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SUNDAY 4 JUNE 2023
VIDEO I SESSION I
14:30 - 15:30

V-001

REDO TRANS-STERNAL TRACHEAL RESECTION AND RECONSTRUCTION: THE USE OF UNCOMMON RELEASE MANEUVERS

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OBJECTIVES
To demonstrate maneuvers that aid in achieving adequate tracheal length for redo tracheal resection and reconstruction.

VIDEO DESCRIPTION
71-year-old male with history of Hurthle cell carcinoma initially underwent thyroidectomy and central neck dissection, follow by radioactive iodine. He developed r+ter 10 years with tracheal invasion, treated by tracheal resection via partial sternotomy, and mediastinal lymph node dissection. Four years later, he developed a right paratracheal mass positive for Hurthle cell carcinoma, with extension into the trachea resulting in obstruction. In this video, we demonstrate our approach to redo transsternal tracheal resection and reconstruction, with the use of several release maneuvers. These include supra-hyoid release, intra-pericardial mobilization of the visceral mass, and pericardiophrenic release. The paratracheal mass, along with a 4cm segment of trachea, was resected. The margins were negative for involvement by tumor. The anastomosis did not show any evidence of tension. The patient did well post-operatively and had no evidence on tracheal narrowing on follow-up CT scan.

CONCLUSIONS
Redo trans-sternal tracheal resection and reconstruction may be performed safely. It is important to utilize release maneuvers such supra-hyoid release, intra-pericardial mobilization, and pericardiophrenic release in order to facilitate a tension free anastomosis.

Disclosure: No significant relationships.
Keywords: Robotic, Sleeve Resection, Bleeding, Technique, Minimally Invasive.

V-002

GREAT CHALLENGES GREAT SOLUTIONS IN CHEST WALL

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OBJECTIVES
To present the case of a patient with a right breast sarcoma with costal wall involvement and reconstruction with a 3D printed dynamic customized prosthesis.

VIDEO DESCRIPTION
We present a 73-year-old woman with a history of breast prosthesis, tumor in the right breast that after removal of the prosthesis is reported as undifferentiated pleomorphic sarcoma. The CT scan showed a right breast mass with involvement of the 4th to 8th right costal arch. She was treated with preoperative chemotherapy with poor response. 3D CT reconstruction was performed to assess resection. With biomedical engineers we designed a dynamic prosthesis to cover the wall defect. A titanium prosthesis was 3D printed and fixed to the sternum with 4 movable ribs. A block resection of the right breast, pectoral muscles, serratus major and partially the latissimus dorsi together with the costal arches from 4th to 8th to the sternal border was performed. Reconstruction of the wall is performed with 3D prosthesis that is fixed to the sternum with self-locking screws and ribs with Dall Miles braided wire system and gore-tex mesh. A muscle flap was made with the rest of the latissimus dorsi muscle by plastic surgery. After 48 hours flap necrosis was observed, the patient was reintervened and a new flap was made with anterior rectus abdominis muscle and anastomosis of the inferior epigastric vein of the flap to cephalic vein was performed to improve venous drainage. The patient was discharged after 10 days with good mobility and ventilatory mechanics.

CONCLUSIONS
Personalized 3D printed dynamic prostheses provide a good correction in large chest wall defects, while not limiting the patient's ventilatory mechanics and facilitating surgery.

Disclosure: No significant relationships.

V-003

A RIGHT APICAL, POSTERIOR, AND SUPERIOR (S1+S2+S6) ROBOTIC SEGMENTECTOMY

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OBJECTIVES

Performing a complex segmentectomy under a minimally invasive approach is still challenging. An accurate lymph node dissection is required. And proper visualization of the structure will be helpful. Here, we report a right S1+S2+S6 segmentectomy with the assistance of the robot.

VIDEO DESCRIPTION

The case is an ex-smoker, a male in his 80s. Multiple lung lesions were detected in the health check-up. There were at least three nodules in his right S1, S2, and S6 segments. The biopsy of the largest lesion revealed an adenocarcinoma. He had a fused fissure in the right upper and lower lobe by the computed tomography, and one of the legions was in this fused fissure. Due to old age and limited lung function, we decided to perform an S1+S2+S6 segmentectomy. Four ports were placed in the eighth intercostal space and one in the sixth intercostal space. The V6 vein was exposed and stapled from the right lower lobe's posterior view. After completing the intersegmental plane of superior and basal segments, B6 was stapled. Ascending pulmonary artery and V2 were exposed from the interlobar view. A1 and V1 are exposed from the craniocaudal view of the hilum and stapled. B1 was visualized clearly from the caudal view but was not visible from the interlobar view. So B1 and B2 were isolated separately and stapled at once. B3 was preserved and confirmed by the bronchoscopy. The intersegmental plane of S1/S3 and S2/S3 was completed under the guidance of indocyanine green. Mediastinal lymph node dissection followed after segmentectomy. His postoperative course was uneventful. By the pathological examination, complete resection of all the lesions could be confirmed.

CONCLUSIONS

Multifaceted view by the multiport robotic surgery is advantageous to perform complicated segmentectomy. As S1, S2 and S6 reside posterior to the hilum, robotic surgery would be preferable.

Disclosure: No significant relationships.

V-004

TROUBLESHOOTING OF A STAPLER FAILURE DURING SALVAGE SURGERY AFTER ANAPLASTIC LYMPHOMA KINASE-TYROSINE KINASE INHIBITORS (ALK-TKI) THERAPY

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OBJECTIVES

Anaplastic lymphoma kinase (ALK)-tyrosine kinase inhibitors (TKIs) have been approved for the therapy of locally advanced non-small cell lung cancer (NSCLC) caused by ALK rearrangement. Although salvage surgery after ALK-TKI is expected to increase in the future, strong adhesions at the pulmonary hilum should be noted.

VIDEO DESCRIPTION

The 45-year-old male was diagnosed with adenocarcinoma of the right lower lung (cT4N2M1b). Gene mutation analysis indicated positive ALK translocation. Cisplatin and pemetrexed was used as the first-line treatment and crizotinib was selected as a second-line treatment. The main tumor regrew 6 years after crizotinib use. Therefore, we planned a right lower lobectomy via 4 port VATS as salvage surgery. The hilar region could not be easily dissected due to the strong adhesion around pulmonary artery (PA) because of prior crizotinib treatment. So, we planned simultaneous dissection of the PA and bronchus using an endoscopic stapler with black cartridge after dissection of the pulmonary veins and fissures. After closing the jaw, the stapler was fired. However, the wire broke in the process and the knife stopped. Knife did not return to home position so I could no longer open the jaw. The specimen was cut at the distal of the jaw and removed outside the thoracic cavity. The assistant pressed the proximal side of the stump to control the bleeding and the endoscopic stapler was removed while removing the tissue trapped in the jaw. The cut surface was clamped and sutured using 4-0 PDS via VATS.

CONCLUSIONS

Salvage surgery after ALK-TKI may be challenging because of the dense adhesion of the hilum. Even if we can close the jaw of the endoscopic stapler, stapler failure may happen as shown in this case. To avoid such a situation, it is important to thin the thickened lymph nodes as much as possible before stapling.

Disclosure: No significant relationships.

V-005

ROBOT-ASSISTED EN BLOC ESOPHAGECTOMY AFTER NEOADJUVANT CHEMORADIATION IN A PATIENT WITH LOCALLY ADVANCED ESOPHAGEAL CANCER

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OBJECTIVES
We attempted to demonstrate the feasibility of robot-assisted en-bloc esophagectomy after neoadjuvant chemoradiation using the technique of fascial plane dissection with esophageal suspension in patients with locally advanced esophageal squamous cell carcinoma.

VIDEO DESCRIPTION
The video shows the robot-assisted thoracoscopic esophagectomy on a patient with cT3N1 squamous cell carcinoma following neoadjuvant chemoradiation. When lower mediastinal dissection, en bloc esophagectomy was performed to resect all of the soft tissue around the esophagus, including the thoracic duct, anterior thoracic paraaortic lymph nodes, bilateral pulmonary ligament lymph nodes, and bilateral pleura. The fascial plane dissection with the esophageal suspension technique was used for upper mediastinal dissection. The fascial plane dissection technique is based on a specific anatomic concept regarding the relationship between lymphatic structures and the esophagus. The fascial plane dissection technique helps reduce surgical morbidity, significantly minimizing the risk of nerve injury during radical lymph node dissection along the recurrent laryngeal nerve.

CONCLUSIONS
Robot-assisted en bloc esophagectomy could be safely performed after neoadjuvant chemoradiation. The fascial plane dissection with the esophageal suspension technique is a reliable method of LN dissection along recurrent laryngeal nerves.

Disclosure: No significant relationships.

V-006

THE SURGICAL TECHNIQUE OF CONTINUOUS INTRAOPERATIVE NEUROMONITORING OF BILATERAL RECURRENT LARYNGEAL NERVES DURING VIDEO-ASSISTED THORACIC SURGERY (VATS) IVOR LEWIS OPERATION

Yong Won Seong[1,2], Young Jun Chai[3,2], Jung-Man Lee[4,2], Hyeon Jong Moon[1,2]
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OBJECTIVES

Vocal cord palsy(VCP) after recurrent laryngeal lymph node(LN) dissection is detrimental. We developed a technique of continuous intraoperative neuromonitoring(CIONM) of bilateral recurrent laryngeal nerves(RLNs) during video-assisted thoracic surgery(VATS) Ivor Lewis operation.
We would like to introduce our technique.

VIDEO DESCRIPTION

This video reveals right side CIONM technique first, then reveals left side CIONM.
Keypoints are described in the video by subtitles.

CONCLUSIONS

The CIONM of bilateral recurrent laryngeal nerves for VATS Ivor Lewis operation was safe and effective.
We anticipate our technique to be beneficial to many thoracic surgeons who perform minimally invasive esophagectomy with thorough bilateral recurrent laryngeal lymph node dissection.

Disclosure: No significant relationships.

MONDAY 5 JUNE 2023
INNOVATIVE/EXPERIMENTAL I SESSION II
08:00 - 09:00

O-007

TRAINING SIMULATOR EFFICACY IN DEVELOPING THORACIC AND GENERAL SURGICAL SKILLS IN AN ACADEMIC RESIDENCY PROGRAM: A PILOT STUDY

Maria Cattoni, Sarah Grossi, Luca Filipponi, Nicola Rotolo, Andrea Imperatori
University of Insubria, Varese, Italy

OBJECTIVES
Virtual training simulators have been introduced in several surgical disciplines to improve residents' abilities. Through the use of the LapSim virtual training simulator (Surgical Science, Göteborg, Sweden), this study aims to plan an effective learning path in minimally invasive thoracic and general surgery.

METHODS
All thoracic and general surgery trainees in their first and second years of residency were enrolled and randomized into two groups: residents undergoing an intensive twice-a-week virtual training program (Group A: n=8) and those undergoing a once-weekly non-intensive virtual training program (Group: n= 9).
The virtual training program was divided into four modules, each of 12 weeks. In the first module, trainees repeated grasping, cutting, clip application, lifting and grasping, and fine dissection exercises during each training session. Seal-and-cut exercise was performed as the initial and final tests. Data on the duration of surgical manoeuvres and the type and number of mistakes were collected and compared between the two groups.

RESULTS
No significant differences were observed between Groups A and B during the first session, confirming that the two groups had the same skill level at the beginning of the course. Comparing the parameters collected during the initial and final test (Table), only Group A showed a significant reduction in total time (p-value=0.002), left (p-value=0.002) and right (p-value=0.019) instrument path lengths, and in the left (p-value=0.001) and right (p-value=0.007) instrument angular path lengths, demonstrating that this group acquired greater precision in surgical manoeuvres.

CONCLUSIONS
Preliminary results demonstrated that virtual simulator training course performed at least 2 twice a week was effective for the acquisition of basic surgical skills required for the trainee's professional growth.

Additional virtual training courses that focused on performing progressively more difficult exercises were scheduled to investigate the mode and timing of the simulations.

Disclosure: No significant relationships.
Keywords: Training Simulator, Thoracic Surgery, General Surgery, Academic Program.

	First session		Final session	
	Group A	Group B	Group A	Group B
Total time (seconds)	398.9 (287.2-527.3)	348 (299.6-455.2)	218.8 (178.1-290.6)	289.9 (226.9-339.5)
Left instrument path length (meters)	2.3 (1.8-3.4)	2.8 (1.6-3.8)	1.5 (0.8-2.6)	2.6 (1.2-3.7)
Left instrument angular path length (degrees)	512.3 (438.3-756.4)	726.5 (419.6-964.4)	340.2 (205.4-492.1)	482.5 (342.5-930.8)
Right instrument path length (meters)	3.5 (2.4-4.8)	2.9 (2-4.1)	2.2 (1.5-3)	2.6 (2.3-3.1)
Right instrument angular path length (degrees)	802.8 (660.5-1025)	695.5 (490.8-891)	454.4 (320-641.9)	574.4 (534-695.3)
Max stretch damage (%)	68.7 (61.4-86.9)	89.2 (72.2-94.8)	76 (67.2-90)	72.8 (66.5-88.6)

O-008

VENTILATION SPECT: A NEW TOOL IN AIR LEAK MANAGEMENT

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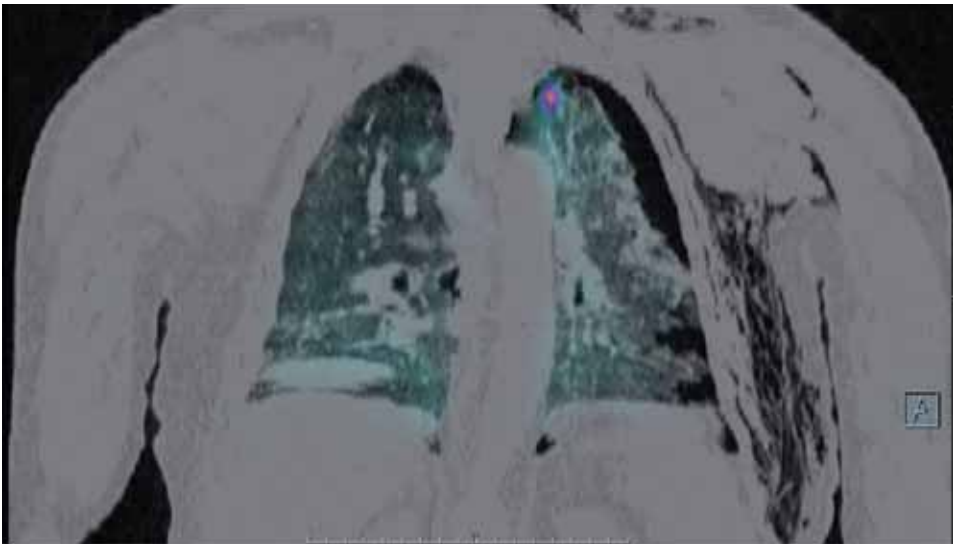
OBJECTIVES
Surgical management of prolonged air leak (PAL) continues to be a challenge. In minimally invasive procedures difficulties localizing the origin are increased. The aim of our study is to assess the eficacy of ventilation SPECT (vSPECT) localizing the origin of air leak (AL).

METHODS
This is a prospective analysis of patients with PAL due to secondary pneumothorax or after lung resection. AL is quantified using the analogical drainage scale before vSPECT. vSPECT is performed in a dual-head gamma camera after patients inhaling of Technegas (99mTc=4Na) during 5 sec 5 times. Acquisition parameters were determined using a thorax phantom. Total SPECT acquisition time was 15 min.
At the surgical procedure we localized the leaking point and checked its concordace with the vSPECT airleakage point. The leakage zone is resected or repaire followed by pleurodesis. We analyzed postoperative AL, days to chest drain removal, postoperative LOS, and calculate Kappa index between vSPECT and surgical findings.

RESULTS
Between January 2021 and December 2022, 15 patients were enrolled. Patient characteristics: 13 (86.6%) were males, 10 (66.7%) had previous diagnosed pneumopathy [7 of which (46.6%) had emphysema], 7 (46.6%) had undergone pulmonary resection.
At the time of vSPECT: median AL (measured analogically) was 1,93 (range 1-4); all patients showed pneumothorax. vSPECT showed a pathologial point of AL in every patient. After vSPECT 13 patients (86.6%) underwent surgery. According to surgical findings there was 100% concordance of site of air (kappa = 1). Median length of stay was 3 days (IQR 2-10), median postoperative AL was 0.44 SD 0.527. Median postoperative time to chest tube removal was 1 (IQR 1-10). There were no complications related to vSPECT.

CONCLUSIONS
vSPECT is a useful tool to identify location of air leak in secondary pneumothorax and postoperative air leak.

Disclosure: No significant relationships.
Keywords: Air Leak, SPECT.



O-009

THE EFFICACY OF POSTERIOR (ERECTOR SPINAE) AND LATERAL (SERRATUS ANTERIOR) FASCIAL PLANE BLOCKS VS INTERCOSTAL NERVE BLOCK IN UNIPORTAL- VIDEO-ASSISTED THORACIC SURGERY (VATS) SURGERY: A PROSPECTIVE TRIAL

Dania Nachira, Giovanni Punzo, Giuseppe Calabrese, Flaminio Sessa, Leonardo Petracca-Ciavarella, Marco Chiappetta, Chiara Cambise, Giovanna Beccia, Carolina Sassorossi, Maria Letizia Vita, Maria Teresa Congedo, Elisa Meacci, Stefano Margaritora
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OBJECTIVES

To evaluate the analgesic efficacy of continuous posterior (Erector spinae block,c-ESPB) and lateral (Serratus anterior block,c-SAPB) fascial plane blocks vs the routinely used intercostal nerve block(ICNB) in Uniportal-VATS, in terms of pain control, drug consumption and complications.

METHODS

From January to December 2022, 72 patients underwent peripheral nerve block (40 ICNB, 16 c-SAPB and 16 c-ESPB) after Uniportal-VATS in a prospective observational study. The ICNB was performed by injection of 20 ml of 0,2% ropivacaine into the intercostal spaces(III-VII), associated with intravenous administration of tramadol(300 mg/48 h) by elastomeric pump. The c-SAPB and c-ESPB were performed by injection of 30 ml 0,2%ropivacaine into the corresponding fascial planes where a catheter was left to ensure continuous infusion of 0,2%ropivacaine(5ml/h for 48 hours). Pain was measured by VAS-score at 0,2,8,12,24,48h after surgery; the amount of daily drug consumption and complications were recorded.
Group biases were reduced through a 1:1 propensity score matching, obtaining 13 patients per each group.

RESULTS

c-ESPB and c-SAPB groups had no difference in morphine request upon awakening compared to ICB(p:0.07and p:0.183, respectively).) A higher VAS-score was recorded in c-ESPB compared to ICB at 2(rest:p:0.05; coughing:p:0.05) and 8h(rest:p:0.02; coughing:p:0.005); no difference was found at 12,24 and 48h. A significantly higher consumption of paracetamol in II post-operative day(p:0.02) and tramadol in I ($p<<0.001$) and II (p:0.04)p.o. was recorded in ICB compared to c-ESPB, while c-ESPB group required a higher dosage of ketoprofen in II p.o(p:0.005). No difference was found in VAS-score at different times and drug consumption between c-SAPB and ICB and between c-ESPB and c-SAPB.No complication was recorded in any group.

CONCLUSIONS

Continuous posterior(c-ESPB) and lateral(c-SAPB) blocks seem to have the same safety and analgesic efficacy compared between them and with ICB in Uniportal-VATS approach, but c-ESPB seems to provide a lower drug consumption in post-operative period compared to ICB.

Disclosure: No significant relationships.
Keywords: VATS Surgery, Post-Operative Analgesia, Fascial Plane Blocks, Intercostal Nerve Blocks.

O-010

DEVELOPMENT OF A NOVEL BIO-ADHESIVE PATCH FOR THE TREATMENT OF TRACHEAL INJURIES IN A LARGE-ANIMAL PORCINE MODEL

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OBJECTIVES

Treatment options for central bronchopleural fistulas remain challenging with mortality rates up to 50%. Therapeutic interventions are case dependent and include primary closure, vascularized tissue flaps, and/or endoscopic procedures. We created a bio-adhesive patch that provides an instantaneous seal in multiple biologic environments, which was successfully tested in-vivo on rat tracheas and ex-vivo on porcine tracheas. To determine the safety and efficacy of this bio-adhesive patch, we tested this device in a physiologically relevant large-animal in-vivo model of tracheal injury.

METHODS

Yorkshire swine underwent right VATS with the creation of a 1-5mm full-thickness distal tracheal defect (n=9). In control animals, the defect was untreated (n=3). For experimental animals, the defect was sealed with the bio-adhesive patch and checked for air leak under direct visualization (n=6). After a two-week survival, the pigs were euthanized, tracheal specimens were harvested, and mechanical burst testing with histological evaluation was performed.

RESULTS

Two of three non-patched controls (66%) and five of six patched-experimental animals (83%) survived to the two-week endpoint (p=0.57). 100% of the non-patched controls (n=3) and 50% of patched-experimental animals (n=3) experienced post operative complications (p=0.13). Control group complications included respiratory distress (n=2) and infection (n=1). Patched-experimental complications included respiratory distress (n=1) and infection (n=2). On mechanical testing, all of the harvested tracheas (regardless of group) that survived to the two-week endpoint were able to sustain intraluminal airway pressures of >200 mmHg without tracheal leak or compromise. Histological review of patch healing showed polymer incorporation to surrounding tissue with no signs patch rejection.

CONCLUSIONS

The bio-adhesive patch utilized was safe and usually incorporated to cover the tracheal defects in this animal model. Given the high morbidity and mortality associated with central bronchopleural fistulae and the limited current effective therapies, further investigation of this patch as an adjunct to surgical treatment in human patients is warranted.

Disclosure: No significant relationships.
Keywords: Airway Injury, Tracheal Injury, Bronchopleural Fistula, Bio-Adhesive Patch.

Animal	Group	Clinical Complication?	Complication management	Complication Resolved?	2-week Survival?	Mechanical Burst Testing (mmHg)
09-2	Control	Respiratory Distress	Chest tube suctioning	yes	yes	209
23-1	Experimental	Respiratory Distress	Chest tube suctioning and Heimlich valve replacement	Yes	Yes	351
25-1	Experimental	None	N/A	N/A	Yes	331
29-4	Control	Respiratory Distress	Chest tube suctioning and replacement	No	No	N/A
29-1	Experimental	None	N/A	N/A	Yes	240
30-1	Experimental	Infection	Antibiotics, Antipyretics, IV fluids	No	No	N/A
30-5	Experimental	None	N/A	N/A	Yes	252
36-9	Control	Infection	Antibiotics, Antipyretics	Yes	Yes	351
35-14	Experimental	Inadvertent airway injury during initial procedure, Infection	Antibiotics, Antipyretics	Yes	Yes	351

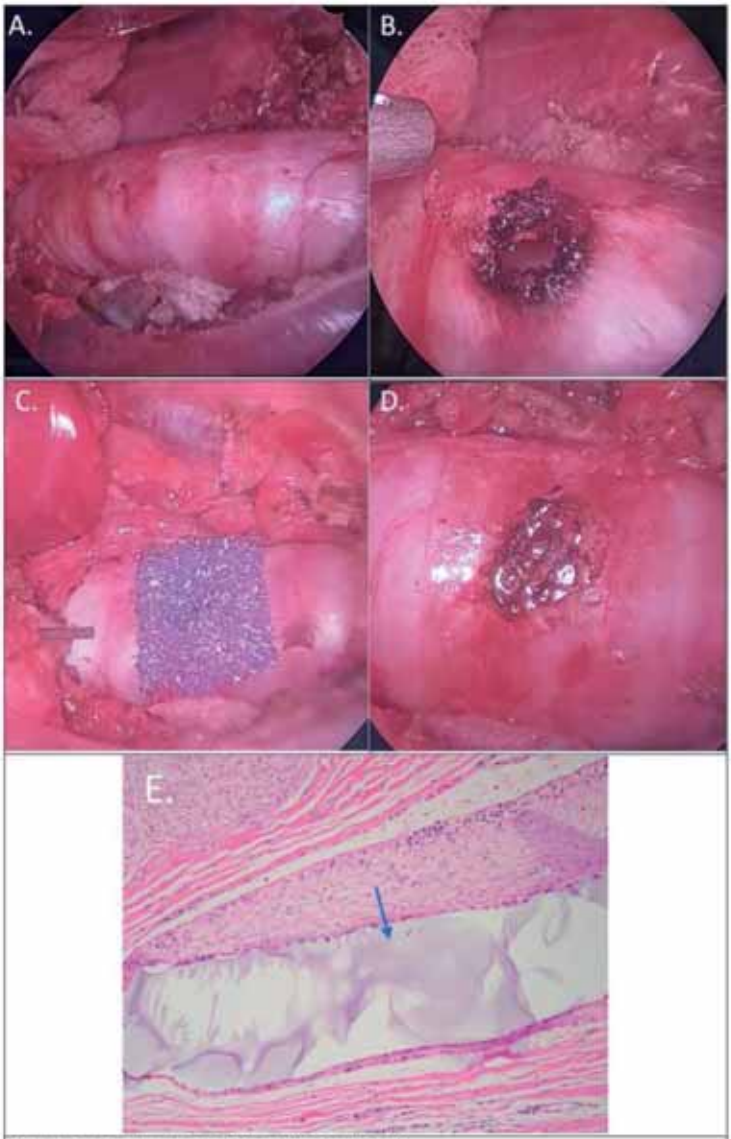

Figure 1: Deployment of Bio-Adhesive Patch

A. Tracheal dissection B. Creation of tracheal defect C. Deployment of bio-adhesive patch with blue sponge backing D. Final patch placement with air- and water-tight adhesion E. Histologic incorporation of bio-adhesive patch polymer (blue arrow) within surrounding granulation tissue

O-011

PRE-OPERATIVE LOCALIZATION OF DIFFICULT LUNG NODULES USING THREE-DIMENSIONAL ANATOMICAL LANDMARKS.VERSUS PERCUTANEOUS HOOKWIRE PLACEMENT: A RANDOMIZED CONTROLLED TRIAL

Dazhi Pang[1], Guangqiang Shao[1], Jitian Zhang[1], Jinglong Li[1], Zhihai Liu[1], Taiyang Liuru[1], Yanan Liang[1], Hongxia Wang[2], Sze-Yuen Peter Yu[1,3]

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OBJECTIVES

Three-dimensional anatomical landmark localization is a new and non-invasive method for lung nodules that are difficult to localize intraoperatively. We compare its safety and accuracy with the conventional percutaneous hookwire placement method.

METHODS

Patients with lung nodules difficult to localize were randomized into three-dimensional anatomical landmarks localization (intervention group) and percutaneous computer tomography-guided hookwire localization (control group). All patients underwent thoracoscopic lung wedge resection. The primary outcome was the accuracy of localization with clear resection margin. Secondary outcomes included the time required for, and composite complications (dislodgement of localizers, pneumothorax, haemoptysis) related to localization.

RESULTS

From May 2020 to May 2021, 40 patients underwent randomization (N = 20 vs. 20). There were no perioperative mortality or major morbidities. The intervention and control groups achieved similar accuracy of localization (100% vs. 95%, p = 1.000) with clear resection margins, chest drain duration (3±2 vs. 2±1 days, p = 0.333), and post-operative length of stay (6±3 vs. 5±3 days, p = 0.358). The intervention group had shorter time required (10±3 vs. 19±9 minutes, p <0.001) for and less composite complications related to localization (0 vs. 30%, p = 0.027).

CONCLUSIONS

The new three-dimensional method based on anatomical landmarks has similar accuracy but higher safety profile than the conventional percutaneous hookwire method for pre-op localization for difficult pulmonary nodules.

Disclosure: No significant relationships.
Keywords: Localization, Solitary Pulmonary Nodules, Video-Assisted Thoracic Surgery.

	Three-dimensional anatomical landmark (N=20)	Percutaneous hookwire (N=20)	p-value
Nodule characteristics			
Distance from visceral pleura (mm)	6±5	8±5	0.370
Diameter (mm)	14±7	11±5	0.186
Depth-to-size ratio ≥0.5	10 (50%)	12 (60%)	0.751
Nature of nodules			0.773
Pure GGO	7 (35%)	5 (25%)	
Part-solid GGO	10 (50%)	12 (60%)	
Solid	3 (15%)	3 (15%)	
Pleural puckering	1 (5%)	1 (5%)	1.000
Pleural adhesions	1 (5%)	2 (10%)	1.000
Malignant nodules	18 (90%)	15 (75%)	0.408
Operative outcomes			
Time required for localization (minutes)	10±3	19±9	<0.001
Accurate localization	20 (100%)	19 (95%)	1.000
Localization-related complications	0	6 (30%)	0.027
Chest drain duration (days)	3±2	2±1	0.333
Post-op length of stay (days)	6±3	5±3	0.358

GGO: Ground-glass opacities

O-012

THE COMPARISON OF EARLY RESULTS OF UNIPORTAL VERSUS MULTIPORTAL VIDEO-THORACOSCOPIC RESECTIONS - PROPENSITY SCORE MATCHED COHORT STUDY

Pawel Zielinski, Piotr Skrzypczak, Magdalena Sielewicz, Piotr Gabryel, Cezary Piwkowski
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OBJECTIVES
The development of minimally invasive techniques in thoracic surgery makes it possible to perform radical anatomical resections using a minimal amount of surgical accesses, minimizing postoperative trauma. The study aimed to compare the early results of single-port and multi-port video-thoracoscopy.

METHODS
The data of 1468 patients who underwent video-thoracoscopic anatomical resections were analyzed, including 1368 multiportal (mVATS) and 79 uniportal (UniVATS). We used the Propensity Score Matching analysis, calculating the predicted probability using the variables: gender, age, nutritional status, COPD, diabetes, atherosclerosis, ThRCRI, FEV1%, and cancer stage. We set the Propensity Score Matching method as "nearest". We analyzed the impact of both surgical accesses on conversion rate, the length of the operation, intraoperative blood loss, drainage time, the length of hospitalization, complications and readmissions. The following comparison groups were obtained: PSM 1:1 - two groups of 79 operations, PSM 1:2 - two groups of 79 and 158 operations, and PSM 1:3 - two groups of 79 and 237 operations.

RESULTS
In the uniVATS group, we observed the significantly more frequent occurrence of the residual air chamber (11,39% vs. 5,26%, $p = 0.0289$), more frequent infection of the postoperative wound (5,06% vs. 0,07%, $p \leq 0.0001$), and a significantly higher number of readmissions (5,06% vs. 1,8%, $p = 0.0425$). Variables such as the length of the operation, intraoperative blood loss, postoperative drainage time, and the length of hospitalization did not differ significantly between the groups.

CONCLUSIONS
We observed more frequent local complications after uniVATS as well as the occurrence of residual air chamber and readmissions. The results of uniVATS and multiVATS treatment were comparable in most essential surgical features such as length of the operation, intraoperative blood loss, postoperative drainage time and the length of hospitalization.

Disclosure: No significant relationships.
Keywords: Uniportal, VATS, Multiportal, Video-Thoracoscopy.

MONDAY 5 JUNE 2023
MISCELLANEOUS I SESSION III
08:00 - 09:00

O-013

INVESTIGATION OF THE NON-SIZED DETERMINED T4N0-2M0 NON-SMALL CELL LUNG CANCER: WHAT IS THE PROPER T CATEGORY FOR THE TUMOR WITH ADDITIONAL NODULES IN DIFFERENT LOBES OF IPSILATERAL LUNG?

Jing-Sheng Cai
Peking University People's Hospital, Beijing, China

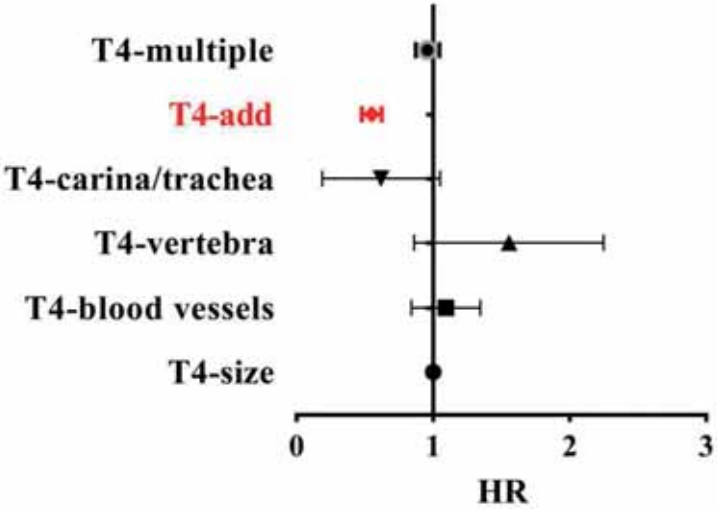
OBJECTIVES
This study aimed to explore the prognostic disparity among T4N0-2M0 non-small cell lung cancer (NSCLC) patients with different T4 descriptors.

METHODS
T3-4N0-2M0 NSCLC patients were included. Patients were assigned to seven subgroups: T3, T4 tumors with size larger than 70 mm (T4-size), T4 tumors with aorta/vena cava/heart invasion (T4-blood vessels), T4 tumors with vertebra invasion (T4-vertebra), T4 tumors with carina/trachea invasion (T4-carina/trachea); T4 tumors with additional tumor nodules in different lobes of ipsilateral lung (T4-add) and T4 tumors had at least two T4 descriptors (T4-multiple). Univariable and multivariable Cox analyses were used to determine the prognostic variables. Kaplan-Meier method with log-rank test was used to compare survival differences among subgroups.

RESULTS
A total of 41,303 eligible T3-4N0-2M0 NSCLC cases were included (17,057 T3 cases and 24,246 T4 cases). There were 10,682 cases, 573 cases, 557 cases, 64 cases, 2,888 cases and 9,482 cases in the T4-size, T4-blood vessels, T4-vertebra, T4-carina/trachea, T4-add and T4-multiple subgroups, respectively. Multivariable Cox analyses confirmed that T4-add patients had the best prognosis in the entire cohort and in the pathological, clinical, total N0 and resected NSCLC subgroup. In the matched cohort, the survivals of T4-add patients were superior to those of T4-size patients (all $P < 0.001$), but were comparable to those of T3 patients (OS, $P = 0.162$; CSS, $P = 0.375$).

CONCLUSIONS
Among NSCLC patients with different T4 descriptors, T4-add patients had the best prognosis. T4-add patients and T3 patients had similar survivals. Herein, we proposed that T4-add patients should be downstaged from T4 to T3 category. Our results served as a novel supplement to the proposals for the T category revision.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, T4 Descriptor, T4-Add, Prognosis.



O-014

COMPLETE ANATOMIC SEGMENTECTOMY SHOWS IMPROVED ONCOLOGIC OUTCOMES COMPARED TO INCOMPLETE ANATOMIC SEGMENTECTOMY

Miles Mcallister[1], Matthew M. Rochefort[1], Paula Ugalde Figueroa[1], Rachel Leo[1], Evert A. Sugarbaker[1], Anupama Singh[1], Julio Herrera-Zamora[1], Rafael R. Barcelos[1], Emanuele Mazzola[2], Steven J. Mentzer[1], Jon O. Wee[1], M. Blair Marshall[1], Daniel C. Wiener[1], Ciaran J. Mcnamee[1], Antonio Coppolino[1], Brian Whang[1], Abby White[1], Christopher T. Ducko[1], Michael T. Jaklitsch[1], Raphael Bueno[1], Scott J. Swanson[1]

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[2]*Department of Data Science, Dana Farber Cancer Institute, Boston, United States*

OBJECTIVES

To compare the locoregional recurrence-free survival (RFS) and overall survival (OS) after complete anatomic segmentectomy (CAS; division of segmental bronchus, artery, and vein) versus incomplete anatomic segmentectomy (IAS; less than 3 structures divided).

METHODS

A single-center retrospective analysis of patients undergoing segmentectomy between 03/2005-05/2020. The cohort was divided into 2 groups: CAS and IAS. Patients receiving neoadjuvant therapy or with incomplete follow-up were excluded. Survival was estimated using Kaplan-Meier curves and compared with log-rank tests. Cox proportional hazards regression was used to evaluate additional factors associated with OS and RFS.

RESULTS

Of the 350 patients included, 3 underwent multiple segmentectomies for metachronous primary tumors, so 353 cases were analyzed: 236 (67.1%) were CAS and 117 (32.9%) were IAS. No significant differences were observed in demographic variables, smoking status, pulmonary function, comorbidity, tumor size, or stage between the two groups. Each group had no 30-day mortality and a 90-day mortality rate of <1%. CAS was associated with dissection of more lymph nodes (LN) than IAS (6 vs. 4 median LN removed; $p < 0.001$). Surgical margins were negative in all cases. Median follow-up was 65 months (IQR = 45-113 mos.). Median OS was not reached after CAS and was 90 months after IAS. Neither group reached median RFS after 10 years. In unadjusted analysis, 5-year RFS was improved (HR: 0.55[0.31-0.95]; $p = 0.03$), but 5-year OS did not differ after CAS vs. IAS. In multivariate analysis, patients undergoing CAS had better 5-year OS (HR: 0.65[0.42-0.99]; $p = 0.05$) and RFS (HR: 0.47[0.27-0.83]; $p = 0.01$) compared to IAS.

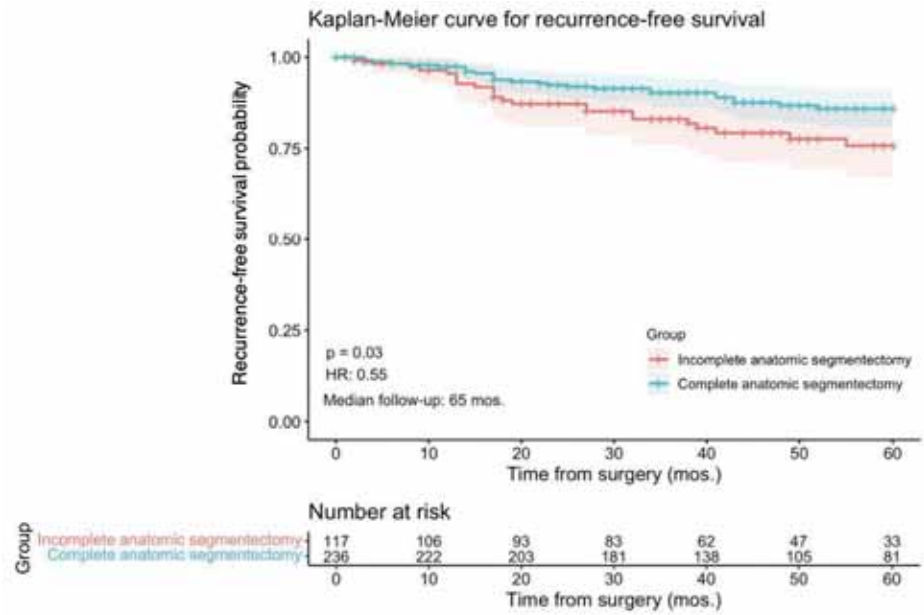
CONCLUSIONS

This single-center experience suggests that patients undergoing complete anatomic segmentectomy have superior long-term overall and recurrence-free survival when compared

to incomplete anatomic segmentectomy. We recommend surgeons should perform a complete anatomic dissection, dividing each of the segmental structures, whenever possible.

Disclosure: No significant relationships.

Keywords: Lung Cancer, Segmentectomy, Anatomic Resection, Survival, Locoregional Recurrence.



O-015

PROGNOSTIC SIGNIFICANCE OF LYMPH NODES ASSESSMENT DURING PULMONARY METASTASECTOMY: A SYSTEMATIC REVIEW AND META-ANALYSIS

Fabrizio Minervini[1], Allen Li[2], Marianna Qu[3], Henning Nilius[4], Yaron Shargall[5]
[1]*Cantonal Hospital Lucerne, Lucerne, Switzerland*
[2]*Faculty of Medicine & The Ottawa Hospital Research Institute, University of Ottawa, Ottawa, Canada*
[3]*School of Medicine, Queens University, Kingston, Canada*
[4]*Department of Clinical Chemistry, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland*
[5]*Division of Thoracic Surgery/Department of Surgery, McMaster University, Hamilton, Canada*

OBJECTIVES
Lung metastasectomy is a recognized standard procedure in the treatment of metastatic tumors. Whether the addition of lymph node dissection to the procedure can improve overall survival (OS) and disease free survival (DSF) remains, however, unknown.

METHODS
We performed a systematic review of the literature analyzing MEDLINE, EMBASE, until 31st October 2021. We included all papers which analyzed if the addition of lymph node tissue dissection/sampling to lung metastasectomy offers survival benefits when compared to patients that do receive lymph node tissue dissection. Secondary outcomes were three- and five-year overall survival and disease-free survival. Post-hoc sub-group analyses were done to assess the primary outcome in different populations.
Interstudy heterogeneity was estimated with visual inspection of forest plots and calculation of the I2 inconsistency statistic.

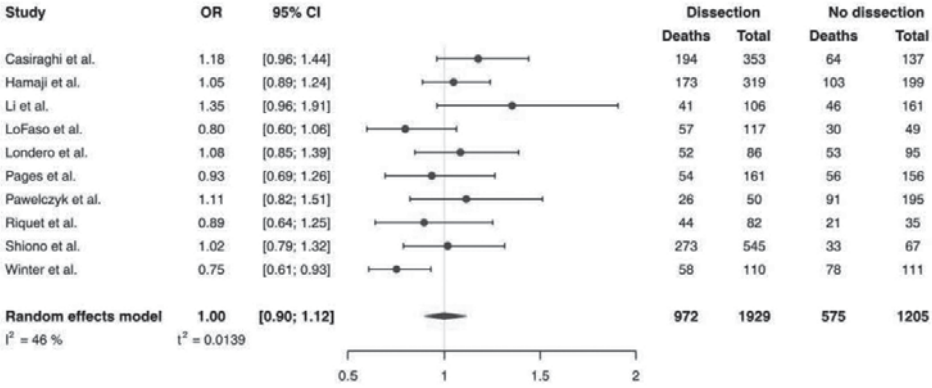
RESULTS
We included in our analysis 11 eligible studies with a total of 3310 patients. The most common primary tumor type was colorectal cancer (1740 patients) and the most commonly performed operative procedure was wedge resection (57%) followed by lobectomy (39%). When resection status was reported, R0 resection was achieved in 90% of the cases.
Nine studies did not show a statistically significant effect of lymph nodes dissection or sampling on the 5-year overall survival with a pooled odds ratio of 1.00 (95% CI: 0.90, 1.12, I2 = 46%, 95% PI: 0.74, 1.35). Regarding disease free survival, the pooled odds ratio was 0.99 (95% CI: 0.64, 1.53, I2 = 75.6 %, 95% PI: 0.14, 7.21). Further, sub-analyses performed on several subgroups did not show any benefit of lymph nodes tissue sampling on OS and DSF.

CONCLUSIONS

Based on the current literature, the addition of lymph node tissue dissection performed at the time of lung metastasectomy was not associated with a significant benefit in overall and disease free survival.

Disclosure: No significant relationships.
Keywords: Pulmonary Metastasectomy, Lymph Nodes Sampling.

Figure: Forest plot of the overall survival after lymph node dissection based on reported odds ratios. Logarithmically transformed odds ratios were pooled using the Mantel-Haenszel estimator. OR – odds ratio, 95% CI – 95% confidence interval,



O-016

DEVELOPMENT OF A NOVEL LAYERED POLYGLYCOLIC ACID MATERIAL TO COVER RAT CRITICAL SIZE DEFECTS OF THE TRACHEA AND IMPROVEMENT OF TRACHEAL HEALING BY INHALATION OF BASIC FIBROBLAST GROWTH FACTOR

Yoshitake Murata, Yojiro Yutaka, Shigeto Nishikawa, Satona Tanaka, Yoshito Yamada, Akihiro Ohsumi, Daisuke Nakajima, Masatsugu Hamaji, Toshi Menju, Hiroshi Date
Department of Thoracic Surgery, Kyoto University, Kyoto City, Japan

OBJECTIVES

We developed a novel layered polyglycolic acid (PGA) material to cover the central airway. The aim of this study is to verify its biocompatibility, and evaluate the effect of basic fibroblast growth factor (bFGF) inhalation on tracheal healing.

METHODS

A critical size defect in the rat cervical trachea was covered with PGA (Figure A). Distilled water (DW) or 3.125, 6.25, 12.5, and 25 µg bFGF was administered into the trachea for 2 weeks (n=6 in each of five groups). Each group was then evaluated by bronchoscopy, the regenerated ciliary area, ciliary beat frequency, and ciliary transport function in the center of the PGA measured as the moving distance of microspheres dropped onto the trachea. To examine potential side effects of bFGF inhalation, the right lower lobe was evaluated pathologically.

RESULTS

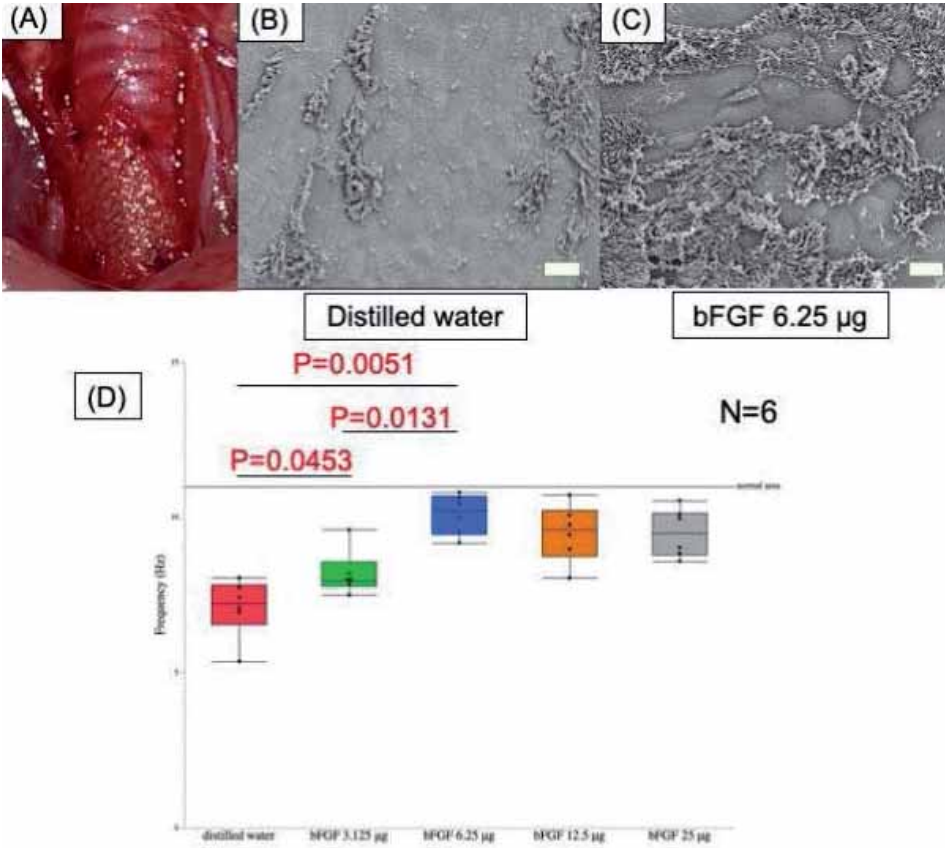
All rats survived during the study period. Histological examination showed collagen fibrosis and ciliated epithelization on the PGA material after 2 weeks. Bronchoscopy revealed stenosis due to granulation in 12.5 and 25 µg bFGF groups, but not in DW or 3.125 and 6.25 µg bFGF groups. Compared with the DW group, 3.125, 6.25, 12.5, and 25 µg bFGF groups had significantly larger regenerated ciliary areas (15.2%, 27.0%, 41.3%, 33.2%, and 31.0%, respectively; p=0.0131) (Figure B, C), improved ciliary beat frequency (7.10, 8.18, 10.10, 9.51, and 9.50 Hz, respectively; p=0.0051) (Figure D), and improved ciliary transport function (6.40, 9.54, 16.89, 16.41, and 14.29 µm/sec, respectively; p=0.0202). Pathological examination of the right lower lobe revealed pulmonary fibrosis and hyperplasia in 12.5 and 25 µg bFGF groups, but not in DW or 3.125 and 6.25 µg bFGF groups.

CONCLUSIONS

The novel PGA showed excellent biocompatibility and facilitated tracheal regeneration, both morphologically and functionally. Inhalation of bFGF promoted tracheal regeneration, and the optimal dose of bFGF was 6.25 µg.

Disclosure: The polyglycolic acid material used in this study was provided by Kureha Co.
Keywords: Polyglycolic Acid (PGA), Basic Fibroblast Growth Factor (BFGF), Trachea, Regeneration.

X The polyglycolic acid material used in this study was provided by Kureha Co.



O-017

LUNG CANCER OUTCOMES IN THE ELDERLY: POTENTIAL DISPARITY IN SCREENING

Anupama Singh[1], Emanuele Mazzola[2], Yue Xie[2], M Blair Marshall[1], Michael T Jaklitsch[1], Fatima G Wilder[1]
[1]*Brigham and Women's Hospital, Boston, United States*
[2]*Dana-Farber Cancer Institute, Boston, United States*

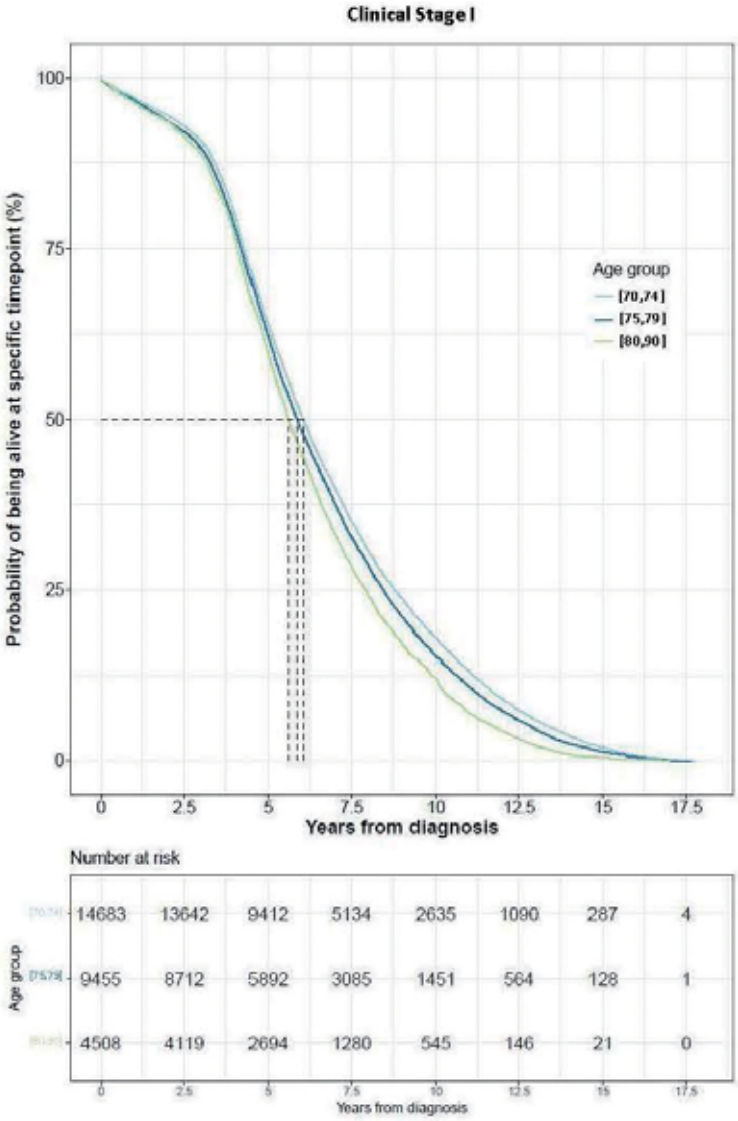
OBJECTIVES
To analyze the outcomes of lung cancer in the elderly.

METHODS
A retrospective analysis of patients in the National Cancer Database with NSCLC from 2004 – 2017 grouped into 3 categories: 70 – 74 (A), 75 – 79 (B), and 80 – 90 years (C). Those with multiple malignancies were excluded. Patient characteristics, lung cancer, and treatment variables were gathered. "Time-to-death" plots were generated only for individuals with known date of death for each age group based on stage.

RESULTS
466,051 patients were included. Demographics (majority non-Hispanic & female) & histology (primarily adenocarcinoma) were similar among groups. Less invasive techniques (imaging & cytology) diagnosed cancer as a function of age: 14% in A, 15.4% in B, 21.3% in C ($p < 0.002$). Clinical stage IA was least common in C (15%) compared to 17% in A and B ($p < 0.002$). Incidence of other clinical stages were similar among the groups. 83% in C didn't receive surgery compared with 70% in A and B ($p < 0.003$). Of the 83%, 8.2% were considered poor surgical candidates because of age or comorbidities compared with 6% in A and B ($p < 0.002$). For 71% in C, surgery was not the first treatment plan compared to 62% in A and B ($p < 0.002$). "Time-to-death" plots show worse prognosis for each stage for C compared to A and B. Figure 1 compares clinical stage I.

CONCLUSIONS
Patients older than 80 years present less frequently as clinical stage IA, are less commonly offered surgical intervention, and are more frequently diagnosed via less accurate measures (i.e. radiographically). They also have worse outcomes for each stage compared to younger patients. Continuing lung cancer screening beyond 80 years may identify patients with earlier stage of disease, improve outcomes in this population, and address disparities related to age.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Screening Guidelines, Disparity.


Clinical Stage I
Probability of being alive at specific timepoint (%)
100
75
50
25
0
Age group
[70,74]
[75,79]
[80,90]
0
2.5
5
7.5
10
12.5
15
17.5
Years from diagnosis
Number at risk
Age group
14683 13642 9412 5134 2635 1090 287 4
9455 8712 5892 3085 1451 564 128 1
4508 4119 2694 1280 545 146 21 0
Years from diagnosis

O-018

PULMONARY PART SOLID NODULES ARE DIFFERENT FROM PURE SOLID NODULES IN MANY WAYS

Runhua Yu, Hanyue Li, Zhitao Gu, Wentao Fang
Department of Thoracic Surgery, Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai, China

OBJECTIVES
The purpose of this study is to illustrate that part solid nodules (PSN) and solid pulmonary nodules (SPN) may be two different diseases by discussing the differences in clinical, histological, genetic characteristics and prognosis.

METHODS
We retrospectively collected patients with cT1N0M0 lung adenocarcinoma presenting as PSN and SPN on CT scan from 2013 to 2021. They were devided into a SPN group and a PSN group. Analyses of the mean CT value of the solid part, histological characteristics, genetic mutations and prognosis between two groups were performed before and after Propensity-score matching (PSM).

RESULTS
From Dec,2012 to Sep,2021, a total of 1057 patients were enrolled in this study with 605 in the PSN group and 452 in the SPN group. Before PSM, we found that PSN group had a lower CT value (Hu) in solid component (-20.13±2.53 Hu vs 28.74±1.26 Hu, P<0.001) and better prognosis (5-year RFS: 90.6% vs 65.1%, P<0.001; 5-year OS: 98.1% vs 84.9%, P<0.001) than SPN group. A distinct difference in EGFR mutation profile was found between two groups (PSN vs SPN: 235 vs 83; P<0.001). After PSM, the SPN group was more associated with higher grade, worse histological features, and a worse prognosis (5-year RFS: 86.9% vs 68.7%, P<0.001; 5-year OS: 96.4% vs 87.9%, P<0.001). Distinctions still remained in CT value and EGFR mutation profile between PSN and SPN after PSM.

CONCLUSIONS
There were significant differences between PSN and SPN in CT images, pathological features, EGFR mutation and prognosis. Even with the same solid component size, SPN indicated less favorable histological characteristics and worse prognosis than PSN. These findings suggested that PSN and SPN might have different pathogenesis and should be regarded as different diseases requiring more targeted evaluation and treatment.

Disclosure: No significant relationships.
Keywords: Lung Adenocarcinoma, Computed Tomography, Gene Mutation, Pathological Feature, Prognosis.

MONDAY 5 JUNE 2023
BROMPTON SESSION IV
09:15 - 10:45

B-019

PROFILING IMMUNOEFFICIENCY ACROSS BLOOD AND TISSUE DISCLOSES PREDICTIVE POWER IN SURGICALLY RESECTED NON SMALL CELL LUNG CANCER (NSCLC)

Giovanni Bocchialini[1], Giulia Mazzaschi[2], Federico Quaini[2], Marcello Tiseo[2], Letizia Gnetti[3], Gianluca Di Rienzo[3], Bruno Lorusso[2], Monica Pluchino[2], Nicola Sverzellati[4], Luca Musini[1], Sara Cattadori[1], Federico Illica Magrini[1], Nicole Pensato[1], Paolo Carbognani[1], Luca Ampollini[1]
[1]*Thoracic Surgery Department, University Hospital of Parma, Parma, Italy*
[2]*Department of Medical Oncology, University of Parma, Parma, Italy*
[3]*Pathology Department, University Hospital of Parma, Parma, Italy*
[4]*Section of Radiology, University Hospital of Parma, Parma, Italy*

OBJECTIVES
At every NSCLC stage exists a complex and dynamic interaction between the host immune system and tumour cells, and circulating immune cells constantly shape tumour immune microenvironment(TIME). The aim of this study was to primarily assess the relationship between tumour infiltrating lymphocytes(TILs) and peripheral blood immunophenotypes in a cohort of surgically resected NSCLC patients. Finally, we discuss how the combination of multiple immune parameters outperform the predictive value of individual ones.

METHODS
This prospective study included 107 patients undergoing anatomical resection. Blood samples (Bl) were collected before surgery and flow-cytometry was employed to determine percentage and absolute number of CD3+, CD4+ and CD8+ T-lymphocytes; CD19+B-cells; CD14+monocytes; CD3-CD16+CD56+NKs; and CD4+CD25+FOXP3highTregs. Densities and location of TILs within tumour tissue were analysed through immunohistochemistry and digital microscopy detecting different markers (CD3,CD4-CD8,PD-1,PD-L1). Correlations between TIME and Bl parameters and their association with clinicopathological characteristics and clinical outcome were statistically investigated.

RESULTS
Stage I NSCLC had increased density of CD3+ and CD8+ (p=0.03 and 0.02, respectively) TILs and flow-cytometry documented higher percentage of circulating CD8+ and CD4+ T cells(p=0.02) compared to stage II and III; activated PD-1+ and GranzymeB+ T-lymphocytes were also more abundant in Bl from early stage cases. The density of CD8+ TILs was directly correlated with the magnitude of blood CD8+ cells(p=0.05). Similarly, CD4-to-CD8 ratio measured in TIME mirrored blood CD4/CD8(p=0.002) and was associated with increased circulating CD8+(p=0.05), CD8+PD1+(p=0.002) and CD8+GnZ+(p=0.08) cells. PD-L1

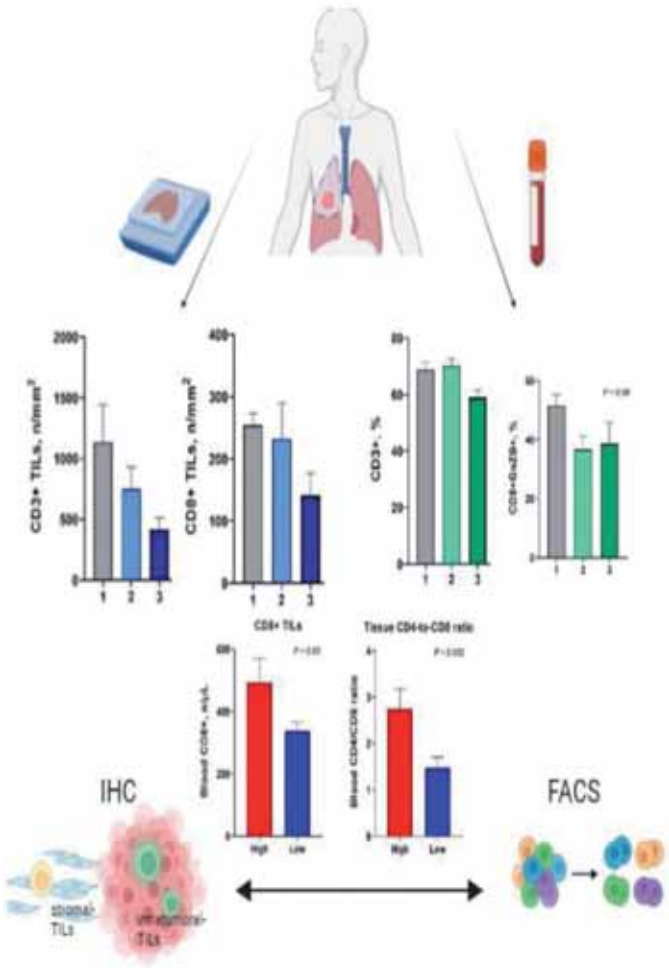
status appeared to impact on Bl lymphocyte subpopulations, higher fraction of circulating CD8+(p=0.06) was documented in PD-L1pos tumours, whereas a greater fraction of CD4+(p=0.08) lymphocytes was present in PD-L1neg cases.

CONCLUSIONS

Our analysis contributes to advance our understanding of the intense crosstalk between circulating and tissue compartments in shaping the immune contexture of NSCLC. Identifying relevant immunophenotypic features across blood and tissue may hint new therapeutic strategies and powerful prognostic tools.

Disclosure: Th No significant relationships.

Keywords: NSCLC, TILs, TIME, Immunotherapy.



B-020

IMPACT OF LUNG CANCER SCREENING ON SURGICAL STAGE DISTRIBUTION AND SURGICAL PRACTICE: A REAL WORLD ANALYSIS OF PATIENTS OPERATED IN AND OUT OF A SCREENING PROGRAM

Michael Richard Gooseman[1], Kerry L Bulliment[1], Vasileios Tentzeris[1], Syed S A Qadri[1], Matthew Callister[2,2], Richard Milton[2,2], Nilanjan Chaudhuri[2,2], Peter Tcherveniakov[2], Kostas Papagiannopoulos[2], Michael Edward Cowen[1], Alessandro Brunelli[2]
[1]*Hull University Teaching Hospitals NHS Trust, Hull, United Kingdom*
[2]*Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom*

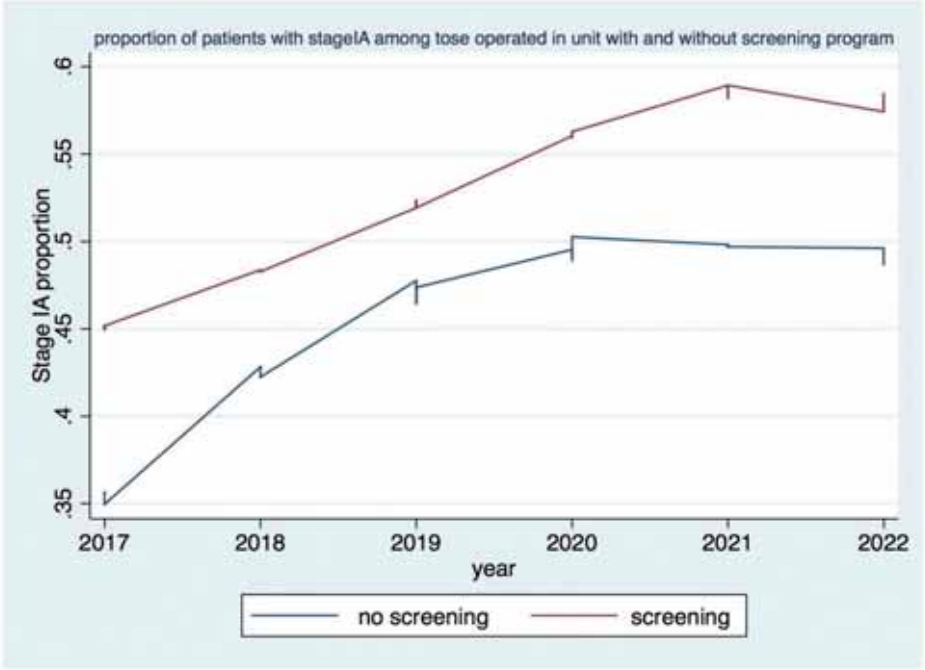
OBJECTIVES
The early detection of lung cancer is a key strategy in reducing mortality from the disease. We investigated the surgical stage of patients in one UK centre whose included population were covered by an active screening program (SU) starting in November 2018 and compared it to another UK centre with the population included for analysis not covered by screening (NoSU). They are units in the same region of the UK.

METHODS
We performed a retrospective analysis of 1493 patients undergoing lung resections (2019-2022) in 2 centres. Temporal distribution was tested using Chi Square for trends. A lowess curve was used to plot the proportion of stage 1A patients amongst those operated over the years.

RESULTS
The surgical populations in the two centres were similar in respect of older age, low BMI, pre-operative forced expiratory value in 1 second, gender.
A statistically significant trend of increasing rates of cT1aN0 was observed over the years in the SU which was not seen in the NoSU ($p=0.001$). The percentage of operated patients with stage 1A NSCLC increased from 47% to 59% from the pre-screening period to the post-screening one in the SU ($p=0.001$), whilst this increase was not seen in the NoSU (50% to 49%,$p=0.62$). The main difference between the two units was attributable to the increase in the proportion of cT1aN0 patients in the SU unit (4.4% to 14% in the SU,$p<0.001$) which remains stable in the NoSU one (4.4% to 3%). The proportion of sublobar resections doubled during the same period in the unit with screening program(17% to 36%,$p<0.001$). This finding was not evident in the unit not submitting screened patients (28% to 29%,$p=0.62$).

CONCLUSIONS
Lung cancer screening is associated with a higher proportion of lung cancers being detected at an earlier stage with a consequent increased practice of sublobar resections.

Disclosure: No significant relationships.
Keywords: Lung Cancer; Sublobar Resection; Screening.


proportion of patients with stageIA among tose operated in unit with and without screening program
Stage IA proportion
.35
.4
.45
.5
.55
.6
2017
2018
2019
2020
2021
2022
year
no screening
screening

B-021

THE OUTCOMES OF SALVAGE SURGERY FOR NON-SMALL CELL LUNG CANCER AFTER IMMUNE CHECKPOINT INHIBITOR OR TARGET THERAPY TREATMENT. A MULTI-CENTER INTERNATIONAL REAL-LIFE STUDY

Francesco Guerrera[1,2], Filippo Lococo[3,4], Ludovic Fournel[5], Domenico Viggiano[6], Mangiameli Giuseppe[7,8], Maria Giovanna Mastromarino[9], Gianluca Guggino[10], Joseph Seitlinger[11], Pietro Bertoglio[12], Luca Luzzi[13], Paolo Albino Ferrari[14,15], Marco Alifano[5], Stefano Margaritora[3,4], Emanuele Voulaz[7,8], Marco Lucchi[9], Francesco Jacopo Romano[10], Piergiorgio Solli[12], Sara Najmeh[11], Annamaria Carta[14,15], Enrico Ruffini[1,2]

[1]*University of Torino, Turin, Italy*
[2]*AOU Città Della Salute e Della Scienze di Torino, Turin, Italy*
[3]*IRCCS-Fondazione Policlinico Gemelli, Rome, Italy*
[4]*Università Cattolica del sacro Cuore, Rome, Italy*
[5]*Centre Université de Paris, site Cochin, Paris, France*
[6]*Careggi University Hospital, Florence, Italy*
[7]*IRCCS Humanitas Research Hospital, Rozzano, Milan, Italy*
[8]*Humanitas University, Milan, Italy*
[9]*University Hospital of Pisa, Pisa, Italy*
[10]*Hospital, Naples, Italy*
[11]*McGill University Health Centre, Montreal, Qc, Canada*
[12]*IRCCS Bologna University Hospital, Bologna, Italy*
[13]*Lung Transplant Unit - University of Siena, Siena, Italy*
[14]*Oncology "A. Businco" Hospital, Cagliari, Italy*
[15]*A.R.N.A.S "G. Brotzu", Cagliari, Italy*

OBJECTIVES

In recent years, targeted therapy and immunotherapy have been demonstrated to improve survival in non-operable, non-small cell lung cancer (NSCLC) patients. The results of salvage lung resection in patients with initially unresectable advanced NSCLC after immune checkpoint inhibitor (ICI) or Target Therapy (TT) treatment remain unclear. This study aimed to define the outcomes of patients undergoing salvage surgery in a multi-center real-life setting.

METHODS

An international multicenter retrospective cohort study was conducted. Patients included in the study were judged inoperable, according to an MTB decision, before being submitted to ICI or TKI treatment. The rate of complications, the 30-day mortality, and the overall survival (OS) and progression-free survival (PFS) were compared. Crude and Multivariable-adjusted analysis were conducted.

RESULTS

Nighty-eight patients affected by NSCLC were included in the study. While ICI was performed in 29 patients (30%), TT was done in 45 (46%), and ICI plus chemotherapy in 24 (24%). The

majority of the patients were male (N=50 – 51%), and the median age at surgery was 62 years. The inoperability was determined by metastatic disease in 42 cases (43%), N2-N3 advanced disease in 15 (15%), local invasiveness in 10 (10%), a combination of local invasiveness and N-status in 26 (27%), and other reasons in 5 cases (5%). Overall, the complication rate was 31%, the mortality rate 1%, and the median LOS was 5 days. No residual lung disease (ypT0) was observed in 26 patients (27%). The 5-year OS was 58%, while the 5-year PFS was 51%. Performing a sublobar (or multiple-sublobar) resections seems to be an independent negative prognostic factor in the multivariable analysis for survival (HR:7.98; IC: 1.39,46.0; P=0.02).

CONCLUSIONS

Patients selected to Salvage Surgery after ICI or TT have reasonable post-operative and long-term outcomes. In this context, Salvage Surgery could be proposed in selected patients after a careful MTB evaluation.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Immune Checkpoint Inhibitor, Target Therapy, Salvage Surgery.

B-022

EFFICACY OF THORACIC PARAVERTEBRAL BLOCK WITH METHYLENE BLUE VISUAL CONFIRMATION IN THE MANAGEMENT OF POSTOPERATIVE PAIN AFTER VIDEO-ASSISTED THORACOSCOPIC LOBECTOMY

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OBJECTIVES

Thoracic paravertebral block (PVB) is an effective strategy for controlling postoperative pain after video-assisted thoracoscopic (VATS) lobectomy, but it may be subjected to a high rate of failure due to incorrect identification of the site of local anesthetic injection. Herein we reported a new technique using methylene blue as a visual confirmation of the correct anesthetic diffusion during PVB. Then, we compared the efficacy of methylene blue PVB with thoracic epidural anesthesia (TEA) for the management of postoperative pain in patients undergoing VATS lobectomy.

METHODS

We conducted a prospective randomized controlled trial on patients undergoing VATS lobectomy for lung cancer. A total of 120 patients were randomly assigned in a 1:1 ratio to receive either PVB or TEA. The end points were to evaluate differences between the two study groups regarding (1) time to perform TEA and PVB, (2) postoperative pain recorded at 1, 12, 24, 48 hours using Postoperative Numeric Rating Scale, (3) total opioid consumption, (4) postoperative outcomes.

RESULTS

Of the 120 patients, 110 completed the study; 55 were enrolled in PVB group and 55 in TEA group. The two study groups were balanced regarding preoperative, operative and pathological variables. PVB was associated with a reduction of local anesthesia performance time compared with TEA ($p<0.0001$). In two cases methylene blue showed that the block was not well performed, thus it was repeated at the end of the surgery. No significant differences were found regarding postoperative pain, opioid consumption and postoperative outcomes (Table 1).

CONCLUSIONS

Paravertebral block with methylene blue was as effective as TEA for controlling postoperative pain but it was easier to perform, resulting in a reduction of anesthesia performance time. The use of methylene blue could be helpful in the learning curve of thoracic anesthesiologists to reduce the failure of PVB.

Disclosure: No significant relationships.
Keywords: Local Anesthesia, VATS, Postoperative Pain, Paravertebral Block.

Variables	Paravertebral block (*n* = 55)	Thoracic epidural analgesia (n = 55)	p-value
Time of local anesthesia performance (min)	8.5 ± 2.0	15.3 ± 3.2	<0.0001
NRS Pain Scores:			
1st hour	3 (0-7)	3 (0-8)	0.29
12th hour	2 (0-6)	2 (0-6)	0.31
24th hour	2 (0-5)	2 (0-5)	0.27
48th hour	1 (0-3)	1 (0-3)	0.41
Total opioid consumption in 24h (mg)	14.2 ± 2.8	13.7 ± 3.6	0.34

B-023

BIOLOGIC VERSUS SYNTHETIC PROSTHESIS FOR CHEST WALL RECONSTRUCTION

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OBJECTIVES
Biologic prostheses used in reconstructions after chest wall resection possess unique features that overcome complications encountered with synthetic prostheses (mesh infection/local sepsis). Since large comparative studies are lacking, we compared postoperative outcomes between biologic and synthetic reconstructions after chest wall resection.

METHODS
All patients who underwent reconstruction after chest wall resection from 2000 to 2022 were reviewed and stratified by prosthesis type (biologic or synthetic). Biologic materials were defined as either being of biological origin or being fully absorbable and incorporable. Weighted matching (age, comorbidities, ECOG-status, extended pulmonary resection, defect size, ribs resected, radiation history, induction therapy, previous cancer, redo-operation, smoking-status, soft-tissue reconstruction, tumor location) was performed. The endpoint was surgical site complications requiring reoperation. Multivariate analysis identified associated risk factors.

RESULTS
In total, 438 patients underwent prosthetic chest wall reconstruction (unmatched: biologic, n=49; synthetic, n=389; matched: biologic, n=46; synthetic, n=46). Table lists patient characteristics and postoperative outcome for both cohorts. In the matched cohort, median (IQR) defect size was 83cm2 (50-142) for the biologic group and 90cm2 (48-146) for the synthetic group (p=0.97). Myocutaneous flaps were used in 15 biologic (33%) and 15 synthetic (33%) reconstructions in the matched cohort (p=>0.99). Surgical site complications requiring reoperation were not significantly different between biologic and synthetic reconstructions in the unmatched (3 [6%] vs 29 [7%]; p=>0.99) and matched (2 [4%] vs 4 [9%]; p=0.68) cohorts (Table). On multivariate analysis, operative time (OR, 1.01 [95% CI, 1.00-1.01]; p=0.006) and operative blood loss (OR, 1.00 [95% CI, 1.00-1.00]; p=0.012) were associated with higher rates of surgical site complications requiring reoperation, and microvascular free flap reconstruction (OR, 0.03 [95% CI, 0.00-0.42]; p=0.024) was associated with lower rates of surgical site complications requiring reoperation.

CONCLUSIONS

No differences were observed in the rate of surgical site complications requiring reoperation between biologic and synthetic prostheses in chest wall reconstruction.

Disclosure: No significant relationships.
Keywords: Chest Wall Reconstruction, Biologic Mesh, Synthetic Mesh, Postoperative Complication.

	All (n=438)	Unmatched cohort			Matched cohort		
		Biologic (n=49)	Synthetic (n=389)	*p*	Biologic (n=46)	Synthetic (n=46)	*p*
Patient characteristics							
Age, median (IQR), years	59 (49-68)	60 (52-67)	59 (48-69)	0.79	60 (51-67)	59 (48-71)	0.80
ECOG performance status 0 1 ≥2	345 (80) 80 (18) 8 (1.8)	16 (33) 29 (59) 4 (8)	329 (86) 51 (13) 4 (1)	**<0.001**	16 (35) 27 (59) 3 (7)	17 (37) 26 (57) 3 (7)	>0.99
Pulmonary comorbidity	74 (17)	14 (29)	60 (15)	**0.021**	13 (28)	12 (26)	0.81
Cardiac comorbidity	197 (45)	22 (45)	175 (45)	>0.99	20 (43)	21 (46)	0.83
History of radiation	110 (25)	16 (33)	94 (24)	0.20	14 (30)	13 (28)	0.82
Redo-operation	124 (28)	13 (27)	111 (29)	0.77	13 (28)	14 (30)	0.82
Postoperative outcome							
Operative time, median (IQR), min	270 (182-374)	298 (220-433)	263 (177-358)	**0.013**	306 (219-464)	307 (212-450)	0.42
Operative blood loss, median (IQR), ml	220 (100-500)	300 (100-500)	200 (100-500)	0.72	300 (112-500)	250 (78-775)	0.95
Resection status				0.28			>0.99
R0	381 (87)	45 (92)	336 (86)		42 (91)	41 (89)	
≥R1	57 (13)	4 (8)	53 (14)		4 (9)	5 (11)	

	All (n=438)	Unmatched cohort			Matched cohort		
		Biologic (n=49)	Synthetic (n=389)	*p*	Biologic (n=46)	Synthetic (n=46)	*p*
Surgical site complications requiring reoperation	32 (7)	3 (6)	29 (7)	>0.99	2 (4)	4 (9)	0.68
Wound infection	22 (5)	4 (8)	18 (5)	0.29	3 (7)	5 (11)	0.71
Dehiscence	10 (2)	1 (2)	9 (2)	>0.99	0 (0)	1 (2)	>0.99
Mesh infection	8 (2)	0 (0)	9 (2)	0.61	0 (0)	1 (2)	>0.99
Material fracture	7 (2)	0 (0)	7 (2)	>0.99	0 (0)	1 (2)	>0.99
30-day complications	162 (37)	21 (43)	141 (36)	0.37	18 (39)	16 (35)	0.67
Pulmonary complications	56 (13)	7 (14)	49 (13)	0.74	5 (11)	7 (15)	0.54
Grade ≥3 complications	56 (13)	4 (8)	52 (13)	0.30	2 (4)	6 (13)	0.27
Need for ICU	27 (6)	2 (4)	25 (6)	0.75	1 (2)	5 (11)	0.20
Length of stay, median (IQR), days	6 (4-8)	6 (4-8)	6 (4-8)	0.93	5.5 (4-8)	6 (5-8)	0.61
Readmission	33 (8)	1 (2)	32 (8)	0.16	1 (2)	5 (11)	0.20
90-day mortality	18 (4)	1 (2)	17 (4)	0.71	0 (0)	2 (4)	0.49
Local recurrence	39 (9)	3 (6)	36 (9)	0.60	3 (7)	2 (4)	0.62
Adjuvant therapy	125 (28)	17 (35)	108 (28)	0.31	15 (33)	12 (26)	0.49

Unless otherwise indicated, data are no. (%). Percentages have been rounded and may not total 100.

B-024

READMISSION AFTER ENHANCED RECOVERY VIDEO-ASSISTED THORACOSCOPIC SURGERY WEDGE RESECTION

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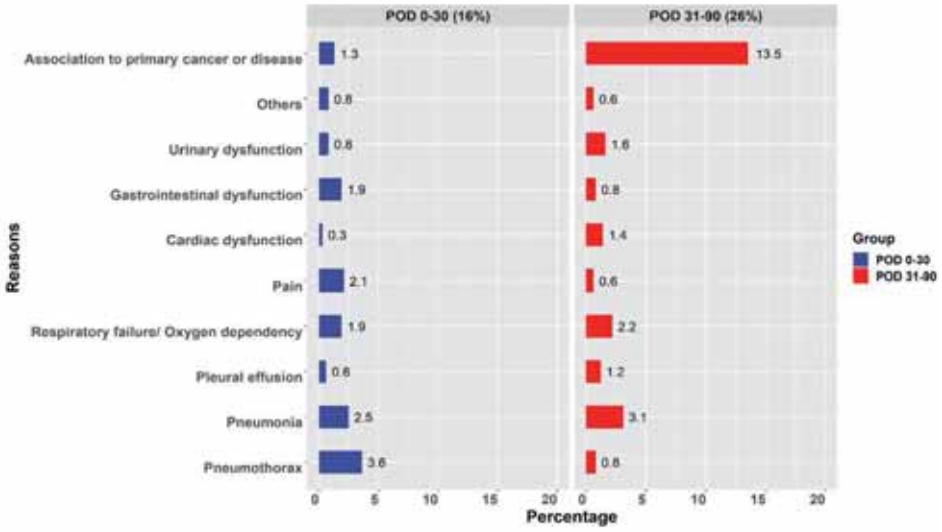
OBJECTIVES
This study aimed to explore risks for readmission after video-assisted thoracoscopic surgery (VATS) wedge resection following an enhanced recovery program.

METHODS
A retrospective analysis was performed on data from prospectively collected consecutive VATS wedge resections from June 2019 to June 2022. All reasons were evaluated individually. We used preoperative and intraoperative characteristics to propensity match patients, who did and patients who did not experience readmission early (0-30 days) or late (31-90 days) after surgery. Cox proportional hazards regression model was used to predict two period readmissions.

RESULTS
A total of 896 VATS wedge resections (benign 29%, non-small cell lung cancer (NSCLC) 23%, metastasis 45% and other lung cancers 3%) were included. Median surgical duration was 38 min and median length of stay was 1 day. There were 141 (16%) patients with early readmission and 230 (26%) with late readmission, of which 12 (1.3%) and 10 (1.2%) patients experienced several readmissions in early and late period, respectively. Specific reasons of readmissions are shown in Figure 1. Body mass index [hazard radio (HR) 1.03, P = .001] and in-hospital pneumothorax (HR 8.04, P = .001) were predictors for early readmission while NSCLC (HR 2.83, P < .001), metastasis (HR 1.54, P = .046), other lung cancers (HR 1.99, P = .022), and 30-day readmission (HR 3.18, P < .001) for late readmission. After propensity score matching, in-hospital pneumothorax (HR 8.98, P = .046) was the only predictor for early readmission while NSCLC (HR 2.79, P = .003), other lung cancers (HR 1.89, P = .046), and 30-day readmission (HR 4.08, P < .001) for late readmissions.

CONCLUSIONS
Readmission after VATS wedge resection remains significant despite an implemented ERAS program. Early readmission was related to surgery and late readmissions mainly to the primary cancer or disease.

Disclosure: No significant relationships.
Keywords: Readmission, Enhanced Recovery After Surgery, Video-Assisted Thoracoscopic Surgery, Early Discharge.



MONDAY 5 JUNE 2023
BREAKING CLINICAL TRIALS SESSION V
13:30 - 14:30

O-025

ENDOSONOGRAPHY WITH OR WITHOUT CONFIRMATORY MEDIASTINOSCOPY FOR RESECTABLE LUNG CANCER

Breaking Clinical Trials

Jelle E. Bousema[1], Marcel G.W. Dijkgraaf[2], Erik H.F.M. Van Der Heijden[3], Ad F.T.M. Verhagen[4], Jouke T. Annema[5], Frank J.C. Van Den Broek[1]
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OBJECTIVES
Resectable non-small cell lung cancer (NSCLC) with a high probability of mediastinal nodal involvement requires mediastinal staging by endosonography and, in the absence of nodal metastases, confirmatory mediastinoscopy according to current guidelines. However, randomized data regarding immediate lung tumor resection following systematic endosonography versus additional confirmatory mediastinoscopy before resection are lacking. To compare invasive mediastinal nodal staging of resectable NSCLC by endosonography with or without confirmatory mediastinoscopy.
Design, Setting, Participants: Randomized controlled non-inferiority trial (23 centers, Netherlands and Belgium) including patients with (suspected) resectable NSCLC and an indication for mediastinal staging after negative systematic endosonography.

METHODS
Patients were randomly assigned to immediate lung tumor resection and lymph node dissection or confirmatory mediastinoscopy followed by tumor resection and lymph node dissection in absence of N2-3 after mediastinoscopy.

RESULTS
The primary outcome in this non-inferiority trial (non-inferiority margin of 8% that previously showed to not compromise survival, Pnon-inferior<0.0250) was the presence of unforeseen N2 disease following tumor resection with lymph node dissection.

Results: Between July 17, 2017 and October 5, 2020, three-hundred-sixty patients were randomized, 178 to immediate lung tumor resection (seven drop-outs) and 182 to confirmatory mediastinoscopy first (seven drop-outs before and six after mediastinoscopy). Mediastinoscopy detected metastases in 8.0% (14/175, 95%-CI: 4.8-13.0) of patients. Unforeseen N2 rate after immediate resection (8.8%) was non-inferior compared to mediastinoscopy first (7.7%) in both ITT (Δ:1.03%, UL 95%-CIΔ: 7.2%, Pnon-inferior=0.0144) and PP analyses (Δ:0.83%, UL 95%-CIΔ: 7.3%, Pnon-inferior=0.0157). Major morbidity and 30-day mortality was 12.9% after immediate resection versus 15.4% after mediastinoscopy first (p=0.4940).

CONCLUSIONS

Based on our chosen non-inferiority margin in the rate of unforeseen N2, confirmatory mediastinoscopy after negative systematic endosonography can be omitted in patients with resectable NSCLC and an indication for mediastinal staging.

Trial Registration: https://www.trialregister.nl/trial/6344.

Funding: ZonMw (project number 843004109) and KWF (project number 11313).

Disclosure: No significant relationships.

O-026

IMPOWER010: EXPLORATORY ANALYSIS OF OUTCOMES BY SURGERY TYPE IN PATIENTS WITH PD-L1 TC ≥50% STAGE II-IIIA NSCLC

Breaking Clinical Trials

Alessandro Brunelli[1], Heather Wakelee[2], Caicun Zhou[3], Enriqueta Felip[4], Eric Vallieres[5], Benny Weksler[6], Rüdiger Liersch[7], Margarita Majem[8], Kimberly Costas[9], Wei Zhang[10], Monika Kaul[10], Marcus Ballinger[10], Virginia Mcnally[11], Elizabeth Bennett[10], Barbara J. Gitlitz[10], Nasser Altorki[12]
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[7]*University Hospital Muenster, Muenster, Germany*
[8]*Santa Creu i Sant Pau Hospital, Barcelona, Spain*
[9]*Providence Regional Medical Center, Everett, United States*
[10]*Genentech Inc, South San Francisco, United States*
[11]*Roche Products Ltd, Welwyn Garden City, United Kingdom*
[12]*NewYork-Presbyterian Hospital, Weill Cornell Medicine, New York, United States*

OBJECTIVES
Context: IMpower010 subgroup analyses showed a clinically meaningful disease-free survival (DFS) benefit and overall survival (OS) trend with atezolizumab vs best supportive care (BSC) after chemotherapy in patients with completely resected PD-L1 TC ≥50% stage II-IIIA NSCLC. Results remained similar when excluding those with EGFR/ALK+ disease.

Objective: Investigate outcomes by surgery type in the PD-L1 TC ≥50% population without EGFR/ALK+ NSCLC.

METHODS
Design, Setting, Participants: IMpower010's study design, primary DFS analysis (Felip, Lancet 2021) and first OS interim analysis (Felip, WCLC 2022) have been reported.

Interventions: Eligible patients who received 1-4 21-day cycles of cisplatin-based chemotherapy were randomised to atezolizumab 1200 mg q3w (16 cycles) or BSC.

Main Outcome Measures: Efficacy by surgery type in the PD-L1 TC ≥50% stage II-IIIA population without known EGFR/ALK alterations and safety by surgery type in safety-evaluable stage II-IIIA patients regardless of PD-L1 or EGFR/ALK status (Lee, JTCVS 2023).

RESULTS

The PD-L1 TC ≥50% stage II-IIIA population without EGFR/ALK+ disease included 209 patients. After lobectomy, the HR (95% CI) was 0.34 (0.19, 0.63) for DFS and 0.31 (0.14, 0.69) for OS, a more favorable profile than for pneumonectomy patients. However, subgroups with small patient numbers should be interpreted with caution (Table). The safety-evaluable stage II-IIIA population included 871 patients. In the atezolizumab arm (n=433), similar rates of Grade 3/4 AEs were reported in pneumonectomy/bilobectomy and lobectomy/sleeve lobectomy patients (21% vs 23%). Serious AEs occurred in 13% and 19%; atezolizumab withdrawal occurred in 32% and 35%.

CONCLUSIONS

Despite limited patient numbers across surgery types, patients with PD-L1 TC ≥50% stage II-IIIA NSCLC without known EGFR/ALK alterations who underwent lobectomy appeared to have the greatest DFS and OS improvement with adjuvant atezolizumab vs BSC. Pneumonectomy/bilobectomy and lobectomy/sleeve lobectomy patients had generally similar AE profiles after adjuvant chemotherapy and atezolizumab.

Disclosure: Employment, Roche Products Ltd and Genentech Inc.

Trial Registration: NCT02486718
Funding: F. Hoffmann-La Roche Ltd

PD-L1 TC ≥50% stage II-IIIA population excluding patients with *EGFR/ALK*+ disease

Type of surgery[a]	Atezo, n	BSC, n	Unstratified DFS HR (95% CI)	Unstratified OS HR (95% CI)
Lobectomy	76[b]	74	0.34 (0.19, 0.63)	0.31 (0.14, 0.69)
Bilobectomy	7	7	1.76 (0.16, 19.6)	0.78 (0.05, 12.6)
Pneumonectomy	20	20	0.77 (0.28, 2.13)	0.76 (0.25, 2.25)

[a] Subgroups with ≤5 patients are not shown.

[b] One patient in the atezo arm classified as lobectomy at the DFS analysis was reclassified as sleeve lobectomy at the OS analysis (atezo: lobectomy, n=75; sleeve lobectomy, n=3).

Atezo, atezolizumab; NE, not estimable.

Data cutoff: DFS, 21 Jan 2021; OS, 18 Apr 2022.

O-027

COMPARISON OF INDOCYANINE GREEN NEAR-INFRARED FLUORESCENCE GUIDED AND TRADITIONAL MEDIASTINAL LYMPHADENECTOMY DURING RADICAL ESOPHAGECTOMY: A RANDOMIZED CONTROLLED TRIAL

Breaking Clinical Trials

Jianting Du[1,2,3], Taidui Zeng[1,2], Shuliang Zhang[1,2,3], Maohui Chen[1,2,3], Guanglei Huang[1,2,3], Chun Chen[1,2,3], Bin Zheng[1,2,3]
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[3]*National Key Clinical Specialty of Thoracic Surgery, Fujian, China*

OBJECTIVES
The extent of Lymph node (LN) dissection during radical esophagectomy remains a controversial topic. Thus, this study mainly aimed to explore the location of sentinel lymph nodes (SLNs) in ESCC and the application value of the Indocyanine green (ICG) near-infrared (NIR) fluorescence system in lymphadenectomy.

METHODS
This randomized controlled clinical trial (ClinicalTrials.gov, NCT04615806) included 42 participants without neoadjuvant therapy and who were LN negative based on PET/CT findings. Traditional esophagectomy with ICG-NIR fluorescence imaging was performed after injecting 0.5 ml ICG (1.25 mg/ml) into the esophageal submucosa in the four peritumoral quadrants. The primary endpoint was to determine the location of SLN in ESCC, based on postoperative pathological reports.

RESULTS
A total of 40 patients with 20 in each group were included in the final analysis. In the ICG group, ICG-NIR fluorescence imaging was successful in all subjects. Seven cases (cases 2, 3, 9, 11, 17, 18 and 20) in the ICG group exhibited LN metastases, all of which were NIR positive. The detection rate, positive predictive value, negative predictive value, sensitivity and specificity were 100%(20 of 20 cases), 8.7%(13/150), 100%(265/265), 100%(13/13) and 65.9%(265/402), respectively. All NIR-negative LNs were non-metastatic LNs. In addition, the number of mediastinal LNs resected in the ICG group was significantly higher than that in the non-ICG group.

CONCLUSIONS
ICG-NIR might be an important and promising technique in predicting SLNs of ESCC and it could significantly improve the detection rate of LNs of ESCC.

Disclosure: No significant relationships.

Trial Registration: NCT04615806.
Funding: None.

MONDAY 5 JUNE 2023
EVOLUTION IN MINIMALLY INVASIVE THORACIC SURGERY (MITS) SESSION VI
14:30 - 16:00

O-028

IS UNIPORTAL VIDEO-ASSISTED THORACOSCOPIC MAJOR LUNG RESECTION A VALUABLE APPROACH AFTER INDUCTION CHEMOTHERAPY? A CASE MATCH ANALYSIS

Marco Andolfi[1], Michele Salati[1], Elisa Meacci[2], Francesco Xiumè[1], Alberto Roncon[1], Gian Marco Guiducci[1], Michela Tiberi[1], Anna Chiara Nanto[1], Dania Nachira[2], Adriana Nocera[2], Giuseppe Calabrese[2], Maria Teresa Congedo[2], Riccardo Inchingolo[3], Stefano Margaritora[2], Majed Refai[1]

[1]*Department of Thoracic Surgery, AOU Ospedali Riuniti di Ancona, Ancona, Italy*

[2]*Department of General Thoracic Surgery, Fondazione Policlinico Universitario 'A. Gemelli', Istituto di Ricovero e Cura a Carattere Scientifico (IRCCS), Università Cattolica del Sacro Cuore, Roma, Italy*

[3]*Department of Medical and Surgical Sciences, Fondazione Policlinico Universitario 'A. Gemelli', Istituto di Ricovero e Cura a Carattere Scientifico (IRCCS), Università Cattolica del Sacro Cuore, Roma, Italy*

OBJECTIVES

The impact of induction chemotherapy (iCT) on postoperative outcomes remains controversial, in particular in terms of complications and mortality.

Therefore, the optimal surgical approach for these cases is object of debate and only a few studies have evaluated the application of uniportal video-assisted thoracoscopic surgery (U-VATS) following iCT.

Aim of the present study was to assess the perioperative results of U-VATS anatomic lung resections in iCT patients versus non-iCT treated counterparts.

METHODS

Observational study enrolling 933 patients (iCT patients:65; non-iCT patients:868) undergone U-VATS anatomic lung resections from 2014 to 2020 in two centers with similar U-VATS volume and case-mix. Data were prospectively collected in a shared platform with standardized variables' definition. Propensity score matching (1:1 ratio, calipers 0,2, standardized difference estimation) using 16 baseline preoperative patients' characteristics was performed in order to minimize selection confounding factors between iCT and non-iCT patients. The two groups of 65 well matched groups of patients (iCT vs non-iCT) were directly compared in terms of perioperative outcomes after U-VATS resection (iCT: 54 lobectomies, 1 bilobectomy, 5 segmentectomies, 5 pneumonectomies Vs non-iCT: 52 lobectomies, 1 bilobectomy, 11 segmentectomies, 1 pneumonectomy, p=0.3).

RESULTS

iCT-group has a conversion rate higher compared to the control group (10vs0, p= 0.0001) without increasing the operation time (207min vs 206min, p=0.9). Moreover, the iCT-group showed a higher incidence of total complications (35.4%vs6.9%, p=0.02), due to the higher rate of prolonged air-leak (15.4%vs4.6%, p=0.05). However, the two groups had similar length of stay (LOS), cardiopulmonary complications (CPC) and readmission (READ) rate (Tab. 1).

CONCLUSIONS

U-VATS after iCT is a feasible surgical approach showing a similar rate of CPC, LOS and READ rate compared with the control group and a conversion rate in line with that reported in literature for other minimal-invasive techniques.

Disclosure: No significant relationships.
Keywords: Uniportal Video-Assisted Thoracoscopy Surgery (VATS), Neoadjuvant Chemotherapy, Lung Major Resection, VATS Lobectomy, Anatomic Lung Resection.

	AFTER MATCHING		
VARIABLE	iCT patients 65	non-iCT patients 65	p-value
Operation time, min, mean (SD)	207.7 (62.8)	206.3 (66.2)	0.9
Conversion to open, n (%)	10 (15.4%)	0 (0%)	0.001
Total complications, n (%)	23 (35.4%)	11 (6.9%)	0.02
Cardiopulmonary complications, n (%)	8 (12.3%)	9 (13.8%)	0.8
PAL, n (%)	10 (15.4%)	3 (4.6%)	0.05
Chest tube days, d, mean (SD)	4.7 (4.0)	3.5 (4.0)	0.2
Unplanned ICU, n (%)	0 (0%)	0 (0%)	0
Length of stay, d, mean (SD)	5.1 (3.3)	4.8 (3.9)	0.6
Readmission rate, n (%)	4 (6.15%)	5 (7.7%)	0.5

O-029

A PROPENSITY-MATCHED ANALYSIS OF ROBOTIC VERSUS OPEN RIGHT UPPER LOBECTOMY IN MEDICARE BENEFICIARIES: IS IT WORTH THE COST

Stuart Campbell, Alper Toker, Jason Lamb, James Mehaffey, Vinay Badhwar, Jeremiah Hayanga
West Virginia University, Morgantown, United States

OBJECTIVES
To perform a contemporary 3-year comparative analysis between robotic and open right upper lobe resections among Medicare beneficiaries.

METHODS
The Centers for Medicare and Medicaid Services inpatient claims database was used to evaluate patients aged 65 and older with a diagnosis of lung cancer undergoing robotic or open upper lobectomy between 2018 and 2020. We restricted the inclusion criteria to right upper lobectomy, an indexed thoracic operation. We excluded sublobar or bronchoplastic resections, metastatic and non-malignant disease, or a history of neoadjuvant chemotherapy. Primary outcomes included length of stay (LOS), readmissions, costs and complications. Risk-adjustment was performed using multilevel regression analysis and Cox Proportional Hazards analysis, using inverse probability of treatment weighting (IPTW) propensity score.

RESULTS
In total, 8,608 patients were identified, 4,317 (50.2%) whom underwent robotic resection and 4,291 (49.8%) open. Following propensity matching, patients who underwent robotic resections had significantly lower rates of postoperative air leaks (OR:0.794; p<0.001), infection (OR:0.471 95% CI:0.242 - 0.876, p=0.021), atelectasis (OR:0.626 95% CI:0.57 - 0.688, p<0.001), pleural effusion (OR:0.657; p<0.001), acute respiratory failure (OR:0.555; p<0.001) and readmission (OR:0.887; p=0.018). Patients who underwent robotic resections had lower in-hospital mortality (OR:0.694; p<0.005), and one-year mortality (OR:0.634; p<0.001). Compared to the open approach, robotic resections were associated with higher overall costs (Estimated Means (EM): $15,766 95% CI: $15,482 - 16,055 vs. 16,178 95% CI: 15,886 - 16,475, p = 0.009) but shorter LOS (EM: 5.57 95% CI: 5.47 - 5.68, p < 0.001 vs. EM: 7.93 95% CI: 7.78 - 8.08).

CONCLUSIONS
In this analysis of Medicare beneficiaries, patients who underwent robotic upper lobectomy had superior outcomes, but higher costs compared to an open approach. These contemporary, real-world data further endorse justification for continued expansion of robotic surgery and the pursuit of economies of scale to lower associated costs in the management of surgically resectable lung cancer.

Disclosure: No significant relationships.
Keywords: Robot, Lobectomy.

O-030

ROBOTIC NODAL UPSTAGING COMPARED TO VIDEOTORACOSCOPIC AND OPEN APPROACHES FOR RESECTED NON-SMALL CELL LUNG CANCER. A PROPENSITY SCORES MATCHING ANALYSIS FROM THE BRAZILIAN LUNG CANCER REGISTRY

Alberto Jorge Monteiro Dela Vega[1], Ricardo Mingarini Terra[1], Leticia Leone Lauricella[1], Isabelle Alves Chirichela[1], Eserval Rocha Junior[1], Jefferson Luiz Gross[2], Federico Enrique Garcia Cipriano[3], Henrique Nietmann[4], Fábio May Da Silva[5], Danielle Cristine Campos Bedin[6], Paulo Manuel Pêgo-Fernandes[7]

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OBJECTIVES

To evaluate if the use of robotic technique (RATS) was able to achieve a better lymph node staging when compared with videotoracoscopic (VATS) and open technique for lung resections for treatment of non-small cell lung cancer.

METHODS

We used data from the Brazilian Lung Cancer Registry, a multicenter database, to retrospectively analyze 1376 patients submitted to lung resections for non-small cell lung cancer with curative intention. A propensity scores match analysis was performed to create groups with comparable baseline characteristics in a pairwise fashion (open vs RATS and VATS vs RATS). The primary endpoint was nodal upstaging.

RESULTS

After propensity scores matching 179 patients in the Open group were compared to 165 in the RATS group. The rate of overall upstaging was higher in the open but not statistically significant (open 22.9% vs RATS 16.97%; p=0.18). There was also no statistical significance for the difference regarding mediastinal nodes (N0 to N2) upstaging (open 11.73% vs RATS 8.48%; p=0.37). Lymph nodes total count was similar for both groups (open 10, RATS 8; p=0.08). In the other comparison, 252 patients in the VATS group were compared to 248 in the RATS group. The rate of overall upstaging was higher in the RATS but also not statistically significant (VATS 8.73% vs RATS 11.29%; p=0.37). N0 to N2 upstaging (VATS 4.76% vs RATS 5.65%; p=0.69) was similar between groups. RATS had a higher number of lymph nodes harvested (VATS 8 vs RATS 10; p<0.001).

CONCLUSIONS

RATS had a similar upstaging rate when compared to both VATS and Open techniques. The number of total lymph nodes harvested was higher in RATS when compared to VATS but similar to Open.

Disclosure: No significant relationships.

Keywords: Lung Cancer, Robotic, Minimally Invasive Surgery.

O-031

ARE THE EFFICACY AND SAFETY OF CHEST TUBE IN UNIPORTAL-VIDEO-ASSISTED THORACIC SURGERY (VATS) RELATED TO THE LEVEL OF INTERCOSTAL SPACE INSERTION OR TO THE DRAIN TYPE?: A PROSPECTIVE MULTICENTER STUDY

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OBJECTIVES
Chest tube insertion through the same incision space (V intercostal-space) in Uniportal-VATS is still debated.The aim of this study is to evaluate if efficacy and safety of chest tube are related to the level of intercostal space insertion (Uniportal-VATS vs Biportal-VATS) or to the type of drain used (standard vs Smart Coaxial drain).

METHODS
Between May 2019 and December 2022, data of patients undergone VATS lobectomy, in 3 European Department of Thoracic Surgery, were prospectively collected. To reduce biases, inclusion criteria were:only Uniportal- or Biportal-VATS upper lobectomies with lymphadenectomy.Uniportal-VATS group with 28Fr-standard chest tube (U-VATSnormal) was compared with Uniportal-VATS group with 28Fr-Smart drain(U-VATSsmart), and U-VATSsmart was also compared with Biportal-VATS with 28Fr-Smart drain inserted in VIII intercostal space (Bi-VATSsmart) in terms of amount of fluid output per day and total, air leaks, skin emphysema, radiograph findings, complications, pain, hospitalization and 90-day re-admission for pleural effusion.

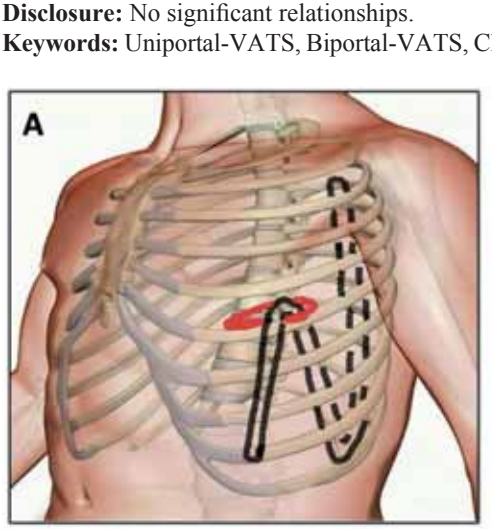
RESULTS
Comparing U-VATSnormal group (45 patients) with U-VATSsmart (40 patients), a higher fluid output was recorded in U-VATSsmart (274±150vs183±182 ml,p:0.004) in III post-operative day (p.o.) and in total (941±547vs725±423 ml,p:0.027), with a trend towards lower 90-day re-admission in U-VATSsmart (0%vs2.2%,p:0.06).No difference was found in terms of other outcomes and complications.
BI-VATSsmart group(33 patients) compared with U-VATSsmart, showed a higher fluid output in Ip.o.(385±189vs178±128ml,p<<0,001), with no difference in total fluid amount and hospitalization. Bi-VATSsmart recorded a lower incidence(p<<0.001) of residual pleural space(median:1 intercostal space) or effusion(p:0.004) at chest-X-Ray before drain removal, a lower incidence of mild subcotaneous emphysema(0vs25%,p:0.002) but a higher level of

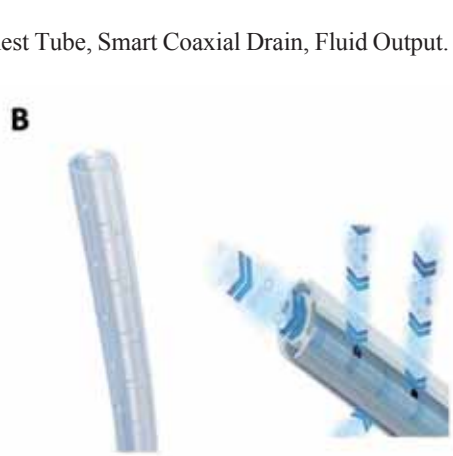
pain in IIp.o during coughing (VAS score:5±2vs4±2,p:0.03) and intercostal neuralgia 7 days after tube removal (18%vs5%,p:0.03).No difference was found between the groups in other complications, hospitalization and 90-day re-admission.

CONCLUSIONS

Chest tube insertion through the same incision space in Uniportal-VATS seems to be safe and effective. The use of Smart drain can improve the fluid output in Uniportal-VATS as if the drainage was inserted in a lower space (i.e. Biportal-VATS),but with lower pain.

Disclosure: No significant relationships.
Keywords: Uniportal-VATS, Biportal-VATS, Chest Tube, Smart Coaxial Drain, Fluid Output.





O-032

ERGONOMIC ASSESSMENT OF ROBOTIC VERSUS THORACOSCOPIC THYMECTOMY

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OBJECTIVES

Robotic surgery is being increasingly adopted as an alternative to thoracoscopic surgery to perform radical-thymectomy and has shown to reduce intraoperative-blood-loss and conversion rate. A wider manoeuvrability range and three-dimensional magnified vision may constitute underlining advantages of the robotic technology.

In the attempt to clarify the ergonomic benefits of robotic and thoracoscopic thymectomy we compared ergonomical domains characteristics of the two surgical modalities using a previously developed scoring-system, and we analysed the relationship between ergonomic domains scoring and perioperative outcomes.

METHODS

Clinical, surgical and perioperative data of patients undergoing robotic or thoracoscopic radical-thymectomy in the period between January-2013 and December-2022 at three-institutions were retrospectively retrieved. All the procedures were divided in four standardized surgical-steps (Inferior and upper-horns, thymic veins and peri-thymic fat) and evaluated by 3 independent reviewers using a scoring scale (score range from 1, unsatisfactory to 3,excellent) entailing assessment of 3 ergonomic domains (manoeuvring, exposure and instrumentation). Primary outcome was the total manoeuvring-score.

RESULTS

Overall, 219 patients undergoing robotic (n=149) or thoracoscopic (n=70) thymectomy were included. At intergroups-analysis no differences could be found in the demographics. Robotic-group had higher total manoeuvring-scores (Fig.1a-b) and performed better particularly in peri-thymic fat manoeuvring-score ($p<0.001$) as well as in peri-thymic fat and upper-horn exposure-score ($p=0.015$;$p=0.001$). Moreover, robotic thymectomy resulted in a lower intraoperative complications-rate (2.7%vs10%; $p=0.04$). No differences could be found in the total instrumentation, exposure-score ($p=0.08$;$p=0.07$), conversion-rate (2vs7.1%; $p=0.11$) and operative-time ($p=0.1$).

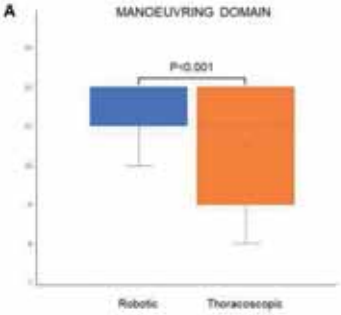
CONCLUSIONS

Comparison of ergonomic domains in robotic versus thoracoscopic thymectomy favoured the robotic-approach due to its enhanced manoeuvrability particularly in the dissection of the peri-thymic fat. Moreover, robotic-thymectomy demonstrated rarer intraoperative complications. We hypothesize that the wider manoeuvrability range as well as the three-dimensional magnified vision provided by the robotic approach enhanced perception of depth and more precise surgical dissection, which may account for the better results.

Disclosure: No significant relationships.

Keywords: Robotic Thymectomy, Thoracoscopic Thymectomy, VATS, Ergonomic VATS, Ergonomic RATS.

A



B

	Robotic (n=149)	Thoracoscopic (n=70)	p-value
Male sex, n (%)	75 (50.3)	25 (35.7)	0.06
Age, median (IQR)	63 (46 - 70)	59.5 (50 - 68.8)	0.56
Myasthenia gravis, n (%)	53 (35.6)	30 (42.9)	0.37
Thymic Epithelial Tumours, n (%)	86 (57.7)	34 (48.6)	0.24
Total manoeuvring score, median (IQR)	11 (11 - 12)	11 (9.3 - 12)	<0.001
Total exposure score, median (IQR)	11 (11 - 12)	11 (10 - 12)	0.07
Total instrumentation score, median (IQR)	11 (11 - 12)	11 (10 - 12)	0.08

O-033

LONG-TERM PATIENT-REPORTED OUTCOMES OF ROBOTIC-ASSISTED THORACOSCOPIC SURGERY VERSUS VIDEO-ASSISTED THORACOSCOPIC SURGERY FOR LUNG CANCER: A LONGITUDINAL COHORT STUDY

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OBJECTIVES

The effects of Robotic-assisted thoracoscopic surgery (RATS) and video-assisted thoracoscopic surgery (VATS) with respect to patient-reported outcomes (PROs) have not been assessed for lung cancer. This study aimed to compare the perioperative and long-term impact of RATS and VATS on symptoms and physical functioning interference in patients with lung cancer.

METHODS

Patients were extracted from a prospective observational cohort (CN-PRO-Lung 3) from April 2021 to January 2023. In this cohort, clinical characteristics and longitudinal PRO data of patients were collected. The Perioperative Symptom Assessment for Lung Surgery (PSA-Lung) was used to assess PRO data. The PSA-Lung scale was rated between 0 (no symptom or interference) and 10 (the worst). It had verified in lung cancer patients that it has adequate reliability and validity. To compare long-term recovery after RATS and VATS patients, the inclusion criteria are as follows: (1) pathologically diagnosed as primary lung cancer; (2) RATS or VATS was performed; (3) did not receive neoadjuvant chemotherapy; (4) has no history of chronic pain and long-term use of morphine. The trajectories of PRO data at baseline, daily in the hospital postoperatively, weekly up to 12 weeks and monthly up to 12 months after discharge were compared between RATS and VATS.

RESULTS

Overall, 1025 primary lung cancer patients, including 143 RATS and 882 VATS patients were included. During postoperative hospitalization, RATS patients reported severer cough (P= 0.0027). From the discharge day to one year after discharge, RATS patients reported severer pain (P=0.0008), cough (P= 0.011), shortness of breath(P= 0.0006), disturbed sleep (P= 0.028), drowsy(P= 0.0153), and interference of walking (P= 0.0236).

CONCLUSIONS

Until one year after surgery, RATS patients reported severer symptoms and daily function interference compared to VATS patients. This finding may need further randomized controlled trials to verify and contribute to shared decision-making regarding surgery approaches for lung cancer.

Disclosure: No significant relationships.
Keywords: Patient-Reported Outcomes, Robotic-Assisted Thoracoscopic Surgery, Video-Assisted Thoracoscopic Surgery, Lung Cancer.

Table 1. Baseline demographic and patient characteristics.

Variables	Total (n =1025)	RATS (n =143)	VATS (n =882)	P value
Before surgery				
Age (years), mean±SD	56.16±11.49	56.39±11.29	56.15±11.53	0.8159[a]
Age group (years)				0.6732[c]
≤55	435(42.44)	63(44.06)	372(42.18)	
>55	590(57.56)	80(55.94)	510(57.82)	
BMI (kg/m2), mean±SD	22.83±2.98	23.53±3.15	22.72±2.94	**0.0026[a]**
Sex				0.9338[c]
Male	340(33.17)	47(32.87)	293(33.22)	
Female	685(66.83)	96(67.13)	589(66.78)	
Education level				**0.0091[c]**
Middle school graduate or below	463(45.17)	79(55.24)	384(43.54)	
Above middle school graduate	562(54.83)	64(44.76)	498(56.46)	
Smoking status				0.6069[c]
Never smoked	827(80.68)	111(77.62)	716(81.18)	
Current smoker	130(12.68)	21(14.69)	109(12.36)	
Former smoker	68(6.63)	11(7.69)	57(6.46)	
ASA classification				0.5469[c]
≤1	938(91.51)	129(90.21)	809(91.72)	
>1	87(8.49)	14(9.79)	73(8.28)	
FEV 1 (L), mean±SD	2.19±0.91	2.15±0.94	2.20±0.91	0.5552[a]
Surgical procedure				
Lymphadenectomy				**<.0001[d]**

Table 1. Baseline demographic and patient characteristics (continuation).

Variables	Total (n =1025)	RATS (n =143)	VATS (n =882)	P value
Systematic lymph node dissection	318(31.02)	81(56.64)	237(26.87)	
Selective lymph node sampling	64(64.78)	62(43.36)	602(68.5)	
Not performed	43(4.20)	0	43(4.88)	
Thoracic drainage tube(s)				0.3899[c]
1	877(85.56)	119(83.22)	758(85.94)	
2	148(14.44)	24(16.78)	124(14.06)	
Operative time (min), median (IQR)	90(65-120)	95(75-110)	85(65-120)	0.1215[b]
After surgery (pathology)				
Histological type				0.0627[d]
Adenocarcinoma	975(95.12)	133(93.01)	842(95.46)	
Squamous cell carcinoma	23(2.24)	2(1.4)	21(2.38)	
Others	27(2.63)	8(5.59)	19(2.15)	
pTNM stage				0.2115[c]
?	938(91.51)	127(88.81)	811(91.95)	
≥?	87(8.49)	16(11.19)	71(8.05)	
Traditional outcomes				
LOS (days), median (IQR)	7(6-8)	7(6-9)	7(6-8)	0.5609[b]
PHS (days), median (IQR)	4(3-5)	4(3-5)	4(3-5)	0.6628[b]
Perioperative complication, Clavien-Dindo Classification				0.0844[d]
< grade 2	1004(97.95)	142(99.30)	862(97.73)	
≥ grade 2	21(2.05)	1(0.7)	20(2.27)	

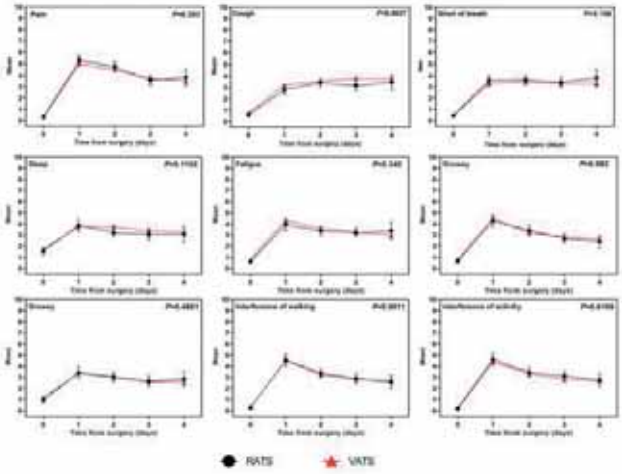
Data are median (IQR) or n (%). [a]Mann-Whitney U test; [b]Chi-Square Tests; [c]Fisher exact probability test; [d]T-Test. RATS, Robotic-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery; BMI, body mass index; ASA, American Society of Anesthesiologists; FEV1, forced expiratory volume in 1 second; TNM, tumour node metastasis; LOS, length of stay; PHS, postoperative hospital stay.

Table 2. Compliance rate of PSA-Lung.

Time point	RATS (n =143)		VATS (n =882)		Chi-Square	*P* value
	Compliance	Compliance rate(%)	Compliance	Compliance rate(%)		
Pre-operation	138	96.5	855	96.94	0.0771	0.7813
Pod 1	120	83.92	774	87.76	1.6269	0.2021
Pod 2	116	81.12	740	83.9	0.6913	0.4057
Pod 3	96	68.09	626	75.15	3.1384	0.0765
Pod 4	49	52.69	349	57.78	0.8535	0.3556
Discharge day	50	34.97	353	40.02	1.3193	0.2507
Discharge week 1	93	65.03	630	71.43	2.4203	0.1198
Discharge week 2	106	74.13	669	75.85	0.1984	0.656
Discharge week 3	100	69.93	651	73.81	0.9455	0.3309
Discharge week 4	90	62.94	562	63.72	0.0325	0.857
Discharge week 5	107	74.83	697	79.02	1.2833	0.2573
Discharge week 6	113	79.02	691	78.34	0.0333	0.8552
Discharge week 7	104	72.73	653	74.04	0.1092	0.7411
Discharge week 8	100	69.93	658	74.6	1.395	0.2376
Discharge week 9	101	70.63	648	73.47	0.5044	0.4776
Discharge week 10	105	73.43	645	73.13	0.0055	0.9407
Discharge week 11	103	72.03	638	72.34	0.0058	0.9392
Discharge week 12	104	72.73	629	71.32	0.1204	0.7286
Discharge month 4	102	71.33	623	70.63	0.0286	0.8657
Discharge month 4	105	73.43	607	68.82	1.2305	0.2673
Discharge month 6	90	62.94	560	63.56	0.0209	0.8851
Discharge month 7	86	63.7	519	61.42	0.257	0.6122
Discharge month 8	79	63.2	480	60.76	0.2704	0.603
Discharge month 9	**54**	**46.55**	**419**	**57.48**	**4.8464**	**0.0277**
Discharge month 10	47	45.63	354	52.52	1.6989	0.1924
Discharge month 11	38	41.76	323	52.44	3.6169	0.0572
Discharge month 12	**34**	**42.5**	**307**	**54.43**	**4.0043**	**0.0454**

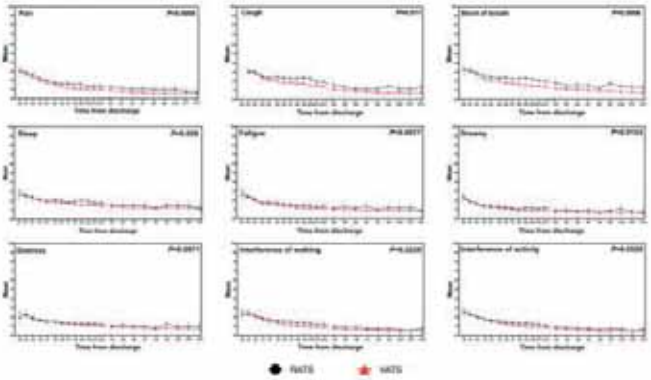
PSA-Lung, The Perioperative Symptom Assessment for Lung Surgery.
Pod, post-operative day; RATS, Robotic-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery.

Figure1 In-hospital Patient-reported outcome of RATS vs. VATS patients (1st to 4th day after surgery)



Mixed-effect models were used to analyze whether PRO scores differed significantly over time between the RATS and VATS groups. In these models, the independent variable was the score of each item as a continuous variable, and the dependent variables were time, approach, and baseline variables (which differed between groups in the univariate analysis);
Adjusted variables: education level, lymphadenectomy;
RATS, Robotic-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery.

Figure2 Patient-reported outcome of RATS vs. VATS patients after discharge (discharge day to one year after discharge)



Mixed-effect models were used to analyze whether PRO scores differed significantly over time between the RATS and VATS groups. In these models, the independent variable was the score of each item as a continuous variable, and the dependent variables were time, approach, and baseline variables (which differed between groups in the univariate analysis).
Adjusted variables: education level, lymphadenectomy;
RATS, Robotic-assisted thoracoscopic surgery; VATS, video-assisted thoracoscopic surgery.

MONDAY 5 JUNE 2023
PULMONARY NEOPLASTIC I (ADVANCED STAGE LUNG CANCER) SESSION VII
16:00 - 17:00

O-034

SURGERY IN SMALL-CELL LUNG CANCER FOR ANY T-STAGE AND POSITIVE LYMPH NODES?

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University Medical Center Essen - Ruhrlandclinic, Department of Thoracic Surgery, West German Cancer Center, University Duisburg-Essen, Essen, Germany

OBJECTIVES
The role of surgery in small-cell lung cancer (SCLC) is under debate. This meta-analysis examined mean-survival in stage I to III SCLC patients after resection and after non-surgical treatment.

METHODS
On December 1st 2022, a systematic literature search was performed. Studies published on the effect of surgery in SCLC were considered and assessed using ROBINS-I. We preformed I^2-tests, Q-statistics, DerSimonian-Laird tests and Egger-regression. The meta-analysis was conducted according to PRISMA standards.

RESULTS
We identified seven original studies with a total of 26,559 patients for this meta-analysis and found heterogeneity between the included studies without evidence for publication bias. Patient characteristics did not differ between the two groups. The mean-survival in an analysis of patients in stage I-III was 33.8±17.2 months for the 'surgery group' and 17.7±4.0 months for the 'non-surgery group' (p-value=0.0023). Even patients in stage II and III, which were resected outside the guidelines, had a significantly longer the mean-survival (22.0±7.1 versus 15.3±4.1 months; p-value=0.0087).

CONCLUSIONS
In this meta-analysis, we present data that is suggestive of a significant survival benefit after surgery for patients of any T-stage with positive lymph node involvement. Based on these findings, the role of surgery in SCLC should be reassessed.

Disclosure: No significant relationships.
Keywords: Small Cell Lung Cancer, Surgery, Meta-Analysis, Mean-Survival, Chemo-/Radio-Therapy.

O-035

MINIMALLY INVASIVE SURGERY FOR CLINICAL T4 NON-SMALL CELL LUNG CANCER: NATIONAL TRENDS AND OUTCOMES

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[1]*Department of Cardiothoracic and Vascular Surgery, Montefiore Medical Center and Albert Einstein College of Medicine, New York, United States*
[2]*Department of General Surgery, Central Michigan University College of Medicine, Michigan, United States*

OBJECTIVES
Recent randomized data support the perioperative benefits of minimally invasive surgery (MIS) for NSCLC. MIS for cT1-3 cancers has been evaluated. However, the utility of MIS for cT4 tumors, which are larger or invade major structures, remains understudied. We therefore sought to analyze national trends and outcomes of MIS resections for cT4 NSCLC.

METHODS
Using the 2010-2019 National Cancer Database, we identified patients with cT4N0-1 NSCLC who underwent lobectomy/pneumonectomy. Patients were stratified by surgical approach (MIS vs. open). Multivariable logistic analysis was used to identify factors associated with use of MIS. Groups were matched using propensity-score analysis to evaluate perioperative and survival endpoints.

RESULTS
The study identified 3,715 patients with cT4N0-1M0 NSCLC, among whom 64.1% (n=2,381) underwent open resection and 35.9% (n=1,334) MIS resection [robotic-assisted in 31.5% (n=420); and video-assisted in 68.5% (n=914)]. Accurate cT staging was noted in just 67.5% (n=1,884) who had surgery without neoadjuvant therapy (n=2,792). An increased proportion of patients underwent MIS resection over the study period (from 17.2% to 47.9%, Figure 1A). Increased MIS use was noted among patients with higher income (≥$40,227, OR 1.24; CI 1.01-1.51), and those treated at academic hospitals (OR 1.25; CI 1.07-1.45). Patients who were clinically node positive (OR 0.68; CI 0.55-0.83) and those who underwent neoadjuvant therapy (OR 0.78; CI 0.65-0.93) were less likely to have MIS resection. In the matched groups, patients undergoing MIS had a shorter median hospital length of stay (5 vs. 6-days, $p<0.001$) and no significant differences between 30-day readmissions or 30/90-day mortality. MIS did not compromise five-year overall survival (53% MIS vs. 51% open, $p=0.487$, Figure 1B).

CONCLUSIONS
Almost a third of cT4 cancers are overstaged clinically. Nationally, the use of MIS approaches for patients with cT4N0-1M0 NSCLC has increased substantially. In these patients, MIS is safe and does not compromise perioperative outcomes or survival.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Minimally Invasive Surgery, Video-Assisted Thoracoscopic Surgery, Robotic-Assisted Thoracoscopic Surgery, Thoracotomy.

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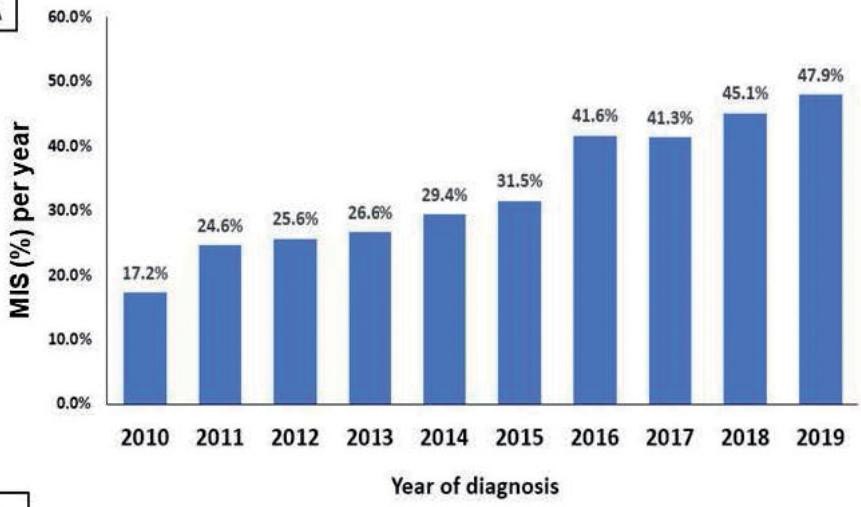

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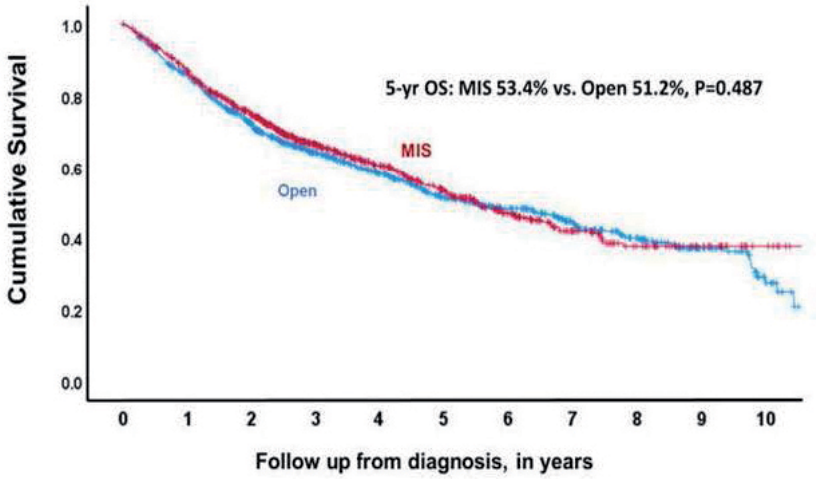

O-036

CLINICAL N-STAGING SUBCLASSIFICATION AMONG STAGE III-N2 NON SMALL CELL LUNG CANCER (NSCLC) PATIENTS UNDERGOING TRIMODALITY THERAPY

Junghee Lee[1], Yun Soo Hong[2], Jin Lee[3], Genehee Lee[3], Danbee Kang[3], Jeonghee Yun[1], Yeong Jeong Jeon[1], Seong-Yong Park[1], Yong Soo Choi[1], Jhingook Kim[1], Young Mog Shim[1], Jong Ho Cho[1], Eliseo Guallar[4], Juhee Cho[5], Hong Kwan Kim[1]

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[5]*Center for Clinical Epidemiology, Sungkyunkwan University, Samsung Medical Center, Seoul, South Korea*

OBJECTIVES

Although the N-descriptor subclassification proposed by IASLC reflects the prognostic implication of the pathologic extent of nodal involvement in non-small cell lung cancer (NSCLC), patients with stage III-N2 disease may benefit more from the subclassification information before deciding on the actual treatment plan. We aimed to evaluate whether the N-descriptor subclassification is still valid in clinical staging for patients undergoing trimodality therapy for stage III-N2 NSCLC.

METHODS

Using our institutional registry between 2003 and 2019, we analyzed 995 consecutive patients with stage III-N2 NSCLC undergoing neoadjuvant concurrent chemoradiotherapy (nCCRT) followed by surgery. We subclassified clinical N2 into cN2a1, cN2a2, and cN2b based on the results of PET-CT and EBUS-TBNA or mediastinoscopy. Survival outcomes were compared using the Kaplan-Meier method and Cox proportional regression.

RESULTS

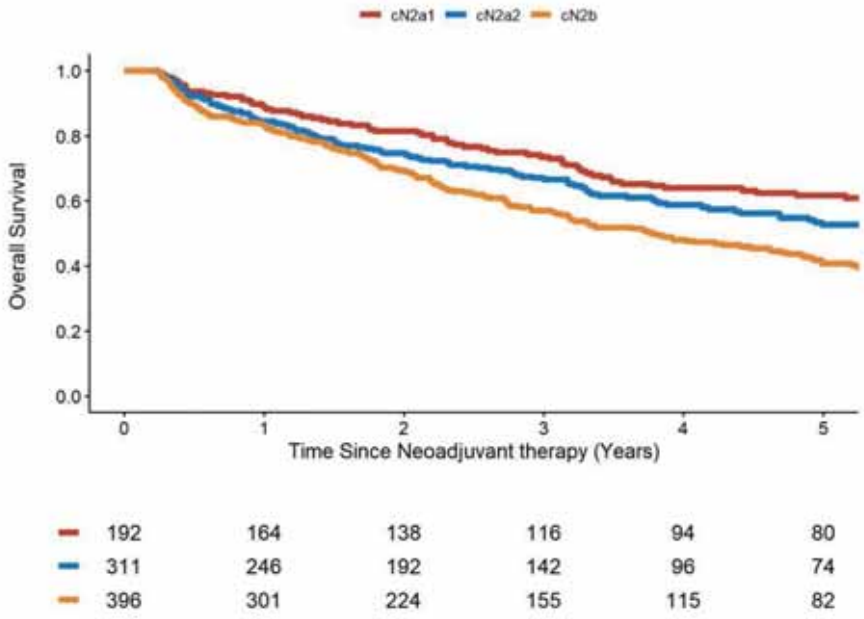
Using the proposed N subclassification, 236 (24%), 342 (34%), and 417 (42%) of patients were categorized as cN2a1, cN2a2, cN2b, respectively. PET-CT was performed in all, and N2 was histologically confirmed in 912 patients (92%). During a median follow-up of 40.5 months, 475 had recurrences, and 489 died. The 5-year RFS for patients with cN2a1, cN2a2, and cN2b was 47%, 38%, and 33% (P=.005), and the 5-year OS was 64%, 55%, and 47% (P<.001), respectively. The hazard ratio (95% confidence interval) for cN2a2 and cN2b was 1.26 (0.98-

1.62) and 1.45 (1.17-1.88) for recurrence, and 1.30 (1.01-1.68) and 1.62 (1.28-2.06) for death, respectively.

CONCLUSIONS

The proposed N-descriptor subclassification by IASLC has prognostic relevance in clinical staging for patients with stage III-N2 NSCLC undergoing nCCRT followed by surgery.

Disclosure: No significant relationships.
Keywords: N Subclassifications, Neoadjuvant, N2, NSCLC.



MONDAY 5 JUNE 2023
YOUNG INVESTIGATORS AWARD SESSION VIII
16:30 - 18:00

O-037

ROBOTIC-ASSISTED THORACOSCOPIC ANATOMICAL LUNG RESECTIONS IMPROVES PULMONARY OUTCOMES IN OVERWEIGHT AND OBESE PATIENTS: A PROPENSITY SCORE MATCHING ANALYSIS

Clara Forcada-Barreda[1], Teresa Gomez-Hernandez[1,2,3], Marta G Fuentes-Gago[1,2,3], Cristina E Rivas-Duarte[1,3], Nuria M Novoa[1,2,3], Jose L Aranda-Alcaide[1,2,3], Gonzalo Varela[3], Marcelo Jimenez[1,2,3]
[1]*Salamanca University Hospital, Salamanca, Spain*
[2]*University of Salamanca, Salamanca, Spain*
[3]*Instituto de Investigación Biomédica de Salamanca, Salamanca, Spain*

OBJECTIVES
Currently, the optimal minimally invasive surgical approach for patients undergoing anatomical lung resection is under debate. The aim of this study was to determine if, in obese patients, robotic-assisted thoracoscopic surgery (RATS) improves postoperative outcomes in patients undergoing anatomical lung resection compared to video-assisted thoracoscopic surgery (VATS).

METHODS
A single-centre retrospective case-control study of a prospectively recorded database of all patients who underwent minimally invasive anatomic lung resection from 2018 to 2021 was performed. The prevalence of postoperative outcomes in cases (RATS) and controls (VATS) (controls) were compared. Selected outcomes were overall morbidity, cardiopulmonary complications, pulmonary complications, major complications (Clavien-Dindo ≥III). Cases and controls were matched by propensity scoring (PSM) analysis using age, body mass index (BMI), gender, ppoFEV1%, ppoDLCO% and tumour size. Subgroup analyses for different BMI values were performed.

RESULTS
A total of 609 patients (438 VATS cases and 171 RATS cases) were included. After PSM, 161 VATS patients and 171 RATS cases were compared. Analysis of the matched series indicated that the incidence of pulmonary complications (6.8% vs 2.3%, p=0.049) was significantly reduced in the RATS group, while there were no statistically significant differences in overall morbidity (27.3% vs. 22.2%, p=0.281), cardiopulmonary complications (10.6% vs 5.8%, p=0.117), major complications (10.6% vs 5.8%, p=0.117), PAL (7.5% vs 7.6%, p=0.959), pneumonia (2.5% vs 1.2%, p = 0.369) and arrythmia (2.5% vs 1.8%, p=0.644). Subgroup analysis demonstrated that the prevalence of pulmonary complications and pneumonia was

significantly reduced in the RATS group for patients with BMI ≥25 kg/m2 (8.5% vs 1%, p=0.016 and 4.3% vs 0%, p=0.037, respectively), which became insignificant in the BMI <25 kg/m2 group (4.5% vs 4.2%, p=1 and 0% vs 2.8%, p=0.497, respectively).

CONCLUSIONS

Overweight and obese patients could benefit more from RATS due to a reduced risk of pulmonary complications.

Disclosure: No significant relationships.

Keywords: Robotic-Assisted Thoracoscopic Surgery, Non-Small Cell Lung Cancer, Obesity, Pulmonary Complications.

O-038

VIDEO-ASSISTED MEDIASTINOSCOPIC LYMPHADENECTOMY (VAMLA): MATURE RESULTS FOR STAGING NON-SMALL CELL LUNG CANCER (NSCLC) WITH NORMAL MEDIASTINUM CLINICALLY STAGED WITH POSITRON EMISION TOMOGRAPHY-COMPUTED TOMOGRAPHY (PET-CT)

Nina Reig-Oussedik, Sergi Call, Carme Obiols, Ramon Rami-Porta, Luis Luizaga, Adria Lloret, Lucia Reyes Cabanillas-Paredes, Juan Manuel Ochoa-Alba, Mireia Serra-Mitjans
Hospital Universitari Mútua Terrassa, Terrassa, Spain

OBJECTIVES

Transcervical lymphadenectomies are indicated for staging lung cancers without clinical N2–3 by PET-CT. In 2010, VAMLA was included in our staging protocol, based on ESTS guidelines, for patients with normal mediastinum. This study analyses the accuracy of VAMLA and the unsuspected N2-3 rates in patients with NSCLC and negative PET-CT.

METHODS

Prospective observational single-center study of 603 consecutive VAMLAs from 2010 to 2022. Exclusion criteria: other indications (n=32); tumors different from NSCLC (n=91); patients with negative VAMLA but without lung resection (n=52); cN2-3 tumors by PET-CT (n=46). Systematic nodal dissection was the gold standard to validate negative VAMLAs. Unsuspected N2–3 rates were analyzed in the global series and in the subgroups of tumors according to their clinical nodal and tumor categories by PET-CT. Pathologic findings were reviewed, and staging values, calculated (including 95% confidence interval [CI]) using the standard formulas.

RESULTS

383 cN0-1 patients underwent VAMLA. A median of 16.6 lymph nodes/patient were resected and a median of 4 stations/patient, explored. The unsuspected N2-3 rate for the whole series (n=383) was 20%: 40% in cN1 (n=97); 3.6% in cT1N0 (n=112); 16% in cT2N0 (n=112); 10% in cT3N0; 33% in cT4N0 (n=22). Staging values: sensitivity, 98.5% (95% CI, 92– 99.7); specificity, 100% (95% CI, 99–100); positive predictive value, 100% (95% CI, 94.4-100); negative predictive value, 99.7% (95% CI, 98.5–100); and diagnostic accuracy, 99.8% (95% CI, 98.7-100). Complication rate: 6.3% being transient left recurrent laryngeal nerve palsy the commonest (4.8%).

CONCLUSIONS

This series of NSCLC with normal mediastinum by PET-CT staged by VAMLA demonstrates a high rate of unsuspected N2-3 disease (specially in cN1) and a high accuracy of this technique. VAMLA should be considered the gold standard for staging NSCLC with intermediate risk of N2-3 and, therefore, it should be included in the current staging algorithms.

Disclosure: No significant relationships.
Keywords: Staging, N2, VAMLA, NSCLC.

O-039

VENTILATION EFFICIENCY/VENTILATION CARBONDIOXIDE (VE/VCO2) SLOPE IN CARDIOPULMONARY EXERCISE TEST IS INDEPENDENTLY ASSOCIATED WITH POSTOPERATIVE OUTCOMES OF LUNG RESECTIONS

Amr Rushwan, Javeria Tariq, Demetrios Stefanou, Polyvios Drosos, Richard Milton, Nilanjan Chaudhuri, Kostas Papagiannopoulos, Peter Tcherveniakov, Elaine Teh, Laura Valuckiene, Alex Brunelli
St James's University Hospital, Leeds, United Kingdom

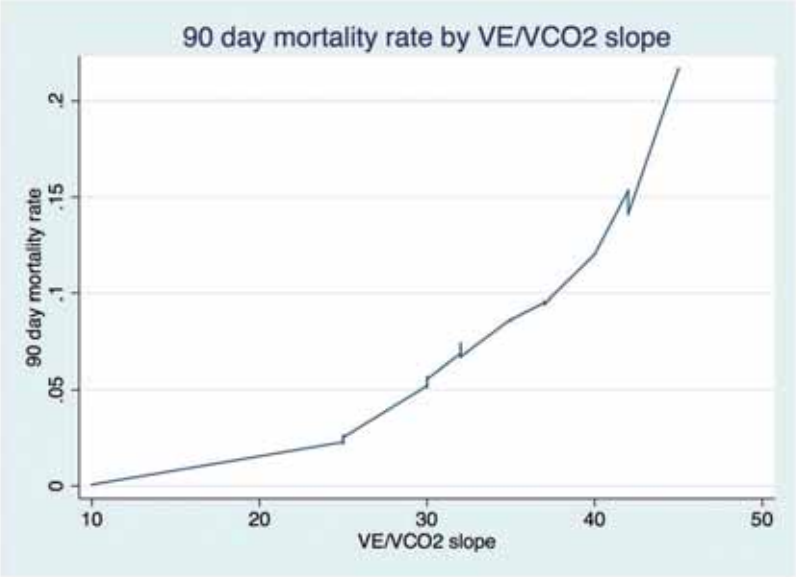
OBJECTIVES
To assess the association between VE/VCO2 slope and postoperative mortality of lung resections for cancer.

METHODS
Retrospective single centre analysis on all patients undergoing lung resection for cancer (April 2014-August 2022) with a preoperative cardiopulmonary exercise test(CPET). VE/VCO2 slope was measured during CPET, which was prescribed according to current functional guidelines. VE/VCO2 slope at AT greater than 40 was chosen as high-risk threshold based on previous literature. Logistic regression analysis was used to test the association of VE/VCO2 slope and several patient- and surgery-related factors with 90-day mortality.

RESULTS
552 patients (24% of patients undergoing lung cancer surgery during the same period) were included (374 lobectomies, 81 segmentectomies, 55 pneumonectomies and 42 wedge resections). 74% were minimally invasive procedures. The total cardiopulmonary morbidity was 32%, in-hospital/30-day mortality 6.9% and 90-day mortality 8.9%. 137 patients (25%) had a slope>40. These patients were more frequently older (>70 years) (72% vs. 69.6%,p=0.012), had more frequently coronary artery disease (17% vs.10%,p=0.028), had lower DLCO (57.3% vs.68%,p<0.001), lower BMI (25.4kg/m2 vs.27.0kg/m2,p=0.001) and lower VO2max (14.9 mL/kg/min vs. 17.0 mL/kg/min,p<0.001) than those with a lower slope. The cardiopulmonary morbidity amongst patients with a slope >40 was 40% vs.29% in those with lower slope(p=0.019). 90-day mortality was 15% vs.6.7% (p=0.002). The 90-day mortality of elderly patients with slope>40 was 21% vs. 7.8% (p=0.001). After adjusting for VO2max value, extent of operation and other patient-related variables in a logistic regression analysis, VE/VCO2 slope retained a significant association with 90-day mortality. Lowess graph(figure) shows a progressively increasing 90-day mortality rate at higher VEVCO2 slope values.

CONCLUSIONS
VE/VCO2 slope was strongly associated with morbidity and mortality following lung resection and should be included in the functional algorithm to assess fitness for surgery.

Disclosure: No significant relationships.
Keywords: CPET, Lung Resection.



O-040

PREOPERATIVE FLUORODEOXYGLUCOSE POSITRON EMISSION TOMOGRAPHY/COMPUTED TOMOGRAPHY (FDG PET/CT) SUVMEAN AND SUVMAX PREDICT SURVIVAL IN LUNG NEUROENDOCRINE NEOPLASMS

Patrick Soldath, Tina Binderup, Andreas Kjaer, Ulrich Knigge, Seppo Langer, René Horsleben Petersen
Rigshospitalet, Copenhagen, Denmark

OBJECTIVES
The FDG PET/CT SUVmean and SUVmax predict survival in non-small cell lung cancer but their prognostic value in lung neuroendocrine neoplasms (NENs) remains unexplored. We aimed to examine whether SUVmean and SUVmax predict survival and nodal involvement in lung NENs.

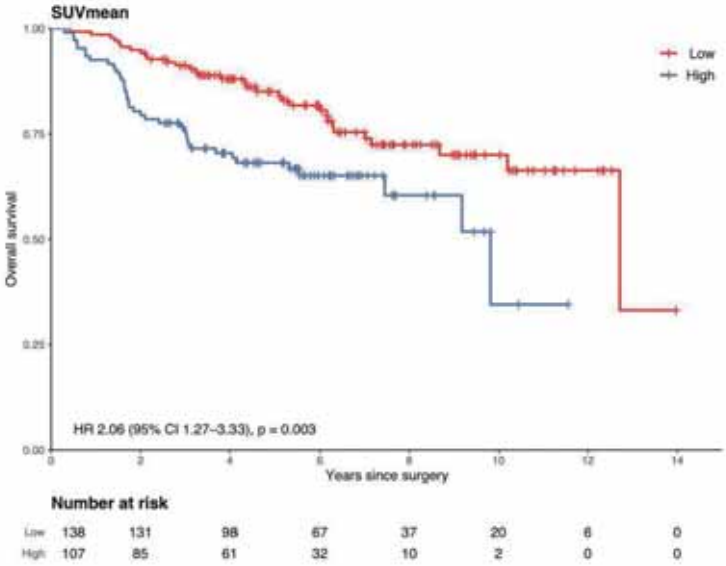
METHODS
We retrospectively studied 245 patients with carcinoids and large-cell neuroendocrine carcinomas treated with radical resection and systematic nodal dissection at Copenhagen University Hospital ENETS Center of Excellence for Neuroendocrine Tumors between 2008 and 2020. We measured SUVmean and SUVmax on the primary tumors and detectable lymph nodes. We dichotomized the patients into groups of low and high SUVmean and SUVmax of the primary tumor using receiver operating characteristic curves and estimated overall survival of the groups using the Kaplan-Meier method. We explored whether SUVmean and SUVmax predict survival using Cox proportional hazards regression and whether they predict nodal involvement using logistic regression.

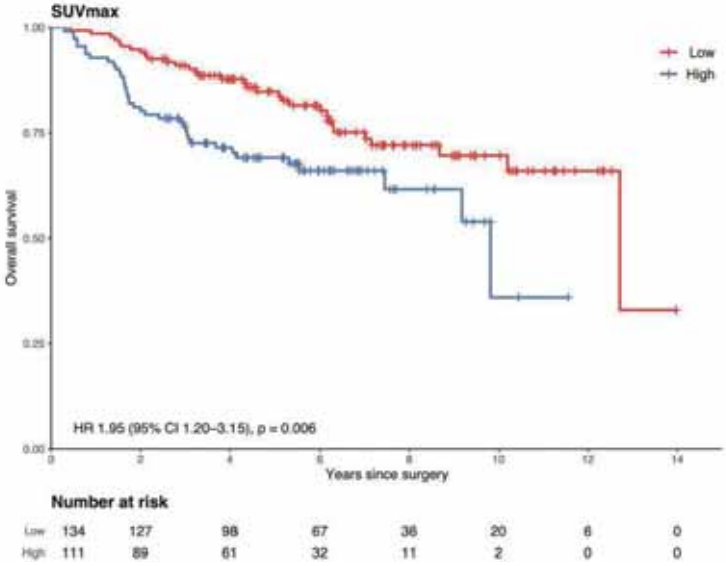
RESULTS
The cutoff points between the low and high groups were 3.9 for SUVmean and 5.3 for SUVmax. Patients in the high groups had significantly worse overall survival compared with patients in the low groups for both SUVmean (HR 2.06; p=0.003) and SUVmax (HR 1.95; p=0.006). At 3, 5, and 10 years, the survival rates were 91, 84, and 66% for the low groups and 75, 66, and 35% for the high groups. Both SUVmean and SUVmax were independent predictors of survival (p=0.01 and p=0.02) in a model that also included sex (p=0.03), age (p=0.001), and nodal involvement (p=0.02). Both SUVmean and SUVmax correlated significantly with nodal involvement ($p<0.001$ for both). The cutoff points between the predicted benign and malignant lymph nodes were 3.8 for SUVmean and 6.1 for SUVmax.

CONCLUSIONS
FDG PET/CT SUVmean and SUVmax are strong independent predictors of survival and nodal involvement in lung NENs.

Disclosure: No significant relationships.

Keywords: Neuroendocrine Neoplasms, Carcinoids, Large-Cell Neuroendocrine Carcinomas, PET, SUV.





O-041

GENETIC PROFILES AND IMMUNE CHECKPOINT EXPRESSION OF PRIMARY OLIGOMETASTATIC NON-SMALL CELL LUNG CANCER AND CORRESPONDING BRAIN METASTASES

Raphael S. Werner[1], Alex Soltermann[2], Holger Moch[3], Michael Weller[4], Emilie Le Rhun[5], Tobias Weiss[4], Luca Regli[5], Alessandra Curioni-Fontecedro[6], Isabelle Opitz[1]
[1]*Department of Thoracic Surgery, University Hospital Zurich, Zurich, Switzerland*
[2]*Pathology Laenggasse, Ittigen, Bern, Switzerland*
[3]*Department of Pathology, University Hospital Zurich, Zurich, Switzerland*
[4]*Department of Neurology, University Hospital Zurich, Zurich, Switzerland*
[5]*Department of Neurosurgery, University Hospital Zurich, Zurich, Switzerland*
[6]*Department of Oncology, University Hospital Zurich, Zurich, Switzerland*

OBJECTIVES
In patients with oligometastatic non-small cell lung cancer (NSCLC), systemic therapy in combination with local ablative treatment of the primary tumor and all metastatic sites is associated with improved prognosis. However, for improved patient selection and treatment allocation, further knowledge about the genetic and immunological characteristics of the oligometastatic state are necessary. Here, we performed a molecular characterization of primary NSCLC and its corresponding brain metastases.

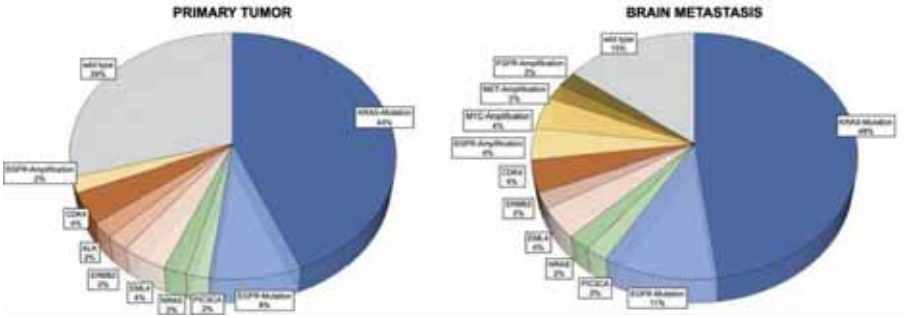
METHODS
We identified 51 oligometastatic NSCLC patients with synchronous (<3 months) or metachronous (>3 months) brain metastases who underwent surgical resection of the primary tumor and the brain metastases. Genetic characterization of the primary tumor and the corresponding metastases was performed on formalin-fixed paraffin-embedded tissue by targeted next-generation sequencing. In addition, a mRNA-based expression analysis of the immune checkpoints PD-L1 and CTLA-4 was performed on the matching tissue specimens.

RESULTS
Targeted sequencing was successful in 48 paired samples including 36 adenocarcinomas, 4 squamous-cell carcinomas, 4 adeno-squamous carcinomas and 4 large-cell lung carcinomas. An oncogenic alteration was present in 34 primary tumors (70.8%) and 41 brain metastases (85.4%). The driver alteration of the primary tumor was most commonly preserved in the corresponding brain metastasis (32 out of 34 cases, 94.1%). KRAS-mutations (n=21) and EGFR-mutations (n=4) were the most common oncogenic drivers. Private alterations of the brain metastases were found in 5 patients with synchronous metastases and in 5 patients with metachronous metastases. Expression profiles of PD-L1 and CTLA-4 were lower in the brain metastasis compared with the primary tumor.

CONCLUSIONS

In oligometastatic NSCLC, genetic alterations of the primary tumor were maintained in the majority of brain metastases. This suggests that most brain metastases should respond to a targeted treatment directed against the primary tumor's mutational profile. Expression levels of PD-L1 and CTLA-4 differed between the primary tumor and the brain metastases and reflect a diverging immune microenvironment.

Disclosure: No significant relationships.
Keywords: Metastatic Non-Small Cell Lung Cancer, Oncogenic Drivers, Immune Profile, PD-L1, Brain Metastases.



O-042

DOES THE POSITRON EMISSION COMPUTED TOMOGRAPHY DECREASE THE RISK OF THE THORACOSCOPIC LOBECTOMY FOR BENIGN DISEASE? THE PROPENSITY SCORE MATCHED COHORT STUDY

Dominika Marta Zielinska, Piotr Skrzypczak, Piotr Gabryel, Mariusz Kasprzyk, Cezary Piwkowski
Poznan University of Medical Sciences, Poznan, Poland

OBJECTIVES

Obtaining a preoperative pathological diagnosis of suspected lung lesions is a challenging step in oncological diagnostics. Lack of cancer confirmation in patients with lung nodules may lead to anatomical resection of an unsuspected benign disease. The study aimed to analyze the impact of preoperative positron emission computed tomography (PET-CT) on the incidence of video-assisted thoracoscopic (VATS) lobectomy for benign disease.

METHODS

The study included 846 consecutive patients, after VATS lobectomy, without the preoperative diagnosis, between January 1, 2014 and December 31, 2020. 654 patients were operated on with positive PET-CT, and 210 without PET-CT. The Propensity Score Matching analysis was done, calculating the predicted probability using: age, gender, cardiovascular comorbidities, previous malignancy, COPD, diabetes, and T category. We set the Propensity Score Matching method as "nearest", obtaining: PET-group and non-PET group of 210 patients each. The statistical analysis included the influence of: age, gender, PET, comorbidities and T category on the incidence of final benign diagnosis.

RESULTS

There was no significant difference in the occurrence of benign postoperative diagnosis in the PET group and non-PET group [n=6 (2.9%) vs. n=10 (4.8%), p=0.308]. In the univariate analysis, two variables significantly influenced the risk of the post-operative unsuspected benign diagnosis: younger age at surgery [60.75 years (IQR: 55.5-67.5) vs. 65.5 years (IQR: 61.0-70.0), p=0,016] and the presence of the COPD (4.6% vs. 0%, p =0.046). In logistic regression analysis, the younger age during the operation was the only statistically significant factor increasing the risk of the VATS lobectomy in benign lesions (p=0.042, OR = 1.062; 95%CI 1.002- 1.127).

CONCLUSIONS

Preoperative PET-CT was not associated with reducing the risk of VATS lobectomy of an unsuspected benign tumor. When qualifying for VATS lobectomy, without preoperative cancer confirmation, that risk should be considered, especially in younger patients.

Disclosure: No significant relationships.
Keywords: Suspected Lung Nodule, Video-Assisted Thoracoscopic Lobectomy, Benign Disease, PET-CT.

MONDAY 5 JUNE 2023
ESOPHAGEAL SESSION IX
17:00 - 18:00

O-043

PREDICTIVE FACTORS OF PATHOLOGICAL COMPLETE RESPONSE AFTER NEOADJUVANT THERAPY FOR ESOPHAGEAL CANCER PATIENTS: AN NATIONAL CANCER DATABASE (NCDB)-BASED NOMOGRAM

Yuqin Cao[1], Yajie Zhang[1], Binhao Huang[2,3,4,5], Han Tang[6], Jules Lin[7], Lijie Tan[6], Jie Zhang[2,5], Hecheng Li[1]
[1]Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China
[2]Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai, China
[3]Fudan University Shanghai Cancer Center, Shanghai, China
[4]Shanghai Medical College, Fudan University, Shanghai, China
[5]University of Pittsburgh Medical Center, Pittsburgh, United States
[6]Zhongshan Hospital, Fudan University, Shanghai, China
[7]University of Michigan, Ann Arbor, United States

OBJECTIVES
Accurate prediction of pathological complete response (pCR) is the foundation for the emerging trend in organ-sparing strategies after neoadjuvant therapy for locally-advanced esophageal cancer. Several studies have identified predictive factors for pCR, but a reliable prediction model based on large databases is still lacking.

METHODS
Clinicopathological data for 6517 esophageal cancer patients who underwent neoadjuvant radiotherapy and/or chemotherapy with active follow-up were extracted from the National Cancer Database (NCDB). 'pCR' was defined as ypT0N0M0R0 without lymphovascular invasion. Multivariable logistic regression was conducted to identify independent factors associated with pCR status. A nomogram was then constructed and validated externally using an independent cohort of 444 Chinese patients.

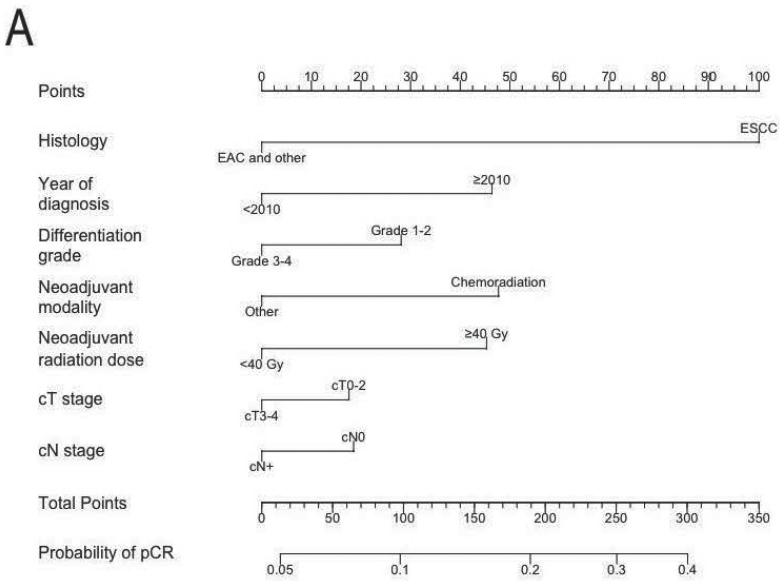
RESULTS
A total of 1051 patients (16.1%) achieved pCR after neoadjuvant therapy in the NCDB database. The distributions of sex, race, year of diagnosis, tumor location, histology, differentiation grade, tumor size, neoadjuvant therapy modality, neoadjuvant radiation dose, clinical tumor (cT), and node (cN) stage were significantly different between pCR and non-pCR patients. Multivariable logistic regression demonstrated that esophageal squamous cell carcinoma (ESCC) (OR=2.26, P<0.001), better differentiated grade (G1-2 vs G3-4, OR=1.28, P<0.001), neoadjuvant chemoradiation (OR=1.50, P=0.002), neoadjuvant radiation dose ≥40Gy (OR=1.50, P<0.001), cT0-2 stage (vs cT3-4, OR=1.17, P=0.049), cN0 stage (vs cN+, OR=1.17, P=0.028), and year

of diagnosis since 2010 (OR=1.51, P<0.001) were significantly associated with achieving pCR after neoadjuvant therapy. The final nomogram model (Figure 1-A) including histology, year of diagnosis, differentiation grade, neoadjuvant modality, neoadjuvant radiation dose, cT stage, and cN stage showed good calibration (Figure 1-B) and discrimination (Figure 1-C) both in the training cohort (C-index = 0.637) and the external validation cohort (C-index=0.738).

CONCLUSIONS

Our nomogram based on the NCDB database from the United States and externally validated using an independent cohort from China may be a useful tool to predict pCR after neoadjuvant therapy for locally-advanced esophageal cancer.

Disclosure: No significant relationships.
Keywords: Neoadjuvant Therapy, Pathological Complete Response, Prediction Model, Database, Organ-Sparing.



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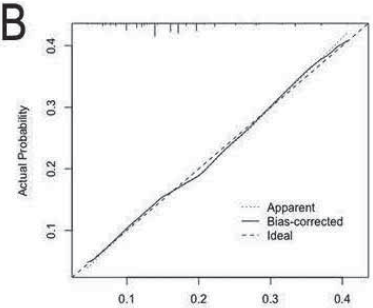
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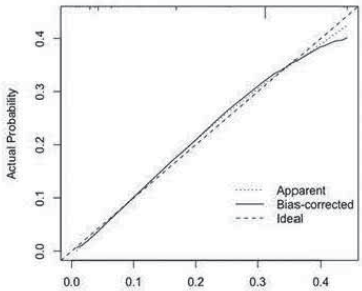
Ideal
Predicted Probability
(Training Cohort, N=6517)


Actual Probability
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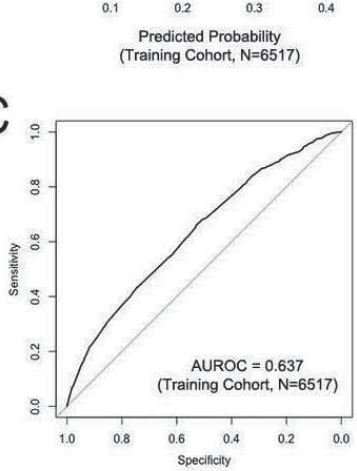
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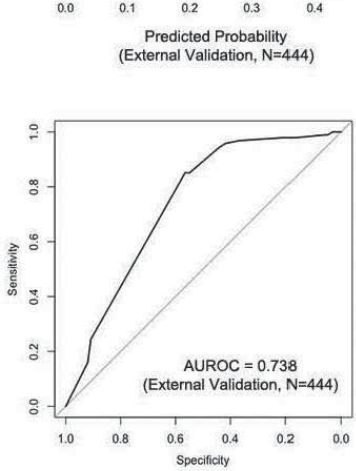
0.6
0.8
1.0
AUROC = 0.637
(Training Cohort, N=6517)
Specificity


Sensitivity
0.0
0.2
0.4
0.6
0.8
1.0
AUROC = 0.738
(External Validation, N=444)
Specificity

O-044

EARLY VERSUS DELAYED SURGERY FOLLOWING NEOADJUVANT CHEMORADIATION FOR ESOPHAGEAL CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS

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OBJECTIVES
The aim of this study was to assess the association between interval between nCRT and surgery and oncological and surgical outcomes in esophageal cancer patients.

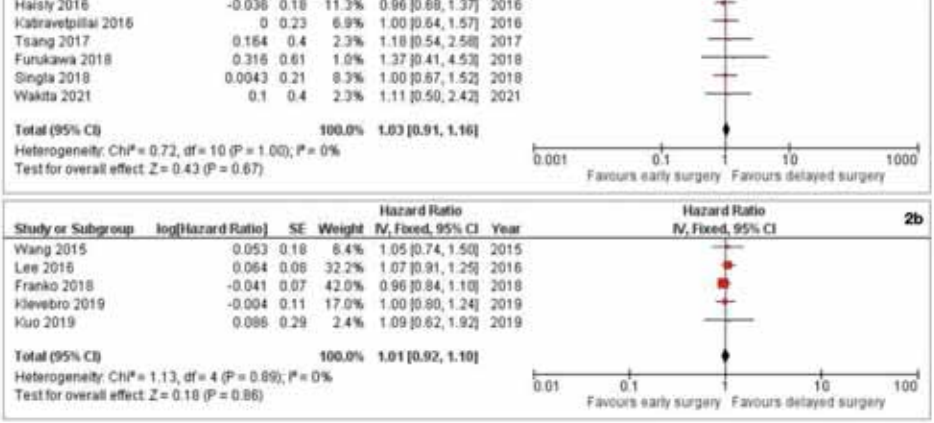
METHODS
Pubmed, Embase and Cochrane data base were searched to identify eligible studies from their inception to December 31, 2021 and divided into early and delayed surgery group. A total of 19 studies with 12 retrospective cohort study, one randomized control trial and 6 data base registry study were included. A total of 13600 participants with 6395 participants in early group and 7205 participants in delayed group were analyzed.

RESULTS
Pooled analysis of cohort studies comparing delayed surgery versus early surgery showed no difference in OS (Hazard ratio (HR) 1.03 95% CI 0.91,1.16), pCR rate(Odds Ratio (OR) 0.98, 95% CI 0.80, 1.20), R0 resection rate(OR 0.90, 95% CI 0.55, I.45; I2=43%), perioperative mortality(OR1.03, 95% CI 0.59, 1.77; I2=0%), pulmonary (OR 1.26 95% CI 0.97,1.64; I2=22%) or major complication rate (OR 1.29, 95% CI 0.96, 1.73; I2=29%) but was however associated with an increased anastomotic leak rate(OR 1.48, 95%CI 1.11,1.97). Mean while pooled assessment of data base registry studies showed Delayed surgery resulted in increased pCR rate (OR 1.12, 95%CI 1.01, 1.24) which however failed to translate to increased overall survival(HR 1.01, 95%CI 0.92 , 1.10; I2 =0%). But delayed surgery was associated with increased perioperative mortality (OR 1.35, 95% CI 1.07, 1.69; I2=15%), and major complication rate (OR 1.55; 95% CI 1.20, 2.01 I2=26%) compared to early surgery.

CONCLUSIONS
Analysis of cohort studies shows that early and delayed surgeries produce comparable oncological outcomes with an increased risk of anastomotic leak in the delayed group without affecting the mortality rate. However, national registry-based studies' analysis shows that delay in surgery is riskier and leads to higher mortality and major complication rates with minimal improvement in pCR rate.

Disclosure: No significant relationships.
Keywords: Neoadjuvant Chemoradiotherapy, Surgery, Early Versus Delayed.


2a
Study or Subgroup | log[Hazard Ratio] | SE | Weight | Hazard Ratio IV, Fixed, 95% CI | Year
Roul 2010 -0.013 0.21 8.3% 0.99 [0.65, 1.49] 2010
Kim 2012 0.0043 0.26 5.4% 1.00 [0.60, 1.67] 2012
Chiu 2013 0.057 0.1 36.5% 1.06 [0.87, 1.29] 2013
Tessier 2014 -0.0043 0.15 16.2% 1.00 [0.74, 1.34] 2014
Shaikh 2015 0.083 0.46 1.7% 1.09 [0.44, 2.68] 2015
Haisly 2016 -0.036 0.18 11.3% 0.96 [0.68, 1.37] 2016
Kabravetpillai 2016 0 0.23 6.9% 1.00 [0.64, 1.57] 2016
Tsang 2017 0.164 0.4 2.3% 1.18 [0.54, 2.58] 2017
Furukawa 2018 0.316 0.61 1.0% 1.37 [0.41, 4.53] 2018
Singla 2018 0.0043 0.21 8.3% 1.00 [0.67, 1.52] 2018
Wakita 2021 0.1 0.4 2.3% 1.11 [0.50, 2.42] 2021
Total (95% CI) 100.0% 1.03 [0.91, 1.16]
Heterogeneity: Chi² = 0.72, df = 10 (P = 1.00); I² = 0%
Test for overall effect: Z = 0.43 (P = 0.67)
Hazard Ratio IV, Fixed, 95% CI
0.001 0.1 1 10 1000
Favours early surgery Favours delayed surgery


2b
Study or Subgroup | log[Hazard Ratio] | SE | Weight | Hazard Ratio IV, Fixed, 95% CI | Year
Wang 2015 0.053 0.18 6.4% 1.05 [0.74, 1.50] 2015
Lee 2016 0.064 0.08 32.2% 1.07 [0.91, 1.25] 2016
Franko 2018 -0.041 0.07 42.0% 0.96 [0.84, 1.10] 2018
Klevebro 2019 -0.004 0.11 17.0% 1.00 [0.80, 1.24] 2019
Kuo 2019 0.086 0.29 2.4% 1.09 [0.62, 1.92] 2019
Total (95% CI) 100.0% 1.01 [0.92, 1.10]
Heterogeneity: Chi² = 1.13, df = 4 (P = 0.89); I² = 0%
Test for overall effect: Z = 0.18 (P = 0.86)
Hazard Ratio IV, Fixed, 95% CI
0.01 0.1 1 10 100
Favours early surgery Favours delayed surgery

O-045

POSTOPERATIVE SURVIVAL EFFECT OF THE NUMBER OF EXAMINED LYMPH NODES IN NODE-NEGATIVE ESOPHAGEAL SQUAMOUS CELL CARCINOMA

Zhiyu Li, Wenwu He, Changding Li, Yongtao Han
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OBJECTIVES
A limited lymph node (LN) examination may make patients who undergo surgery for esophageal squamous cell carcinoma (ESCC) be at risk for missing occult nodal disease. This study aimed to determine an appropriate number of LNs examined for patients with declared node-negative disease.

METHODS
Patients treated surgically for ESCC between 2010 and 2018 were included. A beta-binomial distribution was used to estimate the probability of occult nodal disease and Nodal Staging Score (NSS) was developed to assess the confidence of node-negative diseases. Propensity score matching was conducted to reduce selection bias. Kaplan-Meier curves were plotted to compare survival differences among groups. A Cox regression model was used for prognostic factor analyses.

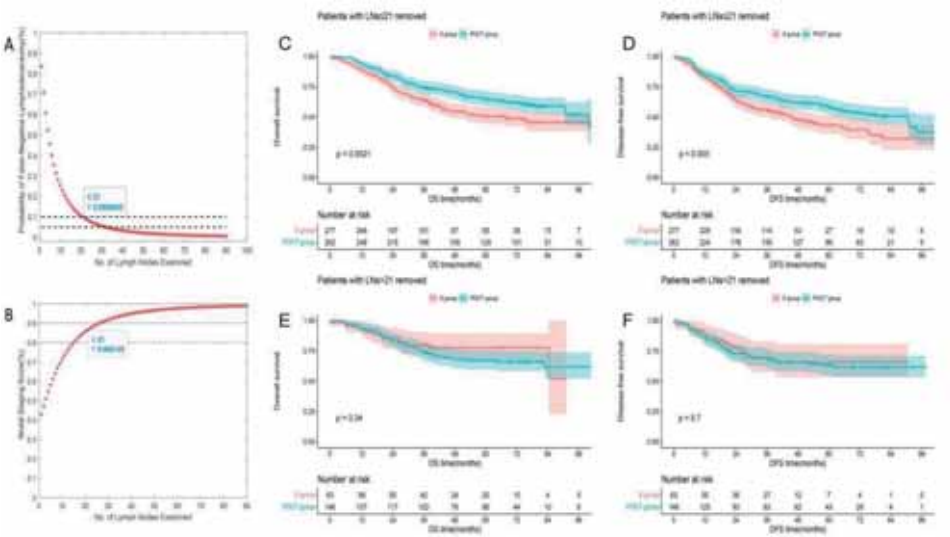
RESULTS
A total of 2722 patients with ESCC were divided into pN0 (n = 1261) and pN+ (n = 1461) groups to develop our model. When patients had 21 LNs examined, the probability of false-negative findings was estimated less than 10% and NSS was estimated at a high level (>86.5%) in the same LN count. After propensity-score matching, 748 pN0 patients were selected to analysis furtherly. 5-year OS (or DFS) in patients with LNs examined >21 vs. that in patients with LNs ≤21 was 69.9% vs. 57.9%, p = 0.0061 (or 63.9% vs. 51.6%, p = 0.0085). Subgroup analyses showed that only patients with LNs removed ≤21 can benefit from postoperative chemotherapy.

CONCLUSIONS
Our study recommends 21 LNs examined as the optimal threshold for evaluation of the quality of lymphadenectomy or prognostic stratification for patients with declared node-negative ESCC. Postoperative chemotherapy could bring an appreciable benefit for pN0 patients who were at high risk of occult lymph node metastasis (examined LNs ≤21) and it might be ineffective for patients with a relatively adequate lymph node examination (examined LNs >21).

Disclosure: No significant relationships.
Keywords: Esophageal Squamous Cell Carcinoma, Lymph Node Count, Postoperative Survival, Node-Negative, Postoperative Chemotherapy.

Table 1 Characteristics for node-negative patients before and after propensity score matching.

	Before PSM			After PSM		
Variables	**S**	**POCT**	***p***	**S**	**POCT**	***p***
Sex						
Male	578 (76.0)	332 (81.2)	0.04	268 (78.8)	332 (81.2)	0.42
Female	183 (24.0)	77 (18.8)		72 (21.2)	77 (18.8)	
Age, years						
≤65	432 (56.8)	321 (78.5)	0.00	249 (73.2)	321 (78.5)	0.09
>65	329 (43.2	88 (21.5)		91 (26.8)	88 (21.5)	
KPS						
≥90	507 (66.6)	185 (45.2)	0.00	171 (50.3)	185 (45.2)	0.17
<90	254 (33.4)	224 (54.8)		169 (49.7)	224 (54.8)	
T stage						
T1	228 (30.0)	30 (7.3)	0.00	49 (14.4)	30 (7.3)	0.01
T2	170 (22.3)	76 (18.6)		61 (17.9)	76 (18.6)	
T3	334 (43.9)	285 (69.7)		210 (61.8)	285 (69.7)	
T4	29 (3.8)	18 (4.4)		20 (5.9)	18 (4.4)	
Tumor location						
Upper	195 (25.6)	85 (20.8)	0.00	68 (20.0)	85 (20.8)	0.18
Middle	443 (58.2)	222 (54.3)		205 (60.3)	222 (54.3)	
Lower	123 (16.2)	102 (24.9)		67 (19.7)	102 (24.9)	
Grade						
G1	240 (31.5)	95 (23.2)	0.01	77 (22.6)	95 (23.2)	0.44
G2	273 (35.9)	167 (40.8)		126 (37.1)	167 (40.8)	
G3	248 (32.6)	147 (36.0)		137 (40.3)	147 (35.9)	



Data are expressed as n (%); KPS (Karnofsky score); S (surgery alone group); POCT (postoperative chemotherapy group).

O-046

PLASMA CELL-FREE DEOXYRIBONUCLEIC ACID (DNA) 5-HYDROXYMETHYLCYTOSINE AND WHOLE-GENOME SEQUENCING SIGNATURES FOR EARLY DETECTION OF ESOPHAGEAL CANCER

Di Lu[1], Xuanzhen Wu[1], Shuangxiu Wu[2], Hui Li[2], Xuebin Yan[1], Jianxue Zhai[1], Xiaoying Dong[1], Siyang Feng[1], Fuming Sun[3], Shaobo Wang[3], Xueying Zhang[3], Kaican Cai[1]
[1]*Department of Thoracic Surgery, Nanfang Hospital, Southern Medical University, Guangzhou, Guangdong, China*
[2]*Clinical Research Division, Beijing, China*
[3]*Department of Bioinformatics, Guangzhou, Guangdong, China*

OBJECTIVES
Esophageal cancer is one of globally high incidence and mortality disease. Its early stage has rarely obvious symptoms. Compared to conventional endoscopy diagnosis, liquid biopsy is an emerging non-invasive method for cancer early detection. An accurate non-invasive test is needed to identify early stage patients of esophageal cancer and provide them earlier clinical treatment.

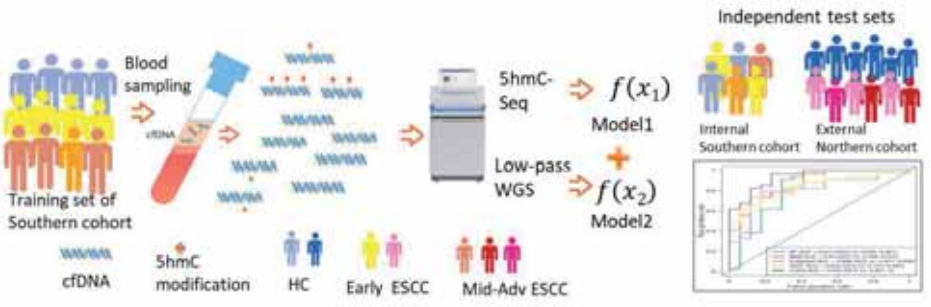
METHODS
We enrolled 100 esophageal squamous cell carcinoma patients and 71 healthy individuals as a Southern China cohort and performed 5-hydroxymethylcytosine (5hmC) sequencing on their plasma cell-free DNA (cfDNA). A diagnostic model was firstly developed based on cfDNA 5hmC signatures and then improved by low-pass whole genome sequencing (WGS) features of cfDNA.

RESULTS
Conserved cfDNA 5hmC modification motifs were observed in the two independent ESCC cohorts. A diagnostic model with 273 5hmC features based on two-thirds samples of the Southern China cohort was validated independently in the left one-thirds samples and the whole Northern China cohort, achieved an AUC of 0.810 and 0.862 with sensitivities of 69.3-74.3% and specificities of 82.4-90.7%, respectively. The performance was well maintained in Stage I to Stage IV, with accuracy of 70%-100%, but low in Stage 0, with accuracy of 33.3%. Low-pass WGS of cfDNA improved the AUC to 0.934 with a sensitivity of 82.4%, a specificity of 88.2% and an accuracy of 84.3%, particularly significantly in Stage 0 with the accuracy up to 80%.

CONCLUSIONS
This study suggests that the blood-based 5hmC integrated with low-pass WGS model could improve the accurate diagnosis of early stage esophageal squamous cell carcinoma.

Disclosure: No significant relationships.

Keywords: Esophageal Cancer, 5-Hydroxymethylcytosine, Cell-Free DNA, Whole Genome Sequencing, Early Screening.



O-047

SURVIVAL OUTCOMES OF THREE-FIELD LYMPH NODE DISSECTION DURING ESOPHAGECTOMY IN ESOPHAGEAL SQUAMOUS CELL CARCINOMA AFTER NEOADJUVANT CONCURRENT CHEMORADIATION THERAPY

Bubse Na, Chang Hyun Kang, Ji Hyeon Park, Kwon Joong Na, Samina Park, In Kyu Park, Young Tae Kim
Seoul National University Hospital, Seoul, South Korea

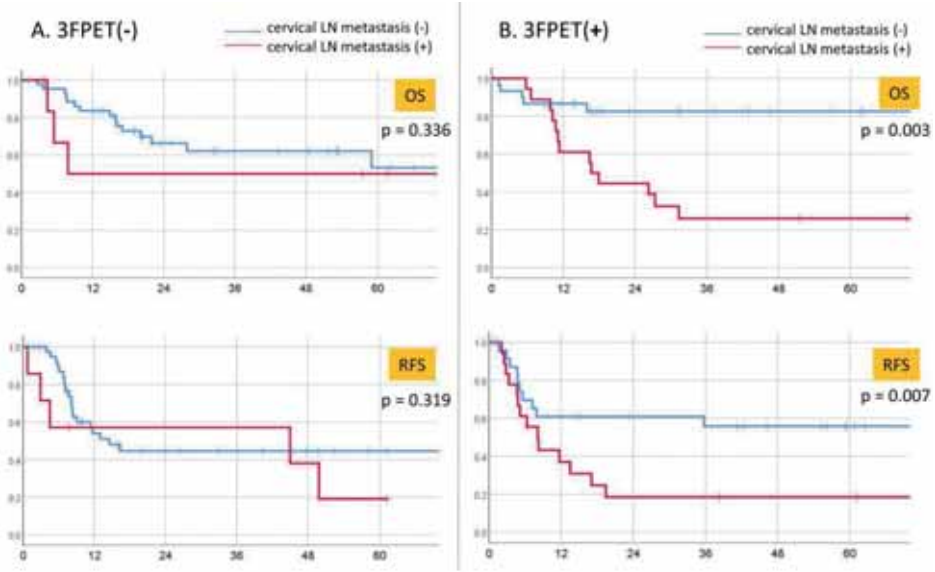
OBJECTIVES
Study about the three-field lymphadenectomy in esophagectomy patients following neoadjuvant CCRT is scarce. We aimed to estimate the survival outcomes.

METHODS
From 2007 to 2021, 116 esophageal squamous cell carcinoma patients underwent esophagectomy after neoadjuvant CCRT. We retrospectively reviewed and analyzed the data to evaluate the risk factors of overall survival (OS) and recurrence free survival (RFS).

RESULTS
Median follow up duration was 20.1 months. 5-year OS and RFS rate were 55.5% and 36%. Univariate analysis revealed that BMI<20 (p=0.074, HR=1.774), ECOG PS>0 (p=0.006, HR=2.467), and pathologically positive cervical LNs (p=0.009, HR=2.245) might be risk factors for the OS. Multivariate analysis showed that ECOG PS>0 (p=0.025, HR=2.128), and pathologically positive cervical LNs (p=0.010, HR=2.235) are risk factors for the OS. In RFS, only pathologically positive cervical LNs were significant in both univariate and multivariate analysis (p=0.002, HR=2.265).
We divided the patients to three-field lymphadenectomy without FDG-PET uptake in cervical nodes (3FPET(-), n=61), and with FDG-PET uptake in cervical nodes (3FPET(+), n=55). The OS and RFS were not significantly different between 3FPET(-) and 3FPET(+). The findings were same when analyzing only upper and middle esophageal cancer.
In 3FPET(-) with upper and middle cancer, the OS and RFS were not different according to the presence of cervical LN metastases in pathologic diagnosis. However, in 3FPET(+) with upper and middle cancer, the OS and RFS of patients with positive cervical LN metastases were significantly worse than those with negative cervical metastases (Figure1).

CONCLUSIONS
Neoadjuvant CCRT and three-field lymphadenectomy can be a good surgical option when there is clinical suspicion of cervical LN metastases. Pathologically positive cervical LNs were significant risk factors for both OS and RFS. However, incidentally found cervical LN metastases in 3FPET(-) did not influence on OS and RFS. Further study in case of persistent positive cervical LNs in 3FPET(+) may be needed.

Disclosure: No significant relationships.
Keywords: Neoadjuvant, CCRT, Esophageal Cancer, Three Field, Lymphadenectomy.



TUESDAY 6 JUNE 2023
PULMONARY NEOPLASTIC II (EARLY STAGE LUNG CANCER) SESSION X
08:30 – 09:00

O-048

SHORT-TERM SURGICAL OUTCOMES OF SEGMENTECTOMY FOR PRIMARY LUNG CANCER: A RETROSPECTIVE COMPARATIVE STUDY OF ROBOT-ASSISTED THORACOSCOPIC SURGERY AND OPEN THORACOTOMY OR VIDEO-ASSISTED THORACOSCOPIC SURGERY

Tomohiro Haruki, Shunsuke Kojima, Shinji Matsui, Takashi Ohno, Yasuaki Kubouchi, Hiroshige Nakamura
Division of General Thoracic Surgery, Faculty of Medicine, Tottori University, Yonago-City, Japan

OBJECTIVES
The results of the JCOG0802/WJOG4607L trial suggest that segmentectomy may be a standard procedure for peripheral small lung cancer. Since segmentectomy is an anatomical resection that requires meticulous dissection and exposure of the segmental pulmonary vessels and bronchus, robot-assisted thoracoscopic surgery (RATS) has been widely used for segmentectomy in recent years. We investigated the usefulness of RATS segmentectomy by comparing perioperative outcomes with conventional (open thoracotomy or VATS) approaches.

METHODS
This single institutional retrospective study included 231 patients with primary lung cancer who underwent segmentectomy by RATS or conventional approach (open thoracotomy or VATS) between January 2011 and December 2022. Surgical outcomes and postoperative complications were analyzed among patients whose background factors were adjusted by propensity score matching (PSM).

RESULTS
Before PSM, there were significant differences in age ($p = 0.03$), smoking status ($p = 0.02$), and types of segmentectomy (simple or complex) ($p < 0.01$). After PSM, 126 patients (63 patients in each group) were included in this analysis. RATS group had significantly shorter operative time (154±76min vs 210±84min; $p < 0.01$), fewer bleeding amounts (10±5mL vs 40±75mL; $p < 0.01$), and shorter duration of chest drainage (2±1days vs 2±0days; $p = 0.04$) than the conventional approach group. The number of dissected hilar lymph nodes did not differ significantly between groups ($p = 0.20$). There was no significant difference in the incidence of all complications ($p = 0.46$) including prolonged air leaks between groups, however, the incidence of postoperative pneumonia (Clavien-Dindo grade > 2) was significantly lower in the RATS group ($p = 0.02$).

CONCLUSIONS

RATS segmentectomy was suggested to be useful with better perioperative results than the conventional approach. Further studies on oncological long-term outcomes and cost-benefit comparisons are needed.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Segmentectomy, RATS, VATS, Open Thoracotomy.

O-049

DOES CONSOLIDATION TUMOR SIZE OF PART-SOLID ADENOCARCINOMA AFFECT SURVIVAL IN PATIENTS WITH LUNG CANCER UNDERGOING SURGERY? - PROPENSITY SCORE MATCHING ANALYSIS

Haruaki Hino, Takahiro Utsumi, Natsumi Maru, Hiroshi Matsui, Yohei Taniguchi, Tomohito Saito, Tomohiro Murakawa
Kansai Medical University, Department of Thoracic Surgery, Osaka, Japan

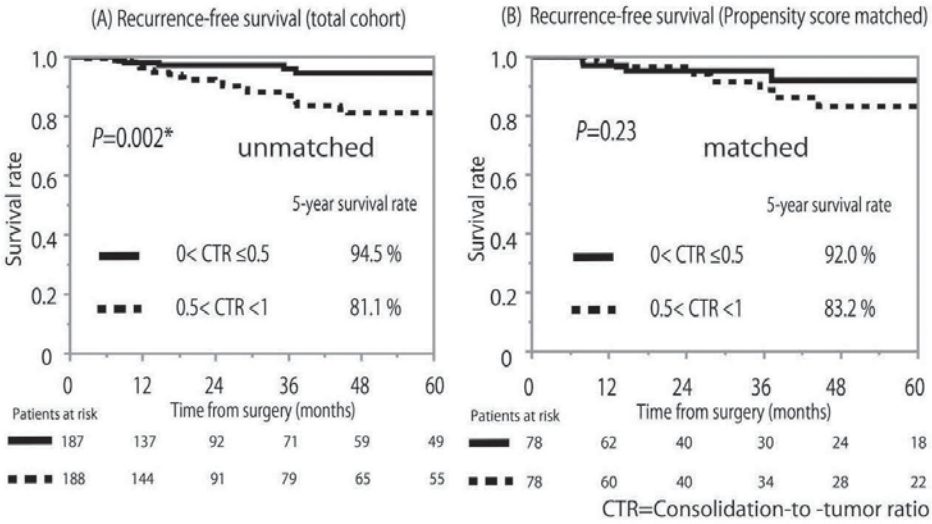
OBJECTIVES
We analyzed the survival impact of consolidation tumor size in patients with part-solid adenocarcinoma undergoing surgery using propensity score matching.

METHODS
We retrospectively analyzed data of 375 patients with part-solid adenocarcinoma who underwent surgery at our institute between 2006~2021. Patients were divided into two groups: 178 patients with 0<consolidation-to-tumor ratio (CTR)≤0.5 (low CTR group) and 188 patients with 0.5<CTR<1 (high CTR group). Using propensity score matching for invasive tumor size, we evaluated the impact of consolidation tumor size and other clinical characteristics stratified by CTR on survival.

RESULTS
In a total cohort, there was a significant correlation between consolidation and lepidic size (r2 =0.018, P=0.009). Considering clinical characteristics, the high CTR group exhibited a significantly higher value for carcinoembryonic antigen, larger consolidation tumor size (mean 1.6 vs. 0.8 cm), higher clinical and pathological stage, higher radical surgery rate, and longer operation time than the low CTR group (P<0.05). Considering the consolidation tumor size-matched cohort, high CTR significantly correlated with small total tumor size; however, other clinical characteristics were nearly similar to consolidation tumor size (mean 1.2 vs. 1.2 cm) (P>0.05). Regarding survival analysis, 5-year overall and recurrence-free survival rates were 85.2 and 81.1% in the high CTR group and 95.2 and 94.5% in the low CTR group (P=0.008, 0.002), respectively, indicating that patients with a high CTR had a significantly poor survival (Figure A). Conversely, among the consolidation size-matched cohort, 5-year overall and recurrence-free survival rates were 83.2 and 83.2% in the high CTR group and 93.0 and 92.0% in the low CTR group (P=0.10, 0.23), respectively, demonstrating that survival difference was diminished between the two groups (Figure B).

CONCLUSIONS
Consolidation tumor size of part-solid adenocarcinoma and CTR can impact survival, consistent with UICC-TNM 8th edition.

Disclosure: No significant relationships.
Keywords: Lung Cancer Surgery, Part-Solid Adenocarcinoma, Consolidation Tumor Size, Propensity Score Matching.



O-050

DOES SUBLOBAR RESECTION UNDERSTAGE PATIENTS WITH 1.5-2CM CLINICAL IA2 NON-SMALL CELL LUNG CANCER?

Jorge Humberto Rodriguez-Quintero[1], Mohamed Kamel[2], Mostafa Elbahrawy[1], John Skendelas[1], Marc Vimolratana[1], Neel Chudgar[1], Brendon Stiles[1]
[1]Montefiore Medical Center/Albert Einstein College of Medicine, New York City, United States
[2]Central Michigan University, Mt. Pleasant, United States

OBJECTIVES
CALGB140503, in which nodal dissection was mandated, reported non-inferior survival for patients with NSCLC undergoing sub-lobar resection (SLR). However, a trend favored lobectomy (L) in patients with 1.5-2.0cm tumors (HR 1.24, 95%CI:0.92-1.67). We sought to evaluate whether SLR is associated with differences in pathologic-upstaging and survival in this group in real world data.

METHODS
Using the National Cancer Database (2018-2019), we evaluated patients with 1.5-2.0 cm NSCLC and stratified based on SLR vs. L. We studied factors associated with nodal-upstaging (logistic-regression) and survival (Cox-regression). The Kaplan-Meier method was used to compare survival after propensity-matching.

RESULTS
Among 3,196 patients, SLR and L were performed in 839 (26.3%)(n=588, 70.1% wedge-resections) and 2,357 (73.7%) of cases, respectively. Patients undergoing SLR were older (69 vs. 67 years,p<0.001) with more comorbidities (CCI >2, 24.2% vs. 19.5%,p=0.004). More patients undergoing SLR (n=172, 20.5%) compared to L (n=41, 1.7%) failed to undergo lymph-node dissection (p<0.001). Those undergoing SLR had less lymph-nodes examined (4 vs. 11, p<0.001). Of the cohort, 243 (7.6%) were upstaged to pN+, and 651 (20.3%) were upstaged overall. Occult pN+ disease was less likely to be identified in the SLR group (4.7% vs. 9%, p<0.001). Multivariable analysis identified lobectomy (OR 1.83, 95%CI:1.19-2.81), lymphovascular invasion (OR 7.95, 95%CI: 5.89-10.70), tumor-size (OR 2.07 95%CI: 1.34-3.20), and pT-upstaging (OR 2.07, 95%CI: 1.50-2.86) as predictors of N+disease (Figure-1A). After propensity-matching, overall survival (Figure-1B) was comparable among SLR and L (36.51, vs.36.72 months, p=0.90). As expected, those upstaged to pN+ disease had worse overall survival (33.6 vs 37.24 months. p<0.001).

CONCLUSIONS
Despite comparable overall survival to lobectomy, in real-world data SLR is associated with suboptimal lymphadenectomy in patients with 1.5-2.0cm NSCLC, which may impact disease free survival. Surgeons should consider lobectomy or at least perform adequate lymphadenectomy when performing SLR to mitigate nodal understaging and to identify appropriate patients for adjuvant therapy.

Disclosure: No significant relationships.

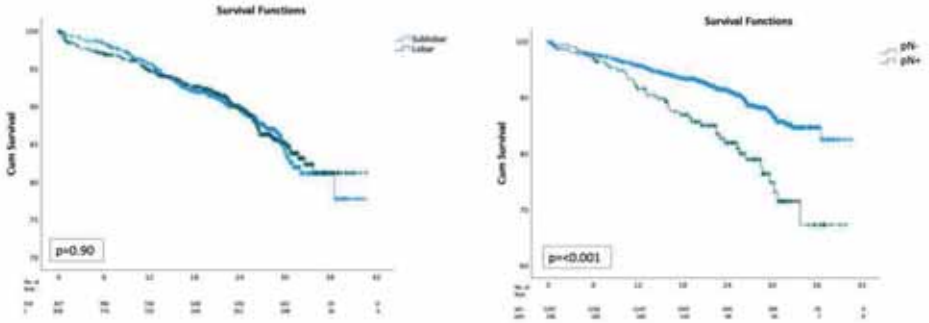
Keywords: Lung Cancer, Sub-Lobar Resection, 1.5-2 Cm Tumor, Lobectomy, Occult Nodal Disease.

Figure 1A. Multivariable Analysis of factors associated with N+ disease.

Figure 1A. Multivariate Analysis of Predictors of N-Upstaging.

N=3,196	OR	95%CI		p
Lobar Resection	1.83	1.19	2.81	0.006
Histology				
Adeno	REF	REF	REF	0.004
Squamous	0.43	0.27	0.68	
Large Cell	1.01	0.44	2.31	
Other	0.86	0.47	1.59	
Lymphovascular invasion	7.95	5.89	10.70	<0.001
Tumor size (mm)				
15	REF	REF	REF	0.002
16	1.80	1.12	2.90	
17	1.09	0.66	1.81	
18	1.49	0.94	2.36	
19	2.30	1.40	3.79	
20	2.07	1.34	3.20	
LN examined				
0	REF	REF	REF	0.005
1-5	1.30	0.17	10.03	
6-10	2.60	0.35	19.57	
>10	3.01	0.40	22.87	
Positive Margins	3.84	1.36	10.86	0.01
T-Upstaged	2.07	1.50	2.86	<0.001

Figure 1B. Kaplan-Meier analysis of propensity-matched cohort (adjusted for age, gender, race, comorbidity and histology)



O-051

LEFT UPPER SEGMENTECTOMY VS LOBECTOMY FOR THE TREATMENT OF EARLY NON-SMALL-CELL LUNG CANCER

Shinya Tane[1], Jiro Okami[2], Yasushi Shintani[3], Takashi Ohtsuka[4], Hiroyuki Ito[5], Shun-Ichi Watanabe[6], Shinichi Toyooka[7], Takeshi Mori[8], Masayuki Chida[9], Shunsuke Endo[10], Ryoichi Nakanishi[11], Mitsutaka Kadokura[12], Hidemi Suzuki[13], Etsuo Miyaoka[14], Ichiro Yoshino[13], Hiroshi Date[15]

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[2]*Department of General Thoracic Surgery, Osaka International Cancer Institute, Osaka, Japan*
[3]*Department of General Thoracic Surgery, Osaka University Graduate School of Medicine, Suita, Japan*
[4]*Division of General Thoracic Surgery, Department of Surgery, Jikei University School of Medicine, Tokyo, Japan*
[5]*Department of Thoracic Surgery, Kanagawa Cancer Center, Yokohama, Japan*
[6]*Department of Thoracic Surgery, National Cancer Center Hospital, Tokyo, Japan*
[7]*Department of Thoracic, Breast and Endocrinological Surgery, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, Okayama, Japan*
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[9]*Department of General Thoracic Surgery, Dokkyo Medical University, Tochigi, Japan*
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[11]*Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan*
[12]*Respiratory Disease Center, Showa University Northern Yokohama Hospital, Yokohama, Japan*
[13]*Department of General Thoracic Surgery, Graduate School of Medicine, Chiba University, Chiba, Japan*
[14]*Department of Mathematics, Tokyo University of Science, Tokyo, Japan*
[15]*Department of Thoracic Surgery, Kyoto University, Kyoto, Japan*

OBJECTIVES

The left upper lobe and the right upper and middle lobes share similar anatomy; hence, segmentectomy, such as upper division and lingulectomy, could yield identical oncological clearance as left upper lobectomy. We aimed to compare the prognosis of segmentectomy with that of lobectomy for left upper lobe early-stage non-small cell lung cancer (NSCLC).

METHODS

Using the Japanese Lung Cancer Registry data, we retrospectively examined 2115 patients who underwent segmentectomy or lobectomy for c-stage I (UICC ver.8) NSCLC in the left upper lobe during 2010. We compared the oncological outcomes of segmentectomy (n = 483) and lobectomy (n = 483) using propensity score matching analysis based on sex, age, performance status, invasive tumor size, whole tumor size, and pulmonary function (Table).

RESULTS

Postoperative morbidity did not differ significantly between the two groups (p=0.20). The 5-year recurrence-free survival (RFS) and overall survival (OS) rates in the segmentectomy and lobectomy groups were 81.9% vs. 78.9% and 87.2% vs. 84.6%, respectively, and the differences between the procedures were not significant (p =0.149 and p =0.155, respectively). When stratified by c-stage (UICC ver.8), 5-year RFS and OS rate in each procedure were 84.2% vs 80.6%, and 88.3% vs 85.8% in c-stage IA, and 66.6% vs 67.2% and 79.8% vs 76.3% in c-stage IB, showing similar outcomes were noted irrespectively of c-stage IA or IB.

CONCLUSIONS

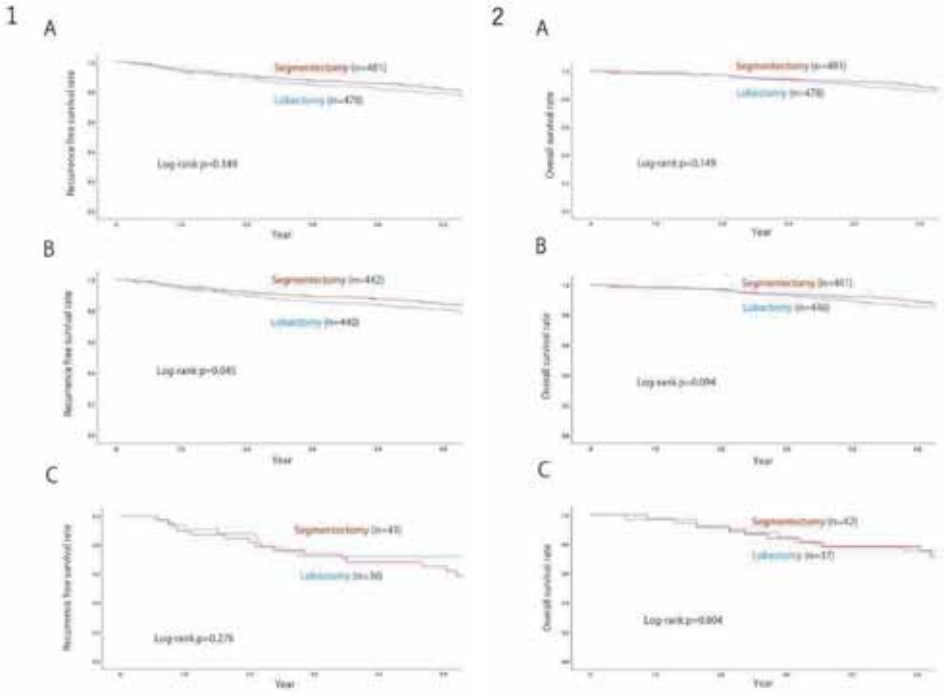
Regardless of tumor size, segmentectomy could be an acceptable treatment as compared with lobectomy in the patients with c-stage I NSCLC located in the left upper lobe.

Disclosure: No significant relationships.
Keywords: Left Upper Lobe, Segmentectomy, Non-Small-Cell Lung Cancer, Prognosis.

	Segmentectomy (n=438)	Lobectomy (n=438)	P value
Age(<65 vs 65?)	145/338	139/344	0.72
Sex	263/220	269/214	0.75
ECOG PS			0.75
0	406	412	
1	65	57	
2	7	11	
3	2	2	
4	1	0	
Unknown	2	1	
FEV1.0 (L)	2.19 ± 0.63	2.16 ± 0.61	0.95
FEV1.0/FVC (L)	73.3±10.6	72.6±10.1	0.28
Smoking history (Yes/No)	265/218	268/215	0.897
Emphysema on CT	71(14.7)	55(11.4)	0.15
Fibrosis on CT	18(3.7)	10(2.1)	0.18
Serum level of CEA (>5)	96(19.9)	112(23.2)	0.24
Lymph node dissection			<0.001
ND0	54	5	
ND1	223	89	
ND2	197	385	
Unknown	9	4	

	Segmentectomy (n=438)	Lobectomy (n=438)	P value
Operation time (min)	211±80	214±72	0.53
Overall postoperative complications (%)	30 (6.2)	43 (8.9)	0.14
Prolonged air leak (%)	14 (2.9)	16 (3.3)	0.85
Histology			0.37
Adenocarcinoma	380	389	
Squamous cell carcinoma	75	61	
Others or unknown	28	33	
Whole tumor size (mm)	1.9±0.8	2.0±0.8	0.10
Invasive tumor size (mm)	1.4±0.9	1.4±0.9	0.78
Clinical stage (UICC ver.8)			0.396
0	51	41	
IA1	145	133	
IA2	166	194	
IA3	79	78	
IB	42	37	
Pathological T (UICC ver.7)			0.158
T1a	295	264	
T1b	99	101	
T2a	83	107	
T2b	1	3	
T3	5	8	
T4	0	0	
Pathological N (UICC ver.7)			<0.001
Nx	19	4	
N0	446	433	
N1	9	18	
N2	9	28	
Pathological stage (UICC ver.7)			<0.001
0orX	20	4	
IA	369	341	
IB	72	86	

	Segmentectomy (n=438)	Lobectomy (n=438)	P value
IIA	8	19	
IIB	5	5	
IIIA	9	28	
Adjuvant chemotherapy (%)	48(10.7)	92(20.3)	<0.001
Recurrence (%)	56(11.6)	77(15.9)	0.062
Regional	35(7.2)	42(8.7)	0.48
Distance	25(5.2)	46(9.3)	0.018



O-052

IS WEDGE RESECTION REALLY ENOUGH FOR STAGE I LUNG CANCER? – RESULTS OF THE SEER DATABASE

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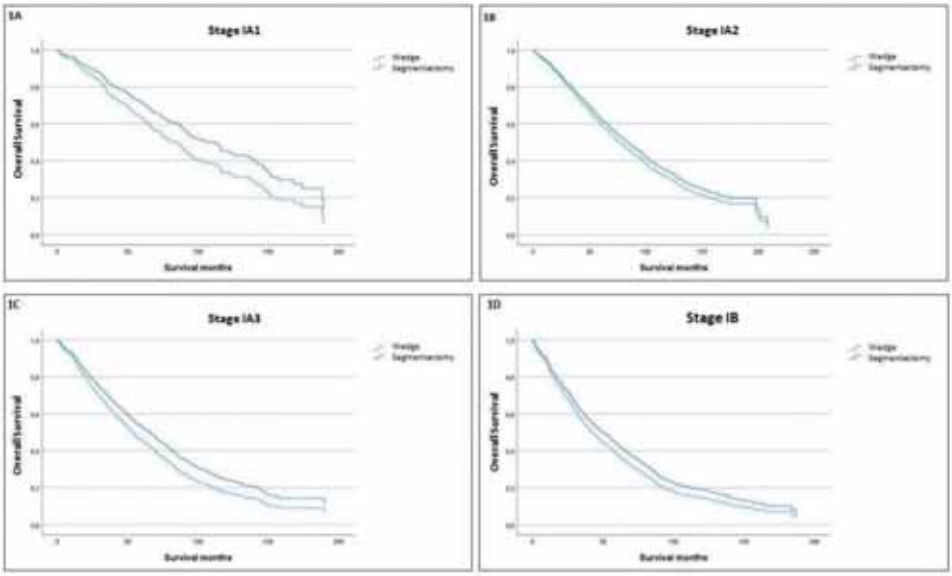
OBJECTIVES
Recent randomized trials have suggested a role for sublobar resection for early-stage NSCLC and even wedge resection. However, these trials did not directly compare wedge resection to segmentectomy. We aimed to compare survival and perioperative outcomes between these two surgical procedures in patients with stage I NSCLC.

METHODS
We retrospectively analysed the Surveillance, Epidemiology and End Results (SEER) database of stage I NSCLC (≤4cm in size) patients who underwent either wedge resection or segmentectomy from 2000 to 2017. We performed propensity score matching to adjust for selection bias (1:1 matching, calliper:0.01, variables matched: age, gender, ethnicity, tumour location, size, histology and the number of lymph nodes sampled). The primary endpoint was overall survival (OS), and the secondary endpoints were 30-day and 90-day mortality. To evaluate the effects on the prognosis of both wedge resection and segmentectomy, univariate and multivariate Cox proportional hazards regression were applied after testing the proportional hazards assumption through the Kaplan–Meier survival curves. Results were presented as hazards ratio and 95% confidence interval(HR and 95%CI).

RESULTS
Overall, 9073 patients treated by wedge resection and 2166 patients treated by segmentectomy were included in the analysis. After propensity score matching, 1946 patients in each group were considered. Overall survival was greater after segmentectomy than wedge resection in all stage IA NSCLC: IA1(HR:0.73 (0.55-0.97); p=0.03, IA2(HR:0.91 (0.79-1.04); p=0.11, IA3(HR:0.81 (0.68-0.96); p=0.015. There was a similar survival benefit after segmentectomy in stage IB(HR:0.86 (0.74-0.10); p=0.04) (Fig.1A-D). The 30-day mortality was significantly higher after wedge resection (2.3%vs1.4%, p=0.01), but there was no significant difference in 90-day mortality (4.5%vs3.7%,p=0.10).

CONCLUSIONS
Although previous trials have shown similar benefits for wedge resection to lobectomy in small lung cancers, we suggest that anatomical segmentectomy should be preferred to non-anatomical wedge resection in all stage IA and stage IB NSCLC.

Disclosure: No significant relationships.
Keywords: Segmentectomy, Wedge Resection, Prognosis, SEER Database.


1A
Stage IA1
Overall Survival
Survival months
1B
Stage IA2
Overall Survival
Survival months
1C
Stage IA3
Overall Survival
Survival months
1D
Stage IB
Overall Survival
Survival months

O-053

SEGMENTECTOMY VERSUS LOBECTOMY FOR NON SMALL CELL LUNG CANCER: THE IMPACT OF TUMOR LOCATION

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Stanford, Palo Alto, United States

OBJECTIVES
Segmentectomy rather than lobectomy can be appropriate for small early stage non-small cell lung cancer (NSCLC), but the technical complexity of and amounts of preserved lung parenchyma after segmentectomy vary by specific lobe. This study evaluated the impact of NSCLC tumor location on segmentectomy use and outcomes.

METHODS
Outcomes after lobectomy or segmentectomy for cT1aN0M0 (<2 cm) NSCLC patients in the National Cancer Database stratified by tumor location in smaller (right upper/middle) versus larger (bilateral lower/left upper) lobes were evaluated with logistic regression, Kaplan-Meier curves, and Cox proportional hazards methods. Postoperative hospitalization>14 days or 30-day mortality was considered major morbidity.

RESULTS
A minority of patients in the cohort (n=31,243) underwent segmentectomy (n=2,783,9%). Larger lobe tumor location was an independent predictor (odds ratio [OR] 2.55) for segmentectomy in multivariable logistic regression, as was older age (OR 1.21), female (OR 1.13), income above median (OR 1.35), Charlson comorbidity index 2+ (OR 1.21), and academic facility (OR 1.68). Major morbidity was significantly less after segmentectomy compared to lobectomy in univariate analysis (Table) and multivariate analysis for both smaller (OR 0.41,p<0001) and larger (OR 0.46,p<0.001) lobe tumor location. Segmentectomy did not compromise oncologic efficacy in terms of positive margins (smaller lobes segmentectomy 0.7% vs lobectomy 1.1%,p=0.5; larger lobes 1.6% vs 1.%,p=0.06) or in multivariate survival analysis for both small (hazard ratio [HR] 0.99,p=0.9) and large (HR 1.05,p=0.34) lobes.

CONCLUSIONS
Segmentectomy in this national analysis had a peri-operative benefit over lobectomy without compromise in survival for small cT1aN0M0 NSCLC in both smaller and larger lobes. Segmentectomy should therefore be considered in this clinical scenario if complete resection is feasible regardless of tumor location.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Lobectomy, Segmentectomy.

Table. Peri-operative outcomes comparing patients who underwent lobectomy vs segmentectomy in Different Anatomic Lobes.

	Small Lobes				Large Lobes			
Patient outcomes	**Total n = 13,394**	**Lobectomy n = 12,712**	**Segmentectomy n = 682**	***p-value***	**Total n = 17,849**	**Lobectomy n = 15,748**	**Segmentectomy n = 2,101**	***p-value***
30-Day mortality	129 (1.0%)	125 (1.0%)	4 (0.6%)	0.070	203 (1.2%)	188 (1.2%)	15 (0.7%)	0.2
90-Day mortality	221 (1.7%)	215 (1.7%)	6 (0.9%)	0.053	318 (1.8%)	296 (1.9%)	22 (1.1%)	**0.034**
Major Morbidity	693 (5.6%)	677 (5.7%)	16 (2.6%)	**<0.001**	819 (4.9%)	771 (5.2%)	48 (2.5%)	**<0.001**
Hospital length of stay Median (IQR)	4.0 (3.0, 7.0)	5.0 (3.0, 7.0)	4.0 (2.0, 5.0)	**<0.001**	4.0 (3.0, 6.0)	5.0 (3.0, 7.0)	3.0 (2.0, 5.0)	**<0.001**
Unplanned readmission	637 (4.8%)	615 (4.8%)	22 (3.2%)	0.085	883 (4.7%)	796 (5.1%)	87 (4.1%)	0.12
No. of regional lymph nodes examined Mean (SD)	10.3 (8.0)	10.5 (8.0)	7.0 (6.7)	**<0.001**	10.0 (7.2)	10.4 (7.2)	7.5 (7.0)	**<0.001**
Median (IQR)	9.0 (5.0, 14.0)	9.0 (5.0, 14.0)	5.0 (2.0, 10.0)		7.0 (3.0, 12.0)	9.0 (5.0, 13.0)	6.0 (3.0, 10.0)	
Positive surgical margins	142 (1.1%)	137 (1.1%)	5 (0.7%)	0.5	203 (1.1%)	169 (1.1%)	34 (1.6%)	0.062
Adjuvant radiotherapy	218 (1.6%)	212 (1.7%)	6 (0.9%)	0.11	368 (2.1%)	325 (2.1%)	43 (2.0%)	>0.9
Adjuvant chemotherapy	950 (7.1%)	926 (7.3%)	24 (3.5%)	**<0.001**	1,299 (6.5%)	1,201 (7.6%)	98 (4.7%)	**<0.001**

Notes: Values are n (%) for categorical variables and mean (SD)/Median (IQR) for continuous variables. Wilcoxon rank sum and Pearson's Chi-squared tests to evaluate p-values for continuous and categorical variables respectively. Small lobes = Right upper lobe + Right middle lobe. Large lobes = Right lower lobe + Left upper lobe + Left lower lobe. Major Morbidity=14+ days length of hospital stay and 30-Day mortality.

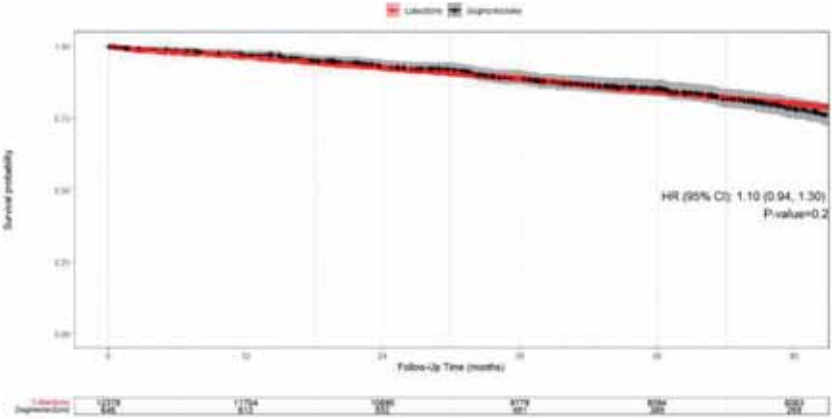

Figure A. *5-year survival of patients who underwent lobectomy v. segmentectomy in small lobes*

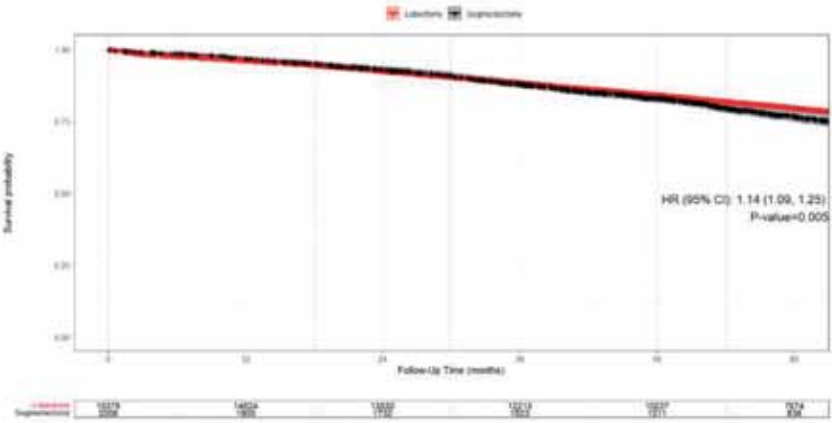

Figure B. *5-year survival of patients who underwent lobectomy v. segmentectomy in large lobes*

TUESDAY 6 JUNE 2023
PULMONARY NON-NEOPLASTIC SESSION XI
08:00 - 09:00

O-054

PULMONARY ARTERIAL ENLARGEMENT ON COMPUTED TOMOGRAPHY IS ASSOCIATED WITH MAJOR CARDIOPULMONARY COMPLICATIONS AFTER PULMONARY LOBECTOMY

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OBJECTIVES
Pulmonary arterial enlargement on computed tomography (CT) is a sign of high pulmonary arterial pressure, a known risk factor for cardiopulmonary complication after lung resection. This study aimed to assess whether pulmonary arterial enlargement on CT is associated with cardiopulmonary complications after lobectomy.

METHODS
Single centre, retrospective analysis on 287 consecutive patients undergoing lobectomy for lung cancer and with preoperative cardiopulmonary exercise test (CPET) (January2017-October2022). Patients were referred to CPET according to current functional guidelines. They represent 19% of all patients undergoing anatomic lung resections during the same period. The diameter of the main pulmonary artery (PA) and ascending aorta (A) was measured on preoperative CT, to calculate the PA/A ratio(Figure 1). According to the literature a PA/A ratio≥0.9 was taken as a threshold value for increased risk and was tested in a stepwise logistic regression analysis along with ergometric parameters, and other patient and surgery-related factors for an association with in-hospital or 30 days major cardiopulmonary complications defined as those with a Thoracic Morbidity and Mortality score≥3 and including death.

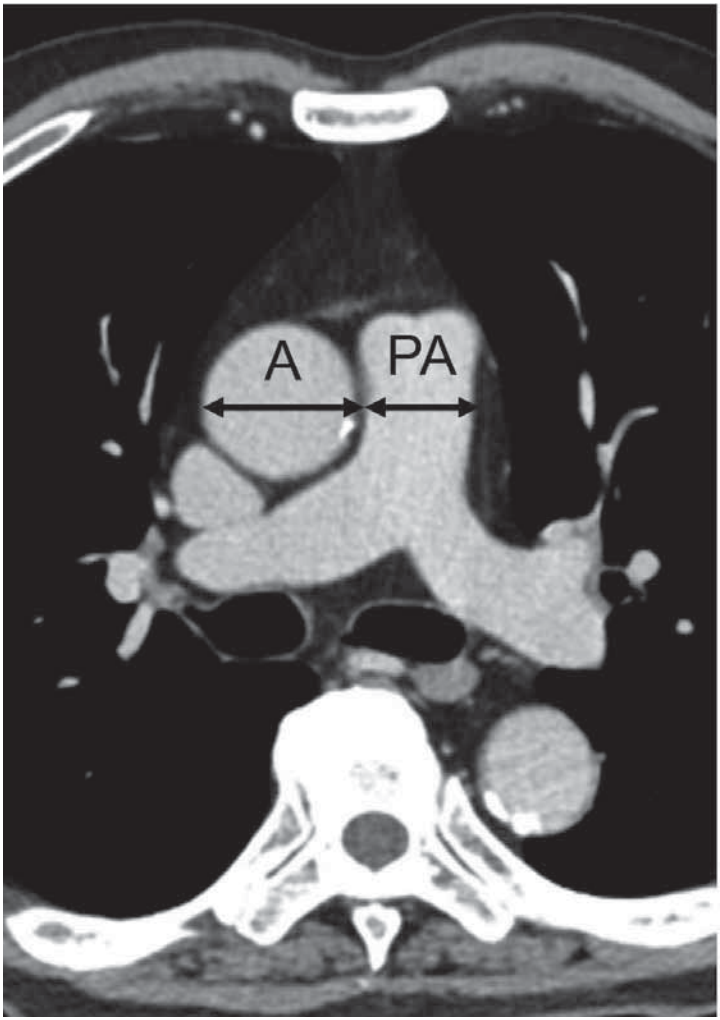
RESULTS
Major cardiopulmonary and 30-day mortality rates of all analysed patients were 15% and 6.6%, respectively. The incidence of major cardiopulmonary complications in patients with PA/A ratio≥0.9 was 39%(14/46) vs.12%(28/241) in those with lower PA/A ratio (p=0.002). After logistic regression analysis, PA/A ratio≥0.9(OR 3.03,95% CI 1.35–6.81, p=0.007), age(OR 1.08,95%CI 0.0002-0.18,p=0.004), %DLCO(OR 0.97,95%CI 0.94-0.99, p=0.02) remained independently associated with major cardiopulmonary complications. Patients with PA/A ratio≥0.9 had significantly lower %DLCO (60±14vs.67±17,p=0.02), lower VO2max(ml/kg/min) (15.1±3.2 vs.16.8±3.7,p=0.005), and higher VE/VCO2 slope (40.7±9.2 vs.35.3±6.5,p=0.0001), compared with those with lower PA/A ratio.

CONCLUSIONS

We found that the PA/A ratio≥0.9 on CT scan was an independent predictor of major cardiopulmonary complication after lobectomy and was associated with poorer CPET results. These findings may assist in selecting appropriate candidates for preoperative CPET before lung cancer surgery.

Disclosure: No significant relationships.

Keywords: Cardiopulmonary Complication, Lobectomy, Pulmonary Arterial Enlargement, Pulmonary Hypertension.



O-055

OUTCOMES OF LUNG VOLUME REDUCTION SURGERY FOR EMPHYSEMA: UNILATERAL, BILATERAL, AND SEQUENTIAL

Rocio Castillo-Larios, Alejandra Yu Lee-Mateus, Daniel Hernandez-Rojas, Priyanka Pulipaka, Mathew Thomas, Samuel Jacob, Magdy M El-Sayed Ahmed, Sebastian Fernandez-Bussy, David Abia-Trujillo, Ian A Makey
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OBJECTIVES
Lung volume reduction surgery (LVRS) has generally been performed as a bilateral operation. We hypothesized that unilateral LVRS would have lower short-term morbidity and mortality than bilateral LVRS.

METHODS
We performed a retrospective analysis of patients who underwent LVRS for emphysema at two hospital sites over 10 years. Functional outcomes included before and after pulmonary functions tests (PFTs), 6-minute walk tests (6MWTs), and supplemental oxygen use. Short-term morbidity and functional outcomes were compared among unilateral, bilateral, and sequential LVRS.

RESULTS
115 patients underwent LVRS. A unilateral approach was used in 59 (51%) patients, and the bilateral approach in 56 (49%). The bilateral LVRS group had more days with an air leak (5 vs 2, p=.037), more days with a chest tube (7 vs 4, p=.017), and a longer length of hospital stay (8 vs 5, p=<.001) compared to the unilateral group. Functionally, the bilateral LVRS group had a greater improvement in FEV1% (+13% vs +6%, p=.025) and RV% (-70% vs -33%, p= <.001) than the unilateral group. Seven patients of the unilateral group underwent sequential LVRS at a median of 1.1 years after the first surgery. Accumulated days of air leak (3 vs 5, p=.614), days with chest tube (10 vs 7, p=.087), length of stay (9 vs 8, p=.826), FEV1 (+16% vs +13%, p=1), RV (-73% vs -70%, p=.672), and 6MWT (+37.5 vs +36.3, p=.248) of the sequential group were comparable to the bilateral group.

CONCLUSIONS
Compared to unilateral LVRS, bilateral LVRS leads to greater functional improvement at the expense of more and longer air leaks. Staged LVRS is a reasonable alternative to single-stage, bilateral LVRS and may be preferable for high-risk emphysema patients.

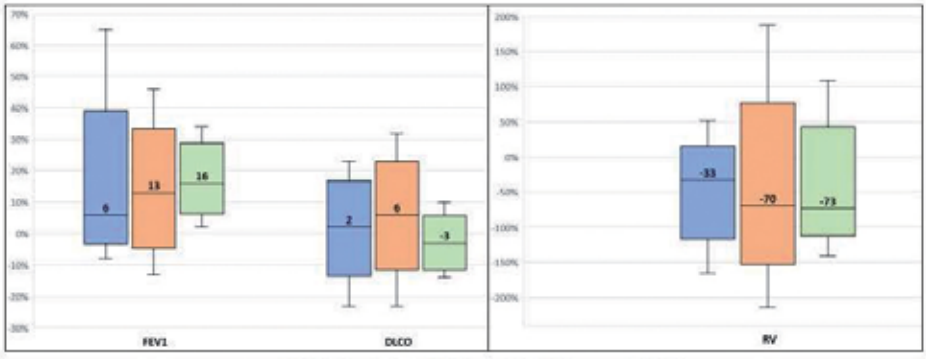
Disclosure: No significant relationships.
Keywords: Lung Volume Reduction Surgery, Emphysema, COPD, Pulmonary Function.

Table 1. Functional Outcomes of 115 LVRS.

PFTs	Pre LVRS		Post LVRS		Delta	Percent Change	N*	p-value
	Median	Mean	Median	Mean				
FEV1%	28 (22, 37.8)	30 ± 11	38 (29, 50.8)	41 ± 16.9	+10	+35.7%	98	**<0.001**
DLCO%	31.5 (25, 40.3)	32.9 ± 11.7	36 (28, 49)	37.9 ± 13.9	+4.5	+14.3%	76	**<0.001**
RV %	223 (199, 251.5)	226.9 ± 56.1	161 (139, 199.5)	171.1 ± 55.8	-62	-27.8%	79	**<0.001**
6MWT								
Distance (m)	311 (266, 347)	312 ± 77	339 (298, 387)	353 ± 150	+27.5	+8.8%	62	**0.007**
Oxygen use								
Yes (%)	91 (79%)		73 (63%)		-18	-20%	115	**0.013**
Liters of Oxygen used	2.3 (1.5, 3)	2.5 ± 1.1	1 (0, 2)	1.3 ± 1.3	-1.25	-56%	91**	**<0.001**

*Only patients with pre- and post-LVRS data were included in the analysis.
**Only patients that used supplemental oxygen before LVRS were included.

Figure 1. Change in Pulmonary Function Tests from Pre to Post LVRS by Group (Combined, Unilateral, Bilateral, and Sequential)



*Numbers represent the median

O-056

UPPER LUNG FIELD PULMONARY FIBROSIS AFTER LUNG CANCER SURGERY: AN UNRECOGNIZED LATE COMPLICATION

Hironori Ishibashi, Yuri Sumi, Michi Aoki, Shunichi Baba, Ayaka Asakawa, Ryo Wakejima, Kenichi Okubo
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OBJECTIVES
Plueroparenchymal fibroelastosis (PPFE) is a rare idiopathic interstitial pneumonia characterised by fibrosis of the alveoli, predominantly in the upper lobes of the lungs.
Unilateral upper lung field pulmonary fibrosis (UPF), such as PPFE, sometimes occurs after surgery for lung cancer on the operated side. However, the incidence and perioperative-associated factors remain unclear. The present study investigated the occurrence of postoperative UPF after surgery for primary lung cancer.

METHODS
All consecutive patients with completely resected lung cancer at Tokyo Medical and Dental University between July, 2010 and September, 2021 were analysed. Exclusion criteria were follow-up less than 12 months, exploratory open chest, pneumonectomy, and preoperative radiotherapy.

RESULTS
In total, 1,050 patients were analysed. The median follow-up period was 46 months (12 – 148 months), with 35 (3.3%) cases of postoperative UPF, and the median postoperative follow-up time until diagnosis of UPF was 28 months (1–91 months). Age ($p=0.0281$), right side ($p=0.0409$), lower lobectomy ($p<0.0001$), more than lobectomy ($p=0.0018$), mediastinal lymph node dissection ($p=0.0026$), open thoracotomy ($p=0.0004$), fibrin glue use ($p=0.0396$), and intraoperative pulmonary fistula ($p<0.0001$) were significantly higher in the UPF group. The incidence of postoperative pneumonia ($p=0.0002$), pleuritis ($p=0.0476$), and chest tube duration ($p<0.0001$) were higher in the UPF group. Lower lobectomy and chest tube duration were risk factors in the multivariate analysis. Among patients with UPF, 29 (3.5% of all lobectomies) underwent lobectomy, with 23 patients (11%) undergoing right middle-lower or lower lobectomy.

CONCLUSIONS
UPF is an occasional late complication after lung cancer surgery, and careful follow-up is required especially after right middle-lower or lower lobectomy or long chest tube drainage.

Disclosure: No significant relationships.
Keywords: Plueroparenchymal Fibroelastosis, Lung Cancer, Postoperative Complication.

O-057

PREDICTORS OF REOPERATION AFTER LUNG VOLUME REDUCTION SURGERY

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OBJECTIVES
Lung volume reduction surgery (LVRS) has proved effective in emphysema treatment, improving lung function, activity level and reducing dyspnea. However, postoperative air leak is an important risk factor for this fragile patient group.
Our aim was to analyze reoperations and identify potential predictors.

METHODS
Consecutive unilateral VATS LVRS performed from 2017-2022 at a single center were included. Typically, 3-5 minor resections were made using vascular magazines without buttressing.
Data were obtained from an institutional database and analyzed.
Multiple logistic regression was used to identify predictors for reoperation.
The perioperative variables were stratified in terms of indication, number of injuries in the lung and location of the injury.

RESULTS
In total 191 patients were included, 25 reoperated (13%). In 21 the indication for reoperating was substantial air leak. For 3 patients bleeding and 1 patient empyema. Length of stay (LOS) was 21 (11-33) vs. 5 days (3-11), median (range). Only 3 patients showed air leak in the stapler line, 11 patients had an air leak adjacent to the stapler line within < 2cm, 13 patients in another area of the lung. Some had several types (table 1).
Multivariate logistic regression analysis showed that low DLCO increases risk of reoperation by OR 1.1 (1.18-1.03, p=0.005). Resections in only one lobe, compared to resections in multiple lobes, was also a risk factor OR 3.10 (1.17-9.32, p=0.03). Patients undergoing reoperation had significantly increased 30 days mortality HR 5.52 (1.03-26.69, p=0.02).

CONCLUSIONS
Reoperation after LVRS was 13% with prolonged LOS and increased risk of 30d mortality. Low DLCO and resections in a single lobe were significant risk factors for reoperation. The air leak is usually not localized in the staplerline.

Disclosure: Research grant recieved from Medtronic
Keywords: Prolonged Air Leak (PAL), Risk Factors, Reoperation, Air Leak, Lung Volume Reduction Surgery (LVRS)

TABLE 1

Intraoperative findings from reoperation. Multivariate logistic regression of risk factors for re-operation, factors with p<0,1 in simple regression included. Surgical outcomes including 95% quantiles and odds ratios.

Surgical outcomes				
Indication for reoperation	Substantial airleak	21 (84%)		
	Bleeding	3 (12%)		
	Empyema	1 (4%)		
Number of lung injuries	0 injuries	5 (20%)		
	1 injuries	13 (52%)		
	2 injuries	4 (16%)		
	3 injuries	3 (12%)		
Location of injuries	In stapler line	3		
	<2cm from stapler line	11		
	other	13		
	In relation to pleural adhesions	2		
Pre- and peroperative characteristics	**Reoperated**	**Not operated**	**Odds ratio/ Hazard ratio**	**P-value**
Patients	25 (13%)	166 (87%)		
DLCO (% of predicted, mean, decreasing)	30 (27-32.2)	36.6 (30.2-42.4)	1.10 (1.179-1.033)	0.005
Resection only in one lobe	19 (76%)	90 (54%)	3.10 (1.170-9.322)	0.03
Upper lobe resected vs. Upper lobe NOT resected	18 (72%)	102 (61%)	1.61 (0.66-4.35)	0.31
Postoperative characteristics				
Days with chest tube	15.5 (9.0-23.25)	3 (2-9)	1.11 (1.07-1.17)	<0.001
LOS	21 (11-33)	5 (3-11.2)	1.05 (1.09-1.08)	<0.001
Prolonged airleak (>5days)	19 (76%)	58 (35%)	5.9 (2.35-16.94)	<0.001
Readmission rate	3 (16%)	22 (18%)	0.81 (0.19-2.28)	0.91
Postoperative pneumonia	4 (16%)	28 (17%)	0.94 (0.26-2.70)	0.91
Postoperative empyema	2 (8%)	3 (2%)	4.72 (0.60-30.00)	0.099
30 days mortality	3 (12%)	4 (2%)	5.52 (1.03-26.69)	0.02

O-058

SAFETY AND FEASIBILITY OF SAME DAY DISCHARGE AFTER PULMONARY WEDGE RESECTIONS: A PROSPECTIVE CONTROLLED CLINCAL TRIAL

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OBJECTIVES
To evaluate the safety and short-term outcomes after early post operative chest tube removal and eligibility for discharge after pulmonary wedge resection.

METHODS
Patients 18 and older who had normal preoperative pulmonary function tests, low thoracic revised cardiac risk index and completed an uncomplicated minimally invasive pulmonary wedge resection were prospectively enrolled from Feb 2, 2022 – Dec 20, 2022. Patients who met preestablished criteria had their chest tubes removed 4 hours after exiting the operating room. All patients were admitted overnight and discharged when cleared by the clinical care team. Descriptive and nonparametric statistical analyses were utilized to compare enrolled (intervention) and non-enrolled (control) screen eligible patients.

RESULTS
Thirty-seven patients were screened eligible and 25 were enrolled. The enrolled group had a mean age of 67.4 years, 56% male compared to 70.7 years and 33% male in the control group. The length of stay was similar between both groups with a median of 1d vs 2d favoring the intervention group. Nineteen patients (76%) were able to have their chest tube removed at 4 hours and none required readmission or reintervention. Of the 19 who had their chest tube removed, 18 met criteria for discharge on the same day. The proportion of patients using any opioids on the first post operative day was lower in the intervention group compared to the control group(24% vs 66%, $p<0.05$).

CONCLUSIONS
Same day chest tube removal and discharge after pulmonary wedge resections is safe and feasible with preestablished criteria. Even in patients who are required to be admitted, early chest tube removal leads to improved pain control and recovery.

Disclosure: Speaker fees from Merck
Keywords: VATS, ERAS, Outpatient Surgery, Sublobar Resection.

	Early Tube Removal Group	Standard Care Group
Baseline		
Age (y)	67.4	70.8
FEV1 (%)	90.5	93
DLCO (%)	94.7	87.6
Outcomes		
POD1-O (%)	24	67
MOR (mg)	4.1	5.7
LOS (days)	1.5	2.2

FEV1 – Percent predicted forced expiratory volume in 1 second. DLCO – Percent predicted diffusion capacity of carbon monoxide, POD1-O – Proportion of patients requiring any opioid on post operative day 1. MOR – mean morphine equivalents used on post operative day 1. LOS – hospital length of stay.

O-059

POST OPERATIVE DAY 1 (POD 1) DISCHARGE FOLLOWING THORACOSCOPIC ANATOMICAL LUNG RESECTION IN THE GROWING ERA OF SUBLOBAR RESECTION: A SINGLE CENTER ENHANCED RECOVERY AFTER SURGERY (ERAS) EXPERIENCE

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OBJECTIVES

The aim of this study was to assess safety and quality of recovery after postoperative day1 (POD 1) discharge following thoracoscopic anatomical lung resection in the growing era of anatomical sublobar resection (SLR), on the basis of an advanced Enhanced Recovery After Surgery (ERAS) program, including early drain removal protocol and patient home-transition support.

METHODS

A retrospective analysis of prospectively collected data was performed. Characteristics, outcome data and early patient home-transition survey were compared between patients discharged on POD 1 and those with longer stay, using a multivariate logistic regression model. The follow-up was 90 days from discharge.

RESULTS

From January 2020 to January 2022, 201 consecutive patients underwent thoracoscopic anatomical lung resection, including lobectomy (53%), simple sublobar resection (SLR) (15%) and complex SLR (32%). POD 1 discharge was achieved in 113 patients (56%) (49% after lobectomy, 59% after simple SLR and 68% after complex SLR). On multivariate analysis, complex SLR was associated with POD 1 discharge, whereas higher age, lower FEV1 (forced expiratory volume in 1 second) and longer duration of surgery were associated with longer hospital stay. Chest tube was removed on POD 0/1 in 63% of patients after lobectomy, 67% after simple SLR and 78% after complex SLR. 90-day mortality was 0.5% and in-hospital morbidity was higher after longer stay (30% vs 1%). There was no impact on 90-day readmission (POD 1: 7% and longer stay:14%). ERAS home transition survey 3 days after discharge reported higher patient satisfaction after POD 1 discharge compared to longer stay and similar pain score.

CONCLUSIONS

POD 1 discharge can be safely achieved after thoracoscopic anatomical lung resection and particularly after sublobar resection in appropriately selected patients without impact on morbidity and readmission, with high patient satisfaction, within an advanced ERAS program integrating proactive air leak management and patient home transition support.

Disclosure: No significant relationships.
Keywords: ERAS, VATS, Anatomical Lung Resection, Sublobar Resection, POD1 Discharge.

Variables	All patient (n=201)	Day 1 (n=113)	Day 2+ (n=88)	*P*-value
Sex, n (%)				
Female	79 (39)	47 (42)	32 (36)	0.47
Male	122 (61)	66 (58)	56 (64)	
Age (y), median (IQR)	66 (60-73)	65 (60-72)	69 (62-75)	0.01
BMI (kg/m²), mean ± SD	26 ± 4.7	26.2 ± 4.5	25.6 ± 4.9	0.69
BMI < 20	23 (11)	11 (10)	12 (14)	0.5
Cardiovascular comorbidities, n (%)				
High blood pressure	98 (49)	52 (46)	46 (52)	0.39
Coronary disease	19 (10)	7 (6)	12 (14)	0.1
Arrhythmia	14 (7)	7 (6)	7 (8)	0.78
Smoking status, n (%)				
Current smoker	38 (19)	19 (17)	19 (21)	0.48
Former smoker	121 (60)	65 (57)	56 (64)	0.38
Never smoker	42 (21)	29 (26)	13 (15)	0.08
ASA score, n (%)				
ASA 1–2	111 (55)	74 (65)	37 (42)	
ASA 3–4	90 (45)	39 (35)	51 (58)	0.001
Pulmonary Function Test				
FEV_1 (%), mean ± SD	85.6 ± 14.7	88.1 ± 13,7	81.9 ± 15.2	0.001
FEV_1 < 65%, n (%)	31 (15)	13 (11)	18 (20)	0.12
DLCO (%), mean ± SD	80.2 ± 14.2	81.4 ± 12.1	78.66 ± 16.2	0.32
DLCO < 65%, n (%)	39 (19)	17 (15)	22 (25)	0.1
Indication for resection, n (%)				
Primary lung cancer	157 (78)	85 (74)	72 (82)	0.3
Stage 1	116 (74)	68 (80)	48 (67)	0.47
Stage 2	25 (16)	11 (13)	14 (19)	0.2
Stage 3	14 (9)	6 (7)	8 (11)	0.4
Stage 4	2 (1)	0	2 (3)	0.19

Variables	All patient (n=201)	Day 1 (n=113)	Day 2+ (n=88)	*P*-value
Metastasis	24 (12)	17 (15)	7 (8)	0.18
Benign	20 (10)	11 (10)	9 (10)	1
Type of resection, n (%)				
Lobectomy	108 (53)	53 (47)	55 (61)	0.03
Segmentectomy	93 (47)	60 (53)	34 (39)	0.045
Simple segmentectomy	34 (17)	20 (18)	14 (17)	0.8
Complex segmentectomy	59 (30)	40 (35)	19 (22)	0.04
Peroperative data				
Duration of surgery (min), mean ± SD	122 ± 38	114 ± 33	132 ± 42	0.002
Conversion to thoracotomy	1	0	1	0.44
Complex resection	18 (9)	3 (3)	15 (17)	0.13
Prior lung resection	14 (7)	5 (4)	9 (10)	0.16

Variables, n (%)	All patient (n=201)	Day 1 (n=113)	Day 2+ (n=88)	*P*-value
Perioperative complication	**27 (12)**	**1 (1)**	**26 (30)**	**<0.001**
Clavien-Dindo 1-2	20	1	19	
Prolonged Air Leak	13	0	13	
Pneumoniae	2	0	2	
Pleural effusion	1	0	1	
Chylothorax	1	0	1	
Pneumothorax	1	0	1	
Arrhythmia	1	0	1	
Recurent Palsy	1	1	0	
Clavien-Dindo 3-4	7	0	7	
Hemothorax	2	0	2	
Pyothorax	1	0	1	
Pneumoniae	1	0	1	
Bronchospasma	1	0	1	
Pulmonary embolism	1	0	1	
Lingular torsion	1	0	1	
ICU required	6	0	6	
Reoperation	4	0	4	
90 days readmission	**20 (10)**	**8 (7)**	**12 (14)**	**0.13**
Early (0-30 d) readmission	10 (5)	5 (4)	5 (6)	0.51
Clavien-Dindo 1-2	8	4	4	
Early pneumoniae	4	2	2	
Chylothorax	2	1	1	
Pneumothorax	1	1	0	
Arrhythmia	1	0	1	
Gastrointestinal symptoms	1	1	0	
Clavien-Dindo 3-5	1	0	1	
Early pneumoniae	1	0	1	

Variables, n (%)	All patient (n=201)	Day 1 (n=113)	Day 2+ (n=88)	*P*-value
Delayed (30 - 90 d) readmission	10 (5)	3 (3)	7 (8)	0.10
Clavien-Dindo 1-2	10	3	7	
Delayed Pleural effusion	5	2	3	
Delayed pneumoniae	3	0	3	
Deep vein thrombosis	1	1	0	
Arrhythmia	1	0	1	
DAOH 30, days, median (IQR)	29 (27-29)	29 (28-29)	27 (24-28)	
DAOH 90, days, median (IQR)	89 (87-89)	89 (88-89)	87 (83-88)	
30 days mortality	1	0	1	
90 days mortality	1	0	1	

Variables	odds ratio [95% CI]	*P*-value
Age, *per 1 year increase*	0.955 [0.922;0.99]	0.01
Non Smoker	0.956 [0.394;2.32]	0.92
ASA 3/4	0.648 [0.316;1.33]	0.23
FEV_1, *per 1% increase*	1.03 [1.0;1.05]	0.048
Type of resection		
Lobectomy (Ref)		
Simple segmentectomy	0.858 [0.367;2.01]	0.72
Complex segmentectomy	3.36 [1.56;7.27]	0.002
Duration of surgery, *per 1 mn increase*	0.985 [0.975;0.994]	0.001

Variables	All patient (n=197)	Day 1 (n=113)	Day 2+ (n=84)	*P*-value
ERAS Teleconsultation timing, POD, median (IQR)	4 (3-5)	3 (3-4)	5 (4-7)	
Home transition experience (Likert scale), n (%)				
Excellent	58 (29)	40 (35)	18 (21)	0.04
Good	126 (64)	69 (61)	57 (68)	0.37
Fair	13 (7)	4 (4)	9 (11)	0.015
Poor	0	0	0	
Very poor	0	0	0	
Home transition pain, n (%)				
None (0)	61 (31)	37 (33)	24 (29)	0.44
Mild (1-3)	126 (64)	71 (63)	55 (65)	0.76
Moderate (4-6)	10 (5)	5 (4)	5 (6)	0.75
Severe (7-10)	0	0	0	
Home transition minor symptoms, n *	111	71	40	
Sleeping disturbance	23	19	4	
Cough and Clear sputum	14	10	4	
Anxiety	11	5	6	
Fatigue	8	4	4	
Nausea	8	4	4	
Appetite loss	7	2	5	
Wound delayed healing	7	3	4	
Shortness of breath	6	5	1	
Dry Cough	4	2	2	
Fever ≤ 38°	4	3	1	
Medics side effects	4	4	0	
Breakdown	3	2	1	
Gastro-intestinal trouble	2	0	2	
Urinary infection	1	0	1	
Subcutaneous emphysema	1	1	0	
150 < CRP < 250 mg/l	8	7	1	

Variables	All patient (n=197)	Day 1 (n=113)	Day 2+ (n=84)	*P*-value
Home transition major symptoms	8	4	4	
Fever ≥ 38.5°	1	0	1	
Tachypnea > 20 bpm	1	0	1	
Tachycardia > 120 bpm	0	0	0	
Dirty sputum	2	1	1	
Severe pain	0	0	0	
CRP > 250 mg/l	4	3	1	
Additional consultation (first week after discharge)	50	34	16	
ERAS nurse second teleconsultation (nurse call)	23	20	3	
ERAS nurse second teleconsultation (patient call)	17	9	8	
Outpatient clinic (surgeon)	3	2	1	
General practitioner	7	3	4	

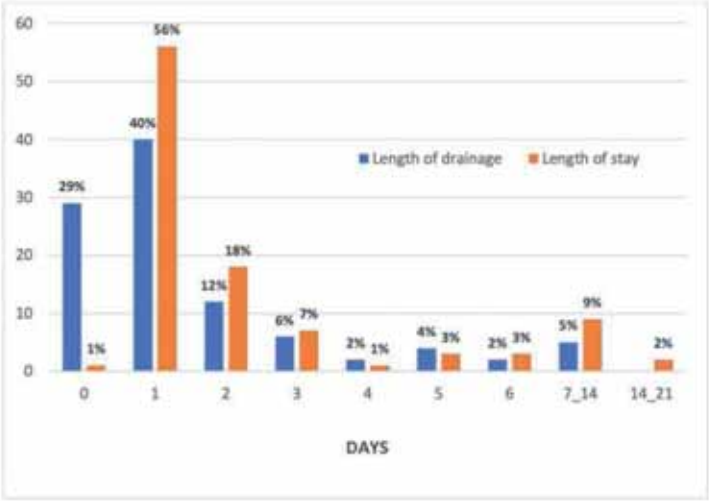

Fig 2: correlation between length of drainage and length of stay

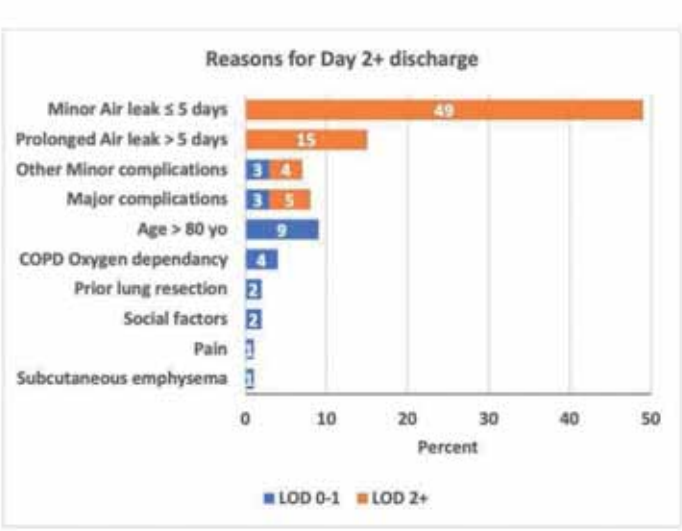

Fig 3 : Reasons for length of stay greater than 1 day, relatively to length of drainage (LOD)

O-060

CAN FUNCTIONAL DETERMINANTS BE TAKEN AS SURROGATES FOR POST RESECTION QUALITY OF LIFE IN POST TUBERCULOSIS SEQUELAE PATIENTS?

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National institute of Tuberculosis and Respiratory Diseases, New Delhi, India

OBJECTIVES

Background: Various studies for lung cancer have shown an unspoken leap of logic that decreased functional determinants can translate to impaired Quality of Life (QoL), however very little is known about the patients undergoing lung resection for Post TB sequelae. The aforementioned assumption would be acceptable only in case QoL scales had a high correlation with traditional functional determinants.
Objective: To assess correlation of postoperative QoL measures with functional determinants (FEV1 & 6MWT) at 1 and 6 months follow up.

METHODS

A prospective observational study on 52 consecutive patients assessed by means of the SF-36 Health Survey. The significance of changes over time, preoperative and postoperative (1 and 6 months) for SF-36 scales, 6MWT or FEV1 were compared by means of repeated measures analyses of variances with adjusted (Games-Howell post-hoc test) pairwise comparisons. Spearman's correlation coefficient was used to see the correlation between two quantitative parameters.

RESULTS

At 1 month postoperatively, a moderate positive correlation was observed between FEV1 change with bodily pain score change ($r = 0.41$; $p < 0.002$). No correlation between the 6MWT change and any SF36 domain change. At 6 months postoperatively, the subtle recovery of FEV1 was not statistically significant to correlate with improved Physical Composite Scale (PCS) ($r = 0.189$; $p = 0.179$)/ Mental Composite Scale (MCS) ($r = -0.20$; $p = 0.153$) change. A weak positive correlation between 6MWT change with PCS change ($r = 0.37$; $p = 0.006$) whereas, a weak negative correlation with MCS change ($r = -0.28$; $p = 0.04$) was noted.

CONCLUSIONS

Discrepancies may exist between patients' perception about their residual physical and emotional status and objective functional measures. Thus, pulmonary function tests and exercise tests cannot be taken into account for postoperative QoL measures in post TB sequelae patients. An ad-hoc tool should always be used for QoL evaluation.

Disclosure: No significant relationships.
Keywords: Functional Determinants, Quality Of Life, FEV1, 6MWT, Post Tuberculosis Sequelae.

SF-36 Domains_1m		6MWT change 1 months	FEV1 change 1 months
PF change_1m	r value	-.085	-.101
	p value	.001	.470
RP change_1m	r value	.143	.152
	p value	.259	.203
GH change_1m	r value	.029	.045
	p value	.836	.751
BP change_1m	r value	.195	.419
	p value	.165	.002
RE change_1m	r value	.025	-.011
	p value	.868	.937
VT (Energy/Fatigue) change_1m	r value	-.042	-.022
	p value	.707	.878
MH change_1m	r value	-.027	-.094
	p value	.849	.491
SF change_1m	r value	-.014	.096
	p value	.924	.498
Health change_1m	r value	.100	.265
	p value	.281	.057

SF-36 Domains_6m		6MWT change at 6 months	FEV1 change at 6 months
PF change_6m	r value	-.220	.032
	p value	.118	.820
RP change_6m	r value	-.291	-.049
	p value	.036	.729
GH change_6m	r value	-.294	-.076
	p value	.034	.595
BP change_6m	r value	.097	.182
	p value	.492	.029
RE change_6m	r value	-.273	-.092
	p value	.050	.517
VT (Energy/Fatigue) change_6m	r value	-.278	-.148
	p value	.047	.295
MH change_6m	r value	-.340	-.139
	p value	.014	.329
SF change_6m	r value	-.241	-.022
	p value	.085	.877
Health change_6m	r value	-.233	-.068
	p value	.130	.630
PCS_change 6m	r value	.274	.189
	p value	.046	.179
MCS_changr6m	r value	-.289	-.201
	p value	.040	.155

O-061

COMPARATIVE STUDY BETWEEN BEDSIDE CHEST ULTRASOUND AND CHEST X-RAY IN THE DIAGNOSIS OF TRAUMATIC PNEUMOTHORAX: SINGLE TRAUMA CENTER EXPERIENCE

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OBJECTIVES
The objective of this study was to compare sensitivity and specificity between bedside CUS performed by thoracic surgeons and chest X-ray in the diagnosis of traumatic pneumothorax.

METHODS
This is a prospective clinical study that included 1446 patients who have been admitted to the ED of the General Hospital of Athens, KAT from January 2019 till January 2022. The inclusion criteria were any patient with either blunt or penetrating chest trauma who have been diagnosed with traumatic pneumothorax with CT chest, chest X-ray and chest US. Patients with subcutaneous emphysema, those already managed with intercostal drainage and patients who were not stable in order to undergo all the radiology exams were excluded from the study. Chest US was performed by thoracic surgeons. Chest X-Rays were supine or erect depending on patients' condition.

RESULTS
1446 patients were proved positive for pneumothorax. 821 patients out of the 1446 were eligible for this study. 812 patients were diagnosed by CT while 763 out of those 821 were prior diagnosed by bedside chest US. The sensitivity of chest US, in the present study is 93% for detection of traumatic pneumothorax. No false-positive cases were diagnosed resulting in a specificity of 100%. On the other side, chest X-ray only revealed 517 out of the 821 pneumothoraxes and included 4 false-positive. In the present study, X-ray has a sensitivity of 63% and specificity of 99% for the diagnosis of traumatic pneumothorax.

CONCLUSIONS
The present study shows that the diagnostic sensitivity and specificity of CUS is significantly higher than chest X-Ray for detection of traumatic pneumothorax.

Disclosure: No significant relationships.

O-062

DOES TAPSE/SPAP RATIO PREDICT EARLY OUTCOME FOLLOWING PULMONARY ENDARTERECTOMY?

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OBJECTIVES

Pulmonary endarterectomy (PEA) is the gold standard therapy for chronic thromboembolic pulmonary hypertension (CTEPH). High risk patients are identified mainly by hemodynamic studies. Tricuspid annular plane systolic excursion/systolic pulmonary artery pressure (TAPSE/sPAP) ratio as a noninvasive approach has been proposed for the assessment of right ventricular in Pulmonary Arterial Hypertension patients by the current European Society of Cardiology/European Respiratory Society guidelines, but it has never been applied in CTEPH patients. The aim of the present study is to describe TAPSE/sPAP in patients who underwent PEA, and to define its predictive impact on early postoperative outcomes.

METHODS

We retrospectively reviewed 292 consecutive adult patients who underwent PEA, between 2018 - 2022. Patients were partitioned in three groups using median preoperative TAPSE/sPAP as cutoff value: Group 1 with TAPSE/sPAP > 0.32 i.e. low risk (n = 132) and Group 2 with TAPSE/sPAP between 0.19-0.32 i.e. medium risk (n = 95), and Group 3 with TAPSE/sPAP < 0.19 i.e. high risk (n = 65). Early outcomes were compared between three groups.

RESULTS

The median age was 52.2 years, and the majority of the patients were male (54.9%).
Overall mortality rate was 5.8 % (n=17). Although, no significant difference was observed between the groups, mortality was higher in medium- and high-risk patients. Improvement in early postoperative pulmonary vascular resistance was non-significantly higher in Group 2 and 3. The decrease in postoperative mean PAP values was significantly higher in Group 3 (p=0.007).

CONCLUSIONS

Preoperative TAPSE/sPAP ratio in the CTEPH population may be used as prognostic factor to predict early outcome following pulmonary endarterectomy. Medium and high-risk patients seem to be associated with lower postoperative survival. On the other hand, because of more decrease in mean PAP was observed in high-risk patients, pulmonary endarterectomy should not be abandoned for this group of patients.

Disclosure: No significant relationships.
Keywords: Chronic Thromboembolic Pulmonary Hypertension, Pulmonary Endarterectomy, Mortality.

TUESDAY 6 JUNE 2023
MEDIASTINUM SESSION XII
10:30 - 11:30

O-063

IMPACT OF POSITIVE NODAL METASTASES IN PATIENTS WITH THYMIC MALIGNANCIES: A PROPENSITY-MATCHED STUDY BASED ON THE SEER DATABASE

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OBJECTIVES
Thymic malignancies are the most common anterior mediastinal tumors in adults, accounting for about 50% of mediastinal tumors. Limited information was available on nodal dissection during the tumor resection. In addition, the prognostic significance of lymph node metastasis on cancer-specific survival (CSS) is unclear. This study aimed to identify the prognostic relevance of lymph node metastasis in patients with thymic carcinoma and thymoma.

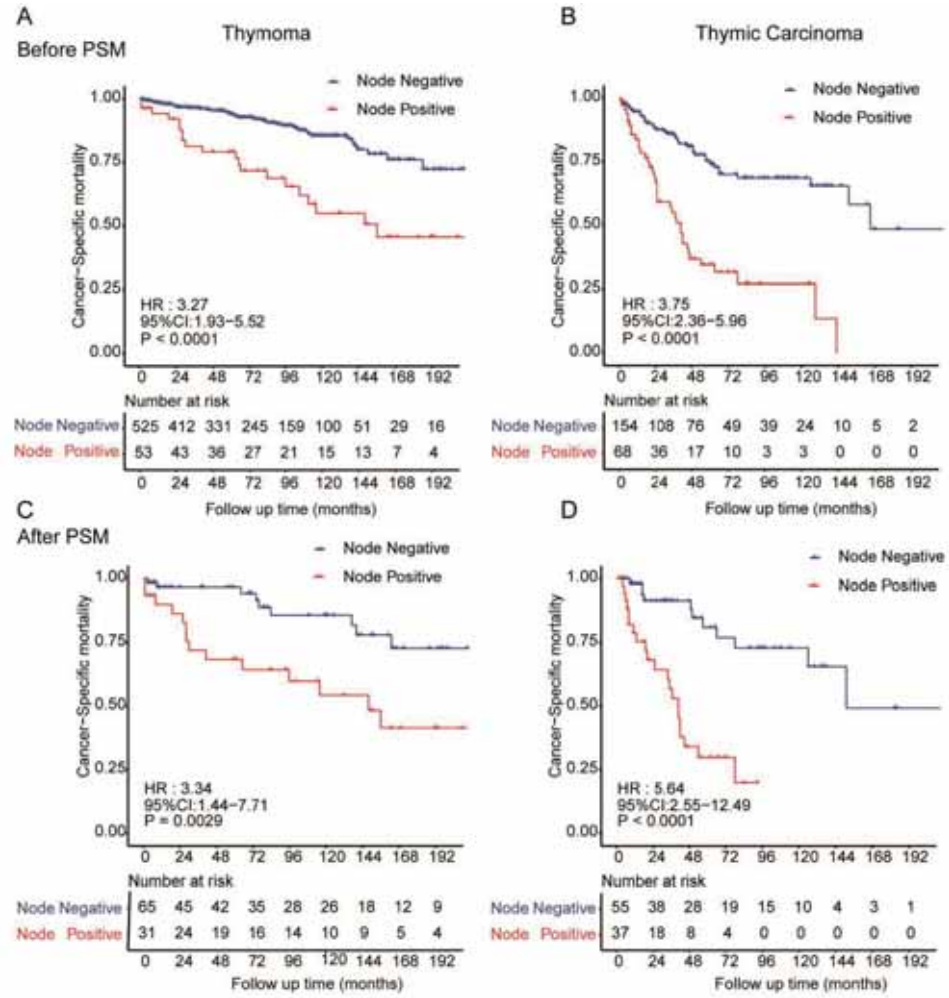
METHODS
From 1998 to 2016, 1132 patients were collected with pathologically confirmed thymic carcinoma or thymoma from the Surveillance Epidemiology and End Results (SEER) database, among which 800 had complete CSS data. The propensity-score matching (PSM) analysis was utilized to balance baseline characteristics between the lymph node-positive patients and those who were lymph node-negative. Furthermore, the impact of nodal status on cancer-specific survival was analyzed by Kaplan Meier curves and Cox proportional-hazards regression.

RESULTS
The study included 578 thymoma and 222 thymic carcinoma patients. Both 53 (9.2%) patients in thymoma and 68 (30.6%) in thymic carcinoma had at least one lymph node-positive. Before the propensity-score matching (PSM), the median of cancer-specific survival (CSS) was not reached vs. 156 months in the lymph node-negative vs. positive group ($P < 0.0001$) in thymoma. Similar results were observed in the thymic carcinoma (the median of CSS was 165 vs. 41 months in the negative vs. positive group, $P < 0.0001$). After PSM, the presence of nodal metastases still indicated worse CSS in both thymoma [hazard ratio (HR) 3.44, 95% confidence interval (CI) 1.44–7.71, $P=0.0029$] and thymic carcinoma. [HR 5.64, 95% CI: 2.55–12.49, $P<0.0001$].

CONCLUSIONS

Lymph node-positive was closely associated with decreased cancer-specific survival in patients with thymic carcinoma and thymoma. Our analysis indicated the importance of nodal sampling during the surgery and more favorable treatment for patients with positive lymph nodes.

Disclosure: No significant relationships.
Keywords: Thymic Malignancies, Thymic Carcinoma, Thymoma, Lymph Node Metastases, SEER Registry.



O-064

THYMOMA METABOLIC SIGNATURES: DISCOVERY OF POTENTIAL BIOMARKERS AND TREATMENT TARGETS

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OBJECTIVES

Study of tumor metabolic reprogramming has revealed disease biomarkers and avenues for therapeutic intervention. Metabolic reprogramming in thymoma is currently understudied and largely unknown. Our laboratory developed a unique in vivo means of harvesting malignant tissue after surgical resection and performing high-throughput metabolomic analysis and glucose stable-isotope tracing to metabolically investigate thymomas, adjacent thymic tissue, and benign thymic lesions. We hypothesized that thymomas are metabolically distinct from normal thymus tissue and that this distinction could be utilized to differentiate thymomas from benign thymic tissue.

METHODS

From 2017 to 2021, 20 patients with a suspected thymoma were recruited to this prospective IRB-approved clinical trial. At the time of surgery, 11 patients were infused with 13C-glucose, a stable, non-radioactive tracer which labels the flow of carbon through metabolic pathways. Samples were analyzed by mass spectrometry to measure the abundance of >200 metabolites. 13C enrichment was measured in patients who received 13C-glucose infusions.

RESULTS

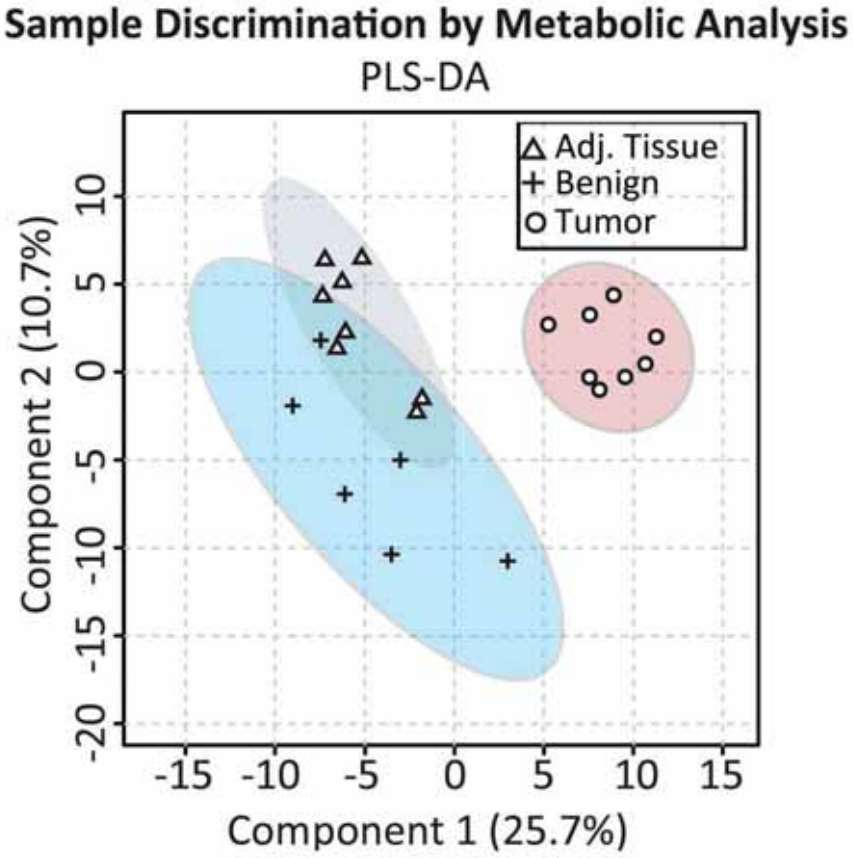
Histological analysis showed that 9 patients had thymomas of diverse subtypes and 11 patients had benign cysts. In our metabolomic analysis, thymomas could be distinguished from both adjacent thymus tissue and benign lesions by metabolite abundances (Figure 1). Key metabolites in pyrimidine biosynthesis and glycerophospholipid metabolism were differentially expressed across these tissues. 13C-glucose infusions revealed differential labeling patterns in thymoma compared to benign cysts and normal thymus tissue. The lactate/3PG labeling ratio, a metabolic marker in aggressive lung tumors correlated with lactate uptake, was increased in thymomas (1.579) compared to normal thymus (0.945) and benign masses (0.807) ($p < 0.05$).

CONCLUSIONS

We report metabolic biomarkers, including differential 13C labeling of metabolites from central metabolism, that distinguish thymomas from benign tissues and suggest increased lactate uptake in thymomas. Altered glucose and lactate metabolism warrant further investigation and may provide novel therapeutic targets for thymoma.

Disclosure: No significant relationships.

Keywords: Thymoma, Metabolism, Metabolomics, Cancer, Lactate.



O-065

ROBOTIC THYMECTOMY IN THYMOMA: A MULTICENTER NATION-WIDE STUDY

Marco Schiavon[1], Giovanni Maria Comacchio[1], Carmelina Cristina Zirafa[2], Angela De Palma[3], Roberto Scaramuzzi[4], Elisa Meacci[5], Stefano Bongiolatti[6], Nicola Monaci[7], Paraskevas Lyberis[8], Edoardo Bottoni[9], Jury Brandolini[10], Sara Parini[11], Sara Ricciardi[12], Antonio D'Andrilli[13], Pierluigi Novellis[14], Erino Angelo Rendina[13], Giuseppe Cardillo[12], Ottavio Rena[11], Piergiorgio Solli[10], Marco Alloisio[9], Enrico Ruffini[8], Luca Luzzi[7], Francesco Facciolo[15], Luca Voltolini[6], Stefano Margaritora[5], Carlo Curcio[4], Giulia Veronesi[14], Giuseppe Marulli[3], Franca Melfi[2], Federico Rea[1]

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OBJECTIVES

Robotic thymectomy is considered one of standard approaches for benign thymic diseases. In recent years, this minimally invasive access has been suggested and considered technically feasible also for thymic epithelial tumors (TETs). However, because of small-sample series and the lack of data on long-term results, controversies still exist on surgical and oncological results with this approach. We performed a large national multicenter study sought to evaluate the early and long-term outcomes after robot-assisted thoracoscopic thymectomy in TETs.

METHODS

Data were retrospectively collected from 15 Italian centers. Between 2002 and 2022, 655 patients (298 men and 365 women) with TETs were operated by left-sided (80%), right-sided (18%), subxiphoid (1%) or bilateral (1%) robotic thoracoscopic approach. Three hundred and six patients (47%) had associated myasthenia gravis.

RESULTS

Complete thymectomy was performed in 98% of cases and in 54 patients (8.2%) resection of other structures was needed, with a R0 resection in all but 5 patients (99%). Twenty-three patients (3.5%) needed open conversion, but no perioperative mortality occurred. Forty-nine patients (7.5%) had postoperative complications. Median diameter of tumor resected was 4 cm (IQR 3-5.5 cm), and Masaoka stage was stage I in 40% of patients, stage II in 55%, stage III in 3.5% and stage IV in 1.5%. Thymoma (WHO classification A-B3) was observed in 97.7% of patients while thymic carcinoma occurred in 2.3% of cases. At the end of the follow-up, 25 patients were dead (3.8%) but only 2 for tumor-related causes. Five and ten-year recurrence rate were 7.5% and 8.3%, respectively.

CONCLUSIONS

We reported the largest collection of robotic thymectomy for thymic tumors. Our data indicate that robot-enhanced thoracoscopic thymectomy is a technically sound and safe procedure with a low complication rate and optimal long-term oncological outcomes.

Disclosure: No significant relationships.
Keywords: Thymoma, Thymic Tumors, Robotic Surgery.

O-066

NEOADJUVANT CONCURRENT CHEMORADIOTHERAPY FOR LOCALLY ADVANCED HIGH-GRADE THYMIC TUMORS: A SINGLE-ARM PHASE II CLINICAL TRIAL

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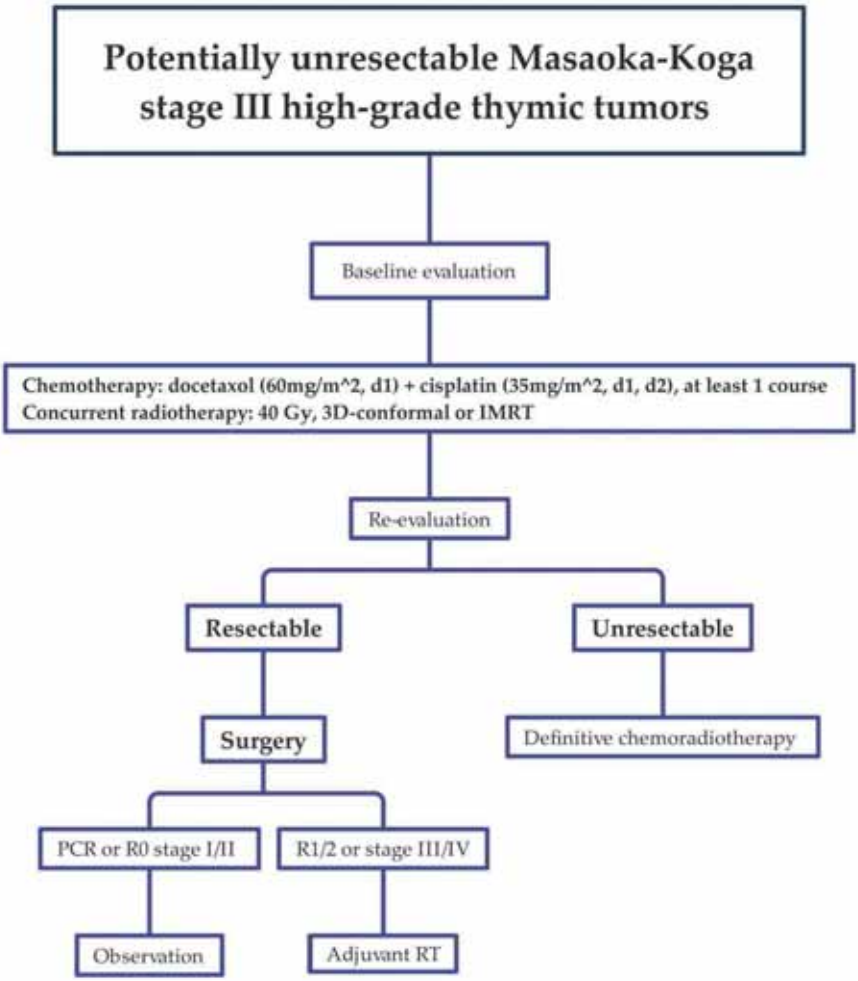
OBJECTIVES
The optimal neoadjuvant therapy regimen for locally advanced thymic tumors is not yet established. Here we conducted a single arm, phase II clinical trial to investigate the safety and efficacy of neoadjuvant concurrent chemoradiotherapy in patients with locally advanced potentially unresectable high grade thymic tumors.

METHODS
The trial was conducted at the Shanghai Chest Hospital in patients with potentially unresectable high-grade thymic tumors. Induction consisted of chemotherapy (docetaxel and cisplatin) and concurrent radiation (40Gy). The primary endpoint was objective response rate (ORR).

RESULTS
A total of 33 patients were accrued, including 11 with thymomas and 22 with carcinomas. ORR was 48.5%, with 16 patients having partial response (PR). The other 17 had stable disease (SD). Thymomas had higher ORR (63.6%) than carcinomas (40.9%, P=0.282). Overall, 13 (39.4%) patients experienced grade 3-4 toxicity. Surgical resection was then conducted in 23 patients (69.7%), among which 19 (82.6%) had complete resection and 4 (17.4%) had pathological complete response. Five-year overall survival and progression free survival (PFS) for the whole group were 63.5% and 44.9%, respectively. Thymoma patients had better PFS than carcinoma patients (P=0.012). Furthermore, 5-year PFS was higher in patients with surgery than in those without (55.9% vs. 20%, P=0.045). Landmark analysis revealed that PFS after 12 months of follow-up was significantly better in patients receiving surgery after PR (P=0.024) than those with SD or without surgery.

CONCLUSIONS
Neoadjuvant concurrent chemoradiotherapy is tolerable and effective for patients with locally advanced potentially unresectable high-grade thymic tumors, especially those with thymomas. Patients could still benefit from surgery after induction in achieving better disease-control, especially those responding to chemoradiation.

Disclosure: No significant relationships.
Keywords: Thymic Tumor, Neoadjuvant, Concurrent Chemoradiotherapy.


Potentially unresectable Masaoka-Koga stage III high-grade thymic tumors
Baseline evaluation
Chemotherapy: docetaxol (60mg/m^2, d1) + cisplatin (35mg/m^2, d1, d2), at least 1 course
Concurrent radiotherapy: 40 Gy, 3D-conformal or IMRT
Re-evaluation
Resectable
Unresectable
Surgery
Definitive chemoradiotherapy
PCR or R0 stage I/II
R1/2 or stage III/IV
Observation
Adjuvant RT

O-067

CYFRA 21-1 IS A POTENTIAL TUMOR MARKER WITH DIAGNOSTIC AND PROGNOSTIC VALUE FOR THYMIC EPITHELIAL TUMORS

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Shanghai Chest Hospital, Shanghai, China

OBJECTIVES

There has been little information for specific serum biomarkers for thymic epithelial tumors (TETs) yet. The study aimed to explore the diagnostic and prognostic value of potentially relevant serum tumor markers in TETs.

METHODS

We retrospectively analyzed the database of our own with the aim of reviewing the clinical records of 301 patients with TETs after thymectomy, in the period between November 2012 and December 2017. Logistic regression analysis was used to evaluate relationships between tumor markers and tumor characteristics. Cox regression analysis and Kaplan Meier analysis were used to evaluate free-from-recurrence (FFR) in complete resected (R0) patients. Thymoma was categorized as low grade and thymic carcinomas and neuroendocrine thymic tumors were both high grade histology.

RESULTS

There were 231 (76.7%) low grade patients and 70 (23.3%) high grade. Carcinoembryonic antigen (CEA), cytokeratin 19 fragment (CYFRA 21-1), squamous cell carcinoma (SCC) antigen, neuron-specifific enolase (NSE), and cancer antigen 125 (CA125) levels were evaluated. In multivariable logistic regression analysis, elevated CYFRA 21-1 level was associated with higher T stage (≥T2) (OR: 3.259, 95%CI: 1.250-8.496, p=0.016) and high grade histology (OR: 6.260, 95%CI: 2.491-15.736, p<0.001). Elevated CA125 level was associated with pelural effusion (OR: 20.173, 95%CI: 7.023-57.946, p<0.001). In 222 patients who received R0 resection with upfront surgery, elevated CYFRA 21-1 level , higher T stage (≥T2), lymph node involvement (N1-N2) and high grade histology were associated with a worse FFR in Cox regression analysis. There were significant differences in 5-year FFR between an elevated CYFRA 21-1 level and a normal level (54.7% vs. 92.5%, p<0.001). No clinical correlation to tumor characteristics was found in CEA, SCC or NSE.

CONCLUSIONS

Cyfra 21-1 is a potential tumor marker with diagnostic and prognostic value for thymic tumors. Additional attention should be paid to treatment strategy making and postoperative follow-up for patients with elevated CYFRA 21-1 levels.

Disclosure: No significant relationships.
Keywords: CYFRA 21-1, Tumor Markers, Thymic Tumors, Diagnosis, Recurrence.

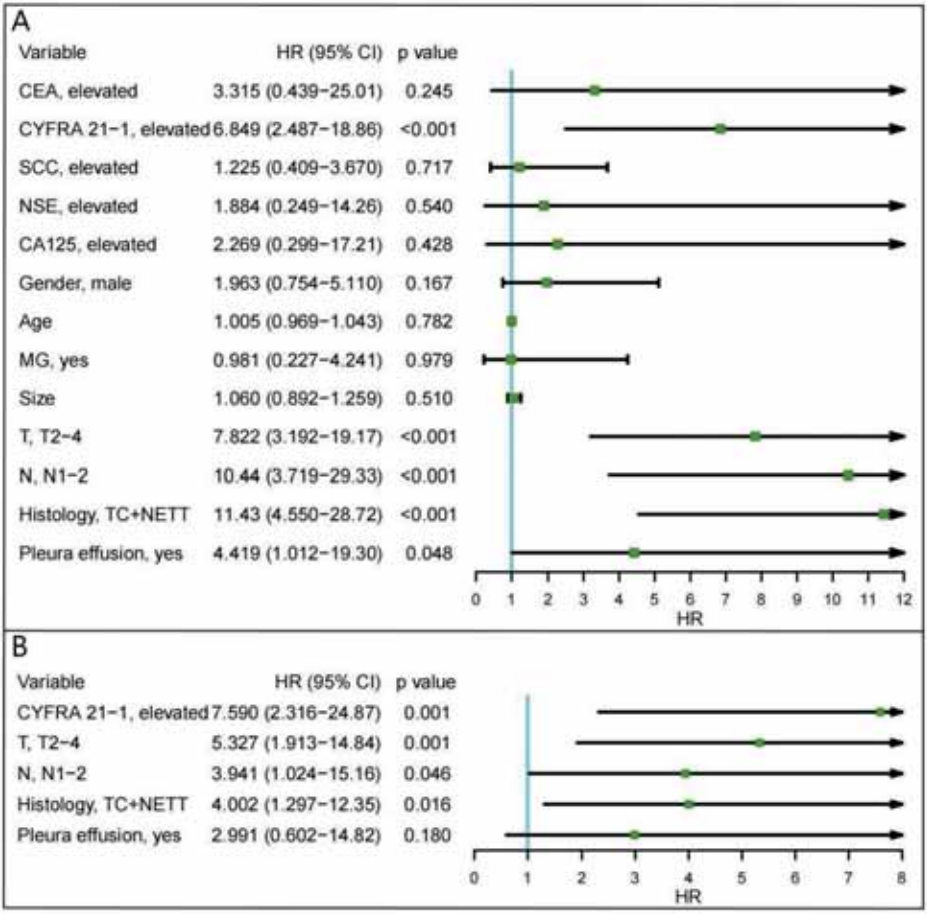
Table 1: Clinical and tumor characteristics of 301 patients enrolled.

Characteristics	
Gender, male	167 (55.4%)
Age, year, median (range)	53 (18-84)
Myasthenia gravis, yes	38 (12.6%)
Complete resection (R0), yes	239 (79.4%)
Inductive therapy, yes	52 (17.2%)
Adjuvant therapy, yes	102 (33.8%)
Surgical approach, MIT	203 (67.4%)
pTNM	
I	184 (61.1%)
II	16 (5.3%)
III	45 (14.9%)
IV	56 (18.6%)
pT	
1	194 (64.4%)
2	20 (6.6%)
3	62 (20.5%)
4	25 (8.3%)
pN	
0	274 (91.0%)
1+2	27 (9.0%)
pM	
0	265 (88.0%)
1a	36 (12.0%)

Table 1: clinical and tumor characteristics of 301 patients enrolled (continuation).

Histology	
A	16 (5.3%)
AB	81 (26.9%)
B1	38 (12.6%)
B2	61 (20.2%)
B3	35 (11.6%)
CA	58 (19.2%)
NETT	12 (3.9%)
Tumor size, cm, median (range)	6.0 (1.6-17.0)
Overall Death	33 (11.0%)
Recurrence/metastasis (in 222 R0 upfront surgery cases)	20 (9.0%)
Follow-up, month, median (range)	60 (2-119)
Elevated CEA, yes	6 (1.9%)
Elevated Cyfra 21-1, yes	39 (12.9%)
Elevated SCC, yes	60 (19.9%)
Elevated NSE, yes	17 (5.6%)
Elevated CA125, yes	28 (9.3%)
Pleural effusion, yes	29 (9.6%)

Ta


A
Variable
HR (95% CI)
p value
CEA, elevated
3.315 (0.439–25.01)
0.245
CYFRA 21–1, elevated
6.849 (2.487–18.86)
<0.001
SCC, elevated
1.225 (0.409–3.670)
0.717
NSE, elevated
1.884 (0.249–14.26)
0.540
CA125, elevated
2.269 (0.299–17.21)
0.428
Gender, male
1.963 (0.754–5.110)
0.167
Age
1.005 (0.969–1.043)
0.782
MG, yes
0.981 (0.227–4.241)
0.979
Size
1.060 (0.892–1.259)
0.510
T, T2–4
7.822 (3.192–19.17)
<0.001
N, N1–2
10.44 (3.719–29.33)
<0.001
Histology, TC+NETT
11.43 (4.550–28.72)
<0.001
Pleura effusion, yes
4.419 (1.012–19.30)
0.048
0 1 2 3 4 5 6 7 8 9 10 11 12
HR
B
Variable
HR (95% CI)
p value
CYFRA 21–1, elevated
7.590 (2.316–24.87)
0.001
T, T2–4
5.327 (1.913–14.84)
0.001
N, N1–2
3.941 (1.024–15.16)
0.046
Histology, TC+NETT
4.002 (1.297–12.35)
0.016
Pleura effusion, yes
2.991 (0.602–14.82)
0.180
0 1 2 3 4 5 6 7 8
HR

TUESDAY 6 JUNE 2023
CHEST WALL / DIAPHRAGM / PLEURA SESSION XIII
13:00 - 14:00

O-068

INCIDENCE OF AND RISK FACTORS FOR DEVELOPING PSEUDOHERNIAS FOLLOWING ANATOMICAL LUNG RESECTIONS USING ROBOTIC VIDEO-ASSISTED THORACOSCOPIC SURGERY

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OBJECTIVES
Robotic video-assisted thoracoscopic surgery (R-VATS) is a common method of anatomical lung resection. Trocars inserted into the intercostal space can compress and damage intercostal nerves causing a commonly reported phenomenon of neuropathic pain after surgery. A scarcely reported outcome is the development of pseudohernias, a bulging of the abdominal wall due to intercostal nerve damage, following R-VATS procedures. This is the first cohort-level study investigating the incidence of pseudohernias after R-VATS.

METHODS
A retrospective cohort analysis of 134 patients receiving R-VATS for anatomical lung resection from January 2017 to October 2021 was performed. The primary outcome reported was the development of pseudohernias. Secondary outcomes included various risk factors, readmission rates, and overall pain scores during follow-up visits comparing those who did and did not develop pseudohernias.

RESULTS
The overall incidence of pseudohernia development following R-VATS procedures was 8.2%. Readmission within 30 days of operation was higher in patients with pseudohernias ($p = 0.01$). Group (pseudohernia versus non-pseudohernia) by time (0-6 months post-operation, 7-12 months post-operation) repeated measures ANOVA showed pain scores from 0-6 months post-operation were higher in patients who developed pseudohernias ($p = 0.04$). Patients receiving bupivacaine for pain management were more likely to develop pseudohernias ($p = 0.03$). Use of intercoastal nerve cryoablation for pain management showed a small association with pseudohernia development, ($p = 0.07$, Cohen's $d = 0.28$). Patients who developed pseudohernias were younger than those who did not ($p = 0.02$).

CONCLUSIONS
This is the first study to identify the incidence of pseudohernia development following R-VATS procedures. The incidence level found was higher than previous case reports suggested; therefore, this complication should be included in preoperative discussions with patients. Better

understanding both the incidence and risk factors for the development of pseudohernias may inform surgical practices to potentially improve patient outcomes such as readmission rates and pain scores.

Disclosure: No significant relationships.
Keywords: Pseduohernia, Robotic VIdeo-Assisted Thoracoscopic Surgery, Surgical Complications.

O-069

INCIDENCE AND RISK FACTORS OF DEVELOPING A DYSRHYTHMIA AFTER BLUNT THORACIC TRAUMA

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OBJECTIVES

The incidence of dysrhythmia after blunt thoracic trauma varies in the literature from 8-75%, and the complication rate from these dysrhythmias is unknown and not well studied. The aims of this study are to [1] identify the incidence of dysrhythmia following blunt thoracic trauma, [2] identify risk factors associated with developing a dysrhythmia, and [3] identify the incidence of cardiac intervention after developing a dysrhythmia. It is our hypothesis that blunt thoracic trauma may result in post injury dysrhythmias.

METHODS

This is a retrospective review of trauma patients ≥ 18 years with a blunt mechanism of injury at a Level 1 Trauma Center from 1/2010-3/2022. Patients were included if they had one of the following: rib fracture, sternal fracture, chest wall contusion, pneumothorax, hemothorax, chest pain, chest wall deformity, or chest wall crepitus. Patients were excluded if they had an Abbreviated Injury Scale Chest = 0 or if they had a pre-existing dysrhythmia. Univariate and multivariate statistical analysis was performed.

RESULTS

2943 patients met inclusion criteria. 574 (19.5%) developed a dysrhythmia; 100 (17.4%) required a new antiarrhythmic at discharge. Risk factors for developing a dysrhythmia and complications from dysrhythmia are identified in Table 1. Patients who developed a dysrhythmia had nearly two times greater likelihood of requiring cardiac intervention than those without dysrhythmia (AOR: 1.79, p= 0.004). Additional risk factors for requiring cardiac intervention included Injury Severity Score (ISS) 16-25 and >25 (p <0.001).

CONCLUSIONS

Incidence of dysrhythmia after blunt thoracic injury is 19.5%. Based on the multivariate analysis, patients with age > 65, ISS > 16, history of previous cardiac disease, or requiring > 5 units of blood products are at increased risk of developing a dysrhythmia following trauma.

Further prospective studies looking at prevention of these dysrhythmias could in turn decrease the incidence of these complications.

Disclosure: No significant relationships.
Keywords: Trauma, Chest Wall Trauma, Dysrhythmia, Blunt Thoracic Trauma.

Risk Factors for Developing Dysrhythmia	**Dysrhythmia**	**No Dysrhythmia**	**p-value**
Age [a]	64 (45-78)	50 (32-65)	< 0.001
ISS [a]	14 (9-22)	13 (9-18)	< 0.001
Cardiac History [b]	347 (60.56%)	226 (39.44%)	< 0.001
	OR	**[CI]**	**p-value**
Risk Factors for Developing Dysrhythmia			
Receiving 5-10 Units of Blood Products	2.23	[1.36- 3.66]	0.002
Receiving > 10 Units of Blood Products	3.08	[1.73- 5.48]	< 0.001
Complications After Dysrhythmia			
Unplanned ICU Admission	2.39	[1.51- 3.80]	< 0.001
Pulmonary Embolism	2.97	[1.05- 8.42]	0.041
Cerebrovascular Accident	3.06	[1.07- 8.80]	0.038
Risk Factors for Readmission with Cardiac Complication			
Age > 65	1.04	[1.017-1.072]	0.001
ISS > 25	7.00	[1.54- 31.88]	0.012
Risk Factors for Requiring Cardiac Intervention			
ISS 16-25	4.05	[2.47-6.65]	< 0.001
ISS > 25	9.12	[5.37-15.47]	< 0.001

O-070

RISK FACTORS INFLUENCING POSTOPERATIVE PLEURAL EMPYEMA IN PATIENTS WITH MALIGNANT PLEURAL MESOTHELIOMA AFTER MULTIMODAL THERAPY – A RETROSPECTIVE SINGLE CENTER ANALYSIS

Peter Henschke[1], Laura C. Guglielmetti[2], Sven Hillinger[1], Gian-Marco Monsch[1], Didier Schneiter[1], Isabelle Opitz[1], Olivia Lauk[1]
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OBJECTIVES

Postoperative empyema is a severe and potentially lethal complication especially in patients undergoing surgery for malignant pleural mesothelioma (PM). Little is known about preoperative factors influencing the risk of postoperative empyema. We aimed to analyze which preoperative characteristics might be associated with an increased risk for postoperative empyema.

METHODS

From September 1999 to April 2022 a retrospective analysis of all PM patients undergoing surgery for PM at the University Hospital of Zurich was performed. Uni- and multivariable logistic regression was used to identify independent clinical predictors of postoperative empyema within 90 days after surgery.

RESULTS

401 PM patients were included in the analysis, of which n=50 empyemas were reported within 90 days of surgery (12.5%). Baseline demographics were comparable between patients with (Eyes) and without empyema (Eno) (table). 151 patients underwent extrapleural pneumonectomy (EPP), of which 22.5% (n=34) developed postoperative pleural empyema within 90 days postoperatively. 9.9% (n=16) of the 250 patients underwent pleurectomy and decortication (P/D), extended P/D (n= 111), partial pleurectomy (n=34), explorative thoracotomy (n= 24) or any other type of resection (n=5), resulted in postoperative empyema ($p<0.001$). In multivariable logistic regression analysis, EPP emerged as sole independent predictor of postoperative empyema (odds ratio 3.936; 95%CI 1.63-9.53, p= 0.002) when controlled for smoking status and MMP scores. Median overall survival was comparable between Eyes (17 months, IQR 5-28 months) and Eno (20 months, IQR 9-35 months; p=0.094).

CONCLUSIONS

Patients undergoing EPP had a significantly higher chance of developing pleural empyema up to three months after the operation compared to patients undergoing other surgical treatments. No single risk factor had an influence on the occurrence of empyema. These findings further support the current standard of care, set by the ERS/ESTS/EACTS/ESTRO guidelines.

Disclosure: No significant relationships.
Keywords: Empyema, Risk Factors, Malignant Pleural Mesothelioma, Surgery.

Overall	401 (100%)	**P-Value**
Gender		
Female	47 (11.78)	0.332
Male	352 (88.22)	
p-value	0.332	
Age		
Median	64	N/S
≤61 years	147 (36.66)	
p-value	N/S	
Laterality		
Right	232 (57.86)	0.208
Left	169 (42.14)	
Asbestos exposure		
Yes	221 (55.11)	
Possible	91 (22.69)	N/S
No	82 (20.45)	
Unknown	7 (1.75)	
Smoking		
Never	179 (44.64)	
Former	173 (43.14)	0.178
Current	38 (9.48)	
Unknown	11 (2.74)	
p-value	0.178	

Overall	401 (100%)	**P-Value**
Weight loss		
No or unknown	231 (57.61)	0.764
Yes	170 (42.39)	
Median weight loss (kg)	5	
MMP Score		
0	72 (17.95)	
1	80 (19.95)	
2	23 (5.74)	0.086
3	4 (1.00)	
4	1 (0.25)	
Unknown	221 (55.11)	
Preoperative CRP		
≤ 30	289 (72.07)	0.411
> 30	84 (20.95)	
Unknown	28 (6.98)	
Induction chemo-/immunotherapy		
Induction chemotherapy/immunotherapy with Bevacizumab	43 (10.72)	N/S
Induction chemotherapy without Bevacizumab	274 (68.33)	
No induction chemotherapy or immunotherapy done	84 (20.95)	

Overall	401 (100%)	**P-Value**
Histological subtype		
Epithelioid	266 (66.34)	
Sarcomatoid	16 (3.99)	0.205
Biphasic	106 (26.43)	
Unknown	13 (3.24)	
cIMIG Stage pre surgery (8th edition)		
IA	33 (8.23)	
IB	50 (12.47)	
II	12 (2.99)	
IIIA	13 (3.24)	0.158
IIIB	5 (1.25)	
IV	1 (0.25)	
Classified only by 7th edition [1]	19 (4.74)	
IMIG classification unknown entirely	268 (66.83)	
Surgery type		
EPP	151 (37.66)	
P/D	21 (5.24)	
eP/D	111 (27.68)	**<0.01**
Partial pleurectomy	34 (8.48)	
Explorative thoracotomy	24 (5.98)	
Other	5 (1.25)	
Unknown	55 (13.71)	

O-071

BALANCED AND CONTINUOUS CHEST DRAINAGE PATTERN PROMOTES THE REDUCTION OF LENGTH OF STAY AND POSTOPERATIVE COMPLICATIONS IN PATIENTS UNDERGOING PNEUMONECTOMY

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OBJECTIVES
Balanced and continuous (BC) drainage after pneumonectomy may reduce postoperative complications (PoC), and length of stay (LOS) compared to clamping and non-continuous (CN) drainage. However, BC drainage is not well promoted clinically. The study investigates the feasibility and safety of the BC drainage method after pneumonectomy.

METHODS
859 patients who underwent pneumonectomy in the Shanghai Pulmonary Hospital between 2012 and 2019 were reviewed. Propensity score matching (PSM) method was conducted to create comparable cohorts with 112 patients matched in each BC drainage and CN drainage group. Univariate analysis was used to compare the postoperative outcomes between the two groups. Multivariate logistic regression analyses identified variables related to the postoperative length of stay (pLOS) and PoC. 5-year overall survival (OS) rate was estimated by the Kaplan-Meier method.

RESULTS
After PSM, univariate analysis showed that the BC drainage group had significantly fewer patients with prolonged pLOS (pLOS > 9.5 days) ($p<0.01$) than those of the CN drainage group. In addition, the rates of overall PoC (52.7% vs. 67.9%, $p<0.05$), severe PoC (13.4% vs. 24.1%, $p=0.02$) and infection-related PoC (21.4% vs. 33.9%, $p<0.05$) were significantly lower in the BC group than in the CN group. Multivariate analyses found that BC drainage (odds ratio [OR]=0.517, $p=0.033$), PoC (OR=3.164, $p<0.001$), and thoracotomy pneumonectomy (OR=4.099, $p=0.011$) were independent factors for prolonged pLOS. BC drainage (OR=0.510, $p=0.020$) and intraoperative blood loss over 175 ml (OR=2.454, $p=0.002$) were independent factors of PoC development. Furthermore, there was no significant difference in the 30-day mortality rate (0 vs. 2.7%, $p=0.08$) and 5-year OS rate between the BC drainage and CN drainage groups (67.9% vs. 77.8%, $p=0.27$).

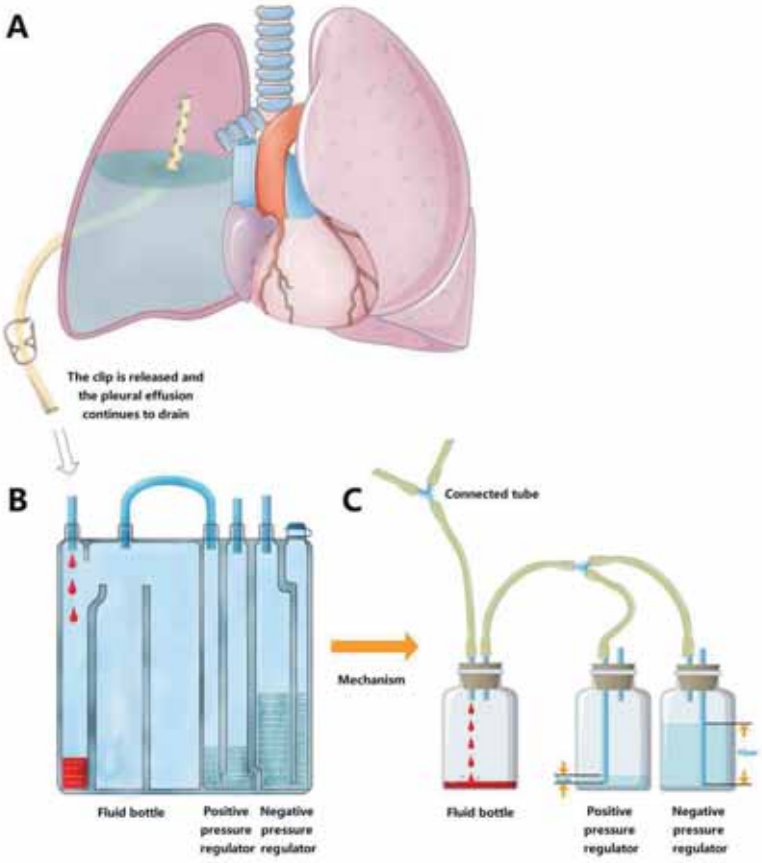
CONCLUSIONS
BC drainage method after pneumonectomy is a feasible and safe drainage approach with the advantage of pLOS and PoC reduction for patients who received pneumonectomy. Future validation by prospective trial is warranted.

Disclosure: No significant relationships.

Keywords: Pneumonectomy, Balanced Drainage, Length Of Stay, Postoperative Complications.

Table 1. Multivariate Analyses of Postoperative Length of Stay (pLOS) and PoC after Propensity Score Matching (PSM).

Outcomes	Variables	OR	95%CI	p-value
pLOS	*Drainage methods*			
	BC drainage vs. CN drainage	0.517	0.282-0.947	0.033
	Surgical approaches			0.036
	Thoracotomy vs. VATS	4.099	1.391-12.077	0.011
	TASIS vs. VATS	2.944	0.510-17.001	0.228
	PoC			
	Yes vs. No	3.164	1.645-6.087	<0.001
PoC	*Drainage methods*			
	BC drainage vs. CN drainage	0.510	0.289-0.900	0.020
	Intraoperative blood loss			
	> 175ml vs. ≤175ml	2.454	1.378-4.369	0.002


A
The clip is released and the pleural effusion continues to drain
B
Fluid bottle
Positive pressure regulator
Negative pressure regulator
Mechanism
C
Connected tube
Fluid bottle
Positive pressure regulator
Negative pressure regulator

O-072

SPONTANEOUS STERNOCLAVICULAR JOINT INFECTIONS: ACHIEVING THE BEST OUTCOMES-- A SYSTEMS ENGINEERING ANALYSIS

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[2]*The University of Iowa, Iowa City, United States*

OBJECTIVES
Spontaneous sternoclavicular joint (SSCJI) is rare and poorly understood. The literature has no consistent definition, authorships lack necessary specialists, patient numbers are small, usually from single institutions; follow-up is short, disease spectrum is limited, and there is no radiological severity grading with few interventions studied. Our objective is to select disease-specific variables and outcomes and use data mining techniques to analyze factors that would allow for selection of patients for different interventions.

METHODS
We performed a retrospective review of SSCJI patients at two large hospitals from 2010 to 2022. SSCJI was defined as joint infection with an absence of direct injury or inoculation. A team of thoracic surgery, radiology, infectious disease, orthopedic, and hospital information experts and systems engineers selected the variables. Using a radiological grading system, CT scans were independently reread by radiologists blinded to outcomes. Using systems engineering software Statistica, small set data mining algorithms were used to determine the influence of different variables on outcomes.

RESULTS
53 variables were selected and analyzed against 14 outcomes. 47 patients (mean age, 51 (22-82); 77% male) met the entry criteria. 34 underwent joint early surgical resection <7 days, 5 patients underwent delayed surgical intervention (>7 days), and 8 underwent medical-only management. Better outcomes seen in antibiotic-only than surgery: recurrence(24% vs. 13%), time to return to pre-operative status (5 vs 2 weeks), 30-day mortality(3% vs. 0%), length of stay (20 vs. 19 days). Combinations of variables that lead to selected outcomes are shown in Table 1.

CONCLUSIONS
SSCJI patients present with severe and numerous co-morbidities and multiple risk factors for poor wound healing. Greater consideration should be given to targeted antibiotic-only therapy. In patients with risk factors shown in Table 1 should then be considered for surgical intervention given the risk for poorer outcomes. A prospective trial is recommended to confirm these findings.

Disclosure: No significant relationships.

Keywords: Sternoclavicular Joint Infection.

Outcome	Variables
Length of Stay	
<30 days	no significant bone infection
>60 days	+ significant bone infection
Recurrence	
-	no previous SSCJ infection
+	previous SSCJ infection
	significant soft tissue fluid collection + 4.155 > WBC > 10.245 + Age > 41.5
Time to return to pre-operative status	
<5 weeks	HA1c < 14.65
>15 weeks	HA1c > 14.65
	significant bony fragments
30-day readmission	
-	fluid collection <= 2.45 cm
+	fluid collection > 2.45 cm OR glucose > 225.5

Table 1: Specific variables leading to outcomes

O-073

MALIGNANT PLEURAL MESOTHELIOMA CHARACTERISTICS AND OUTCOMES: A SEER-MEDICARE ANALYSIS

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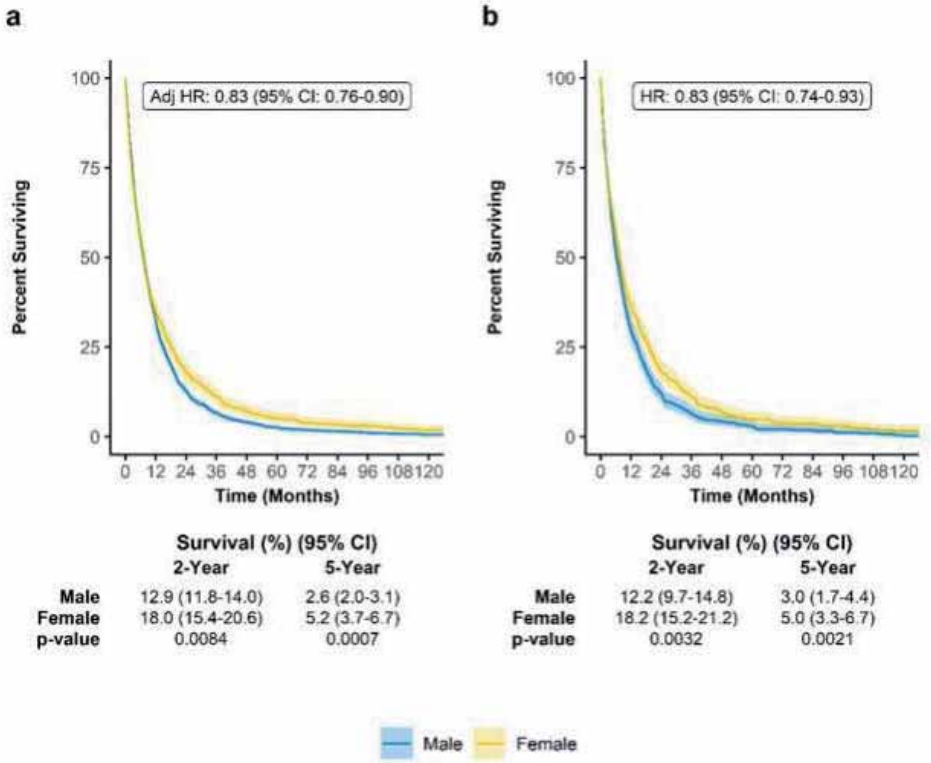
OBJECTIVES
Pleural mesothelioma is a rare cancer linked to asbestos exposure. Previous research has indicated that female individuals have better survival than male individuals, but this has never been examined in the SEER-Medicare database.

METHODS
Malignant pleural mesothelioma cases diagnosed from 1992-2015 were queried from the linked SEER-Medicare database. Multivariable logistic regression was used to assess the clinical and demographic factors associated with sex. A multivariable Cox proportional hazards model and propensity matching methods were used to assess sex differences in overall survival while accounting for potential confounders.

RESULTS
Among 4,201 patients included in the analysis, 3,340 (79.5%) were males and 861 (20.5%) females. Females were significantly older, with more epithelial histology than males were, and had significantly better overall survival, adjusted for confounders (adjusted hazard ratio, 0.83, 95% CI: 0.76-0.90). Other variables independently associated with improved survival included younger age at diagnosis, having a spouse/domestic partner, epithelial histology, lower comorbidity score, and receipt of surgery or chemotherapy.

CONCLUSIONS
The study describes sex differences in mesothelioma occurrence, treatment and survival and is the first to examine SEER-Medicare. It provides directions for future research into potential therapeutic targets.

Disclosure: No significant relationships.
Keywords: Sex Differences, Survival, Rare Cancers.



Shaded regions represent 95% confidence intervals; HR=Hazard Ratio; CI=Confidence Interval; Adj=Adjusted

TUESDAY 6 JUNE 2023
PULMONARY NEOPLASTIC III SESSION XIV
14:30 - 15:30

O-074

IS TIME BETWEEN IMAGING AND SURGERY A RISK FACTOR FOR UPSTAGING IN PATIENTS WITH CLINICAL STAGE I NON SMALL CELL LUNG CANCER (NSCLC)?

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OBJECTIVES
The timing of preoperative imaging in patients with early-stage lung cancer is a debated topic, as there is limited data on tumor growth and cancer progression between clinical staging by imaging and pathological staging after resection. We quantified disease progression during this interval in patients with non-small cell lung cancer (NSCLC) to better understand the optimal timing of resection after imaging.

METHODS
Our prospectively maintained institutional database was queried retrospectively. All patients who underwent surgery for cT1N0M0 NSCLC from January 2015 through September 2022 were identified. Patients with incomplete data or a CT-to-surgery interval >180 days were excluded. Tumor growth and upstaging between chest CT and surgery were analyzed as a function of time (<30, 30-59, ≥60 days) for different nodule types. We analyzed descriptive statistics and performed regression analysis incorporating preoperative variables.

RESULTS
During the study period, 622 patients underwent surgery for cT1N0M0 NSCLC. CT-to-surgery interval was <30 days in 228 (36.7%), 30-59 days in 242 (38.9%), and ≥60 days in 152 (24.4%) with no differences in patient or nodule characteristics observed between these groups (Table 1). T-stage increased in 346 patients (55.6%) between CT-imaging and surgery. Among these patients, 126 (36.4%) had pure ground-glass nodules, 147 (42.5%) had part-solid nodules, and 73 (21.1%) had solid nodules. N-stage was upstaged in only 18 patients (2.8%), 11 (1.7%) to N1 and 7 (1.1%) to N2. The CT-to-surgery interval length was not associated with upstaging of any nodule type (all nodules, p=0.903; pure ground-glass, p=0.880; part-solid, p=0.858; solid, p=0.959) even after multivariate adjustment for patient and procedural variables (p=0.993).

CONCLUSIONS

In patients undergoing surgery for cT1N0M0 NSCLC, preoperative chest CT can be performed up to 90 days before surgery without negative oncological impacts. We can reduce patient cost and radiation exposure by avoiding unnecessary repeat CT scans during this interval.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Pulmonary Nodule, Diagnostic Imaging, Upstaging.

A) Preoperative Characteristics	Total	Time to surgery			P-Value
	n = 622	0 to <30 days n = 228	30 to <60 days n = 242	60 to 154 days n = 152	
Age, years	69.0 (63.0, 74.1)	69.0 (63.0, 74.0)	70.0 (63.0, 75.0)	69.0 (61.0, 74.0)	0.405
Sex					
Male	197 (31.7%)	70 (30.7%)	81 (33.5%)	46 (30.3%)	0.740
Female	425 (68.3%)	158 (69.3%)	161 (66.5%)	106 (69.7%)	
BMI					
Missing	26.4 (23.4, 30.2) 40	26.2 (23.5, 30.1) 11	26.4 (23.2, 30.5) 18	26.5 (23.8, 30.1) 11	0.944
FEV1					
Missing	0.9 (0.7, 1.0) 68	0.9 (0.7, 1.0) 27	0.9 (0.7, 1.0) 27	0.9 (0.8, 1.0) 14	0.496
Nodule Size, cm on CT	1.6 (1.2, 2.2)	1.6 (1.2, 2.2)	1.7 (1.2, 2.2)	1.5 (1.1, 2.1)	0.546
Solid Component, cm on CT	0.8 (0.3, 1.3)	0.8 (0.0, 1.2)	0.8 (0.4, 1.4)	0.8 (0.3, 1.1)	0.396
Clinical T					
Tis/T1mi	214 (34.4%)	88 (38.6%)	77 (31.8%)	49 (32.2%)	0.283
T1a	200 (32.2%)	67 (29.4%)	75 (31.0%)	58 (38.2%)	
T1b	160 (25.7%)	53 (23.2%)	70 (28.9%)	37 (24.3%)	
T1c	48 (7.7%)	20 (8.8%)	20 (8.3%)	8 (5.3%)	
Clinical Nodule Characteristics					
Ground glass	146 (23.5%)	62 (27.2%)	51 (21.1%)	33 (21.7%)	0.541
Part-solid	293 (47.1%)	105 (46.1%)	116 (47.9%)	72 (47.4%)	
Solid	183 (29.4%)	61 (26.8%)	75 (31.0%)	47 (30.9%)	

B) Postoperative Characteristics	Total	Time to surgery			P-Value
	n = 622	0 to <30 days n = 228	30 to <60 days n = 242	60 to 154 days n = 152	
Total Lymph Node Count	4.0 (2.0, 8.0)	4.0 (2.0, 8.0)	4.0 (2.0, 7.0)	4.0 (2.0, 7.0)	0.640
Pathological N-stage					
NX	57 (9.2%)	26 (11.4%)	13 (5.4%)	18 (11.8%)	0.073
N0	547 (87.9%)	194 (85.1%)	222 (91.7%)	131 (86.2%)	
N1	11 (1.8%)	3 (1.3%)	5 (2.1%)	3 (2.0%)	
N2	7 (1.1%)	5 (2.2%)	2 (0.8%)	0 (0.0%)	
Pathological N-upstage					
Yes	18 (2.9%)	8 (3.5%)	7 (2.9%)	3 (2.0%)	0.682
No	604 (97.1%)	220 (96.5%)	235 (97.1%)	149 (98.0%)	
Nodule Size, cm by pathology	1.5 (1.1, 2.0)	1.5 (1.1, 2.0)	1.6 (1.2, 2.1)	1.5 (1.1, 2.1)	0.559
Invasive Component, cm by pathology	1.2 (0.7, 1.8)	1.1 (0.6, 1.8)	1.3 (0.7, 1.8)	1.2 (0.7, 1.7)	0.603
Pathological T-stage					
Tis/T1mi	118 (19.0%)	49 (21.5%)	41 (16.9%)	28 (18.4%)	0.287
T1a	140 (22.5%)	55 (24.1%)	50 (20.7%)	35 (23.0%)	
T1b	236 (37.9%)	76 (33.3%)	99 (40.9%)	61 (40.1%)	
T1c	78 (12.5%)	25 (11.0%)	36 (14.9%)	17 (11.2%)	
T2	42 (6.8%)	21 (9.2%)	14 (5.8%)	7 (4.6%)	
T3	8 (1.3%)	2 (0.9%)	2 (0.8%)	4 (2.6%)	
Pathological T-upstage					
Yes	346 (55.6%)	129 (56.6%)	132 (54.5%)	85 (55.9%)	0.903
No	276 (44.4%)	99 (43.4%)	110 (45.5%)	67 (44.1%)	

O-075

BOTH RADIOGRAPHIC LEPIDIC COMPONENTS AND CLINICAL CHARACTERISTICS PROMOTE FAVORABLE SURVIVAL AMONG PATIENTS WITH PART-SOLID ADENOCARCINOMA: A PROPENSITY SCORE-MATCHED ANALYSIS

Haruaki Hino, Takahiro Utsumi, Natsumi Maru, Hiroshi Matsui, Yohei Taniguchi, Tomohito Saito
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OBJECTIVES
Patients with part-solid adenocarcinoma have been reported to experience more favorable outcomes than patients with pure-solid adenocarcinoma. We analyzed the impact of lepidic components and preoperative characteristics on survival following surgery for lung adenocarcinoma.

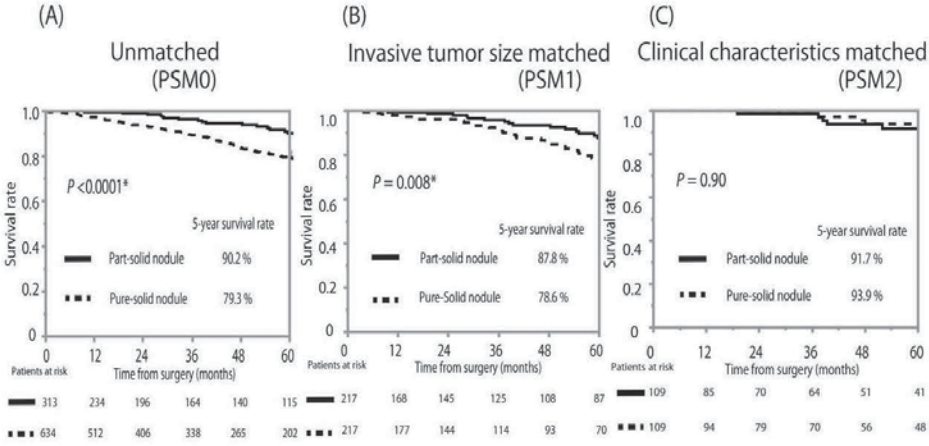
METHODS
We retrospectively analyzed data for 313 patients with part-solid adenocarcinoma (lepidic component) and 634 patients with pure-solid adenocarcinoma (no lepidic component) treated at our institution from 2006–2020. We performed propensity score matching to evaluate the impact of preoperative characteristics on survival. Survival was analyzed in three different cohorts: PSM0, unmatched cohort (n=313 vs. 634); PSM1 (n=217 each), in which matching was performed based on preoperative solid diameter only; and PSM2 (n=109 each), in which matching was performed based on nine clinical characteristics (age, sex, procedure, carcinoembryonic antigen [CEA], maximum standardized uptake value [SUVmax], smoking history, comorbidities, respiratory function, and solid diameter). After matching, we compared survival among the three cohorts using the Kaplan–Meier method.

RESULTS
The survival analysis indicated that, among the unmatched cohort (PSM0), the 5-year overall, cancer-specific, and recurrence-free survival rates of part-solid and pure-solid adenocarcinoma were 90.2/79.3%, 96.9/84.0%, and 86.7/70.4%, respectively (Ps< 0.05) (Figure A). Among PSM1, the survival rates were 87.8/78.6%, 95.8/84.5%, and 82.6/71.1%, respectively (Ps< 0.05), suggesting that patients with part-solid nodules had better survival when matched on solid diameter only (Figure B). Finally, among PSM2, the survival rates were 91.7/93.9%, 96.7/95.3%, and 83.7/82.4 (Ps>0.05) (Figure C), respectively. Thus, survival was similar between the part-solid and pure-sold adenocarcinoma groups matched based on nine clinical characteristics.

CONCLUSIONS
Among the full matched cohort (PSM2), the survival difference diminished between the two groups. Therefore, both radiographic lepidic components and preoperative clinical characteristics promote favorable survival for patients with part-solid adenocarcinoma.

Disclosure: No significant relationships.
Keywords: Lung Cancer Surgery, Part-Solid Adenocarcinoma, Prognosis, Propensity Score Matching.

Overall survival curves between Part-solid and Pure-solid adenocarcinoma in clinical stage I.



O-076

THE NUMBER OF METASTATIC LYMPH NODES IS MORE PREDICTIVE OF PROGNOSIS THAN THE LOCATION-BASED PATHOLOGICAL N STAGE IN RESECTED NON-SMALL CELL LUNG CANCER

Qiuyuan Li, Fang Wang, Haojie Si, Long Xu, Hang Su, Xuefei Hu, Deping Zhao, Dong Xie, Yuming Zhu, Gening Jiang, Chang Chen
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OBJECTIVES
Current N classification is defined solely by anatomical location of metastatic lymph nodes (LN) in non-small cell lung cancer (NSCLC) with prognostic heterogeneity. We sought to evaluate the prognostic significance of the number of metastatic lymph nodes (nN) in resected NSCLC, in comparison with the currently used pathologic N classification in the staging system.

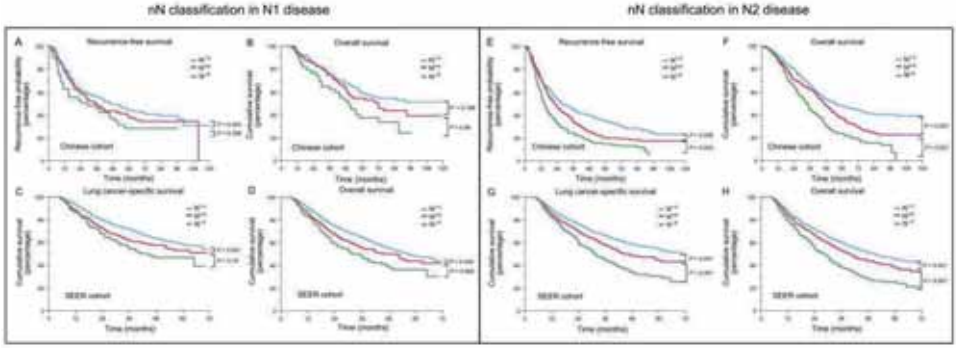
METHODS
Totally, 4,432 patients with stage IA to IIIB resected NSCLC from Chinese cohort were analyzed. Optimal thresholds for the nN classification were determined by X-tile. To quantify the relative improvement in prognostic accuracy of nN classification, the net reclassification improvement (NRI) was calculated. A validation cohort consisting of 28,022 patients from the Surveillance, Epidemiology, and End Results (SEER) database were analyzed.

RESULTS
Both the Chinese and SEER cohorts showed a stepwise deterioration of worse prognosis with the increasing of nS. One to three, four to six, and more than six were selected as the optimal thresholds of nS classification in the Chinese cohort and validated in the SEER cohort. Multivariate Cox analysis showed that the nN classification was an independent predictive factor for overall survival (OS) in both cohorts (Chinese cohort: N0 versus [vs.] N1-3, $p < 0.001$; N0 vs. N3-6, $p < 0.001$; N0 vs. N> 6, $p < 0.001$; SEER cohort: N0 vs. N1-3, $p < 0.001$; N0 vs. N3-6, $p < 0.001$; N0 vs. N> 6, $p < 0.001$). Further NRI test showed a better discriminatory capability of the nN classification than the current N classification for predicting prognosis. Moreover, patients with N> 6 manifested survival benefit from postoperative radiotherapy.

CONCLUSIONS
The nN classification was shown to be a better prognostic determinant than the location-based pathological N classification. The number of metastatic LN should be further validated and considered emphasizing in the future revision of TNM system.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, N Classification, Intercontinental Cohorts, Prognosis.

Observation time	RFS/LCSS		OS	
	NRI	95% CI	NRI	95% CI
Chinese cohort				
3-year	0.089	0.027-0.097	0.101	0.053-0.205
5-year	0.083	0.057-0.179	0.106	0.049-0.132
SEER database				
3-year	0.112	0.064-0.149	0.093	0.058-0.183
5-year	0.062	0.093-0.162	0.122	0.067-0.234



O-077

REDUCTION OF PRESURGICAL MEDIASTINAL INVASIVE TESTS IN LUNG CANCER. SHOULD WE REVISE THE EUROPEAN SOCIETY OF THORACIC SURGEONS (ESTS) GUIDELINES?

Iker Lopez[1], Borja Aguinagalde[1], Iratxe Urreta[1], Raul Embún[2], Iñigo Royo[2], Sergio Bolufer[3], Laura Sanchez[4], Jon Zabaleta[1], Arantza Fernández-Monge[1]
[1]*Donostia University Hospital, Donostia-San Sebastian, Spain*
[2]*Miguel Servet University Hospital, Zaragoza, Spain*
[3]*University General Hospital of Alicante, Alicante, Spain*
[4]*Marqués de Valdecilla University Hospital, Santander, Spain*

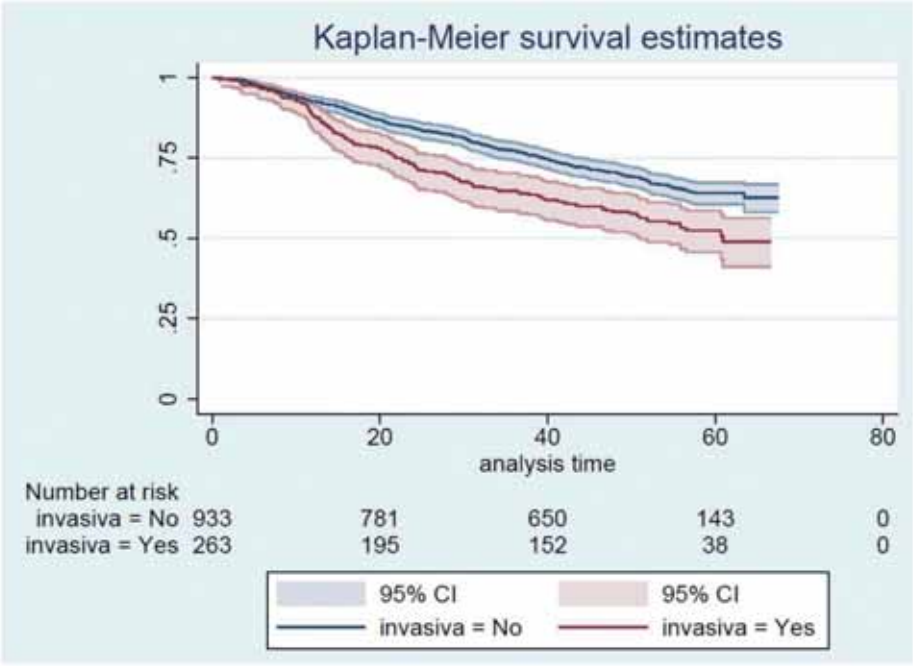
OBJECTIVES
The objective of this study was to assess the impact of avoiding the invasive test for mediastinal staging in surgical lung cancer patients with negative CT and PET for mediastinal nodes, in the situations that the ESTS guidelines recommend doing it.

METHODS
The analysis is based on data from the prospective cohort of the Spanish Group for Video-Assisted Thoracic Surgery (GEVATS). A total of 2826 patients underwent surgery for lung cancer (20 December 2016-20 March 2018). Patients with cN0 by CT and PET and central tumor or tumor greater than 3 cm, and patients with cN1 were selected (1247 patients, 58.5%). A comparative survival analysis was made between patients with mediastinal invasive test (invasive test group) and those without it (no invasive test group) using Kaplan-Meier and Cox Regression method.

RESULTS
In patients with negative CT and PET for mediastinal nodes, 769 (36,1%) had a tumor greater than 3 cm, 789 (37%) a central tumor and 310 (14.5%) cN1 in CT or PET. Only in 275 (22%) patients a mediastinal invasive test was performed. No differences were detected in unexpected pN2, 27 (9.8%) invasive test group vs 93 (9.6%) no invasive test group. The mean follow-up was 51.4 months. The 5-year global survival was worse in the invasive test group, 52.4% vs 64.1% ($p < 0.001$). In the Cox Regression model for all-causes death, the mediastinal invasive test, male gender, age, diabetes, sincronic tumor, DLCO, tumor size and pN were significant independent risk factors. In the model for cancer-related death similar results were obtained.

CONCLUSIONS
When CT and PET are negative for mediastinal nodes we could avoid the invasive mediastinal test even in the case of a tumor greater than 3 cm, central tumor or cN1 because the long term results do not get worse.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Mediastinal Staging, Mediastinal Invasive Test.


Kaplan-Meier survival estimates
0
.25
.5
.75
1
0
20
40
60
80
analysis time
Number at risk
invasiva = No 933 781 650 143 0
invasiva = Yes 263 195 152 38 0
95% CI
invasiva = No
95% CI
invasiva = Yes

O-078

IS UNDERUTILIZATION OF ADJUVANT THERAPY IN RESECTED NON-SMALL CELL LUNG CANCER ASSOCIATED WITH SOCIOECONOMIC DISPARITIES?

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[2]*Central Michigan University, Mt. Pleasant, United States*

OBJECTIVES
Although adjuvant systemic therapy (AT) has demonstrated improved survival in patients with resected non-small cell lung cancer (NSCLC), it remains underutilized. The success of recent trials demonstrating improved outcomes associated with adjuvant immunotherapy and targeted treatment imply that low uptake of systemic therapy in at-risk populations may further widen outcome gaps. We therefore sought to determine factors associated with underutilization of AT.

METHODS
The National Cancer Database (2010-2017) was queried for patients with completely resected pathologic stage II-IIIA NSCLC and stratified based on the receipt of AT. Logistic regression was used to identify factors associated with AT delivery. Propensity-matching was used to adjust for age, race, gender, comorbidity, grade, lymphovascular invasion, extent of resection and stage. The Kaplan-Meier method was applied to estimate differences in survival among groups.

RESULTS
Of 37,571 eligible patients, only 20,616 (54.9%)received AT (IIA 53.0%; IIB 43.0%, IIIA 67.3%). While AT rates increased over time (Figure 1A), multivariable analysis (Table 1), showed that patient factors associated with decreased utilization, included age >65 (OR 0.48, 95%CI: 0.46-0.51), male gender (OR 0.87, 95%CI: 0.87-0.91), and multiple comorbidities (>3OR 0.76, 95%CI: 0.68-0.84). Additionally, socioeconomic factors and treatment facility were associated with underutilization, including public insurance (OR 0.67, 95%CI: 0.57-0.80), lower education level (OR 0.92, 95%CI: 0.88-0.96), and treatment at a lower volume center (OR 0.84, 95%CI: 0.74-0.94). Among the 23,118 patients that were matched (1:1), overall survival was significantly higher for patients who received AT (5-year survival 57.0% versus 44.2%, median 76.35 vs 47.57 months, p=<0.001, Figure 1B).

CONCLUSIONS
AT underutilization in patients with resected stage II-III NSCLC is associated with patient and institutional factors, along with socioeconomic factors. It is critical to implement measures to address these inequities, especially in light of newer adjuvant immunotherapy and targeted therapy treatment options which are expected to improve survival.

Disclosure: No significant relationships.
Keywords: Adjuvant Therapy, Systemic Therapy, Lung Cancer, Underutilization, Disparities.

Figure 1A- Percentage of patients receiving AT by year.

Figure 1B- Overall Survival on propensity-matched cohort.

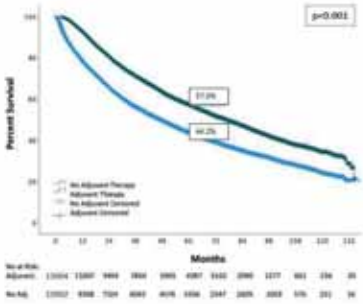

Table 1.- Multivariable Analysis for Factors Associated with Delivery of Adjuvant Therapy

	N=37,571	OR	95%CI		p
Type of Facility					
	Integrated Cancer Facility	REF	REF		0.02
	Academic Facility	0.84	0.74	0.94	
	Comprehensive Community Facility	0.96	0.91	1.02	
	Community Facility	0.95	0.89	1.01	
Age >65		0.48	0.46	0.51	<0.001
Gender (M)		0.87	0.84	0.91	<0.001
Insurance					<0.001
	Private	REF	REF		
	Public	0.67	0.57	0.80	
	Uninsured	0.72	0.68	0.77	
Low Education Indicator		0.92	0.88	0.96	<0.001
Distance from Home to facility >10 miles		0.90	0.86	0.94	<0.001
Charlson-Deyo Comorbidity Index					
	0	REF	REF		<0.001
	1	0.96	0.91	1.01	
	2	0.90	0.84	0.96	
	3	0.76	0.68	0.84	
Grade					
	I	REF	REF		<0.001
	II	1.37	1.26	1.48	
	III	1.47	1.36	1.60	
	IV	1.57	1.31	1.88	
Lymphovascular Invasion		1.08	1.03	1.14	<0.001
Positive Lymph Nodes		3.25	3.10	3.41	<0.0001

O-079

INFLUENCE OF PLEURAL INVASION ON SURVIVAL IN 8TH EDITION PT3-4 N0M0 NON-SMALL-CELL LUNG CANCER: A PROPENSITY SCORE MATCHING STUDY BASED ON THE SEER REGISTY

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[6]*Charité-Universitätsmedizin, Berlin, Germany*

OBJECTIVES

Pleural invasion (PI) is considered an adverse prognostic factor in non-small-cell lung cancer (NSCLC). However, the prognostic roles of PI in pT3-4 N0M0 NSCLC remain controversial. Therefore, this study aims to evaluate the prognostic value of PI in patients with postoperative stage pT3-4 N0 M0 NSCLC.

METHODS

Within the SEER database, we selected 9185 resected pT3-4 N0M0 NSCLC patients from 2010 to 2019 with a special interest in the prognostic impact of PI. The PI was defined as including PL0, PL1, PL2 and PL3 according to the TNM system. To define PL0 as lack of pleural invasion, PL1 and PL2 as invasion to the surface of the visceral pleura (VPI) and PL3 as invasion of the parietal pleura (PPI). Patients were divided into six groups according to PI status and T stages. We used propensity score matching (PSM) to reduce baseline differences. The risk factors were statistically analyzed using Cox proportional hazard model. The Kaplan-Meier method was used to assess the association of PI with overall survival (OS).

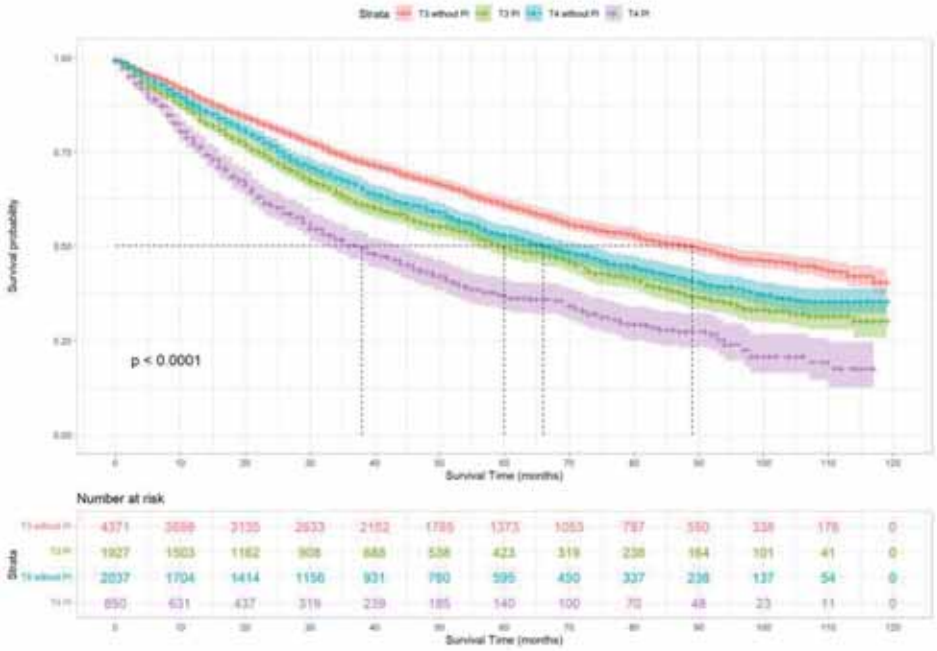
RESULTS

Overall, 1770 patients (19.27%) had VPI, and 1007 patients (10.96%) had PPI. Kaplan-Meier analysis stratified by stage T showed worse OS in patients with PI ($P<0.0001$). In multivariable Cox analysis of OS, T3 VPI had a significantly worse prognosis than T3 without PI (Before PSM: $P<0.001$; After PSM: $P=0.009$), there was no difference between T3 VPI and T3 PPI (Before PSM: $P=0.176$; After PSM: $P=0.192$), T3 PI was not different with T4 without PI (Before PSM: $P = 0.333$; After PSM: $P = 0.327$).

CONCLUSIONS

We were able to demonstrate that PI was a factor of poor prognosis in pT3-4 N0M0 NSCLC. The T status of tumors, T3N0M0 with PI could be appropriately upstaged to the T4 level in the future edition of the TNM classification.

Disclosure: No significant relationships.
Keywords: Visceral Pleura Invasion, Parietal Pleura Invasion, Non-Small-Cell Lung Cancer, TNM Classification.



TUESDAY 6 JUNE 2023
VIDEO II SESSION XV
14:30 - 15:30

V-080

ROBOT-ASSISTED RESECTION OF A PULMONARY INTRALOBAR SEQUESTER WITH ARTERIAL SUPPLY VIA THE COELIAC TRUNK

Tadeusz Brunn
USZ, Zürich, Switzerland

OBJECTIVES
Intralobar lung sequestration is a rare condition that comprises of a non-functional dysplastic lung tissue usually receiving an arterial blood supply from the aorta.

VIDEO DESCRIPTION
In this report we present the case of a 37 years old female current smoker without pre-diagnosed disease that complained about new onset pain in the right hemithorax with exertional dyspnea.

RESULTS
After thorough workup including CT angiography the diagnosis of an intralobar pulmonary sequester with arterial blood supply originating from the coeliac trunk could be made and the lesion was successfully resected via a robot-assisted thoracoscopic approach.

CONCLUSIONS
Arterial blood supply to a lung sequester originating out of the coeliac trunk is rare and robot-assisted thoracoscopic resection is feasible.

Disclosure: No significant relationships.

V-081

MANEUVERS FOR SAFE VASCULAR HANDLING DURING VIDEO-ASSISTED THORACIC SURGERY (VATS) IN CASES OF FIBROSIS AND INFLAMMATION SECONDARY TO NEOADJUVANT CHEMOIMMUNOTHERAPY

Cagatay Cetinkaya[1], Hasan Fevzi Batirel[2]
[1]*Uskudar University Faculty of Medicine, Istanbul, Turkey*
[2]*Biruni University Faculty of Medicine, Istanbul, Turkey*

OBJECTIVES

Neoadjuvant chemoimmunotherapy is more frequently applied in stage II and III lung cancer. Tumor response leads to significant fibrosis and inflammation in the mediastinum and vascular structures. As a result conversion to open surgery during VATS is more common. We present two such cases that were handled with different VATS maneuvers.

VIDEO DESCRIPTION

Videos of two patients with right and left upper lobe cancer are presented. The first patient had bulky lymph nodes in the right paratracheal area invading the azygos vein. Azygos vein invasion and fibrosis in the paratracheal lymph nodes were handled with intrapericardial exploration and division of azygos vein anteriorly and posteriorly. The second patient had a left upper lobe tumor which had also metastasized to 5 and 11 stations. The hilar lymph nodes were stuck to the apical and anterior branches. Bronchus was open cut and a vascular stapler was applied around the two arterial branches without any tension through an extra port. Both cases had uneventful recovery postoperatively.

CONCLUSIONS

Safe vascular handling is critical to prevent major bleeding during VATS. Fibrosis and inflammation secondary chemoimmunotherapy poses a new challenge to VATS surgeons. Intrapericardial exploration and bronchus first techniques allowed a safe VATS in those cases.

Disclosure: No significant relationships.

V-082

ROBOTIC-ASSISTED ENUCLEATION OF LARGE CROISSANT-SHAPED LEIOMYOMA OF THE LOWER ESOPHAGUS

Domenico Galetta
European Institute of Oncology, Milan, Italy

OBJECTIVES

Esophageal leiomyoma is a common benign esophageal neoplasm. The main treatment is the surgical resection traditionally accomplished by both open or thoracoscopic approach. We report the case of robotic-assisted enucleation of a large croissant-shaped leiomyoma of the lower esophagus occurred in an asymptomatic 57-year-old female and we describe the technique of resection.

VIDEO DESCRIPTION

The intervention was performed using a da Vinci Xi Surgical System. After a double-lumen endotracheal intubation and left lateral decubitus position. Four ports (3x1 cm and 1 x 3 cm) were placed in the 5th, 6th, and 7th intercostal space. The lower right lobe was medially and upwards retracted. The mediastinal pleura on the esophagus was opened in caudo-cranial direction visualizing a large whitish bulge. A longitudinal myotomy was performed to expose the mass. The extramucosal leiomyoma was enucleated stepwise The tumor, a croissant-shaped, 55x42x2.5 mm, was extracted in an endo-bag through the 3-cm anterior incision. The muscular layer of the esophagus was closed with separate sutures (Vicryl 3-0). The mediastinal pleural was also closed by a continuous suture (Vicryl 3-0). One 28-Fr chest tube was inserted through the port site in 7th intercostal space, and the incisions closed. The total operative time was 116 minutes, and the blood loss was 30 ml. The patient was well postoperatively. On the 5th day, a postoperative gastrograffin swallow demonstrated no leaks or stricture. At this time the patient started a liquid diet with good tolerance. She was discharged on the 6th postoperative day. Final histological exam confirmed the diagnosis of benign leiomyoma.

CONCLUSIONS

We present a case of large irregular intramural esophageal leiomyoma excised by robotic-assisted surgery. The resection was safely performed, and the leiomyoma easily approached, handled and removed. A clear operative field and delicate dissections are critical points for the complete removal of this neoplasm.

Disclosure: No significant relationships.

V-083

MARIONETTE METHODS FOR MEDIASTINAL LYMPH NODE DISSECTION IN MINIMALLY INVASIVE SURGERY

Mingyon Mun, Junji Ichinose, Yosuke Matsuura, Masayuki Nakao
Cancer Institute Hospital of JFCR, Tokyo, Japan

OBJECTIVES

Complete lymph node dissection (LND) in minimally invasive surgery is sometimes difficult because of the insufficient surgical field. The enough traction of anatomical structure is important for making a traction and counter traction at the dissected area. We report our simple technique of retraction of the intrathoracic structures named marionette method.

VIDEO DESCRIPTION

Four port VATS, dual port VATS, and RATS are conducted as a minimally invasive surgery at out institution. A silk thread is introduced into thoracic cavity through 16G indwelling needle from an intercostal space. This silk thread is used to pull up the nerve, bronchus, and stump of pulmonary vein (marionette method). In station 4L LND, upper lobe branch or cardio-thoracic branch of the vagus nerve are divided and pull up using the introduced silk thread. The left recurrent nerve is retracted and station 4L is dissected en-bloc. Regarding left lower lobectomy via dual port VATS, the station 7 LN was dissected via posterior approach. The lower lobe bronchus is pulled up ventrally after hilar nodes dissection, and the stump of the inferior pulmonary vein is also retracted ventrally using Marionette method. After dissecting the esophagus and contralateral pleura, second assistant supports to make a surgical field using a metal retractor. Then, the right main bronchus, pericardium, and the left main bronchus are exposed. Finally, top of the subcarinal LNs is divided. Thus, en-bloc station 7 LN dissection could be conducted. As a result, the surround structure that defines each zone is exposed.

CONCLUSIONS

Marionette method using a silk thread is a simple and effective procedure to conduct the complete lymph node dissection in minimally invasive surgery.

Disclosure: No significant relationships.

V-084

SYNCHRONOUS MULTIPLE THYMOMA - SUBXIPHOID UNIPORTAL VIDEO-ASSISTED THORACIC SURGERY (VATS) APPROACH

Arthur Vieira, José Dufresne
Centre Hospitalier Affilié Universitaire Régional - Université de Montreal, Trois-Rivières, Canada

OBJECTIVES
To describe a rare case of synchronous multiple thymomas completely resected by sybxiphoid uniportal VATS approach.

VIDEO DESCRIPTION
A 66 years-old male patient, with a recent diagnosis of two synchronous anterior mediastinal lesions identified after a lung cancer screening Chest CT-Scan. The exam showed a 3,3cm mass and a second 2,2 cm lesion in the anterior mediastinum. A PET Scan confirmed the 02 lesions to have hypermetabolic activity with an SUV of 4.3 and 4.0, respectively. Patient was asymptomatic.
Due to one lesion leaning towards the right side and the other lesion to the left side, we proposed a subxiphoid uniportal VATS approach that allows for complete visualisation of both phrenic nerves.
Through a 4cm incision in the subxiphoid space and after lifting the sternum with a retractor attached to a L bar fixed to the table, we gained access to the anterior mediastinum. The dissection was uneventful, with both phrenic nerves being visualized during the entire procedure. The left lesion was severely attached to the pericardium, so the area was removed en bloc with the specimen. A vessel-sealing device was used for the dissection and to control the thymic veins draining to the left brachiocephalic vein. After complete resection, a 24F chest drain was inserted and the lungs reexpanded.
Patient had atrial fibrillation after surgery, which was managed by the cardiology team. The remainder of the hospitalisation was uneventful: chest drain was removed on POD3 and the patient discharged POD6. Final pathology was: B3 thymoma and a B2 thymoma – Masaoka IIa – pT1a(m)N0M0.

CONCLUSIONS
Synchronous multiple thymomas are a rare pathology affecting only 2.2 to 1.1% of all patients with a diagnosis of thymoma. The subxyphoid uniportal approach allows for an oncological resection while preserving both phrenic nerves and with the benefits of a minimally invasive technique.

Disclosure: No significant relationships.

V-085

ROBOTIC ASSISTED TRANSDIAPHRAGMATIC THYMECTOMY: A CASE REPORT

Benjamin Zhang, Oliver Chow, Sebron Harrison, Jeff Port, Nasser Altorki, Benjamin Lee
Weill Cornell/ New York Presbyterian, New York, United States

OBJECTIVES

Laparoscopic transdiaphragmatic thoracic surgery has been described as a method to reduce post-operative pain. Subxiphoid or subcostal approaches have also been described for thymectomies with small to medium sized tumors. We describe a successful resection of a 13 cm thymic tumor utilizing a robotic transdiaphragmatic approach.

VIDEO DESCRIPTION

A 71-year-old man presented with a biopsy proven 13 cm B2 thymoma. We recommended resection via a robotic transdiaphragmatic approach to avoid a traditional thoracotomy or sternotomy in order to improve post-operative pain and recovery. The patient was positioned semi-lateral decubitus. The abdomen was initially entered with a 12mm subcostal port. After an additional subcostal port and a subxiphoid port were placed, both subcostal ports were advanced through the diaphragm into the left chest. Next, a posterior transthoracic port was placed. A 4-armed robotic platform was then utilized to perform a total thymectomy. The tumor remained intact without surgical disruption of the capsule and was placed in an impervious bag. The tumor was then brought into the abdomen after creating a common diaphragmatic defect and then extracted from the abdomen by connecting the initial subcostal port incisions. The diaphragm was repaired, and the incisions were closed.
The patient had an uncomplicated recovery and was discharged home on post-operative day 1 with only oral pain medications. Pathology revealed an intact 13 cm type AB thymoma with negative margins. The patient returned to work at approximately 2 weeks post-op.

CONCLUSIONS

A transdiaphragmatic minimally invasive approach can be a technically and oncologically safe approach to resection of large thymic tumors. In our patient, post-operative pain was minimal which facilitated a short length of stay and rapid return to work. Consideration should also be made of this surgical approach for other large thoracic tumors.

Disclosure: No significant relationships.

TUESDAY 6 JUNE 2023
MISCELLANEOUS II SESSION XVI
15:30 - 16:30

O-086

ERAS PROJECT IN THORACIC SURGERY: ADHERENCE AND OUTCOMES IN THE ITALIAN VIDEO-ASSISTED THORACIC SURGERY (VATS) GROUP REGISTRY

Nicoletta Pia Ardò[1], Duilio Divisi[2], Domenico Loizzi[1], Andrea Droghetti[3], Roberto Crisci[4], Carlo Curcio[5], Alessandro Bertani[6], Diletta Mongiello[1], Francesco Sollitto[1]
[1]*Università di Foggia, Azienda ospedaliero-universitaria "Policlinico Riuniti" Foggia, Struttura Complessa di Chirurgia Toracica Universitaria, Foggia, Italy*
[2]*U.O.C. Chirurgia Toracica a direzione Universitaria Asl Teramo, Teramo, Italy*
[3]*S.C. Chirurgia Toracica Ospedale Carlo Poma Mantova, Mantova, Italy*
[4]*Division of Thoracic Surgery Mazzini Hospital Teramo MeSVA Department, University of L'Aquila, L'Aquila, Italy*
[5]*U.O.C. Chirurgia Toracica Ospedale Monaldi Napoli, Napoli, Italy*
[6]*Unità di Chirurgia Toracica e trapianto di polmone ISMETT Palermo, Palermo, Italy*

OBJECTIVES
This restrospective, multicentric study aimed to evaluate the impact of Enanched Revovery After Surgery (ERAS) pathways in Thoracic Surgery in the Italian VATS Group Registry. The ERAS group was compared with the standard treatment regards: hospital length of stay, chest tubes duration, postoperative complication rates, pain, quality of life and survival.

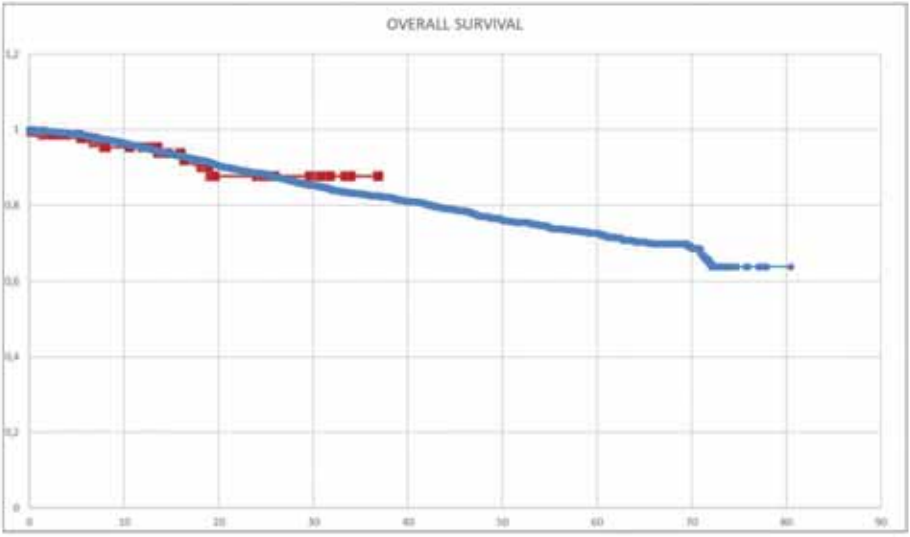
METHODS
We conducted a retrospective study on all patients entered into the Italian VATS Group Registry Platform from July 2013 through July 2020, divided into two groups: ERAS group and Standard group.

RESULTS
A total of 10938 patients underwent major lung resection; 365 followed the ERAS program. The ERAS group was superior to the Standard group for the following variables: mean length of hospital stay (6,07 ± 3.98 days vs 8.57 ± 6.57 days); duration of thoracic drainage (4 ± 4 days vs 5 ± 4 days). Statistically significant differences were found in favor of the ERAS group regarding the following postoperative complications: post-operative transfusions of blood (0.5% vs 2.1%), intensive care unit transfer (0.05% vs 4.3%), atrial fibrillation (3.83 vs 6.74%), Sputum retention (0.8 vs 2,49%). Overall survival, pain assessment and quality of life showed no statistically significant differences between the two groups.

CONCLUSIONS

The results that emerged in this multicentric study are encouraging and highlight that ERAS is applicable in Thoracic Surgery and can effectively reduce the hospital stay and the length of the drainage. The strengths of the paper are the large sample size under study and the multicentric approach. This work presents the limitations of all retrospective studies in regard to patient selection. Further analyses are needed, especially with prospective and randomized studies.

Disclosure: No significant relationships.
Keywords: ERAS, Italian VATS Group Registry, VATS Group, VATS Lobectomy.



O-087

IMMUNOTHERAPY EFFECTIVENESS IN STAGE IV NON-SMALL CELL LUNG CANCER ACCORDING TO RACIAL CHARACTERISTICS

Annie Chang[1], Shivam Joshi[2], Earnest Chen[1], Emanuela Taioli[3]
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[2]*Institute for Translational Epidemiology and Department of Population Health Science and Policy, Icahn School of Medicine at Mount Sinai, New York, United States*
[3]*Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai, New York, United States*

OBJECTIVES

Outcomes of immunotherapy for metastatic non-small cell lung cancer (NSCLC) vary widely. Yet, there is little data on whether response rates to immunotherapy in NSCLC depend on race. Therefore, the purpose of this study was to explore how race modulates the effectiveness of chemoimmunotherapy in metastatic NSCLC.

METHODS

Stage IV NSCLC patients were identified from Surveillance Epidemiology and End Results (SEER)-Medicare linked data. The primary predictor of interest was race and the primary outcome of interest was overall survival (OS). Race was categorized as white, Black, Asian, Hispanic, Native American, other, and unknown. Covariates of age, sex, marital status, Charlson comorbidity index, receipt of immunotherapy, and histology were extracted from SEER. Odds ratios were calculated to determine the factors associated with racial groups and mortality. Multivariable Cox-proportional hazards regression models were conducted to evaluate the independent association of race with OS, adjusted for covariates.

RESULTS

Out of 21,098 patients with stage IV NSCLC meeting selection criteria, 16,855 (79.9%) were white, 2,294 (10.9%) were Black, 1,048 (5.0%) were Asian, 346 (1.6%) were Native American, 674 (3.2%) were of other race, and 176 (0.83%) were of unknown race. Across racial groups, female sex, being married, and receipt of immunotherapy were independently associated with better OS, while older age, a histology of epithelial neoplasms, and a higher Charlson comorbidity index were independently associated with worse OS (Table 1). Asians who were married tended to have higher survival (HRadj: 0.66 (95% CI: 0.53-0.82)), and Hispanics who received immunotherapy were significantly associated with higher survival (HRadj: 0.48 (95% CI: 0.28-0.84)).

CONCLUSIONS

Race appears to modulate the effectiveness of immunotherapy, with evidence suggesting that age, sex, marital status, and receipt of immunotherapy contribute to differences in immunotherapy effectiveness.

Disclosure: No significant relationships.
Keywords: Immunotherapy, NSCLC.

Table 1: Factors independently associated with mortality.

	HR_{adj} non-Hispanic White (95% CI) n=16855	HR_{adj} Black (95% CI) n=2294	HR_{adj} Asian (95% CI) n=1048	HR_{adj} Hispanic (95% CI) n=346	HR_{adj} Native American (95% CI) n=51
Age at diagnosis, years					
66-69	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
70-74	1.14 (1.08,1.19)	1.05 (0.92,1.18)	1.06 (0.81,1.41)	1.13 (0.89,1.43)	0.95 (0.64,1.39)
75-79	1.21 (1.15,1.28)	1.16 (1.02,1.33)	1.24 (0.94,1.65)	1.38 (1.08,1.75)	1.36 (0.91,2.03)
≥80	1.56 (1.49,1.64)	1.46 (1.27,1.67)	1.68 (1.27,2.23)	1.85 (1.48,2.30)	1.45 (1.01,2.08)
Sex					
Female vs. Male	0.79 (0.77,0.82)	0.86 (0.78,0.95)	0.67 (0.54,0.82)	0.78 (0.66,0.91)	0.66 (0.50,0.88)
Marital Status					
Married	0.85 (0.82,0.88)	0.94 (0.84,1.05)	0.66 (0.53,0.82)	0.85 (0.71,1.01)	0.95 (0.70,1.63)
Unmarried	1.10 (1.03,1.17)	1.08 (0.96,1.23)	0.85 (0.60,1.21)	1.19 (0.89,1.58)	1.12 (0.77,1.63)
Unknown/ Other	1.32 (1.07,1.64)	1.39 (1.03,1.88)	1.05 (0.26,4.26)	1.29 (0.74,2.27)	1.82 (0.57,5.82)
Charlson Comorbidity Index					
0	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
1	1.16 (1.07,1.25)	1.08 (0.86,1.36)	1.54 (0.98,2.40)	1.32 (0.92,1.89)	1.48 (0.93,2.37)
2	1.24 (1.14,1.34)	1.38 (1.12,1.69)	1.00 (0.59,1.68)	1.15 (0.74,1.80)	1.48 (0.82,2.68)
≥3	1.45 (1.37,1.54)	1.37 (1.18,1.58)	2.08 (1.40,3.10)	1.55 (1.12,2.13)	1.44 (0.96,2.16)
Immuno-therapy					
Received	0.53 (0.48,0.59)	0.59 (0.41,0.84)	0.56 (0.35,0.91)	0.48 (0.28,0.84)	0.49 (0.21,1.12)

Table 1: Factors independently associated with mortality (continuation).

	HR_{adj} non-Hispanic White (95% CI) n=16855	HR_{adj} Black (95% CI) n=2294	HR_{adj} Asian (95% CI) n=1048	HR_{adj} Hispanic (95% CI) n=346	HR_{adj} Native American (95% CI) n=51
Histology					
Epithelial neoplasms	1.57 (1.50,1.66)	1.30 (1.13,1.49)	1.33 (0.96,1.84)	1.96 (1.55,2.47)	1.11 (0.75,1.64)
Squamous cell neoplasms	0.98 (0.94,1.02)	1.00 (0.90,1.11)	1.05 (0.83,1.31)	1.40 (1.17,1.69)	0.68 (0.50,0.92)
Adenomas and adeno-carcinomas	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Other	0.53 (0.48,0.59)	0.82 (0.63,1.06)	0.87 (0.55,1.37)	1.08 (0.74,1.56)	0.66 (0.35,1.23)

O-088

VALIDITY OF PROLONGED AIR LEAK PROBABILITY SCORE IN PRIMARY SPONTANEOUS PNEUMOTHORAX

Necati Citak[1], Servet Özdemir[2]
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[2]*Bakirköy Dr. Sadi Konuk Research and Education Hospital, Istanbul, Turkey*

OBJECTIVES
A probability-scoring system called PALpx was created for prolonged air leak (PAL) in the first attack of primary spontaneous pneumothorax (PSP). It was investigated whether PALpx could predict the development of PAL in PSP patients.

METHODS
We analyzed 652 PSP patients between 2012 and 2021. An air leak that persists for more than 5 days was accepted as PAL. A multivariable logistic regression model was prepared to estimate the probability of PAL. Regardless of the p-value for the variables, the beta regression coefficients calculated for each variable in the logistic regression analysis were used to generate a risk score. Using the sum of the regression coefficients and constant, the logarithm of the odds (log_odds) value was calculated for each patient. The probability of PAL was calculated using the following formula: Probability = (100 × (e(log_odds) / (1 + e(log_odds))). The predictive performance of the PALpx was evaluated by assessing its discrimination, which was measured using the area under the receiver operating characteristic curve (AUC). Calibration was ascertained using the Hosmer–Lemeshow method and Brier score.

RESULTS
The PAL rate was 25.3% (n=165). Logistic regression analysis showed that the presence of bullae or blebs (p=0.001, odds ratio=2.37, 95%CI=1.44-3.90), pneumothorax volume (p<0.001, odds ratio=1.04, 95%CI=1.03-1.05), and dystrophic severity score (p<0.001, odds ratio=1.16, 95%CI=1.07-1.26) were independent risk factors for PAL (Table 1). The PALpx significantly predicted PAL (AUC=0.808, p<0.001), and it had an adequate calibration (Hosmer-Lemeshow test p=0.119, Brier score=0.25) (Figure 1a and 1b). When risk groups (low-risk (<10%), moderate-risk (10%-25%), and high-risk (>25%)) were created for convenience in clinical practice, the PAL rate was 10% in the low-risk group, 33% in the moderate-risk group, and 67% in the high-risk group (p<0.001).

CONCLUSIONS
The probability of PAL could be predicted by PALpx in the first episode of primary spontaneous pneumothorax. However, multicenter external validation is required.

Disclosure: No significant relationships.

Keywords: Primary Spontaneous Pneumothorax, Prolonged Air Leak, Probability, Validity, Discrimination.

Variables	Odds ratio	95%CI	p value	Beta coefficient[α]
Age (per year)*	0.964	0.927-1.002	0.06	-0.037
Sex (Male vs. Female)	1.044	0.469-2.324	0.91	0.043
Smoking (No vs. Yes)	0.920	0.537-1.576	0.76	-0.084
Smoking (per pack/years)*	1.002	0.957-1.040	0.92	0.002
Side (Left vs Right)	1.164	0.765-1.772	0.47	0.152
Kirscher pneumothorax volume (per volume)*	1.045	1.034-1.056	**<0.001**	0.044
Presence of bullae/blebs	2.376	1.446-3.904	**0.001**	0.865
Dystrophy severity score (per score)*	1.164	1.073-1.262	**<0.001**	0.152
Model Constant				-3.008[β]
Nagelkerke R Square				0.320

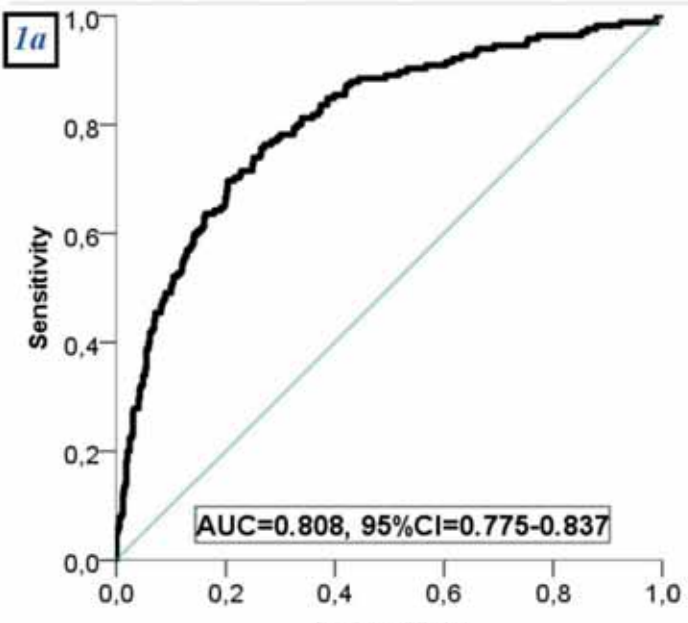
CI; confidence interval, vs; versus

[α] With the sum of the regression coef?cients and constant (intercept), the logarithm of the odds (log odds) value was calculated for each patient.

* Age is centered on the mean of 25 years, cigarette pack/years is 6 packs/years, Kirscher pneumothorax volume is centered at 41.6%, and dystrophy severity score is centered on 1.7 (i.e., 25 is subtracted from the actual age, 6 is subtracted from the actual number of packs/years, 41.6% is subtracted from the actual Kirscher pneumothorax volume, and 1.7 is subtracted from the actual dystrophy severity score).

[β] The formula was created according to the results of the analysis, as follows: log odds = (-0.037 x (Age-25)) + Sex (Male=0.043, Female=0) + History of smoking (Yes=0.084, No=0) + (0.002* (pack/years-6)) + pneumothorax side (Right=0.152, Left=0) + (0.044 x (Kirscher pneumothorax volume-41.6)) + presence of bulla/bleb (Yes=0.865, No=0) + (0.152 x (Dystrophic severity score-2) – 3.008). The probability of PSP surgery was calculated individually for each patient.

1a



1b

Steps		Prolonged air leak = No		Prolonged air leak = Yes		Total
		Observed	Expected	Observed	Expected	
	1	60	62.5	5	2.4	65
	2	64	61.1	1	3.8	65
	3	56	59.5	9	5.4	65
	4	62	57.4	3	7.5	65
	5	57	55.0	8	9.9	65
	6	52	51.8	13	13.1	65
	7	47	48.1	18	16.8	65
	8	42	41.3	23	23.6	65
	9	27	31.7	38	33.2	65
	10	20	18,093	47	48.9	67
How many patients classified as having no prolonged air leaks were correctly classified by the prediction model?						96.4%
How many patients classified as having a prolonged air leak were correctly classified by the prediction model?						41.2%
Generally correct classification rate						80.4%

O-089

ANATOMICAL VERSUS NON-ANATOMICAL LUNG METASTASECTOMY: EUROPEAN SOCIETY OF THORACIC SURGEONS (ESTS) MULTICENTRE ANALYSIS

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OBJECTIVES

To assess the current practice of lung metastasectomy in 15 European centres.
The primary endpoint was to compare the impact of anatomical vs. non-anatomical resections on patient survival.

METHODS

Retrospective analysis on patients ≥18 years, who underwent curative-intent lung metastasectomy (01/2010-12/2018).
Anatomical resections included segmentectomies, lobectomies/bilobectomies; non-anatomical resections included wedge resections and precision tumourectomies.
Exclusion criteria were: previous lung/extra-pulmonary metastasectomy, pneumonectomy, non-curative intent, evidence of extrapulmonary recurrence at the time of lung surgery.
Tests for censored data were performed to compare OS and RFS between groups, differentiated by type of resection, primary tumour histology, lymph node dissection, induction/adjuvant treatments.

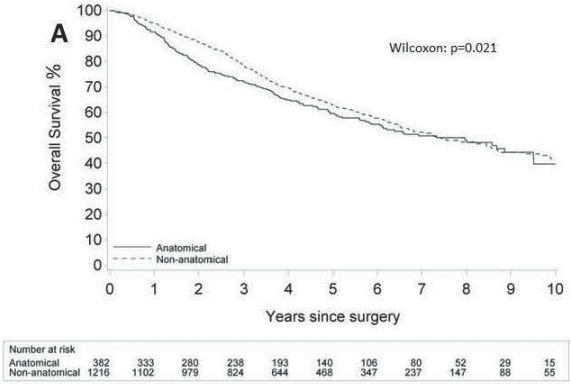
RESULTS

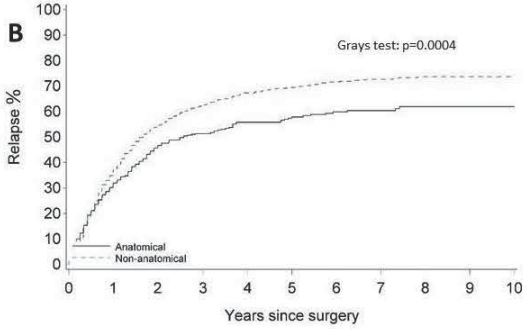
A total of 1717 patients (mean age 62.8±20.9 years; 57% males) were included: 412 (24%) underwent anatomical resections and 1305 (76%) non-anatomical resections.
There were no significant differences concerning pre-operative comorbidities (p=0.982) and ASA score (p=0.410) between groups. Induction therapies were performed more frequently for anatomical resections (14.58% vs. 8.60%, p<0.001).
Anatomical resections were associated with a higher rate of hilar-mediastinal lymph node dissection (88.52% vs. 27.52%, p<0.001), larger size (mean: 26.61±20.41 vs. 15.49± 9.75 mm, p<0.001) and lower number (mean: 1.71±2.74 vs. 2.78±4.27 mm, p<0.001) of resected nodule(s).
The mean resection margin was larger for anatomical resections (17.01±14.24 vs. 6.59± 6.06 mm, p<0.001).
Patients who underwent non-anatomical resections had fewer post-operative complications (12.61% vs. 23.72%, p<0.001) and shorter hospital stay (mean: 4.46±2.99 vs. 6.50±4.83 days, p<0.001).
5-year OS and RFS were 76.7% and 28.9%, respectively.
OS was longer for non-anatomical resections (at 2 years: 87.5% vs. 78.8%, p=0.021). Disease relapse occurred more frequently after non-anatomical resections (62.91% vs. 52.30%, p=0.0004), and RFS was longer after anatomical resections (at 5 years: 34.8% vs. 27.1%, p=0.008) (Figure).

CONCLUSIONS

Lung metastasectomy provides satisfactory oncological outcomes. Non-anatomical resections seem to offer a significant survival benefit, although they are associated with a higher risk of recurrence, possibly due to smaller resection margins.

Disclosure: No significant relationships.
Keywords: Lung Metastasectomy, Anatomical Resection, Non-Anatomical Resection.


A
Wilcoxon: p=0.021
Overall Survival %
100
90
80
70
60
50
40
30
20
10
0
Anatomical
Non-anatomical
0 1 2 3 4 5 6 7 8 9 10
Years since surgery
Number at risk
Anatomical 382 333 280 238 193 140 106 80 52 29 15
Non-anatomical 1216 1102 979 824 644 468 347 237 147 88 55


B
Grays test: p=0.0004
Relapse %
100
90
80
70
60
50
40
30
20
10
0
Anatomical
Non-anatomical
0 1 2 3 4 5 6 7 8 9 10
Years since surgery

O-090

IMPACT OF CORONAVIRUS (COVID)-19 CONTAINMENT MEASURES ON SURGICAL CARE OF LUNG CANCER PATIENTS: EXPERIENCES OF A MAXIMUM CARE CENTER

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OBJECTIVES
The governmental measures to contain the COVID-19 pandemic limited intensive care and operating room capacities in many European countries in the years 2020-2021. As a result, many elective operations had to be postponed. For NSCLC patients more than others this resulted in an increased risk of tumor growth and disease progression. We analyzed the local strategy to minimize this risk by prioritizing cancer-related operations.

METHODS
Retrospective, monocentric cohort analysis at a maximum care center with a thoracic surgery service. Data of all patients undergoing NSCLC surgery between 2017 and 2021 were evaluated. The number of operations performed and the disease stages of the operated patients were analyzed. To determine a possible delay effect, the immediately pre-pandemic treatment period 2017-2019 (PRE) was compared with the pandemic phase 2020-2021 (PAN).

RESULTS
A total of 1,262 thoracic operations were performed in the observation period. During this period, the annual number of thoracic interventions increased continuously (2017 n=170, 2018 n=240, 2019 n=262, 2020 n=301, 2021 n=289). On average, 16.35% of surgeries were NSCLC resections in both cohorts (17.2%PRE, 15.1%PAN). Stage distribution of operated patients showed an increase in the early stages in the pandemic phase (PRE vs PAN): stage I 47.73% vs 42.72% ($p<0.01$), stage II 12.86% vs 23.5% ($p< 0.01$), stage III 33.11% vs 22.91% ($p=0.86$), stage IV 6.29% vs 10.89% ($p<0.01$). The perioperative course (length of intensive care and hospital stay) did not change in either cohort.

CONCLUSIONS
Prioritization of surgeries in NSCLC patients prevented tumor progression and stage shift with worsening of the disease prognosis. With regard to future containment sanctions prioritization of surgeries for NSCLC is an effective public health measure.

Disclosure: No significant relationships.
Keywords: NSCLC, Lung Cancer,Covid-19, Containment, Prioritization.

O-091

PROGNOSTIC SIGNIFICANCE OF LIMITED RESECTION IN PATHOLOGIC N0 LUNG ADENOCARCINOMA WITH SPREAD THROUGH AIR SPACES

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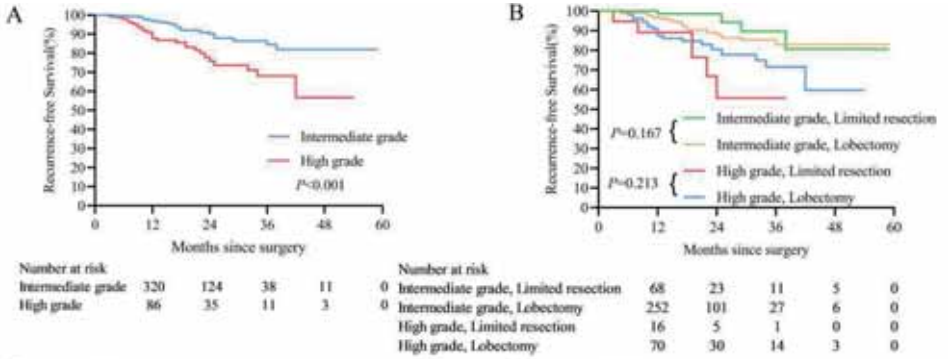
OBJECTIVES
Tumor spread through air spaces (STAS) has recently been recognized as a form of tumor invasion having an unfavorable prognosis in patients with early-stage lung adenocarcinoma. The aim of this study was to investigate whether limited resection predicts poorer survival in pathological N0 patients.

METHODS
We retrospectively reviewed 1566 patients who underwent lobectomy (n=1245) or limited resection (n=321) for pathologic N0 lung adenocarcinoma from 2015 to 2020. We divided the study population into groups according to STAS status, i.e., STAS positive vs. STAS negative, and to type of surgery, i.e., lobectomy vs. limited resection. Stratums were concomitantly determined by pathological TNM stage. Pearson's chi-square test or Fisher exact test was used for comparing the relationship between STAS and clinicopathologic factors. Outcomes were analyzed by using Kaplan-Meier and Cox proportional hazards model.

RESULTS
For recurrence-free survival(RFS), Kaplan-Meier analysis revealed that STAS-positive patients performed worse RFS($P<0.001$). But there was no significant difference between limited resection and lobectomy in neither the STAS-negative group nor STAS-positive group($P=0.449$ and $P=0.387$ respectively). Among STAS-positive patients, Kaplan-Meier analysis also revealed that patients who underwent limited resection achieved comparable RFS with those who underwent lobectomy in both pathologic IA and IB stage($P=0.485$ and $P=0.188$ respectively). Furthermore, in multivariable analysis, limited resection was not found to be an independent prognostic factor of RFS among patients with STAS. Instead, higher pathologic stage, high grade histologic subtype, higher CEA level, solid nodule on CT and the presence of adjuvant chemotherapy predicted poorer prognosis in both univariate and multivariate analyses. In a stratified subgroup based on with and without adjuvant chemotherapy, adjuvant chemotherapy was significantly associated with poorer outcomes in STAS-positive patients(3y-RFS: 70.8% vs. 88.5%, $P<0.001$).

CONCLUSIONS
Limited resection wasn't a significant prognostic factor for pathologic N0 lung adenocarcinoma patients with STAS in the short-term follow up.

Disclosure: No significant relationships.
Keywords: Lung Adenocarcinoma, Spread Through Air Spaces, Prognosis, Lobectomy.


A
Recurrence-free Survival(%)
Intermediate grade
High grade
P<0.001
Months since surgery
Number at risk
Intermediate grade 320 124 38 11 0
High grade 86 35 11 3 0
B
Recurrence-free Survival(%)
P=0.167
Intermediate grade, Limited resection
Intermediate grade, Lobectomy
P=0.213
High grade, Limited resection
High grade, Lobectomy
Months since surgery
Number at risk
Intermediate grade, Limited resection 68 23 11 5 0
Intermediate grade, Lobectomy 252 101 27 6 0
High grade, Limited resection 16 5 1 0 0
High grade, Lobectomy 70 30 14 3 0
C
Recurrence-free Survival(%)
With ACT
Without ACT
P<0.001
Months since surgery
Number at risk
With ACT 220 87 40 15 0
Without ACT 202 79 16 0 0
D
Recurrence-free Survival(%)
P=0.156
Limited,With ACT
Limited,Without ACT
P<0.001
Lob, With ACT
Lob, Without ACT
Months since surgery
Number at risk
Limited resection, with ACT 29 10 3 0 0
Limited resection, without ACT 60 21 12 6 0
Lobectomy, with ACT 173 69 13 0 0
Lobectomy, without ACT 160 66 28 9 0

TUESDAY 6 JUNE 2023
TRANSPLANT SESSION XVII
16:30 - 17:30

O-092

THE EFFECT OF EPOPROSTENOL-INDUCED THROMBOCYTOPENIA ON LUNG TRANSPLANTATION FOR PULMONARY ARTERIAL HYPERTENSION

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OBJECTIVES
Preoperative Intravenous epoprostenol therapy can cause thrombocytopenia, which may increase a risk of perioperative bleeding in lung transplantation. The purpose of this study is to determine whether lung transplantation can be performed safely under epoprostenol-induced thrombocytopenia.

METHODS
From June 2008 to July 2022, we performed 37 lung transplants for pulmonary arterial hypertension (PAH), including idiopathic PAH (n=26), congenital heart disease-associated PAH (n=7), pulmonary veno-occlusive disease (n=3) and peripheral pulmonary stenosis (n=1) in our institution. Of those, 26 patients received intravenous epoprostenol therapy (EPO group), while 11 patients were treated with no or other prostacyclin (no-EPO group). We retrospectively compared pre and postoperative platelet counts in plasma and posttransplant outcomes between the groups.

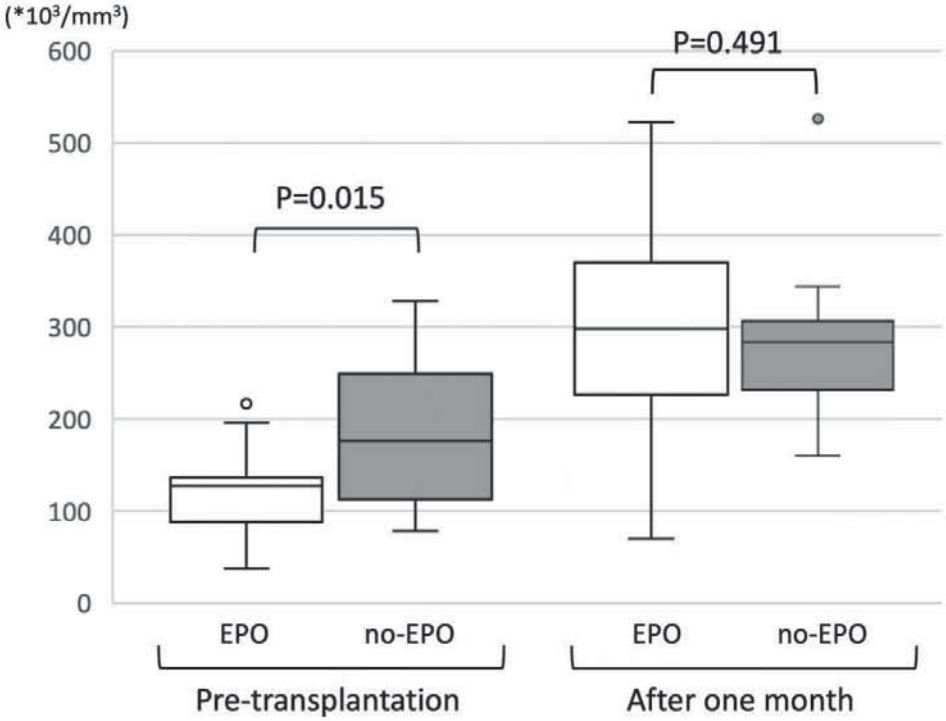
RESULTS
Preoperative platelet counts were significantly lower in EPO group in comparison to no-EPO group (median, EPO: 127*103 vs. no-EPO: 176*103/mm3, P=0.015). All transplant procedures were performed under extracorporeal circulation (ECC), and cardiopulmonary bypass was more frequently used in no-EPO group (42.3% vs. 81.8%, P=0.031). There was no significant difference in operative and ECC time between the groups. Blood loss during surgery did not significantly differ between the groups (2473 vs. 2615 ml, P=0.561). Re-thoracotomy for postoperative hemorrhage was required in 7 patients (26.9%) in EPO group and 4 patients (36.4%) in non-EPO group (P=0.566). The platelet counts significantly increased over one month after surgery, and there was no more significant difference in platelet counts between the groups (298*103 vs. 284*103/mm3, P=0.491). In-hospital mortality was similar in both groups (EPO: n=1, no-EPO: n=2, P=0.144), and 3-year survival rates were 91.4% in EPO group, and 80.8% in no-EPO group (P=0.477).

CONCLUSIONS

PAH patients treated with intravenous epoprostenol showed significantly lower platelet counts prior to lung transplantation, which did not increase the risk of perioperative bleeding. The patients showed favorable posttransplant outcomes with the improvement of thrombocytopenia after surgery.

Disclosure: No significant relationships.

Keywords: Lung Transplantation, Pulmonary Arterial Hypertension, Thrombocytopenia, Epoprostenol.



O-093

LUNG ULTRASOUND IS A USEFUL METHOD FOR GRAFTS EVALUATION IN A SWINE LOBAR TRANSPLANT MODEL

Sho Murai, Yui Watanabe, Kazunori Ueda, Tatsuaki Watanabe, Takashi Hirama, Hisashi Oishi, Hiromichi Niikawa, Takeo Togo, Ken Onodera, Hirotsugu Notsuda, Takaya Suzuki, Masafumi Noda, Yoshinori Okada
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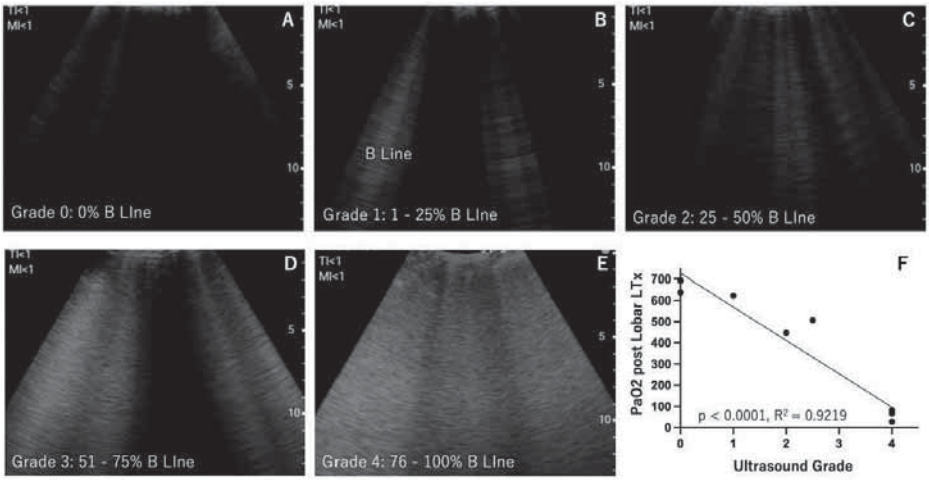
OBJECTIVES
Lung transplantation is an established therapy for end-stage lung diseases. However, the transplantation rate for children and small patients is low and waitlist mortalitiy is high. Some donor lungs that are ineligible for transplantation may be lobar transplantable, and lobar transplantation has the potential to save the lives of small patients. For safe lobar transplantation, it is necessary to clarify a graft evaluation method for each lobe. The purpose of this study was to establish a large animal model of lobar transplantation and to determine a graft evaluation method for safe lobar transplantation.

METHODS
We created a model of aspiration pneumonia and acute lung injury by selectively injecting gastric juice into the left lung of large Yorkshire domestic pigs weighing approximately 50 kg. Lobar grafts were evaluated, and lungs were recovered 6 hours after gastric juice injection. Lobar graft evaluation methods included graded scores of X-rays before donor surgery, local O2 and CO2 concentrations in the airway, visual inspection, palpation, lung ultrasonography(Figure1A-E), and O2 partial pressure in the pulmonary vein during surgery. The left upper lobe of the donor lungs was transplanted as a left lung into a small pig weighing approximately 30 kg. Four hours of reperfusion was performed, and the correlation between pre-transplant endpoints and post-transplant O2 partial pressure was examined in each lobe graft (n=9).

RESULTS
Lobar transplantation was performed reproducibly, and all animals survived 4 hours after transplantation. The pre-transplant assessment that correlated best with post-transplant O2 partial pressure was lung ultrasonography (Figure1F, $p<0.0001$, $R2=0.9219$), which correlated better than visual inspection ($R2=0.7867$), palpation ($R2=0.9016$), chest radiograph ($R2=0.6975$) and O2 partial pressure in pulmonary vein ($R2=0.9000$). On the other hand, there was no correlation with local O2 and CO2 concentrations in the airway.

CONCLUSIONS
Lung ultrasonography was a useful method for grafts evaluation in a swine lobar transplant model.

Disclosure: No significant relationships.
Keywords: Lobar Transplantation, Donor Assessment, Ultrasound.



O-094

RESULTS OF LUNG TRANSPLANT PERFORMED WITH DONORS OVER 70 YEARS

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OBJECTIVES
To compare outcomes of lung transplantation (LT) using grafts from donors over 70 years to those performed with younger donors.

METHODS
This is a retrospective study from a prospectively maintained database. The analysis includes all LT performed in our institution from January 2013 to June 2022. Retransplantation and heart-lung transplantation were excluded. Variables from donors, recipients, transplant procedure and postoperative outcomes were collected and compared between the two groups.

RESULTS
A total of 388 LT were performed in this period, 47 of them (12.3%) with grafts from donors over 70 years. The group of older donors were more frequently women (70.2% vs. 51.9%, p= 0.018), with less smoking history (77.8% non-smokers compared to 56.6%, p=0.002) and longer mechanical ventilation time (3 vs. 2 days, p=0.017). We found a higher LAS score (37.5 vs. 35, p=0.264) and a higher rate of need of intraoperative extracorporeal support (61.7% vs. 49.3%, p=0.047) in the elderly donor group. Development of chronic lung allograft dysfunction was less frequent in the group of donors over 70 (6.4% vs. 17.9%, p=0.046), although the best FEV1 in the long term follow up was lower (2.700 ml vs. 2.580 ml, p=0.001). There were no significant differences between the groups regarding primary graft dysfunction, 30 nor 90 day mortality (Table 1). Overall survival was no significantly different between groups neither (86% in elderly group vs. 87% in younger group, 76% vs. 77% and 65% vs. 68% at 1, 3 and 5 years, respectively).

CONCLUSIONS
The use of extended donors over 70 years of age did not result in increased postoperative morbidity, early mortality, or survival in this study. The use of carefully selected elderly donors could help to palliate the shortage of organs increasing the opportunities for the patients awaiting for a transplant.

Disclosure: No significant relationships.
Keywords: Extended Donors.

	Donor ≥ 70 N=47 patients	**Donor < 70** N=341 patients	**P *value***
Gender donor (%)			
Male	14 (29.8)	164 (48.1)	0.018
Female	33 (70.2)	177 (51.9)	
Smoking history (%)	10 (22.2)	144 (43.4)	0.002
BMI donor *(median, IQR)*	27.3 (25-29.7)	25.4 (23.3-27.8)	0.003
Cause of brain injury (%)			
CVA	40 (85.1)	216 (63.3)	
Trauma	6 (12.7)	55 (16.1)	0.051
Anoxia	1 (2.13)	39 (11.4)	
Other	0 (0)	31 (9.1)	
Type of donor (%)			
DBD	38 (80.8)	271 (79.5)	
cDCD	9 (19.5)	56 (16.4)	0.346
uDCD	0 (0)	14 (4.11)	
MV Donor *(days, median, IQR)*	3 (1-7)	2 (1-4)	0.017
P/F ratio *(median, IQR)*	468 (390-512)	446 (388-500)	0.297
Use of EVLP (%)	3 (6.8)	22 (6.5)	0.930
Age recipient *(mean +- SD)*	57.3 +-10.3	55.1 +- 11.1	0.918
Gender recipient (%)			
Male	25 (53.2)	224 (65.7)	0.094
Female	22 (46.8)	117 (34.3)	
Indication (%)			
COPD	13 (27.7)	119 (34.9)	
IPF	14 (29.8)	64 (18.8)	
ILD	10 (21.2)	69 (20.2)	0.333
CF	2 (4.3)	27 (7.9)	
Other	8 (17)	62 (18.2)	
LAS Score *(median, IQR)*	37.5 (34.5-40)	35 (33-39.9)	0.026

	Donor ≥ 70 N=47 patients	**Donor < 70** N=341 patients	**P *value***
BMI recipient *(median, IQR)*	24.9 (22-27)	24.1 (21.3-27)	0.473
6MWT *(median, IQR)*	353 (260-445)	340 (260-412)	0.345
mPAP mmHg *(median, IQR)*	21 (17-26)	23 (17-27)	0.327
Ratio pTLC Donor/Rec *(median, IQR)*	1 (0.9-11)	1 (0.9-1.1)	0.926
Double lung transplant (%)	44 (93.6)	295 (86.5)	0.169
Single lung transplant (%)	3 (6.4)	46 (13.49)	
Urgent status (%)	8 (17)	38 (11.2)	0.246
Intraoperative ECLS (%)			0.047
ECMO	26 (55.3)	126 (37)	
CPB	3 (6.4)	42 (12.3)	
None	18 (38.3)	173 (50.7)	
Grade 3 PGD 72 hours (%)	10 (22.2)	51 (15.7)	0.385
Postoperative ECMO (%)	10 (22.2)	46 (13.8)	0.136
Reintervention (%)	11 (23.4)	53 (15.8)	0.192
MV Recipient *(days, median, IQR)*	2.5 (1-25)	2 (1-11)	0.197
ICU stay, days *(median, IQR)*	10 (6-30)	8 (5-20)	0.210
Hospital stay, days *(median, IQR)*	45.5 (36-83)	42 (34-59)	0.090
30-d mortality (%)	0 (0)	13 (3.8)	0.173
90-d mortality (%)	2 (3)	18 (5.8)	0.364
Hospital mortality (%)	1 (2.1)	23 (6.7)	0.218
Best post-op FEV1 *(median, IQR)*	2070 (1790-2390)	2580 (2040-3100)	0.001
CLAD (%)	3 (6.3)	60 (17.9)	0.046
Time to CLAD *(days, median, IQR)*	627 (176-708)	820 (468-1124)	0.205

O-095

CLINICAL OUTCOMES AND COST ANALYSIS OF ORGAN DELIVERY VIA PUBLIC TRANSPORTATION IN LUNG TRANSPLANTATION

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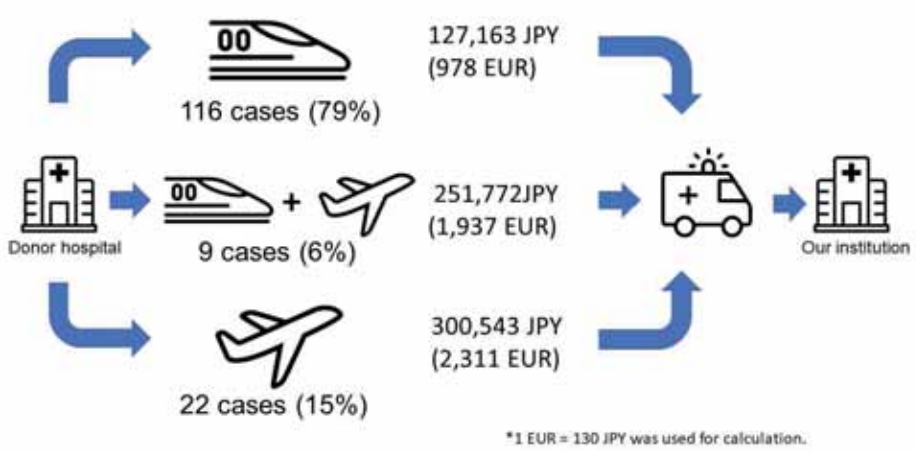
OBJECTIVES
Longer preservation time of lung grafts is associated with an increased risk of primary graft dysfunction (PGD) and poor clinical outcomes in lung transplantation. To minimize ischemic time, private jets or helicopters are often used for long-distance organ transportation. In Japan, donor lungs are typically transported via public transportation, such as passenger planes or bullet trains. The aim of this study was to investigate the safety and cost-effectiveness of using public transportation for donor lung delivery.

METHODS
We retrospectively analyzed data from 176 cadaveric lung transplantations performed between October 2011 and October 2022 in our institution. Of these, 29 local cases transported by only taxi and ambulance were excluded. One hundred forty-seven distant cases were analyzed to investigate the means and cost of organ delivery via public transportation. Donor and recipient characteristics, and post-transplant outcomes were investigated.

RESULTS
One hundred sixteen (79%) lungs were transported by bullet trains at a mean cost of JPY 127,163 (EUR 978), and 22 (15%) lungs were transported by passenger planes at a mean cost of JPY 300,543 (EUR 2,311). The mean of total ischemic time (TIT), defined as cold ischemic time plus implantation time, was 523 ± 111 minutes. The mean of donor age was 41 years, and PaO2/FiO2 was 463 mmHg. To investigate the impact of TIT on clinical outcomes, the cohort was divided into TIT < 8hours (n = 51) and ≥ 8hours (n = 96). The incidence of PGD grade 3 at 72 hours was 14% in TIT ≥ 8hours and 4% in TIT < 8hours (p = 0.07). The 30-day and 90-day survival rates were both 97.8% in TIT ≥ 8hours and 100% in TIT < 8hours. No significant difference was observed in overall survival.

CONCLUSIONS
Organ delivery via public transplantation instead of using private jets or helicopters is safe and cost-effective.

Disclosure: No significant relationships.
Keywords: Lung Transplantation, Organ Transportation, Organ Preservation.


116 cases (79%)
127,163 JPY
(978 EUR)
Donor hospital
9 cases (6%)
251,772JPY
(1,937 EUR)
Our institution
22 cases (15%)
300,543 JPY
(2,311 EUR)
*1 EUR = 130 JPY was used for calculation.

O-096

EFFICACY AND SAFETY OF CRYOBIOPSY VERSUS FORCEPS BIOPSY IN LUNG ALLOGRAFT RECIPIENTS: A SINGLE-CENTER ANALYSIS

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OBJECTIVES

Endoscopic surveillance with transbronchial biopsy in lung transplant (LTx) is crucial, since an early diagnosis of acute cellular rejection (AR) can affect long term survival. Histological diagnosis of AR is usually obtained using transbronchial forceps biopsy (FB). In recent years, transbronchial cryobiopsy (CB) has been increasingly used, as it obtains larger samples than FB, without crush artefacts. Few studies have compared the two methods in terms of diagnostic accuracy and safety. The aim of this study is to assess the diagnostic yield and safety of CB in comparison with FB, for sampling lung tissue in transplant recipients.

METHODS

We analyzed through a retrospective study our case series of the two procedures. From January 2013 to December 2017, 251 FBs were performed in 110 patients, 223 for surveillance purposes and 28 on clinical indication. From January 2018 to October 2022, 218 consecutive CBs were performed in 137 patients, 159 for surveillance purposes and 59 on clinical indication. All biopsies were scored according to the ISHLT criteria. Clinical and functional data, complications, and histologic results were collected.

RESULTS

Diagnostic yield was higher in the CB group for all parameters: grade of AR was detected in 95.0% vs 84.5% in the FB group ($p<0.001$). Diagnostic rate of airway inflammation was 65.1% vs 51.8% ($p=0.005$), for chronic rejection 89.0% vs 64.9% ($p<0.001$). Pneumothorax requiring chest drainage occurred in 3.6% in the CB group and in 4% of patients in the FB group (p non-significant). Moderate and severe bleeding complicated CB and FB procedures in 7 (3.2%) and 3 cases (1.3%), respectively ($p=0.178$).

CONCLUSIONS

Transbronchial cryobiopsies improved the diagnostic yield in the monitoring of the lung allograft. The risk of bleeding and pneumothorax has not increased significantly. Prospective studies will better define the role of CB after LTx.

Disclosure: No significant relationships.
Keywords: Lung Transplantation, Acute Rejection, Cryobiopsy, Endoscopy.

O-097

PROGNOSIS AND RISK OF OCCURRENCE OF DIABETES MELLITUS IN PATIENTS AFTER LUNG TRANSPLANTATION

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[1]*Shanghai Pulmonary Hospital, Shanghai, China*
[2]*Huadong Hospital, Shanghai, China*

OBJECTIVES
This study aimed to analyze the prognoses of patients with lung transplantation and explore the associated risk factors of post-transplantation diabetes mellitus (PTDM).

METHODS
A total of 23,904 lung-transplantation patients were enrolled in this study. Logistic regression was used to analyze the risk effect of different immune-graft use on PTDM and calculate its corresponding odds ratio (OR). Kaplan-Meier (K-M) survival analysis and Cox regression were used to analyze the effect of different immunosuppressive agents on patient survival after transplantation and calculate the corresponding hazard ratio (HR) values.

RESULTS
The K-M survival analysis showed that among lung-transplant patients, overall survival was poor with Cyclosporin, Sandimmune, and Sirolimus. Tacrolimus (OR=1.18, 95% confidence interval [CI] 1.09-1.28, p<0.005), bariximab (OR=2.17, 95%CI 1.96-2.44, p<0.05), mycophenolic acid extended-release tablets (OR=2.00, 95%CI 1.52-2.70, p<0.05) alemtuzumab (OR=3.33, 95%CI 2.44- 4.55, p<0.05) tacrolimus generics ((OR=2.78, 95%CI 2.38-3.33, p<0.05) and mycophenolate mofetil generics (OR=3.13; 95%CI 2.63-3.85, p<0.05) increased the risk of developing PTDM in lung-transplantation patients. However, cyclosporine (OR=0.60, 95%CI 0.48-0.75, p<0.05), Sandimmune (OR=0.48, 95%CI 0.42-0.56, p<0.05), Neoral (OR=0.53, 95%CI 0.48-0.58, p<0.05), sirolimus (OR=0.58, 95%CI 0.39- 0.89, p=0.01), azathioprine (OR=0.51, 95%CI 0.47-0.56, p<0.05) and Gengraf (OR=0.72, 95%CI 0.56-0.94, p=0.015) reduced the risk of PTDM in patients.

CONCLUSIONS
The use of immunosuppressive agents may reduce the incidence of immune rejection of transplanted organs, but different immunosuppressive agents play different roles in the long-term survival of patients. PTDM is detrimental to the long-term survival of lung transplant patients. Besides, tacrolimus, mycophenolate mofetil, alemtuzumab, tacrolimus generics, and mycophenolate mofetil generics all increase the risk of PTDM in patients.

Disclosure: No significant relationships.
Keywords: Lung Transplantation, Post-Transplantation Diabetes Mellitus, Survival.

TUESDAY 6 JUNE 2023
INTERESTING CASES SESSION XVIII
16:30 - 17:30

O-098

STAGED REPAIR OF ESOPHAGEAL STENT MIGRATION INTO RIGHT MAIN BRONCHUS WITH ESOPHAGECTOMY, SLEEVE BILOBECTOMY AND RETROSTERNAL COLON INTERPOSITION

Sezer Aslan[1], Ceyhun Pasayev[2], Cagatay Cetinkaya[3], Hasan Batirel[4]
[1]*Sirnak State Hospital, Thoracic Surgery Clinic, Sirnak, Turkey*
[2]*Marmara University Faculty of Medicine, Department of Thoracic Surgery, Istanbul, Turkey*
[3]*Uskudar University Faculty of Medicine, Department of Thoracic Surgery, Istanbul, Turkey*
[4]*Biruni University Faculty of Medicine, Department of Thoracic Surgery, Istanbul, Turkey*

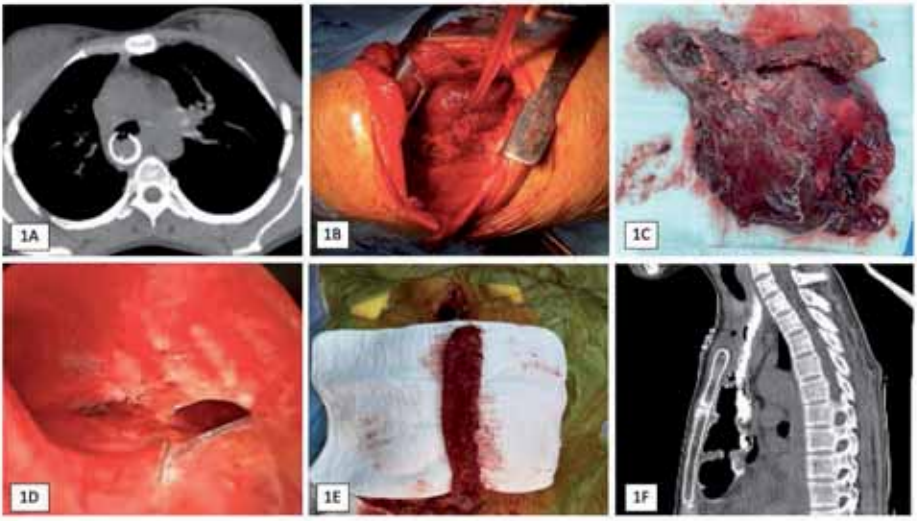
OBJECTIVES
Tracheo-broncho esophageal fistulas can be seen due to malignancies, prolonged intubations, iatrogenic interventions in adulthood. We present the surgical management of a patient who developed esophageal stent related major fistula in the right main bronchus.

CASE DESCRIPTION
A 32-year-old female patient with HIV positivity was under treatment with antiretroviral therapies. She was diagnosed with strictures related to candida esophagitis in 2017. The stricture was managed with esophageal stent. Patient had recurrent endoscopies, dilatations, stenting during the following 3 years. Percutaneous endoscopic gastrostomy was performed in 2019 due to progressive dysphagia. In 2020 patient's symptoms worsened and she was unable to swallow her saliva. Endoscopy revealed total obstruction at 25 cm and he was refused any further treatment due to her AIDS and frailty. Patient admitted to our clinic with unresolved cough and total esophageal obstruction. Thorax CT showed destroyed right lower lobe and metallic images in right main bronchus (Figure 1A). Eroded membranous trachea starting from 1 cm to the carina and extending to the intermediate bronchus was observed with bronchoscopy. Two-step surgery was planned. Esophagectomy, carinoplasty and sleeve right lower bilobectomy with anastomosis of upper lobe bronchus to carina was performed (Figure 1B). The release of esophagus and hilar structures was challenging. Inflammation at the subcarinal area made separation of esophagus impossible, and enbloc resection of thoracic esophagus with lower two lobes was performed (Figure 1C). Postoperative bronchoscopy image showed a open bronchus in the right side (Figure 1D). After three months, retrosternal colon interposition was performed (Figure 1E and F). She is alive and well with normal oral intake three years after surgery.

CONCLUSIONS

Restoration of gastrointestinal continuity is essential in benign gastroesophageal obstructions. Fistulas and subsequent lung destruction should be managed with a staged approach and if necessary esophagectomy and colonic interposition via an appropriate route.

Disclosure: No significant relationships.



O-099

ROBOT ASSISTED THORACIC SURGERY (RATS) SEGMENTECTOMY WITH PER OPERATIVE 3D HOLOGRAPHIC NAVIGATION : ASSESSMENT OF FEASIBILITY

Patrick Bagan, Bassel 0 Dakhil, Rym Zaimi
Victor Dupouy Hospital, Argenteuil, France

OBJECTIVES

Diagnosis and treatment of a deep lung micronodules remain a challenging issue. The aim of this study is to report the technique and efficacy of real-time navigation using holographic reconstruction (HR) technology combined with robotic system for segmentectomy in patients with small micronodules.

CASE DESCRIPTION

We analyzed the results of an innovative technique of real-time navigation with and head-mounted display during mini invasive robot assisted segmentectomy performed with an open console .
All patients had a pre-surgery 3D planning based on the chest CT scan.
This retrospective assessment started in june 2022. We evaluated the success rate of diagnosis, the operative time and the post operative course.
The 3D navigation during RATS segmentectomy (figure 1) was performed for the small micronodules diagnosis and treatment in 4 patients (3 female, mean age 65 years). The precision of the head-mounted display based localization system was effective in all cases. The mean diameter of the micronodules was 8 mm (6-9). The surgeries performed were S1+ 3 segmentectomy (n=1), S3 segmentectomy (n=2), s6 segmentectomy (n=1). The diagnosis was an lung adenocarcinoma (n=3), tuberculoma (n=1). The mean operative time was 125 mn (100-145). The mean hospital stay was 2.5 jours (1-3).

CONCLUSIONS

The pre-surgery planning simulation of segmentectomy and intraoperative navigation Using the holographic imaging technique were feasible and helpful in facilitating segmentectomy. The 3D holographic assistance is an helpfull tool for mini invasive RATS lung segmentectomy.

Disclosure: No significant relationships.
Keywords: RATS, Holographic Naviqgation, Segmentectomy.

A

B

O-100

FIRST ABO-INCOMPATIBLE PEDIATRIC LUNG TRANSPLANT PERFORMED WITH IMMUNOADSORPTION COLUMN: A CASE REPORT

Alilis Cecilia Fontana Bellorín, Alejandro Vazquez Sanchez, Verónica Monfort Drago, Juan Escrivá Peiró, José Alfonso Cerón Navarro, Carlos Jordá Aragón, Alfonso Morcillo Aixelá, Victor Calvo Medina, Karen Stephanie Aguilar González, Marina Allameh Fernández, María Amparo Gascón Gascón, Mireia Espinós Arnau, Jesús Gabriel Sales Badía
Hospital Universitari i Politécnic La Fe, Valencia, Spain

OBJECTIVES

The small pool of pediatric donors leads to consider ABO-incompatibility (ABO-i) for lung transplantation (LT), usually treated with plasma exchange technique requiring high plasma/blood volume with higher risk of rejection. We present the first case reported in the world of LT with ABO-i using the immunoadsorption column to remove isohemagglutinins in an infant.

CASE DESCRIPTION

An 11-month-old male was admitted to the ICU after cardiorespiratory arrest, with the echocardiography showing severe pulmonary hypertension and severe dilation of the right ventricle. Progressive worsening led to cardiogenic shock, and the need for a peripheral carotid right jugular V-A extracorporeal membrane oxygenation (ECMO). After 30 days, and 3 failures of weaning, LT was proposed. A thrombosis of the arterial cannula led to a switch to RA-Ao central ECMO.

Given the shortage of pediatric donors, an ABO-i donor was considered, following the "Incompatible heart transplant protocol" of the Great Ormond Hospital in London.

A 4-year-old donor, weighing 17kg and 120cm tall with ARh- blood group, was accepted 42 days after admission. Then, the patient was 12 months old, 6.7kg, 62cm, and blood group B Rh-. Using a bicavoaortic CPB modified with an integrated immunoadsorption column circuit for the isohemagglutinins removal, the implantation of 2 right lobes and 1 left lobe adjusted to the size of the receptor was performed. Postoperative ECMO was required because of weaning failure.

There was no primary graft dysfunction and the ECMO withdrawal was performed after 72h. A tracheostomy was needed to promote weaning from non-invasive ventilation due to tracheomalacia, achieving the stoma closure after 4 months.

To date, anti-A isohemagglutinins remain undetectable and the patient is developing according to age, without episodes of acute rejection.

CONCLUSIONS

The use of the immunoadsorption column is a feasible technique for LT in early pediatric ages with ABO-i, reducing the risks of large volume transfusions related morbidity.

Disclosure: No significant relationships.
Keywords: Pediatrics, Lung Transplant, ECMO, ABO-Incompatibility.

O-101

A NOVEL SIMPLE TECHNIQUE TO RELEASE TENSION AFTER EXTENSIVE TRACHEAL RESECTION

Niall Khan, Rebecca Weedle, Darragh Rice, Vincent Young
St James Hospital, Dublin, Ireland

OBJECTIVES

Tracheal reconstruction is a challenging area of thoracic surgery which has been slow to evolve. We present the case of a 63-year-old male who underwent successful tracheostomy formation despite extensive tracheal resection following trachea-innominate fistula repair post-total laryngectomy. We present a novel technique where a sling is passed under the carina and fixed under tension via the anterior chest wall.

CASE DESCRIPTION

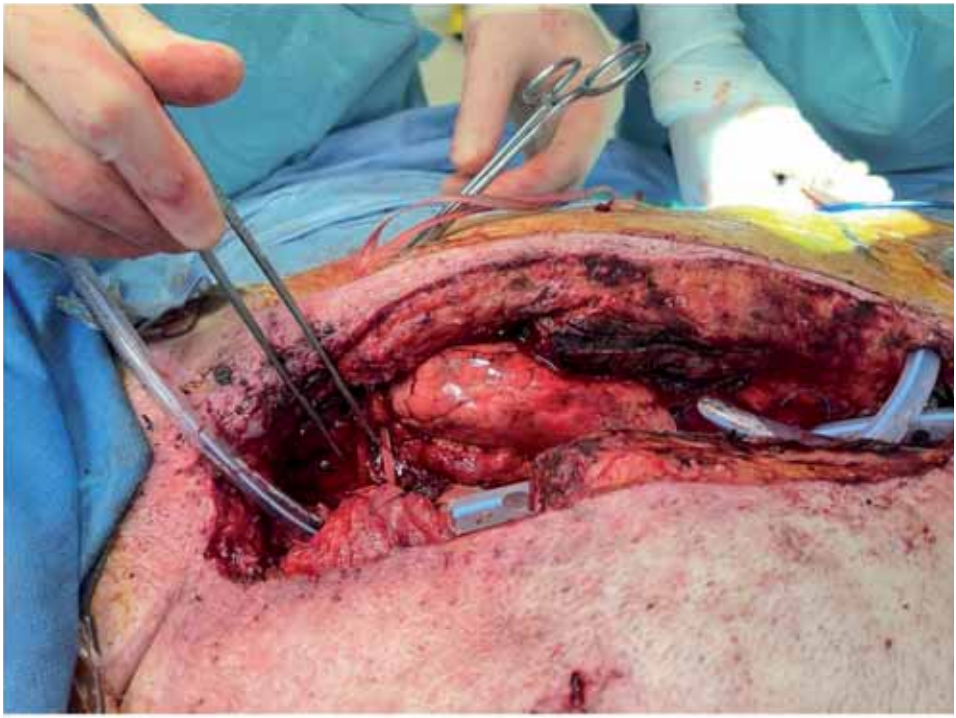
During the initial operation to repair the tracheo-innominate fistula, the proximal trachea was necrotic and non-viable, requiring resection of two tracheal rings to reach viable tissue. This left only 4cm of trachea in situ, and it was not feasible to close the sternum. A tracheostomy was placed into the tracheal stump and the sternum was left open to allow stabilization. The patient was brought back to theatre six days later for repair.

During this second procedure, the trachea was mobilized down to the carina. A sling was passed underneath the carina and pulled through an intercostal incision in the left anterior chest wall. The sling was fixed in place, under tension, with an artery clip. This elevated the trachea by several centimetres, allowing enough clearance to close the sternum over a tracheostomy. A right pectoralis major flap was used to cover the defect in the superior mediastinum. The sling was left in place for seven days and then released at the skin. The tracheostomy remained intact. Unfortunately, the patient passed away two weeks later, as a result of cerebrovascular complications unrelated to the tracheal repair.

CONCLUSIONS

The technique described is expeditious, simple, and releases considerable tension from the trachea. We perceive it would be well tolerated by patients.. It could be added to various procedures to release anastomotic tension or to elevate a tracheal stump for tracheostomy. To our knowledge, this is the first such description of this technique.

Disclosure: No significant relationships.
Keywords: Trachea, Tracheal Release, Tracheostomy, Tracheal Resection, Tracheo-Innominate Fistula.



O-102

BIRD-CAGE RECONSTRUCTION WITH DIAPHRAGMATIC RE-IMPLANTATION FOR HIGH-GRADE CHEST WALL SARCOMA

Jesyl Obtinario Gagto, Felixberto Siy Lukban, Eduardo Riego Bautista
Philippine General Hospital, Manila, Philippines

OBJECTIVES

To present a novel approach to chest wall resection and reconstruction for high-grade chest wall sarcoma.

CASE DESCRIPTION

Chest wall tumors encompass a heterogeneous group of benign and malignant pathologies that may arise primarily from the bone and soft tissue of the thoracic cage or as extensions from breast, pleural, and even thyroid pathologies. Primary chest wall tumors arising from the bone or soft tissue of the thoracic cage represent only 2% of chest wall tumors. Regardless of etiology, surgical excision with wide resection margins is still the management's mainstay. Radical resection, albeit curative in intent, poses a high morbidity and mortality burden due to the disruption of pulmonary physiology and respiratory mechanics. We present a rare case of a 63-year-old male with high-grade sarcoma from the left posterolateral chest requiring en bloc excision of 5 ribs and innovative thoracic cage and diaphragm reconstruction by a multidisciplinary team.

A 23x26cm well-encapsulated solid mass invading intercostal muscles from 7th-11th ICS was removed with 2cm circumferential margins. A 27x30cm soft tissue defect and a 15x20cm chest wall defect were left after specimen removal. The bird-cage reconstruction technique, entailing a four-layer repair, was done. The layers are as follows: neo-ribs constructed from steel wires and methylmetacrylate cement, polypropelene mesh, omental flap (harvested via mini-laparotomy) and split thickness skin graft. The diaphragm was not involved but was detached from the posterolateral chest wall. It was re-implanted onto the methylmetacrylate neo-rib, which is a novel technique at diaphragm reconstruction.

CONCLUSIONS

Bird-cage reconstruction using methyl-methacrylate cement neo-rib and polypropylene mesh is a safe and cost-effective alternative for large thoracic cage defects needing reconstruction. Diaphragmatic re-implantation onto methylmetacrylate cement neo-ribs provide excellent functional and structural outcomes, a novel surgical technique of combined chest and diaphragmatic reconstruction.

Disclosure: No significant relationships.

SUNDAY 4 JUNE 2023
JUNIOR POSTER SESSION
17:00 - 18:00

P-001

EXERCISE TRAINING AMELIORATES INFLAMMATORY RESPONSES INDUCED BY ONE-LUNG VENTILATION BY ACTIVATING THE PI3K/AKT SIGNALING PATHWAY

Zhiming Chen, Lu Di, Zhizhi Wang, Jiayang Fan, Kaican Cai
Department of Thoracic Surgery, Nanfang Hospital, Southern Medical University, Guangdong, China

OBJECTIVES
Re-expansion pulmonary edema and subsequent acute respiratory distress syndrome, is one of the most catastrophic complications that occurs after one-lung ventilation (OLV). The PI3K/AKT signaling pathway is an intracellular signaling pathway that responds to extracellular signals and promotes metabolism, proliferation, cell survival, growth and angiogenesis. In our preliminary study, it was found that PI3K/Akt signaling pathway involved in inflammation responses during OLV, but the mechanism is still unclear. Therefore, the purpose of this study was to evaluate the beneficial effects of physical training on the inflammatory responses following one-lung ventilation in rats.

METHODS
Male Sprague Dawley rats were divided into sham-operated animals and sedentary and trained animals submitted to one-lung ventilation. The run training program consisted of 5 sessions/week, each lasting 60 min/day, at 66% of maximal oxygen consumption for 8 weeks. Transcriptomic analysis was performed on lung tissues. Interleukin-6 (IL-6), interleukin-1β (IL-1β) and tumor necrosis factor-α (TNF-α) level in serums were assayed using an ELISA kit. Using Western blot, the expression of p-Akt in lungs were assessed.

RESULTS
The lung injury scores of rats in trained group were much lower than that in sedentary group. Transcriptomic analysis revealed upregulated PI3K/Akt pathway in trained group. The expression of interleukin-6 (IL-6), interleukin-1β (IL-1β) and tumor necrosis factor-α (TNF-α) after OLV was increased. Trained group displayed higher survival rate as well as decreased IL-6, IL-1β, TNF-α levels and lung edema in comparison to sedentary group.

CONCLUSIONS
Our findings suggest that exercise training had protective effects on acute lung injury and reduced inflammation induced by OLV, possibly by activating the PI3K/Akt signaling pathway.

Disclosure: No significant relationships.

Keywords: One Lung Ventilation, Inflammatory Responses, Lung Injury, PI3K/Akt .

P-002

PARSIMONIOUS EUROLUNG RISK MODEL TO PREDICT POSTOPERATIVE CARDIOPULMONARY MORBIDITY AND MORTALITY: EXTERNAL VALIDATION OF THE THE BRAZILIAN REGISTRY OF LUNG CANCER

Paula Duarte D'Ambrosio[1], Ricardo Mingarini Terra[1], Leticia Leone Lauricella[1], Carolina Adan Cavadas[1], Jaqueline Schaparini Fonini[1], Jefferson Luiz Gross[2], Federico Enrique Garcia Cipriano[3], Henrique Nietmann[4], Fabio Da Silva May[5], Paulo Manuel Pêgo-Fernandes[1]

[1]*Instituto do Cancer do Estado de Sao Paulo (ICESP), Hospital das Clinicas de Sao Paulo, Faculdade de Medicina, Universidade de Sao Paulo, Sao Paulo, Brazil*

[2]*Centro de Referência Pulmão e Tórax AC Camargo Cancer Center, Sao Paulo, Brazil*

[3]*Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto, Ribeirão Preto, Brazil*

[4]*Hospital de base, Sao Jose Do Rio Preto, Brazil*

[5]*Departamento de Cirurgia, Coordenação de Medicina, Centro de Ciências da Saúde, Universidade Federal de Santa Catarina, Florianópolis, Brasil*

OBJECTIVES

The European Society for Thoracic Surgery has recently updated its models of cardiopulmonary morbidity (parsimonious Eurolung 1) and 30-day mortality (parsimonious Eurolung 2) after anatomic lung resection. The purpose of this study is to perform an external validation of the parsimonious model for both mortality and morbidity (Eurolung 1 and 2 respectively) in a multicentre national registry.

METHODS

External validation of parsimonious Eurolung 1 and Eurolung 2 was evaluated through calibration (calibration plot, Brier score, and The Hosmer-Lemeshow test) and discrimination [area under receiver operating characteristic curves (AUC ROC)], on a national multicentre Registry (The Brazilian Registry of Lung Cancer) of 1031 patients undergoing anatomic lung resection.

RESULTS

In terms of calibration, for parsimonious Eurolung1, there was an overlap of the calibration plot, with a slope of 1.11 and a Brier score of 0.15. The Hosmer-Lemeshow test had a P -value of 0.015 ($P < 0.05$). Moreover, AUC ROC for parsimonious Eurolung 1 was 0.678 (95% confidence interval, 0.636-0.721), resulting in weak discrimination. Figure 1a By contrast, for parsimonious Eurolung 2, there was not much overlapping of the calibration plot with a slope of 0.94 and a Brier score of 0.07. However, The Hosrmer-Lemeshow test suggests that the model is not well calibrated (P-value < 0.001). Although miscalibration of both scores, parsimonious Eurolung 2 had acceptable discrimination with AUC ROC = 0.734 (95% confidence interval, 0.675-0.794). Figure 1b

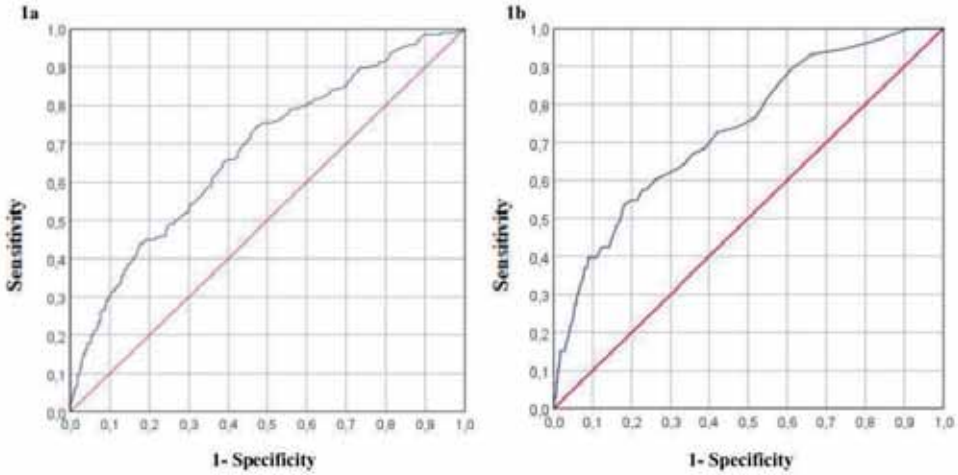
CONCLUSIONS

Although miscalibration of both scores, the 30-day mortality score (Eurolung 2) seems to

be transportable among Brazilian patients. Nonetheless, the postoperative cardiopulmonary morbidity score (Eurolung 1) may not have sufficient generalizability for Brazilian patients. A multicenter study with more relevant variables and sophisticated statistical methods is warranted to develop new models among Brazilian patients.

Disclosure: No significant relationships.
Keywords: Lung Resection, Risk Model, External Validation, Morbidity, Mortality.

Figure 1. Discrimination. Eurolung 1 and 2. ROC: receiver operating characteristics



P-003

COMPLYING WITH QUALITY METRICS IN SEGMENTECTOMY IMPROVES ONCOLOGICAL OUTCOMES IN LUNG CANCER SURGERY

Julien Epailly, Alex Fourdrain, Cesare Braggio, David Boulate, Xavier Benoit D'Journo, Vanessa Pauly, Pascal Alexandre Thomas
Marseille University Hospital, Marseille, France

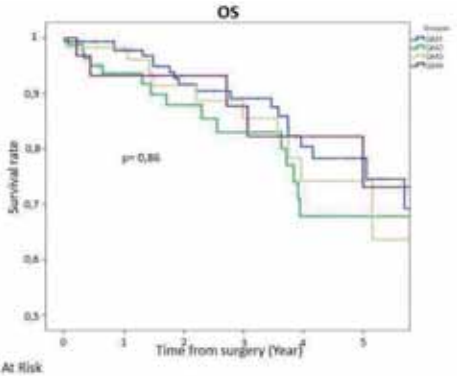
OBJECTIVES
Recent randomized trials demonstrated comparable survival in segmental vs. lobar resections for early stage lung cancer. However, segmentectomy seems to be associated with a higher rate of cancer recurrence. The objective of this study was to assess the impact of quality metrics on outcomes after segmentectomy for lung cancer, based on real-life data.

METHODS
A retrospective single centre study was performed including subsequent patients treated with segmentectomy for lung cancer between 2010 and 2022. Patients' characteristics, perioperative data including quality metrics (QM) (adequate lymphonodal evaluation, uncertain resection status, tumour size), and follow-up were collected prospectively. Based on QM, patients were classified in 4 groups following the adherence to QM: 1) patients with R0 resection and tumour≤20mm (QM1), 2) patients with uncertain resection and tumour≤20mm (QM2), 3) patients with R0 resection and tumour>20mm (QM3) and 4) patients with uncertain resection and tumour>20mm (QM4). The primary outcome was recurrence-free survival. The secondary outcome was overall survival. Both were assessed with Kaplan-Meier survival estimates.

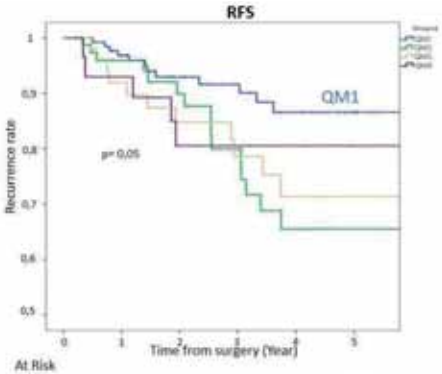
RESULTS
Over a 12-year period, 321 consecutive patients were included. In 149/321 patients (46.4%) the surgical resection met all quality metrics (QM1), while 112/321 patients (34.9%) had an uncertain resection (81 patients (25.2%) with a tumour≤20 mm (QM2), and 31 patients (9.7%) with a tumour>20mm (QM4). Recurrence-free survival rate was significantly higher in the QM1 group compared to QM2, QM3 and QM4 with 5-year recurrence-free survival of 86.6%, 65.5%, 71.3% and 80.5% respectively, p=0.05), while overall survival was not significantly different (78.3%, 67.8%, 74.2% and 73.1% respectively, p=0.86). According to tumour size categories, there were no differences in nodal upstaging rates between uncertain resection and R0 segmentectomies.

CONCLUSIONS
Complying with quality metrics of segmentectomy for lung cancer was associated with improved oncological outcomes but similar overall survival.

Disclosure: No significant relationships.
Keywords: Lung Cancer Surgery, Segmentectomy, Recurrence, Quality, Outcomes.



At Risk						
QM1	149	146	140	138	133	132
QM2	81	76	73	71	66	66
QM3	60	59	56	54	51	51
QM4	31	29	29	28	27	26



At Risk						
QM1	149	145	141	140	137	137
QM2	81	78	75	71	66	66
QM3	60	56	53	51	49	49
QM4	31	29	26	26	26	26

P-004

OPERATIVE OUTCOMES AND MIDDLE-TERM SURVIVAL OF ROBOTIC-ASSISTED LUNG RESECTION FOR CLINICAL STAGE IA LUNG CANCER COMPARED WITH VIDEO-ASSISTED THORACOSCOPIC LOBECTOMY

Clara Forcada-Barreda[1], Teresa Gomez-Hernandez[1,2,3], Cristina E Rivas-Duarte[1,3], Marta G Fuentes-Gago[1,2,3], Nuria M Novoa[1,2,3], Gonzalo Varela[3], Marcelo Jimenez[1,2,3]
[1]Salamanca University Hospital, Salamanca, Spain
[2]University of Salamanca, Salamanca, Spain
[3]Instituto de Investigación Biomédica de Salamanca, Salamanca, Spain

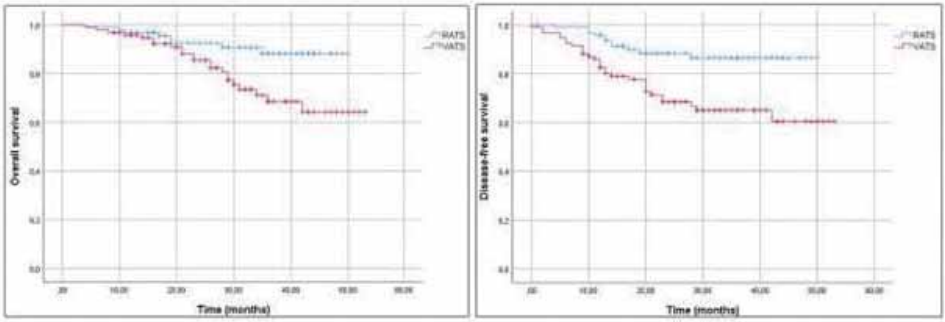
OBJECTIVES
Despite limited published evidence, robotic-assisted thoracoscopic surgery (RATS) for anatomic lung resection in early-stage lung cancer is increasingly performed. The aim of this study is to evaluate its safety and oncologic efficacy. We compared the outcomes of both RATS and video-assisted thoracoscopic (VATS) anatomic lung resection in patients with clinical stage IA non-small cell lung cancer (NSCLC).

METHODS
Single-center retrospective case-control study of a prospectively recorded database of all patients with resected clinical stage IA NSCLC who underwent RATS (cases) or VATS (controls) anatomic lung resection from June 2018 to January 2022. Cases and controls were matched (1:1, no replacement) by propensity scoring (PSM) based on age, gender, and type of resection (lobectomy, anatomic segmentectomy). Clinicopathologic data and perioperative outcomes were compared, and the Kaplan-Meier method and log-rank test were used to evaluate the overall survival (OS) and disease-free survival (DFS).

RESULTS
323 patients (94 RATS and 229 VATS cases) were included. After PSM, 94 VATS and 94 RATS cases were compared. The demographics, pulmonary function, comorbidity, and tumor size were similar in both groups. There was no operative mortality and overall morbidity was comparable among RATS and VATS cases (20.2% vs 27.7%, p=0.232, respectively). Pathological N1/N2 upstaging was similar in both groups (11.7% in RATS and 11.7% in VATS, p=1) and postoperative adjuvant therapy was administered in 20.2% of RATS cases and 20.2% of VATS patients, p=1. During the 3.5-year follow-up period (median: 28,5 months; IQR: 18-37), recurrence rate was 6.4% in RATS group; meanwhile, in the VATS group, recurrence was observed in 29.8% (p=0.000). OS and DFS in RATS were higher (log rank p=0.010 and log rank p=0.001, respectively) than in VATS (Figure 1).

CONCLUSIONS
RATS can be performed safely in patients with early-stage NSCLC. For clinical stage IA disease, robotic anatomical lung resection offers better oncologic efficacy than VATS.

Disclosure: No significant relationships.
Keywords: Robotic-Assisted Thoracoscopic Surgery, Non Small Cell Lung Cancer, Overal Survival, Disease-Free Survival.



P-005

VIDEO-ASSISTED THORACOSCOPIC LUNG RESECTION IN PATIENTS RECEIVING IMMUNOTHERAPY TREATMENT FOR NON-SMALL CELL LUNG CANCER, IS IT HARD AND WORTH DOING?

Gizem Gedikoglu Pirim[1], Hüseyin Melek[1], Tolga Evrim Sevinç[1], Elçin Suleymanov[1], Hakan Ertilav[1], Basak Gorusun[1], Ahmet Sami Bayram[1], Türkkan Evrensel[2], Cengiz Gebitekin[1]
[1]Uludag University, Faculty of Medicine, Thoracic Surgery Department, Bursa, Turkey
[2]Uludag University, Faculty of Medicine, Medical Oncology Department, Bursa, Turkey

OBJECTIVES
Although video-thoracoscopic anatomic lung resection (VATS-LR) is gaining popularity due to reduced complications and improved quality of life, there are concerns regarding its feasibility and outcome in patients receiving immunotherapy for NSCLC. The aim of this study is to evaluate the feasibility, safety and results of VATS-LR in patients with NSCLC who have received immunotherapy.

METHODS
The data of patients who underwent anatomical lung resection and lymph node dissection for NSCLC in our clinic between January 2018 and 2022 were analyzed retrospectively. The patients were divided into 3 groups. Group 1: patients who did not receive oncological treatment before surgery (G1), Group 2: patients who received neoadjuvant/induction chemotherapy or chemoradiotherapy before surgery (G2), and Group 3: patients who received immunotherapy before surgery (G3). Surgical approach (VATS-LR vs thoracotomy (T-LR)), demographic characteristics, clinical stages, treatment regimens, postoperative complications and pathological stages of the groups were compared.

RESULTS
The study included 411 patients(G1=223, G2=173, G3=15). Three hundred fifty two patients underwent lobectomy (G1=192,86.1%, G2=145,83.8%, G3=15,100%), 21 patients underwent pneumonectomy (G1=3, 1.3%, G2=18, 10.4%, G3=0). VATS-LR were performed in 240 (58.4%) of the patients (G1=174, 78%, G2=57, 32.9%, G3=9, 60%). Conversion rate from vats to thoracotomy was done in G1=9.3%, G2=20%, and G3=0. Complications were seen in 154(37.5%) patients (G1= 78, 35%, G2=70, 40.5%, G3=6, 40%). Mortality was observed in 7 patients (1.7%) (G1=4, 1.8%, G2=3, 1.7%, G3=0). In the histopathological examination, complete response was detected in 22 patients (12.7%) in G2, while it was found in 6 patients (40%) in G3 (Table 1).

CONCLUSIONS
Our study showed that VATS-LR could be performed safely and at similar rates in patients who have received chemotherapy/chemoradiotherapy as well as immunotherapy. Immunotherapy treatment should not be considered a contraindication for VATS-LR.

Disclosure: No significant relationships.
Keywords: Immunotherapy, VATS, NSCLC, Neoadjuvant Therapy.

	Total	Group 1	Group 2	Group 3	p
	(n=411)	(n=223)	(n=173)	(n=15)	
Age years (min-max)	62.83 (26-86)	62.59 (26-83)	63.27 (34-86)	61.33 (48-74)	
Gender (Male/Female %)	346/65 (15.8%)	177/46 (21%)	**158/15 (8.7%)**	11/4 (27%)	
Comorbidity	243 (59.1%)	139 (62.3%)	93 (53.7%)	**12 (80%)**	
Pathology					
Squamous Cell	170 (41.4%)	69 (30.9%)	**96 (55.5%)**	5 (33%)	
Adenocarcinoma	154 (37.5%)	**101 (45.3%)**	50 (29%)	3 (20%)	
Other type	87 (21.2%)	53 (23,7%)	27 (15%)	7 (46.7%)	
VATS	240 (58.4%)	174 (78%)	**57 (32.9%)**	**9 (60%)**	
Thoracotomy					
Type of Lung Resection					
Lobectomy	352 (85.6%)	192 (86.1%)	145 (83.8%)	15 (100%)	
Pneumonectomy	21 (5.1%)	3 (1.3%)	18 (10.4%)	-	

P-006

CENTRAL VENO-ARTERIAL ECMO OR CARDIOPULMONARY BYPASS AS INTRAOPERATIVE SUPPORT DURING LUNG TRANSPLANTATION: IS THERE STILL A DEBATE?

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OBJECTIVES
Central veno-arterial ECMO (VA-ECMO) has been recently advocated as preferred over cardiopulmonary bypass (CPB) for intraoperative support during lung transplantation (LT). We aimed to compare our LT outcomes between VA-ECMO and CPB support in the intraoperative scenario.

METHODS
Patients undergoing LT from January 2013 to September 2022 were included in this single institution retrospective study from a prospective database. Redo LT and heart-lung transplants were excluded from the analysis. Variables related to donors, recipients, transplant surgery, early postoperative outcomes and mid-term survival were analyzed comparing the two groups.

RESULTS
A total of 397 LT were included, 199 of them (50.1%) performed with intraoperative support, specifically 154 (77.4%) with VA-ECMO and 45 (22.6%) with CPB. Donor and recipient characteristics are detailed in Table 1. Transplant outcomes showed no statistically significant differences in primary graft dysfunction grade 3 at 72 hours (22.45% VA-ECMO vs. 30% CPB, p=0.322), need of postoperative ECMO (23.65% VA-ECMO vs. 23.3% CPB, p=0.957), reintervention (20.9% VA-ECMO vs. 22% CPB, p=0.885) and ICU and hospital stay (Table 1). VA-ECMO cohort showed a significantly lower length of mechanical ventilation (3 days vs. 4.5 CPB; p=0.049). Thirty and 90-day mortality were significantly lower in the VA-ECMO group (1.3% vs. 20% CPB, and 3.9% vs. 24.4% CPB, p<0.001) as well as hospital mortality (6.5% vs. 17.8% CPB, p=0.020). In a multivariate analysis intraoperative central VA-ECMO behaved as a protective factor for 90-day and 1-year mortality, (90-day: OR 0.198, 95%IC [0.05-0.77]; p=0.020, and 1-year: OR 0.239, 95%IC [0.09-0.63]; p=0.004). No significant differences were found in 1-, 3-, and 5-year survival (VA-ECMO: 87%, 73% and 67% vs. CPB: 68%, 60% and 55%; log-rank p=0.057).

CONCLUSIONS
In the same line of several studies on this matter, our outcomes suggest that VA-ECMO offers better postoperative results and has become our standard of care for intraoperative support during LT.

Disclosure: No significant relationships.
Keywords: Lung Transplant, ECMO, Cardiopulmonary Bypass, Survival, Outcomes.

TABLE 1. Demographics and transplant outcomes comparing intraoperative use of ECMO-VA vs CPB.

	ECMO-VA (n=154)	CPB (n=45)	*P value*
Age donor *(mean +- SD)*	55.9 +- 14.4	54 +- 12.5	0.442
Gender donor, female (%)	92 (60.5)	27 (60)	0.949
BMI donor *(median, IQR)*	25 (23-27.8)	26.8 (24.1-29.2)	0.024
Cause of brain injury (%)			0.030
CVA	105 (69.1)	28 (62.2)	
Trauma	27 (17.8)	3 (6.7)	
Anoxia	12 (7.9)	6 (13.3)	
Type of donor (%): DBD	116 (75.8)	36 (80)	0.018
cDCD	36 (23.5)	6 (13.3)	
uDCD	1 (0.65)	3 (6.7)	
MV Donor *(days, median, IQR)*	2 (1-6)	1 (1-3)	0.012
P/F ratio *(median, IQR)*	450 (390-504)	409 (365-479)	0.062
Use of EVLP (%)	11 (7.2)	2 (4.55)	0.528
Age recipient *(mean +- SD)*	56.1 +- 10.8	53.2 +- 9.9	0.110
Gender recipient, male (%)	98 (64)	30 (66.7)	0.747
Indication (%)			0.607
COPD	35 (22.9)	16 (35.6)	
IPF	42 (27.5)	9 (20)	
ILD	34 (22.2)	11 (24.4)	
CF	10 (6.5)	3 (6.7)	
LAS Score *(median, IQR)*	37 (34-42)	36 (32-39)	0.164
BMI recipient *(median, IQR)*	25.3 (23-27.1)	25.5 (22-28)	0.773
6MWT *(median, IQR)*	336 (264-411)	353 (240-410)	0.740
mPAP mmHg *(median, IQR)*	24 (18-27)	26 (21-31)	0.024
Ratio pTLC Donor/Rec *(median, IQR)*	1 (0.9-1.1)	1 (0.9-1.2)	0.787
Double lung transplant (%)	150 (97.4)	41 (91.1)	0.059
Urgent status (%)	19 (12.4)	9 (20)	0.199
Total preservation time 1st lung	330 (300-400)	370 (300-430)	0.069
Total preservation time 2nd lung	439 (390-525)	420 (390-525)	0.431
PGD Grade 3 at 72 hours (%)	33 (22.45)	12 (30)	0.322
Postoperative ECMO (%)	35 (23.65)	10 (23.3)	0.957
Reintervention (%)	32 (20.9)	9 (22)	0.885
MV Recipient *(days, median, IQR)*	3 (1-18.5)	4.5 (2-27)	0.049
ICU stay, days *(median, IQR)*	11 (6-25)	10 (7-27)	0.582
Hospital stay, days *(median, IQR)*	44 (36-69)	42.5 (29-70)	0.219
30-d mortality (%)	2 (1.3)	9 (20)	<0.001
90-d mortality (%)	6 (3.9)	11 (24.4)	<0.001
Hospital mortality (%)	10 (6.5)	8 (17.8)	0.020
CLAD (%)	14 (9.2)	8 (19.1)	0.073
Time to CLAD *(days, median, IQR)*	548 (308-1036)	676 (361-911)	0.633

VA-ECMO: veno-arterial extracorporeal membrane oxygenation; CPB: cardiopulmonary bypass; DBD: brain death donor; cDCD: controlled donation after circulatory death; uCDC: uncontrolled donation after circulatory death; MV: mechanical ventilation; P/F: arterial oxygen partial pressure/fractional inspired oxygen; EVLP: ex vivo lung perfusion; COPD: chronic obstructive pulmonary disease; IPF: idiopathic pulmonary fibrosis; ILD: interstitial lung disease; LAS: lung allocation score; BMI: body mass index; 6MWT: 6 min walking test; mPAP: median pulmonary artery pressure; pTLC: predictive total lung capacity; PGD: primary graft dysfunction; CLAD: chronic lung allograft disease.

P-007

FACTORS AFFECTING LONG-TERM SURVIVAL IN PATIENTS WITH T4 NON-SMALL CELL LUNG CARCINOMA

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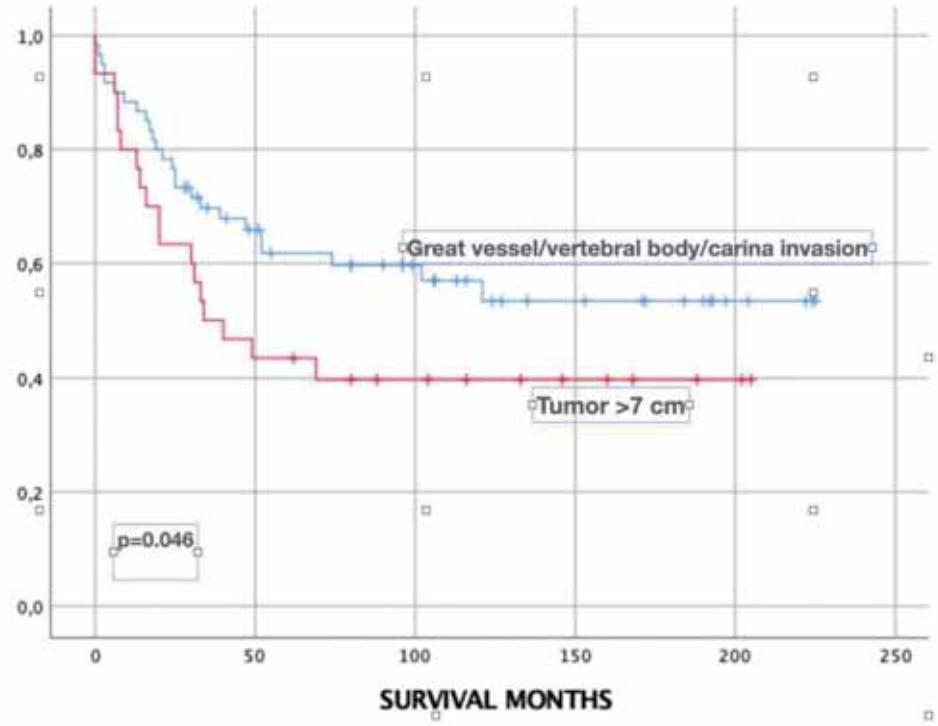
OBJECTIVES
It has been also shown that surgery is beneficial in a well-selected group of patients with T4 non-small cell lung cancer (NSCLC) Our aim is to find prognosticators in patients who underwent pulmonary resection for T4 non-small cell lung cancer.

METHODS
Surgical-pathologic T4-N0/2-M0 non-small cell lung cancers who underwent resectional surgery between 2004 and 2021 in our institution were analyzed. Patients with T4 extension to mediastinal structures or great vessels undergoing lobectomy, bilobectomy, or pneumonectomy were included. Neoadjuvant treatment was defined as preoperative chemotherapy and/or radiation. Study endpoints were pathologic margin status and overall survival.

RESULTS
A total of 124 patients with pT4N0/1/2M0 tumors were analyzed; 42(33.9%) received neoadjuvant therapy; whereas 82(66.1%) underwent primary surgery. The postoperative 90-day mortality occurred in 6 patients (4.8%). Overall survival rates at 1, 2 and 5 and 10 years were 88, 76 and 48 and 46%, respectively. The median survival time was 52 months (95% confidence interval: 96-138 months). Neoadjuvant therapy was associated with fewer positive surgical margins (2 of 42 [4.8%] vs 8 of 82 [9.8%], p=0.01). The mean survival of the patients with T4 tumor due to its size(i.e.,>7 cm) and those with T4 tumor due to mediastinal invasion, great vessel, tracheal or vertebral invasion(invasion group), were 106 (95% CI: 87-125 months);and 166 months (95% CI: 135-198) respectively (p=0.046) (Figure). Overall survival was longer among patients receiving upfront surgery compared to that of those receiving neoadjuvant therapy(122 vs 58 months, p=0.02). Multivariate analysis showed that, having T4 due to tumor invasion and having upfront surgery were associated with better survival (p=0.01 and p=0.03 respectively).

CONCLUSIONS
Surgical treatment should be performed in T4 patients where surgery is technically possible despite the fact that, neoadjuvant therapy was associated with more R0 resections. The patients with larger than 7 cm tumor could be referred to neoadjuvant therapy.

Disclosure: No significant relationships.
Keywords: Lung Cancer, T4, Neoadjuvant Therapy, Long-Term Survival.


1,0
0,8
0,6
0,4
0,2
0,0
Great vessel/vertebral body/carina invasion
Tumor >7 cm
p=0.046
0
50
100
150
200
250
SURVIVAL MONTHS

P-008

SURGICAL AND NEUROLOGICAL OUTCOMES OF ROBOTIC THYMECTOMY ON THE ELDERLY POPULATION, A SINGLE CENTER STUDY

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OBJECTIVES
Extended thymectomy is a first-line treatment for patients with a recent diagnosis of myasthenia gravis with high serum levels of anti-acetylcholine-receptor antibodies (AchRAbs) and/or with thymoma.
With the growth in the population's average age and the application of robotic surgery to mediastinal lesions, an increase in the indications for thymectomy was observed in older patients.
In the past, the gold standard approach was sternotomy, often considered too invasive in the elderly.
Our study aims to evaluate the surgical and neurological outcomes in myasthenic patients over 60 years old, comparing them with younger ones.

METHODS
We compared two groups of patients with generalized myasthenia gravis, one formed by patients aged > 60 and one by patients aged < 60, who underwent robotic extended thymectomy between 2014 and 2022. The preoperative diagnosis was based on clinical features, the detection of AchRAbs and a thorax CT scan.
Neurological outcomes were evaluated in the patients with follow-up > 24 months.

RESULTS
Clinical characteristics of the patients are reported in Table 1. We did not find statistically significant differences between the two groups in terms of complications, length of stay and corticosteroid therapy reduction. Comparison between age and duration of surgery was adjusted for gender, laterality of surgical approach and histology by multiple linear regression obtaining a p=0.884. We have not found differences in the reduction of corticosteroid therapy in patients with thymoma comparing them to patients with hyperplastic thymus or in fibro-adipose involution. Moreover, fibro-adipose involution is associated with better neurological outcomes, in terms of steroid dose decrease (p=0,071).

CONCLUSIONS
Robotic extended thymectomy is a feasible treatment, with positive surgical and neurological outcomes, in patients affected by late-onset myasthenia gravis and in elderly patients aged more than 60, with or without thymoma.

Disclosure: No significant relationships.
Keywords: Robotic, Thymectomy, Indications, Elderly, Myasthenia.

Characteristic	All patients (n=294)	<60 yrs old (n=235)	≥60 yrs old (n=59)
AchRAbs levels (nmol/L)	9.0 (7.1)	8.8 (6.2)	10 (8.8)
Surgery duration (minutes)	119.4 (43.9)	116 (44)	133 (39)
Length of stay (days)	3.7 (1.7)	3.8 (1.8)	3.6 (1)
Follow-up (monts)	40.9 (22.7)	42.6 (22)	33.8 (24.6)
Prednisone reduction (mg)	17.1 (17.6)	16.5 (17.9)	33.8 (24.5)
Sex			
M	111 (37.8)	71	40
F	183 (62.2)	164	19
Thymoma			
No	233 (79.3)	200	33
Yes	61 (20.7)	35	26
Thymic hyperplasia			
No	123 (41.8)	69	54
Yes	171 (58.2)	166	5
Fibro-adipose involution			
No	233 (79.3)	201	32
Yes	61 (20.7)	34	27
Post-operative complications			
No	271 (92.2)	215	56
Yes	23 (7.8)	20	3
Laterality			
Right	11 (3.7)	6	5
Left	283 (96.3)	229	54

P-009

PROGNOSTIC FACTORS OF NON-LEPIDIC LUNG ADENOCARCINOMA PRESENTING AS GROUND GLASS OPACITY: RESULTS OF A MULTICENTER STUDY

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OBJECTIVES

Ground glass opacity presents as lepidic component of lung adenocarcinoma. In some cases, GGO lesions presents as invasive adenocarcinomas, with minimal or absent lepidic component. The goal of this study is to define the clinicopathological characteristics and prognosis of non-lepidic invasive adenocarcinoma presenting as GGO nodules, to evaluate any statistical relationships existing between the histological characterization, size and location of the tumor and the incidence of relapse and lymph node dissemination.

METHODS

We conducted a retrospective multicenter study including all patients with GGO observed on CT scan treated between 2003 and 2021. The following data were analyzed: anamnestic, radiological and histological characteristics, SUV value; lymphatic and vascular invasion, pathological stage, type of resection, adjuvant treatment. The main endpoints were to evaluate the prognostic factors for death and recurrence calculated by Cox regression analysis.

RESULTS

388 patients were considered; Two hundred twenty-seven patients diagnosed with non-lepidic invasive adenocarcinoma underwent curative anatomical resection; of these 54 were pure GGO and 173 were mixed GGO for the presence of a solid component. One hundred sixty-one patients diagnosed with lepidic adenocarcinoma underwent curative anatomical resection; of these 108 were pure GGO and 53 were mixed for the presence of a solid component. Non lepidic invasive adenocarcinoma had a worse prognosis compared to lepidic adenocarcinoma ($p=0.001$). Independent prognostic factors for death and recurrence were the presence of lymph node involvement ($p=0.002$), and of vascular and lymphatic invasion ($p<0.001$).

CONCLUSIONS

Non lepidic invasive adenocarcinoma, lymphatic and vascular invasion are prognostic factor for death and recurrence in patients with GGO. Lobar rather than sub-lobar resection is Prognostic factors of non-lepidic lung adenocarcinoma presenting as ground glass opacity: results of a multicenter study indicated followed by adjuvant treatment in case of pN1-N2 disease. Lymphadenectomy (Sampling or radical) is therefore always necessary for correct staging and for the subsequent therapeutic procedure.

Disclosure: No significant relationships.

P-010

TRACHEAL STENOSIS FOLLOWING PROLONGED INTUBATION OR TRACHEOSTOMY IN CORONAVIRUS (COVID)-19 PATIENTS: RESULTS FROM THE OBSERVATIONAL MULTICENTRIC STUDY

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OBJECTIVES

Tracheal stenosis represents a fearsome complication following prolonged intubation or tracheostomy that impair quality of life. The recent SARS-CoV-2 pandemic increased the number of patients that required invasive ventilation through prolonged intubation or tracheostomy. Therefore an increased risk of tracheal lesion and subsequent stenosis is present. Aim of this study was to define the actual incidence of tracheal stenosis during pandemic and to identify risk factors of tracheal stenosis.

METHODS

We prospectively collected clinical data of patients that underwent prolonged intubation or tracheostomy from seven hospitals located in Lombardy. Patients were monitored with CT scan and spirometry 2 months from hospital discharge and a clinical follow-up for additional 6 months (8 months of follow-up). Data obtained were collected and analysed using REDCap and R software respectively.

RESULTS

From Januar 2020 to December 2021, a total of 281 patients met our criteria. Male sex was prevalent (80.1%), mean age was 61.35 (±10.3) years, BMI was 29 (±6) and intubation lasted

22.6 (±16.4) days. Twenty-four patients (8.54%, CI 5.55-12.44) developed tracheal stenosis within a period of 200 days from intubation. Compared to patients without tracheal stenosis, tracheostomy was performed more frequently (75% of cases) in patients that developed stenosis. Alcohol consumption (at least 1 unit of alcohol per day) increased risk of developing tracheal stenosis of 5.43 fold (p=0.002; CI 1.86-15.83), whereas tracheotomy had an odds ratio of 2.58 with a trend toward significance (p=0.053; IC 0.99-6.76).

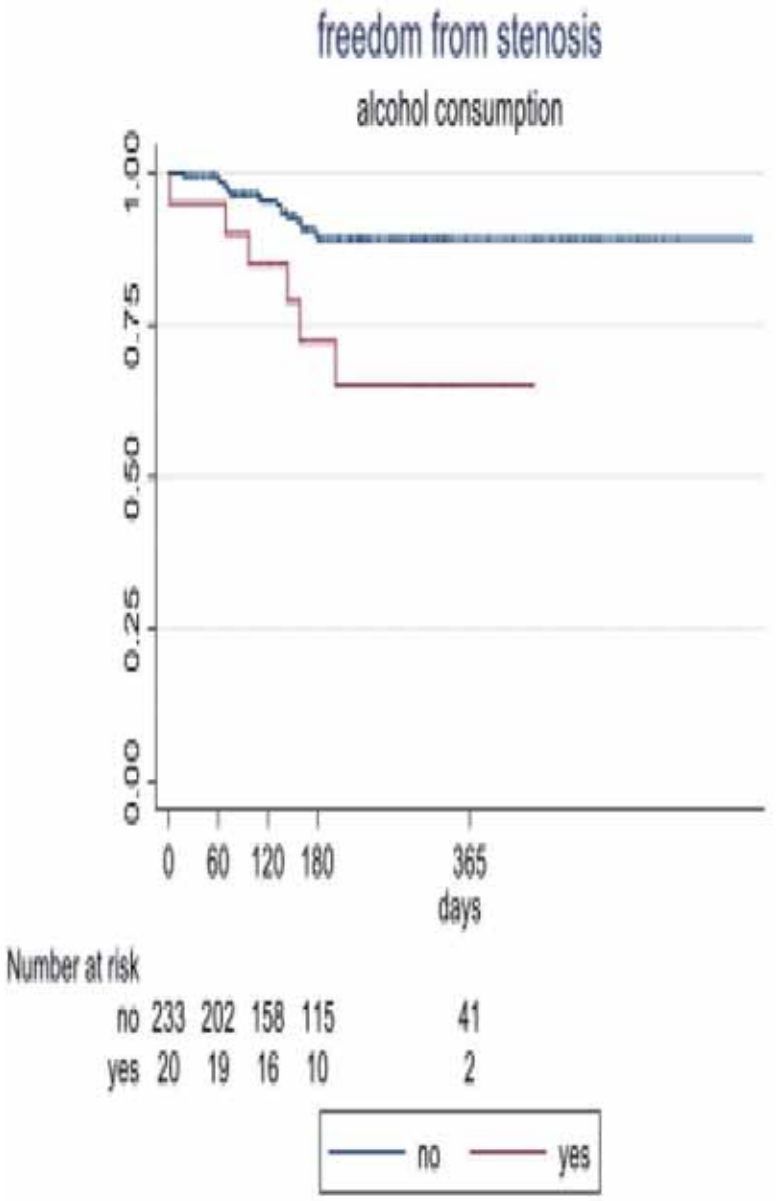
CONCLUSIONS

Incidence of tracheal stenosis increased during pandemic, this is probably related to the increased use of prolonged intubation. Patients with previous history of prolonged intubation should be monitored for at least 200 days from invasive ventilation in order to early detect tracheal stenosis. Alcohol consumption plays an important role in the genesis of tracheal stenosis, more study are needed to understand the mechanism of action.

Disclosure: No significant relationships.

Keywords: Tracheal Stenosis, Thoracic Surgery, Prolonged Intubation, Tracheotomy, COVID-19.

	Stenosis (n=24)	**Non-stenosis (n=257)**	**OR (95%CI)**	**p-value**
Male	18 (75%)	207 (80.5%)	0.72 (0.27-1.92)	0.517
Age	60.9±9.7	61.8±10.9	1.01 (0.97-1.05)	0.670
BMI	27.7±5.1	29.7±6.1	1.07 (0.99-1.14)	0.074
Smoker		n=245		
Never	16 (66.7%)	160 (65.3%)	1	
Former	7 (29.2%)	58 (23.7%)	1.21 (0.47-3.08)	0.694
Current	1 (4.2%)	27 (11%)	0.37 (0.05-2.91)	0.345
Alcohol (Yes)	6 (25%)	14/242 (5.8%)	5.43 (1.86-15.83)	0.002
GERD	1 (4.2%)	20/255 (7.9%)	0.51 (0.07-3.98)	0.521
Diabetes		n=255		
No	12 (50%)	149 (58.4%)	1	
Type I	3 (12.5%)	59 (23.1%)	0.63 (0.17-2.32)	0.488
Type II	9 (37.5%)	47 (18.4%)	2.38 (0.94-5.99)	0.066
COPD	2 (8.3%)	22/255 (8.6%)	0.96 (0.21-4.37)	0.961
ASTHMA	2 (8.3%)	18/255 (7.1%)	1.20 (0.26-5.50)	0.817


freedom from stenosis
alcohol consumption
1.00
0.75
0.50
0.25
0.00
0
60
120
180
365
days
Number at risk
no 233 202 158 115 41
yes 20 19 16 10 2
no
yes

P-011

A REAL WORLD CASE MATCHED COMPARISON OF MINIMALLY INVASIVE SEGMENTECTOMY AND LOBECTOMY FOR PERIPHERAL STAGE IA1-2 NON SMALL CELL LUNG CANCER (NSCLC)

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OBJECTIVES

Recent randomised trials have shown that segmentectomy is at least non inferior to lobectomy for clinical stageIA1-2 NSCLC patients. The objective of this study is to compare in a real-world series the short- and long-term results of segmentectomy and lobectomy for peripheral cT1a-bN0 NSCLC.

METHODS

A series of consecutive patients undergoing minimally invasive (VATS or RATS) segmentectomy or lobectomy for peripheral (outer third of the lung) stage IA1-2 NSCLC in a single centre (January2017-August 2022).
Propensity score case matching analysis was performed to generate two matched groups of patients undergoing segmentectomy or lobectomy. Propensity score was constructed using patient related and tumour related variables. Short term (morbidity and mortality) and long term (Overall-OS and Event Free Survival-EFS) outcomes were compared between the two matched groups. EFS was calculated by including death resulting from any cause and any recurrence as events.

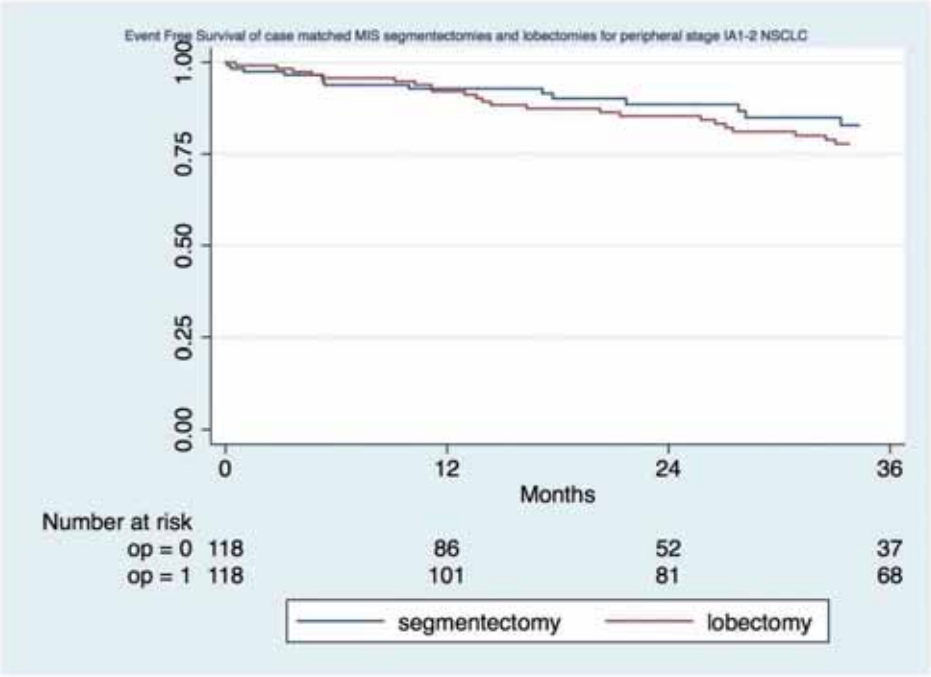
RESULTS

Propensity score generated 118 pairs of patients undergoing minimally invasive segmentectomy (S) or lobectomy (L). Median follow-up was 30 months (95%CL 4-64).
Median postoperative length of stay was 4 days in both groups. 90-day mortality was similar (S 2.5% vs. L 1.7%,p=1).
3 years OS (S 87% (76-93) vs. L 81% (72-88),p=0.73) and EFS (S 82% (72-90) vs. L 78% (68-84),p=0.52) didn't differ between the groups(Figure).
Locoregional recurrence rate (S 4.2% (5/118) vs L 9.3% (11/118),p=0.19) was similar despite a lower nodal upstaging (S 3.4%(4/118) vs. L 14%(17/118),p=0.005).
Median distance of tumour from resection margin in pR0 cases was shorter after segmentectomy (S 15mm (5-25) vs. L 30mm (16-43),p<0.0001)
The occurrence of compromised resection margins (pR1 or pR uncertain) was similar between the groups (S 7.6% (9/118) vs. L 9.3% (11/118),p=0.81)

CONCLUSIONS

This real-world series demonstrates the non-inferiority of segmentectomy compared to lobectomy in treating peripherally located stageIA NSCLC.

Disclosure: No significant relationships.
Keywords: Segmentectomy, Sublobar Resection, Lung Cancer.



P-012

TAILORED RESOURCE-SPARING PREOPERATIVE EVALUATION FOR THORACIC SURGERY

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Tata Memorial Hospital, Mumbai, India

OBJECTIVES

Thoracic surgery is associated with a higher incidence of intraoperative and postoperative events and a narrow margin of error which becomes significant in identifying and optimizing the preoperative risk. Standard guidelines recommend pulmonary function testing (PFT) for all thoracic surgeries.
This study aims to evaluate the safety and effectiveness of an individualized case-to-case approach for preoperative evaluation where PFT testing is limited to selected patients with a high risk of complications.

METHODS

A prospective study of patients undergoing thoracic oncological surgeries was conducted to compare the outcome of patients evaluated with a tailored PFT testing approach (Group A) to the standard approach (Group B). The tailored approach was used only for high-risk individuals identified based on effort tolerance, smoking, COPD / ILD (interstitial lung disease), the extent of surgery, and radiological evidence of lung parenchymal diseases.

RESULTS

186 patients in Group A were compared with 167 patients in Group B. The median age, ICU stay, and hospital stay were comparable. There was no statistically significant difference in major postoperative complications (18.3% vs. 24.6%, p=0.146636), intraoperative complications (8.06% vs. 4.19%, p=0.13284), and 30-day mortality (3.22% vs.3.59%, p=0.849515) between groups A and B.

In group A, PFT testing was done in 43% of patients (67% of major lung resections and 49% of esophagectomies). Among patients undergoing major lung resections, there was no significant difference in postoperative complications (35.3% vs. 28.6%, p=0.65311) or intraoperative events (14.7% vs. 14.3%, p=0.974773), irrespective of PFT testing. Similarly, no difference in outcome was observed in the esophagectomy subgroup.

CONCLUSIONS

An individualized, resource-sparing approach, using PFT only in high-risk patients, is safe in major thoracic surgery. With good functional evaluation and risk categorization, PFT can be avoided in a significant proportion of patients.

Disclosure: No significant relationships.
Keywords: Thoracic Surgery, Tailored Approach, Preoperative Evaluation.

MONDAY 5 JUNE 2023
MODERATED POSTER SESSION
17:00 - 18:00

P-013

BEDSIDE CHEST ULTRASONOGRAPHY FOR EVALUATION OF PATIENTS AFTER VIDEO-ASSISTED THORACIC SURGERY (VATS) LOBECTOMY

Roberto Cascone, Annalisa Carlucci, Domenico Caporale, Gabriella Giudice, Cosimo Lequaglie
IRCCS CROB, Rionero In Vulture, Italy

OBJECTIVES
Prospective observational study on the use of bedside chest Ultrasonography as a tool for evaluating lung re-expansion after VATS lobectomy. Our study aims to assess the US as at least equal to the X-ray for evaluation of post-operative residual pleural space or pleural effusion in patients with lung cancer and treated with VATS lobectomy.

METHODS
From January 2022 to December 2022, 43 patients undergoing VATS lobectomy were enrolled. At the end of surgery, a chest X-ray was performed. This exam has been associated with bedside chest US, performed with a portable wireless curvilinear probe and by the same operator in all patients, looking for the presence of residual pleural space or pleural effusion. The operator dedicated to US was unaware of the result of X-ray; the two exams were compared to determine if there was agreement in detecting residual pleural space or pleural effusion. This procedure was also carried out in the first three post-operative days.

RESULTS
Of the 43 patients analysed, US revealed residual pleural space in 8 patients. Compared with X-ray, only 7 were true positives (Positive Predictive Value – 87.50%). Of the 35 remaining patients, US detected 34 true negatives and 1 false negative (Negative Predictive Value – 97.14%). Regarding the pleural effusion, the US detected 7 true positives and 1 false positive (Positive Predictive Value – 87.50%); while 33 true negatives and 2 false negatives were found (Negative Predictive Value – 94.29%). For residual pleural space, specificity and sensitivity of US was respectively 97.14% and 87.50%. For pleural effusion, specificity and sensitivity of US was respectively 97.06% and 77.78%.

CONCLUSIONS
According to data emerging from our study, bedside chest US is a technique which, if performed by an expert operator, can represent a valid alternative to the standard chest X-ray in the evaluation of patients undergoing VATS lobectomy.

Disclosure: No significant relationships.
Keywords: Ultrasonography, VATS, Lung Cancer.

P-014

SURVIVAL OUTCOME IN PATIENTS WITH THYMOMA DISTANT RECURRENCE WHO UNDERWENT SURGICAL RESECTION

Marco Chiappetta[1], Carolina Sassorossi[1], Filippo Lococo[1], Elisa Meacci[1], Enrico Ruffini[2], Francesco Guerrera[2], Paraskevas Lyberis[2], Vittorio Aprile[3], MArco Lucchi[3], Marcello Carlo Ambrogi[3], Diana Bacchin[3], Andrea Dell'Amore[4], Giovannimaria Comacchio[4], Carlotta Marino[4], Gabriella Roca[4], Stefano Margaritora[1]

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[3]*University of Pisa, Pisa, Italy*

[4]*University of Padua, Padua, Italy*

OBJECTIVES

The aim of this study is to describe characteristics and survival outcome of patients who underwent surgical treatment for distant thymoma relapse according to the International Thymic Malignancy Interest Group definition(ITMIG).

METHODS

Data of patients affected by thymoma recurrence from 4 different Institution were collected and retrospectively reviewed. Patients with loco-regional metastases, who underwent non-surgical therapies and with incomplete data on follow-up were excluded. According to the ITMIG distant recurrence definition, patients with recurrence due to hematogenic localization(lung nodule,liver,etc) were included. Clinical and pathological characteristics were described using descriptive statistics while survival outcome was calculated using Kaplan-Meier curves and Cox regression analysis.

RESULTS

The final analysis was conducted on 40 patients.Clinical and pathological characteristics are reported in table.

Median DFI from thymectomy to recurrence resulted 66±55months.A single localization was present in 13 patients, the relapse was intrathoracic in 28(70%), involving the lung in 26cases. Liver was operated in 7 cases, while other kind of abdominal involvement(peritoneal nodules or diaphragm) was detected in 8 cases. A complete resection was achieved in all cases but 1 and a type of adjuvant treatment was administered in 22cases(52.3%).

5 and 10 years OS resulted 73.2%and27.2%. A recurrence occurred in 24(57%) patients. Univariable analysis identified as the only significant favorable factor a low-grade histology:5YOS in low grade(A,B1, B2)92.3% vs 53.3% in high-grade histology(B3-C) (p=0.035,HR 0.274;95%CI0.82-0.910,figure1). Site of recurrence and number of localization did not influence the prognosis, while in patients with adjuvant therapy administration there

were a survival advantage also if not statistically significant: 5YOS 84.8%vs 54.5% in patients without adjuvant therapy(p=0.103,HR2.565;95%CI0.827-7.951).

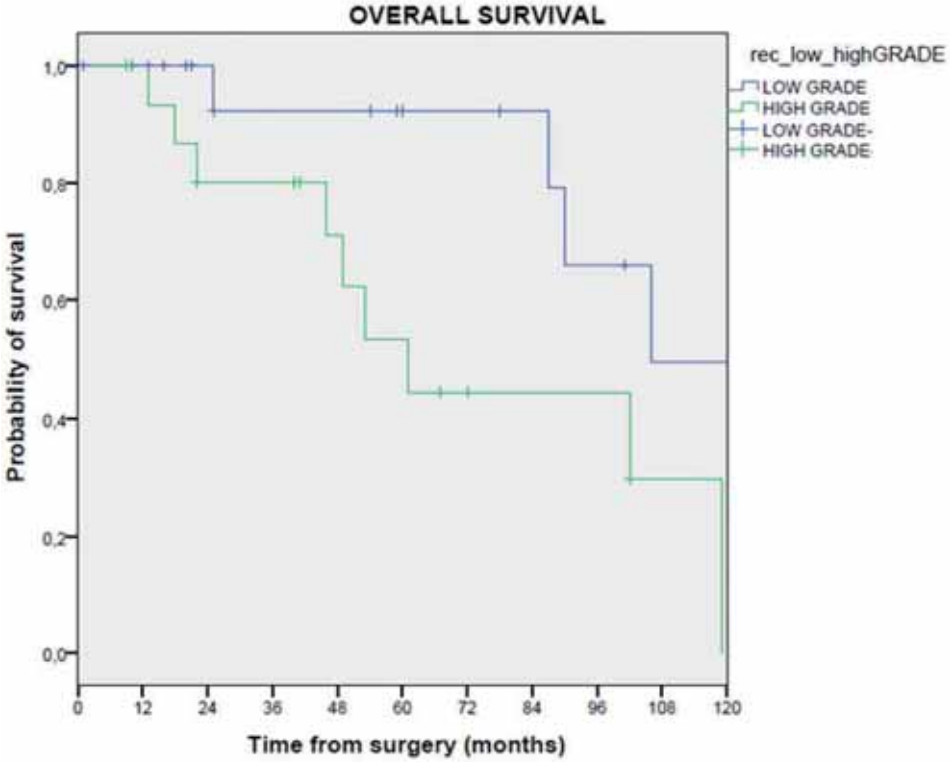
CONCLUSIONS

Our study showed a good survival outcome in patients who underwent surgical therapy for distant thymoma recurrence, independently by number and site of the relapse localization. In this group, patients with A,B1 and B2 histology presented a significant better survival than patients with B3-C histology.

Disclosure: No significant relationships.
Keywords: Mediastinum, Thymoma, Recurrence; Surgery.

Variable		**Univariable analysis**
	N (%)	**P value**
Sex		0.365
Male	19 (43)	
Female	21 (57)	
Disease free interval thymectomy-recurrence		0.316
< 36 months	13 (32.8)	
>36 months	27 (67.2)	
Primary situs of relapse		0.632
Lung+liver	2 (5)	
Lung	24 (60)	
Peritoneal localization	2 (5)	
Diaphragm	6 (15)	
Liver	5 (12.5)	
Thoracic wall	1 (2.5)	
Secondary localizations		0.694
Pleura	16	
Pericardium	3	
Liver	2	
Thoracic wall	1	
Neo-adjuvant therapy		0.591
Yes	3 (7)	
No	37 (93)	

Variable		Univariable analysis
WHO classification		0.850
A	1 (2.5)	
AB	2 (5)	
B1	7 (18)	
B2	9 (22)	
B3	12 (30)	
B1/B2	2 (5)	
B2/B3	6 (15)	
C	1 (2.5)	
WHO change in higher grade		0.274
Yes	9 (22)	
No	31(78)	
WHO low-high grade		0.025
AB-B1-B2	22 (55)	
B3-C	18 (45)	
Single or Multiple localizations		0.793
Single	13 (32.3)	
Multiple	27 (67.2)	
Localization		0.069
Intrathoracic	24 (60)	
Extrathoracic	12 (30)	
Intra ed extra thoracic	4 (10)	
Adjuvant treatment	22 (55)	0.091 (yes vs no)
Chemo-radiotherapy	7	
HITOC	9	
Chemotherapy	6	


OVERALL SURVIVAL
rec_low_highGRADE
LOW GRADE
HIGH GRADE
LOW GRADE-
HIGH GRADE
Probability of survival
1,0
0,8
0,6
0,4
0,2
0,0
0
12
24
36
48
60
72
84
96
108
120
Time from surgery (months)

P-015

PREOPERATIVE DIAGNOSTIC ACCURACY OF MEDIASTINAL LYMPH NODE STAGING IN PATIENTS WITH NEUROENDOCRINE LUNG TUMORS

Fabian Doerr[1], Hruy Menghesha[1], Kaid Darwiche[2], Dirk Theegarten[3], Hubertus Hautzel[4], Martin Schuler[5], Servet Bölükbas[1]

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OBJECTIVES

Pulmonary neuroendocrine tumors account for approximately 20% of primary lung malignancies. Invasive and non-invasive mediastinal lymph node assessment is an essential component during the preoperative work-up. Identifying the correct 'N'-stage is important for the determination of treatment. Hence, regardless of any preoperative assessment, a systematic lymph node dissection should be performed during operation. We evaluated the clinical to pathological agreement of nodal staging in resectable neuroendocrine tumors.

METHODS

Retrospectively collected monocentric data of patients, that underwent anatomical resection and systematic lymphadenectomy for pulmonary neuroendocrine tumors between June 2016 and October 2022 were analyzed. We excluded neo-adjuvant treated patients and divided our cohort in two groups according to the type of mediastinal lymph node assessment. (A) non-invasive (PET-CT/CT) and (B) invasive (EBUS-TBNA/mediastinoscopy). The concordance between clinical and pathological lymph node staging was assessed and the sensitivity of non-invasive staging was determined.

RESULTS

A total of 141 patients were included in this analysis. The patients' mean age was 63.9± 11.3 years and 72% (n=101) were female. 55 patients (39%) were in group A; whereas 86 patients (61%) belonged to group B. Both groups were equally distributed regarding age, gender, histology, ECOG, UICC stage and surgical access (p-value>0.05). Concordance between cN- and pN-stage was 93% (n=51) in the non-invasive and 80% (n=69) in the invasive-group (p-value=0.033). Nodal upstaging occurred in 2 (4%) patients in group A and in 9 (10%) patients in group B. Down-staging was necessary in 8 patients (9%) of the invasive and in

2 patients (4%) of the non-invasive group. Invasive nodal staging did not prolong time between diagnosis and surgery (Group A: 10.4 days; Group B: 11.2 days; p-value=0.148).

CONCLUSIONS

The likelihood to detect occult mediastinal lymph nodes after non-invasive staging is not higher than after biopsy. Solely non-invasive staging is justified especially when biopsy prolongs time to surgery.

Disclosure: No significant relationships.
Keywords: Lymph Node Staging, Neuroendocrine Lung Tumor.

P-016

FEASIBILITY OF COMPUTED TOMOGRAPHY-DERIVED SURGICAL MARGIN ASSESSMENT IN EX-VIVO PORCINE SUBLOBAR LUNG RESECTION MODEL

Shinsuke Kitazawa[1], Nicholas Bernards[1], Alexander Gregor[1], Yuki Sata[1], Yoshihisa Hiraishi[1], Hiroyuki Ogawa[1], Takamasa Koga[1], Tsukasa Ishiwata[1], Masato Aragaki[1], Fumi Yokote[1], Andrew Effat[1], Kate Kazlovich[1,2], Robert Weersink[3], Michael Cabanero[4], Kazuhiro Yasufuku[1,2]

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OBJECTIVES

Surgical margins (SM) significantly impact the risk of recurrence after sublobar resection for lung cancer. Whether a SM is sufficient is sometimes uncertain intraoperatively, particularly for small and subsolid lesions. CT imaging of a sublobar resected specimen could enable intraoperative SM measurement. However, consistency between radiological and pathological measurements has not been previously studied. We aimed to investigate the feasibility of SM measurement by CT versus pathology using an ex-vivo sublobar lung resection model.

METHODS

Pig lung samples were harvested using a surgical stapler. Prior to resection, 3% blue-dyed agarose gel was injected randomly, in terms of depth and location, to mimic peripheral lung nodules. CT images were acquired following specimen inflation. The specimen embedded in silicone gel was cut at the same anatomical location and orientation as observed by CT for an accurate comparison with the pathological SM measurement. The bisected samples were then fixed by formalin and SM length in the four different stages (CT, pre-formalin fixation, post-formalin fixation, pathology) were measured and compared.

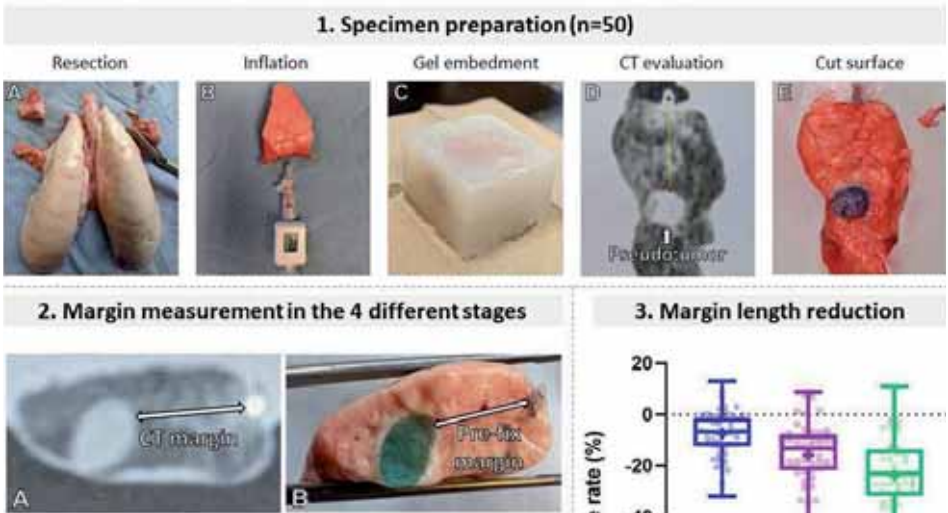
RESULTS

A total of 50 lung specimens were analyzed. After specimen processing (including fixation, paraffin embedding, and hematoxylin & eosin staining), we observed SM length decrease in 94% (47/50) and an increase in 6% (3/50) of the samples. Mean SM length were as follows: CT based 14.0 ± 5.8 mm (range: 4.5-28.3), pre-formalin fixation 13.0 ± 5.5 mm (range: 4.0-25.0), post-formalin fixation 12.1 ± 5.8 mm (range: 2.5-26.0), and pathology 10.9 ± 5.2 mm (range: 1.0-23.4). There was an average of a 23.8 % reduction of SM length from CT to pathology ($p < 0.001$).

CONCLUSIONS

Although CT examination of resected lung cancer specimens is feasible and low risk tool that can allow real-time identification of the tumor and SM measurement during sublobar resection, surgeons must be aware that CT-derived SM can overestimate the pathology-derived SM.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Sublobar Resection, Surgical Margin, Computed Tomography.



P-017

CHANGES IN QUALITY OF LIFE AFTER LUNG CANCER DIAGNOSIS ACCORDING TO RACE

Tara Ivic-Pavlicic, Shivam Joshi, Raja Flores, Emanuela Taioli
Icahn School of Medicine at Mount Sinai, New York, United States

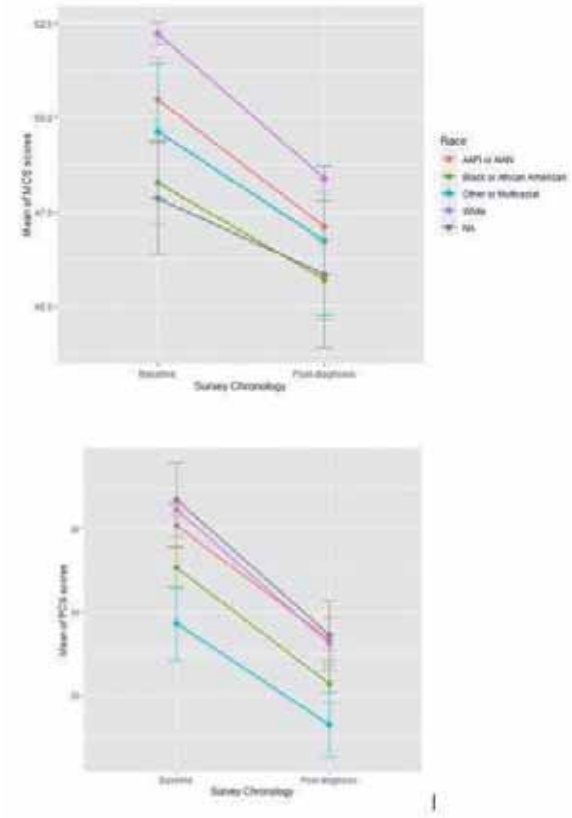
OBJECTIVES
Previous studies have demonstrated that quality of life (QoL) is an important prognostic factor and a significant contributor to survival. Furthermore, QoL is worst in lung cancer patients than in patients suffering from other malignancies. However, it is not known whether changes in QoL from before to after a lung cancer diagnosis differ by self-reported racial classifications.

METHODS
Data from the Surveillance, Epidemiology, and End Results Medicare Health Outcomes Survey (SEER-MHOS) from 1998-2017 were used to determine racial differences in QoL changes pre- to post-lung cancer diagnosis. Quality of life was measured using the 36-item Short Form Health Survey until 2006 and subsequently the Veteran's RAND 12-Item Survey. Changes in physical and mental quality of life were measured using the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores, respectively.

RESULTS
1179 out of the 1300 participants with lung cancer as their primary or first cancer diagnosis had pre- and post-lung cancer diagnosis PCS and MCS scores available. The mean PCS and MCS scores pre-diagnosis were 38.06 and 51.37, respectively; they declined to 30.94 and 47.30, respectively, post-diagnosis. MCS scores decreased -3.53 in Asian Pacific/Asians (AAPI or AIAN), - 2.77 in Blacks; - 5.63 in Whites, - 3.83 in others/multiracial. PCS scores decreased -5.85 in AAPI or AIAN, - 5.56 in Blacks; - 4.54 in Whites, - 6.42 in others/multiracial. Across races, mean PCS and MCS scores differed significantly before a lung cancer diagnosis, but they did not differ significantly post-lung cancer diagnosis.

CONCLUSIONS
This is the first and largest project to assess racial differences in physical and mental QoL measures pre- and post-lung cancer diagnosis. Though QoL decreases significantly for all races post-lung cancer diagnosis, there were racial differences in the amount of change.

Disclosure: No significant relationships.
Keywords: Quality Of Life, Lung Cancer, Race.



AAPI or AIAN: N=95; Black: N= 138; Others: N= 47; White: N =1322

P-018

A PROPOSAL FOR PATHOLOGICAL T SUBCLASSIFICATION IN THE LUNG CANCER TNM STAGING SYSTEM, MULTIPLE T FACTOR

Hüseyin Melek, Tolga Evrim Sevinç, Gizem Gedikoglu Pirim, Elçin Süleymanoglu, Ahmet Sami Bayram, Cengiz Gebitekin
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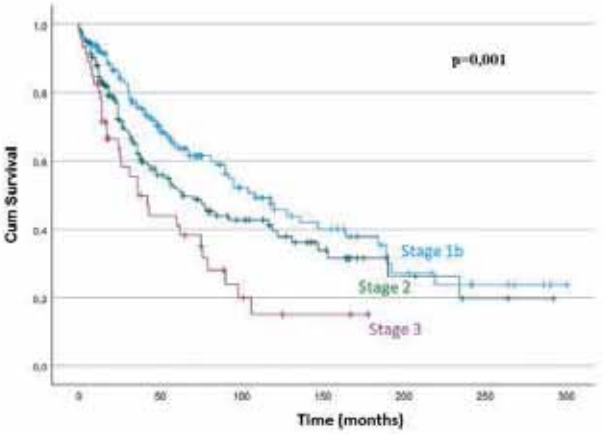
OBJECTIVES
In the 8.TNM staging system of lung cancer, the T stage is determined by considering many factors such as the size of the tumor, invasion characteristics and presence of nodules. As a result of this staging system, patients can be classified into the same T stage for a single factor(sT) or multiple factors(mT). In this study, our aim was to show the effect on survival of having mT in patients with the same T stage.

METHODS
Between january 1996-2021, 1597 patients who underwent anatomic lung resection and lymph node dissection for NSCLC in our clinic were reviewed retrospectively. Patients who were classified as T2-T4 according to T stage and didn't have lymph node or distant metastases and didn't receive neoadjuvant therapy were included in the study. 382 patients were divided into two groups as sT or mT for determining the T stage. The survival of the patients and the affecting factors were analyzed.

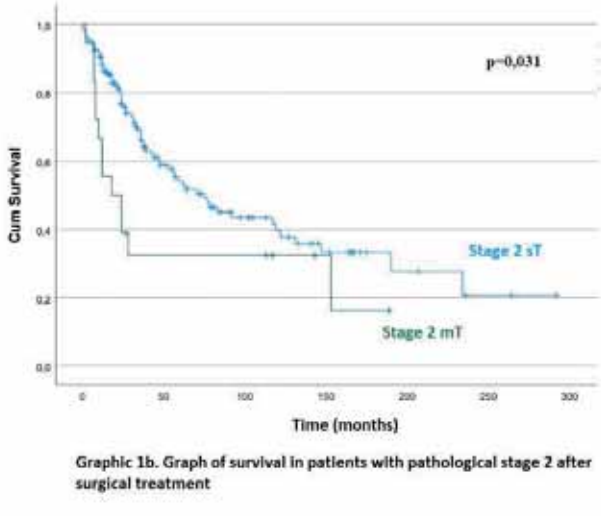
RESULTS
According to the T stage, 169 were T2a(44.2%, stage 1b), 56 were T2b(14.7%, stage 2a), 111 were T3(29.1%, stage 2b) and 46 were T4(12%, stage 3a). Forty-six patients were observed as having mT (stage 1b, n=25, stage 2, n=18 and stage 3, n=3). Five-year survival was 56% in all patients (64.6% in stage 1b, 51.8% in stage 2, and 41.1% in stage 3a, $p<0.001$). Five-year survival in sT patients in stage 1b was 68.5% and 42% in mT patients in the same stage. For stage 2 patients, 5 year survival was 54.1% in sT patients and 32.4% in mT patients($p=0.031$, graphic1).

CONCLUSIONS
This study shows that mT patients had worse survival rates despite having the same T stage. The definition of the T classification as "single" or "multiple" in the new TNM staging system will allow for larger case series and subgroup analysis.

Disclosure: No significant relationships.
Keywords: TNM, T Stage, Lung Cancer, NSCLC.



Graphics 1a. Graph of survival in patients with pathological stage 1,2,3 after surgical treatment



Graphic 1b. Graph of survival in patients with pathological stage 2 after surgical treatment

P-019

THE PROGNOSTIC VALUE OF THYROID TRANSCRIPTION FACTOR 1 IN LONG-TERM SURVIVAL OF PATIENTS SUFFERING FROM PULMONARY CARCINOIDS

Hruy Menghesha[1], Fabian Dörr[1], Kaid Darwiche[2], Martin Schuler[3], Hubertus Hautzel[4], Dirk Theegarten[5], Servet Bölükbas[1]

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OBJECTIVES

The multimodal treatment of neuroendocrine lung tumors is the subject of ongoing debate. These inhomogeneous groups of malignant entities are differentiated based on mitotic count and microscopically detected necrosis. Immunohistochemical markers are used not only for specification but also for risk stratification. In non-small cell lung cancer, TTF-1 is used both as a prognostic factor and for choosing the appropriate therapeutic regimen. Our aim is to determine whether this strategy can also be followed in lung carcinoids.

METHODS

We retrospectively collected data of all consecutive patients who underwent surgical therapy in curative intention for primary pulmonary neuroendocrine tumors at our institution between May 2010 and October 2022. After exclusion of patients who neither suffered from pure typical nor atypical carcinoid as the underlying entity, we analyzed long term survival in dependence of the TTF-1 expression status using Kaplan-Meier method and log rank testing. To evaluate, whether TTF-1 acts as an independent risk factor for long term survival, we performed a cox regression analysis.

RESULTS

A total of 105 patients were eligible for further analysis. In the overall cohort mean age was 62.17±13.36 years and women were represented more frequently than men (79% vs. 21 %). There was no significant difference between both groups regarding age, gender, distribution of specific tumor entity or UICC stage. Mean survival was significantly better in patients with absence of TTF-1 expression (23.86±7.23 months), than in patients with expression of TTF-1 (9.19±7.23) with a p-value of 0.017. Cox regression analysis revealed that TTF-1 expression

acts as an independent risk factor for long term survival with a hazard ratio of 0.487 and a p-value of 0.02.

CONCLUSIONS

TTF-1 expression seems to have a negative impact on long term survival in pulmonary carcinoids. Further studies are needed to investigate the role of TTF-1 in determining systemic therapy in these patients.

Disclosure: No significant relationships.

Keywords: Immunohistochemistry, Neuroendocrine Tumors, TTF-1.

P-020

IMPORTANCE OF THE RATIO OF THE SURGICAL MARGIN TO NODULE SIZE IN PULMONARY METASTASECTOMY FOR COLORECTAL CARCINOMA

Ali Ozdil[1], Gizem Kececi Ozgur[1], Merve Ezgi Unal[2], Ayse Gul Ergonul[1], Tevfik Ilker Akcam[1], Pinar Gursoy[3], Deniz Nart[4], Kutsal Turhan[1], Alpaslan Cakan[1], Ufuk Cagirici[1]
[1]Ege University Faculty of Medicine Department of Thoracic Surgery, Izmir, Turkey
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[3]Ege University Faculty of Medicine Department of Medical Oncology, Izmir, Turkey
[4]Ege University Faculty of Medicine Department of Pathology, Izmir, Turkey

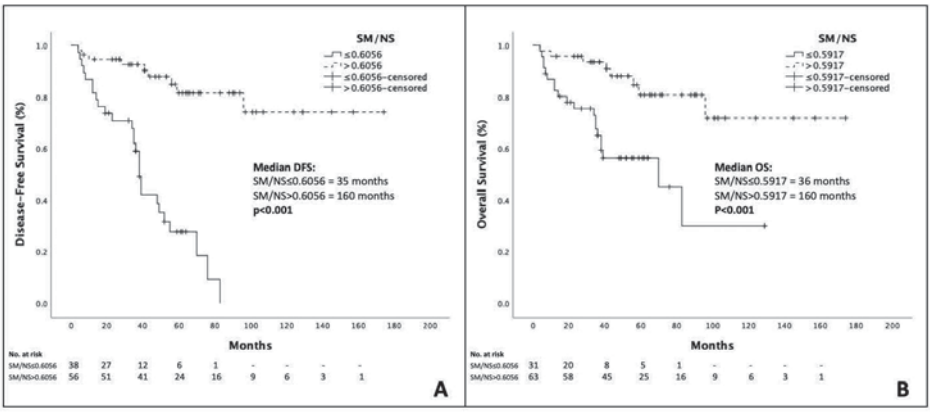
OBJECTIVES
Pulmonary metastasectomy (PM) is a survival-enhancing treatment involved in multimodal management of patients with metastatic colorectal cancer (CRC). In this study, we aimed to analyze clinical properties of patients who underwent PM for CRC and to investigate prognostic factors associated with disease free (DFS) and overall survival (OS).

METHODS
Data of 94 patients who underwent PM for CRC metastases between January 2010 and December 2021 were included in study. Relationship between prognostic risk factors and OS and DFS were evaluated.

RESULTS
The mean age of the patients, of which 58 were male and 36 were female, was 62.24 ± 11.13 years (range, 23-81). Cut-off values of ratio of surgical margin (SM) to nodule size (NS) were calculated as 0.6056 with a sensitivity of 81% and specificity of 75% (95% CI: 0.769-0.937; $p<0.001$) for DFS and 0.5917 (95% CI: 0.66-0.878; $p<0.001$) with a sensitivity of 78.8% and specificity of 60.7% for OS. Univariate analysis showed that CEA level ($p<0.001$), DFI ($p=0.024$ and $p=0.002$, respectively) and NS ($p<0.001$) were significant factors associated with DFS and OS. Also the ratio was one of significant factors with p values <0.001 for both DFS and OS. Multivariate analysis demonstrated that CEA level ($p=0.001$ and $p=0.001$), DFI ($p<0.001$ and $p<0.001$), nodule size ($p=0.019$ and $p=0.039$, respectively), ratio of SM to NS (SM/NS) ($p<0.001$ and $p=0.006$) were independent prognostic factors for both DFS and OS.

CONCLUSIONS
We suggest that SM/NS could be considered as a prognostic factor. This study demonstrated that the ratio ≤0.6 must be taken as a common risk factor for DFS and OS. It would be would be safer than nodule size or surgical margin width alone.

Disclosure: No significant relationships.
Keywords: Metastasectomy, Colorectal Carsinoma, Prognosis.


SM/NS
≤0.6056
>0.6056
≤0.6056–censored
>0.6056–censored
Disease–Free Survival (%)
Median DFS:
SM/NS≤0.6056 = 35 months
SM/NS>0.6056 = 160 months
p<0.001
Months
No. at risk
SM/NS≤0.6056 38 27 12 6 1 - - - -
SM/NS>0.6056 56 51 41 24 16 9 6 3 1
A
SM/NS
≤0.5917
>0.5917
≤0.5917–censored
>0.5917–censored
Overall Survival (%)
Median OS:
SM/NS≤0.5917 = 36 months
SM/NS>0.5917 = 160 months
P<0.001
Months
No. at risk
SM/NS≤0.6056 31 20 8 5 1 - - - -
SM/NS>0.6056 63 58 45 25 16 9 6 3 1
B

P-021

THE COMPARISON OF EARLY OUTCOMES AND COST FOR ROBOTIC VERSUS VIDEO-ASSISTED THORACOSCOPIC ANATOMICAL RESECTION OF LUNG CANCER

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Department of Thoracic and Cardiovascular Surgery, Seoul National University Hospital, Seoul National University College of Medicine, Seoul, South Korea

OBJECTIVES
Both robotic-assisted thoracic surgery (RATS) and video-assisted thoracoscopic surgery (VATS) are established options for the treatment of lung cancer. The objective of this study was to compare surgical outcomes and the cost of RATS and VATS for anatomical resection in patients with lung cancer.

METHODS
A retrospective analysis of the records of 2086 patients, who were attempted to undergo minimally invasive anatomical resection for lung cancer in a single institution between Jan 2017 and Jul 2020 was conducted. Of them, 133 underwent RATS and 1953 underwent VATS, postoperative outcomes and cost were compared after propensity score-matching.

RESULTS
In total, 130 well-balanced pairs were obtained. Conversion to thoracotomy was required more frequently in the VATS group (VATS 6.1% vs. RATS 0.8%, p=0.017). The overall postoperative complication rate was significantly lower in the RATS group (VATS 28.5% vs. RATS 21.5%, p=0.039) and the RATS group showed shorter hospital stay (VATS 6.3±6.0 days vs. RATS 4.7±3.3 days, p=0.008). However, the postoperative complication rate of grade 3 or higher was not significantly different between the two groups (VATS 6.1% vs. RATS 3.8%, p=0.395). The total hospitalization cost {$10,928 [Interquartile range (IQR), $9,971-$13,025] vs. $12,151 (IQR, $11,045-$13,573), p<0.001}, and surgical cost [$7,164 (IQR, $6,698-$7,985) vs. $8,488 (IQR, $7,662-$8,806), p<0.001] were significantly higher in the RATS group. The Advanced hospital room charge [$0 (IQR, $0-$709) vs. $418 (IQR, $0-$836), p=0.004] was significantly higher in the RATS group, but there was no statistical difference in the total hospital room charge for the two groups [$837 (IQR, $461-$1,264) vs. $697 (IQR, $418-$697), p=0.217].

CONCLUSIONS
The total cost for the RATS group was $1,233 more than the VATS group, although there were 5% fewer converted thoracotomies, 1.6 fewer days of hospitalization, and 7% fewer complications. RATS required higher cost than VATS with significant improvements in early postoperative outcome measures.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Robot-Assisted Thoracic Surgery, Video-Assisted Thoracoscopic Surgery.

	Unmatched patients			PS-matched patients		
	VATS (N = 1952)	RATS (N = 134)	p-value	VATS (N = 130)	RATS (N = 130)	p-value
Thoracotomy conversion	141 (7.2%)	1 (0.7%)	0.036	8 (6.1%)	1 (0.8%)	0.017
Hospital stay (days, mean ±SD)	5.7 ± 6.9	5.0 ± 3.7	0.240	6.3 ± 6.0	4.7 ± 3.3	0.008
Complication rate	465 (23.8%)	26 (19.4%)	0.215	37 (28.5%)	23 (21.5%)	0.039
≥ Grade III	73 (3.7%)	5 (3.7%)	0.640	8 (6.1%)	5 (3.8%)	0.395
30-day mortality	2 (0.1%) :ARDS	0 (0.0%)	NC	0 (0.0%)	0 (0.0%)	NC
Complete resection	1945 (99.6%)	134 (100%)	0.999	129 (99.2%)	130 (100%)	1.000
Bronchoplasty or Angioplasty	20 (1.0%)	8 (6.0%)	<0.001	4 (3.1%)	4 (3.1%)	1.000
Mediastinal LN dissection	1950 (99.9%)	134 (100%)	0.999	130 (100%)	130 (100%)	1.000
Resected LNs (No.)	23.5 ± 9.6	24.1 ± 8.7	0.475	23.1 ± 8.4	24.0 ± 8.7	1.000
Hospitalization cost (median (IQR), $)	10,293 (9,440-11,672)	11,577 (10,691-13,009)	<0.001	10,928 (9,971-13,025)	12,151 (11,045-13,573)	<0.001
Total hospital room charge	790 (513-1,220)	698 (423-1,383)	0.507	837 (461-1,264)	697 (418-697)	0.217
Advanced hospital room charge	0 (0-698)	422 (0-841)	<0.001	0 (0-709)	418 (0-836)	0.004
Surgical cost (include cost of instruments)	7,193 (6,700-7,917)	8,497 (7,676-8,855)	<0.001	7,164 (6,698-7,985)	8,488 (7,662-8,806)	<0.001

P-022

ASSESSMENT OF LONG-TERM RESULTS OF INTERCOSTAL NERVE RECONSTRUCTION, "THE GEBITEKIN TECHNIQUE" FOR THE TREATMENT OF SEVERE COMPENSATORY HYPERHİDROSİS

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OBJECTIVES
Severe compensatory sweating(sCS) significantly impairs quality of life(QOL) and causes regret. Many authors agree that sCS is not treatable due to the low success rates of the medical and surgical techniques. A new technique was presented several years ago which involved bilateral intercostal nerve reconstruction, "Gebitekin Technique(GT)" in patients with sCS. The aim of this study is to analyze the long-term outcomes of patients operated on with this technique.

METHODS
Between January 2014 and 2020, 72(144 VATS) patients with sCS underwent GT in our clinic. All patients with sCS were given a QOL questionnaire introduced by the WHO(WHOQOL-BREF). Patients with sCS and impaired QOL were considered candidates for GT. All patients were evaluated regarding possible causes of secondary hyperhidrosis. The questionnaire was applied again to the patients who completed it at least 24 months after GT. Sixty(83.3%) patients who answered both questionnaires were included in the study.

RESULTS
ETS was performed at more than one level in 39(65%) patients and 28(46,7%) patients were ETS with clipping. The median time between ETS and GT was 54 months(range 8-192). The mean operation time for bilateral GT was 135.16 (range 60 to 255) minutes. The first intercostal nerve was used in 33(55%) patients. Early postoperative minor complications were seen in 22(18,3%) patients. Mortality or major morbidity wasn't observed. Forty-one(68.3%) patients reported reduction of sCS. The symptoms of depression and fatigue disappeared in all but one patient. While we had no patients with an excellent QOL before GT surgery, 40% of patients had an exceptional QOL after surgery. None of the patients had a recurrence of primary hyperhidrosis, and there was no difference in sweating reduction between both sides.

CONCLUSIONS
Our study showed that the Gebitekin technique is a safe, effective, and successful treatment of sCS that changes QOL in most patients, and sCS decreased by 68.3%.

Disclosure: No significant relationships.
Keywords: Hyperhidrosis, Compensatory Hyperhidrosis, VATS, Intercostal Nerve.

P-023

DOES THREE-DIMENSIONAL (3D) PRINTING ENHANCE RESULTS IN LUNG RESECTION SURGERY?

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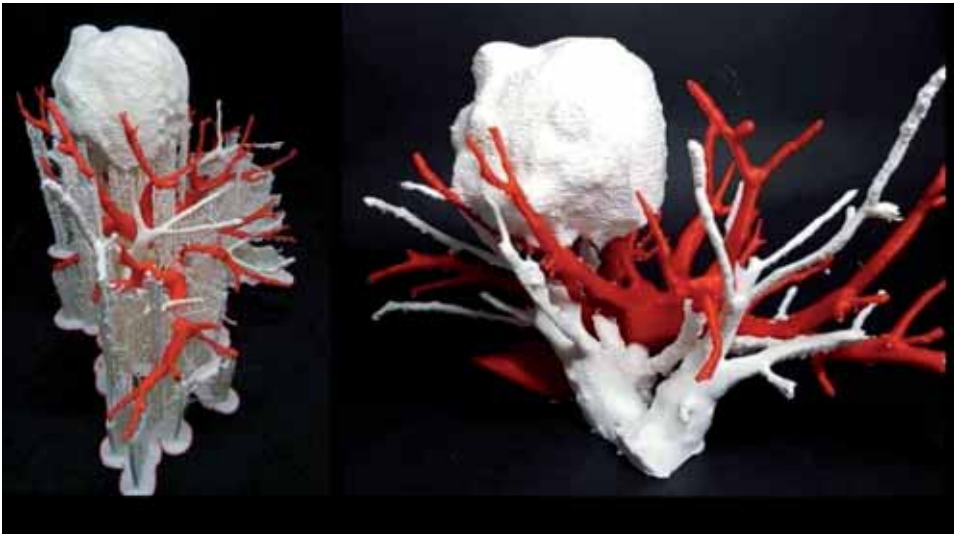
OBJECTIVES
Analyzing the results of anatomical lung resections in which three-dimensional (3D) printing of the pulmonary vascular anatomy has been applied.

METHODS
Observational prospective study from April 2017 to December 2020 of 111 anatomical lung resections in which 3D printing of the pulmonary vascular anatomy was realized preoperative and compared with a cohort of 203 patients with lung resections prior to the incorporation of this technology. Vascular accident, anatomical variations and surgical time were analyzed. Another endpoint was to compare the concordance of the number of vascular branches visualized in the CT scan, the 3D printed model and intraoperative by the main surgeon.

RESULTS
- 3D cohort included 111 patients: 83 (74,8%) men and 28 (25,2%) women. Average age: 64 years (15-84). 85,5% lobectomies, 10% segmentectomies and 4,5% pneumonectomies. 81 (73%) by VATS and 30 (27%) thoracotomies.
- Operative time in the 3D group was 163 min vs. 217 min in the control group ($p<0,001$).
- Vascular accidents in 3D group were 1 (0.9%), due to 1 mm-thick artery rupture, vs 11 (5,4%), mostly major bleeding, in the control ($p>0,05$).
- Anatomical variants in 20 cases (18%): 13 venous (3 left common veins) and 7 arterials.
- Accuracy of arterial branches identified by main surgeon in CT scan / surgery: 89/111 (80.2%).
- Accuracy of arterial branches identified by 3D model / surgery: 99/111 (89%).
- Accuracy of vein branches identified by main surgeon in CT scan / surgery: 106/111 (94%).
- Accuracy of vein branches identified by 3D model / surgery: 110/111 (99%).
- Iatrogenic: no cases in 3D group vs 2 (1%) in the control.

CONCLUSIONS
• 3D model reports with precision pulmonary vascularization and decreases the probability of major vascular accident, iatrogenesis and surgical time.
• Anatomical variations are frequent, but mostly observed by 3D printing.
• 3D printing improves preoperative planning and surgical safety.

Disclosure: No significant relationships.
Keywords: 3D Printing, New Technologies, Anatomical Lung Resections, Safe Surgery.



P-024

PRACTICAL METHODS TO DIFFERENTIATE THYMIC MALIGANCIES USING POSITRON EMISSION TOMOGRAPHY/COMPUTED TOMOGRAPHY (PET/CT) AND TUMOR MARKERS

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OBJECTIVES
The differential diagnosis of anterior mediastinal tumor plays an important role in determining treatment strategies, but its diversity makes it challenging. Recently, positron emission tomography/computed tomography (PET/CT) was reported as a useful diagnostic tool for differential diagnosis of anterior mediastinal tumor. The purpose of this study is to evaluate the efficacy of PET/CT and tumor markers for differential diagnosis of thymic malignancies.

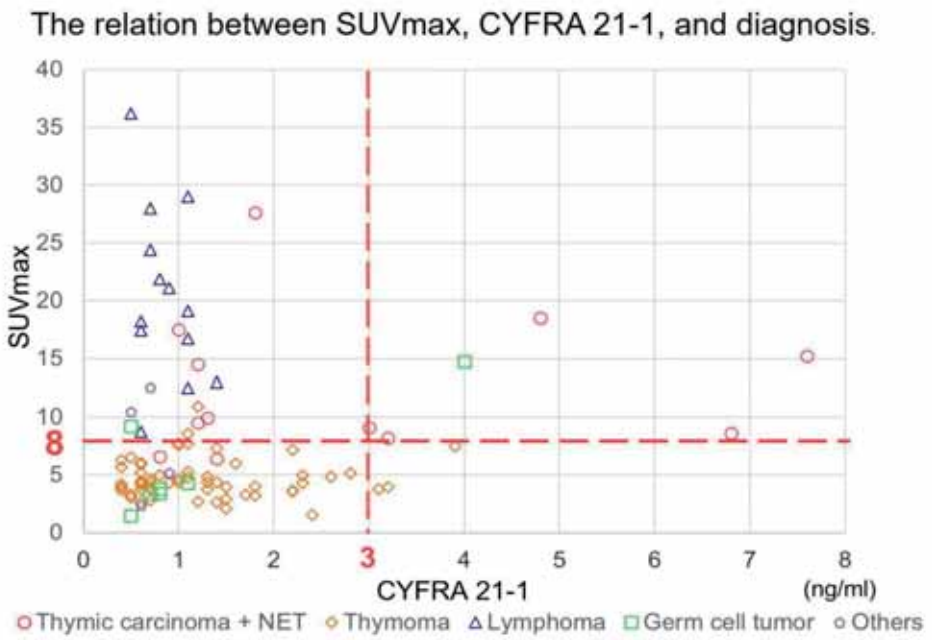
METHODS
The patients who admitted our department from January 2012 to December 2021 for primary anterior mediastinal tumor were retrospectively evaluated. We evaluated the relationship between standardized uptake value maximum (SUVmax), tumor markers and pathological diagnosis in 5 groups of tumors, thymic carcinoma including neuroendocrine tumor (NET), thymoma, lymphoma, germ cell tumor, and others.

RESULTS
Totally 139 patients were enrolled in this study. SUVmax was significantly higher in lymphoma, thymic carcinoma including NET, and thymoma, in that order (19.20 ± 8.03 vs 11.89 ± 5.93 vs 4.72 ± 1.67, $p < .01$). Cytokeratin 19 fragment (CYFRA 21-1) was significantly higher in the thymic carcinoma including NET than other groups (2.69 ± 2.31 vs 1.23 ± 0.79, 0.86 ± 0.28, 1.22 ± 1.16, and 0.97 ± 0.45, $p < .05$). The ROC curves analysis indicated that the optimal cut-off values of SUVmax for thymic carcinoma including NET in addition to lymphoma and CYFRA 21-1 for thymic carcinoma including NET were 7.97 (AUC 0.934) and 2.95 (AUC 0.768) respectively. With the combination of optimal cut-off values (SUVmax 8, CYFRA 21-1 3) calculated by ROC curves, accuracy rate for thymic carcinoma including NET was 91.4% (specificity 98.7%, sensitivity 41.6%).

CONCLUSIONS
SUVmax and CYFRA 21-1 were significant indicators for the diagnosis thymic cancer including NET. This practical and specific method contributed to more accurate preoperative diagnosis in anterior mediastinal tumor, which could facilitates the determination of treatment strategies.

Disclosure: No significant relationships.

Keywords: Thymic Malignancies, Thymic Neoplasm, Anterior Mediastinal Tumor, Primary Mediastinal Lymphoma, PET/CT.



Accuracy rate for diagnosing thymic carcinoma and NET: 91.4%
(Cut-off values; SUVmax 8, CYFRA 21-1 3)

POSTER

P-025

RECONSIDERING THE T CATEGORY FOR THE T3 NON-SMALL CELL LUNG CANCER WITH ADDITIONAL TUMOR NODULES IN THE SAME LOBE: A POPULATION-BASED STUDY

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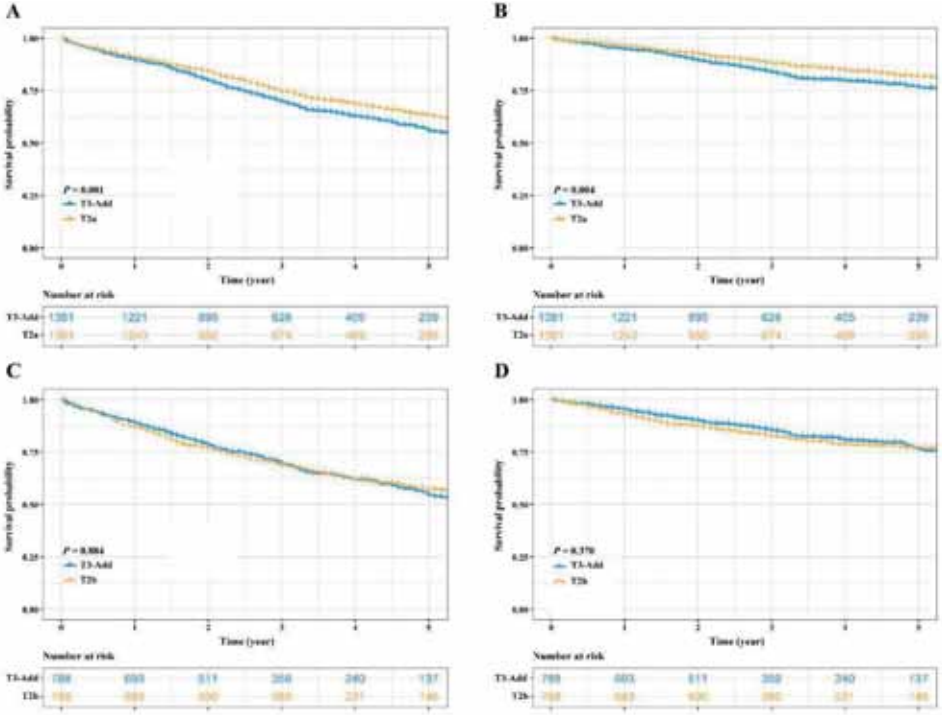
OBJECTIVES
This study aimed to evaluate the prognosis of the T3 non-small cell lung cancer (NSCLC) patients with additional tumor nodules in the same lobe (T3-Add), and externally validate the current T category of this population.

METHODS
Survivals were estimated using the Kaplan-Meier method with a log-rank test. Propensity score matching (PSM) was performed to reduce bias. The least absolute shrinkage and selection operator (LASSO)-penalized Cox model was used to determine the prognostic factors.

RESULTS
A total of 41,370 eligible cases were included. There were 2,312, 20,632, 12,787, 3,374 and 2,265 cases in the T3-Add, T1, T2, T3 and T4 group, respectively. The Kaplan-Meier curves demonstrated that the survivals of the T3-Add patients were superior to those of the T3 patients both before and after PSM. Additionally, the OS of the T3-Add patients were worse than that of the T2 patients, but the CSS differences between these two groups were not statistically significant. In the subset analyses, the survivals of the T3-Add patients were inferior to those of the T2a patients, but were comparable to those of the T2b patients (5-year OS rate: 54.3% vs. 57.2%, P = 0.884; 5-year CSS rate: 76.2% vs. 76.8%, P = 0.370). In the T3-Add & T2b matched pair, multivariable Cox analysis further confirmed that T category was not a prognostic factor for survivals.

CONCLUSIONS
T3-Add and T2b NSCLC patients had similar survivals, and we proposed that it is necessary to reconsider the T category of the patients with additional nodules in the same lobe in the forthcoming 9th edition of TNM staging manual.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, T3-Add, T3 Category, T2b Category.


A
B
C
D
Survival probability
Time (year)
Number at risk
T3-Add
T2a
T2b

P-026

INVESTIGATIONS OF THE DISTANT METASTATIC NSCLC WITHOUT LOCAL LYMPH NODE INVOLVEMENT: A POPULATION-BASED STUDY

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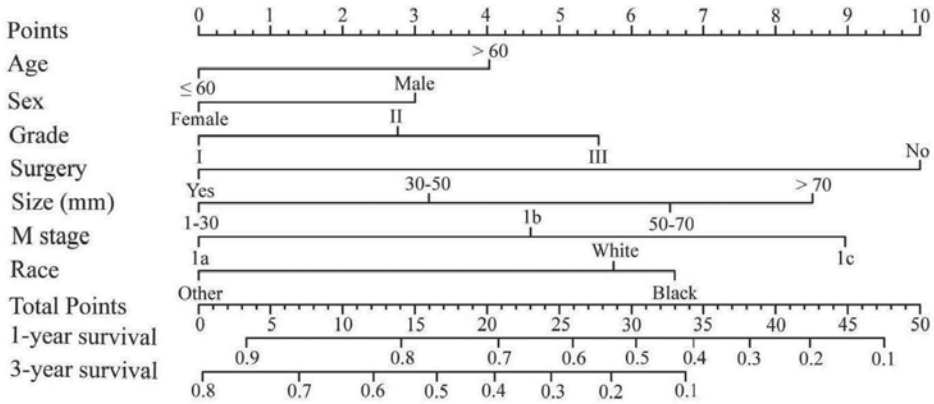
OBJECTIVES
This study aimed to investigate the presentations and survival outcomes of the distant metastatic non-small cell lung cancer (NSCLC) without lymph node involvement to obtain a clearer picture of this special subgroup of metastatic NSCLC.

METHODS
A least absolute shrinkage and selection operator (LASSO) penalized Cox regression analysis was used to select the prognostic variables. A nomogram and corresponding risk-classifying systems were constructed. The C-index and calibration curves were used to evaluate the performance of the model. Overall survival (OS) curves were plotted using the Kaplan-Meier method, and the log-rank test was used to compare OS differences between groups. Propensity score matching (PSM) was performed to reduce bias.

RESULTS
A total of 12,610 NSCLC patients with M1 category (N0 group: 3,045 cases; N1-3 group: 9,565 cases) were included. Regarding the N0 group, multivariate analysis demonstrated that age, sex, race, surgery, grade, tumor size and M category were independent prognostic factors. A nomogram and corresponding risk-classifying systems were formulated. Favorable validation results were obtained from the C-index, calibration curves and survival comparisons. In further analyses, the survival curves demonstrated that the survival of the N0 NSCLC patients was better than that of the N1-3 NSCLC patients both before and after PSM.

CONCLUSIONS
In this study, an efficient nomogram and risk-classifying systems were designed for the T1-4N0M1 NSCLC which showed acceptable performance. Primary lung tumor resection might be a feasible treatment for this population subset. Additionally, we proposed that lymph node stage might have a place in the forthcoming TNM staging proposal for NSCLC patients with M1 category.

Disclosure: No significant relationships.
Keywords: T1-4N0M1, Non-Small Cell Lung Cancer, Prognosis, Survival, Nomogram.


Points
Age
Sex
Grade
Surgery
Size (mm)
M stage
Race
Total Points
1-year survival
3-year survival
0 1 2 3 4 5 6 7 8 9 10
> 60
≤ 60
Male
Female
II
I
III
No
Yes
30-50
> 70
1-30
1b
50-70
1a
White
1c
Other
Black
0 5 10 15 20 25 30 35 40 45 50
0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1
0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1

P-027

RISK FACTORS FOR EARLY BRONCHIAL DEHISCENCE AFTER SLEEVE RESECTION

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OBJECTIVES
to reveal risk factors for anastomotic dehiscence after bronchial sleeve resection for both primary and secondary central lung cancer.

METHODS
Between 2006 for 2021, 295 patients underwent bronchial sleeve resection with performing invaginated bronchial anastomosis: 281 for primary lung cancer and 14 for secondary lung tumors. There were 238 (80,7%) males and 57 (19,3%) females with a median age of 60 years (range: 19-81). Primary lung cancer was staged according to the TNM8 classification. II and IIIA stages were prevalent and were diagnosed in 118 (40%) and 87(29,5%) cases, respectively. For 88 patients were carried out neoadjuvant chemotherapy, including 13 cases combined with radiotherapy. Low lung capacity was observed in 97 cases with FEV1 in 57±9,4%. The most common histology was squamous cell carcinoma -159 (53,9%), less common – adenocarcinoma, revealed in 58 (19,7%) cases. R1-resection occurred in 16 (5,4%) cases.

RESULTS
Bronchial dehiscence was diagnosed in 12 patients (4,1%) with mean presentation at postoperative day 10 (range: 1–24 days). Univariate analysis indicated that current smoking (p=0,013), COPD (p=0,018), smoking history, evaluated in pack-years (p=0,032), bronchoplastic right lower lobectomy (RLL) (p=0,037) and upper bilobectomy with segmentectomy S6 by performing anastomosis between right main bronchus (RMB) and bronchus of basal pyramid (BP) (p=0,024) were statically significant as potential predictors for occurrence of dehiscence. By multivariate analysis all factors but smoking history were concerned as statistically significant: current smoking (p=0,031), COPD (p=0,023), bronchoplastic RLL (p=0,04) and upper bilobectomy with segmentectomy S6 by performing anastomosis between RMB and bronchus of BP (p=0,03).

CONCLUSIONS
current smoking, COPD, bronchoplastic RLL and upper bilobectomy with segmentectomy S6 by performing anastomosis between RMB and bronchus of BP were identified with occurrence of bronchial dehiscence after sleeve resection.

Disclosure: No significant relationships.
Keywords: Sleeve Resection, Bronchial Dehiscence, Risk Factors.

P-028

THE EFFICACY AND SAFETY OF NEOADJUVANT IMMUNOTHERAPY IN RESECTABLE, LOCALLY ADVANCED ESOPHAGEAL SQUAMOUS CELL CARCINOMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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OBJECTIVES
The efficacy and safety outcomes of neoadjuvant immunotherapy in ESCC patients have been preliminarily shown in many studies. However, there is a lack of phase 3 randomized controlled trials (RCTs) with long-term outcomes. And the comparison of different therapeutic strategies is lacking. This systematic review and meta-analysis try to explore the efficacy and safety of different neoadjuvant immunotherapy regimen in resectable, locally advanced esophageal squamous cell carcinoma (ESCC) patients.

METHODS
This systematic review and meta-analysis followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. PubMed, Embase, and Cochrane Library were searched for relevant publications up to July 1, 2022. All keywords were searched through MeSH. Analyses were conducted through R package meta 5.5-0 and meta 3.4-0.

RESULTS
This study included 30 trials with 1406 patients. The pooled pCR and MPR rate was 0.30 (95% CI: 0.26-0.33) and 0.56 (95% CI: 0.50-0.63). The pCR rate of neoadjuvant immunotherapy combined with chemoradiotherapy (nICRT) was significantly higher than neoadjuvant immunotherapy combined with chemotherapy (nICT) (nICRT: 0.48, 95% CI: 0.31-0.65; nICT: 0.29, 95% CI: 0.26-0.33; $p = 0.03$). There was no significant difference in efficacy results between different chemotherapy agents and treatment cycle numbers. Incidence of grade 3-4 TRAEs in nICRT group was significantly higher than nICT group ($p = 0.03$), and patients treated with carboplatin had a higher incidence of grade 3-4 TRAEs than those with cisplatin ($p < 0.01$).

CONCLUSIONS
Neoadjuvant immunotherapy has good antitumor efficacy and well tolerance for locally advanced ESCC patients. This result supports the clinical practice of neoadjuvant immunotherapy in ESCC patients, and long-term survival data still need to be validated by further studies.

Disclosure: No significant relationships.
Keywords: Neoadjuvant Immunotherapy, Esophageal Squamous Cell Carcinoma (ESCC), NICRT, NICT, Meta-Analysis.

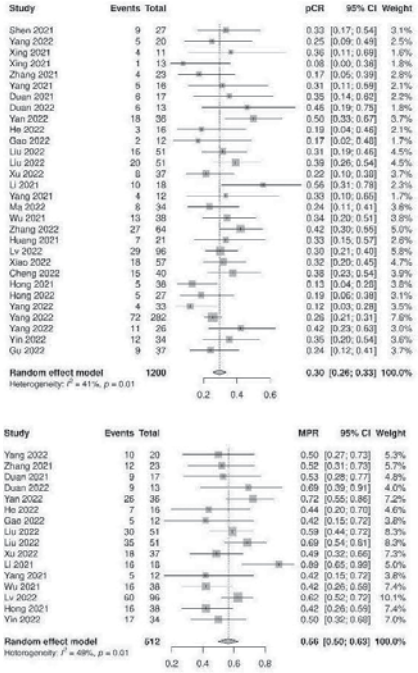
Table 1. Characteristics of included studies.

First author/ Year	Study type	Study center	Sample size	Clincial stage	Age (Median)	Male (%)	ECOG (0/1/2)	Tumor location (U/M/L/EGJ)	cT (1/2/3/4)	cN (0/1/2/3)	Turmor stage (II/III/Iv)	Inter-vention	ICI	CT regimen	cycles of nICT
Shen 2021	One-arm prospective	Single	28	cT1N1-3M0 or cT-2-4aN0-3M0	62.2	0.96	0.89/0.11/0	0.11/0.50/0.29/0.11	0/0.11/0.82/0.07	0.07/0.54/0.32/0.07	0.14/0.75/0.11	nICT	Nivo/ Pemb/ Camr	CP+ABX	2
Yang 2022	One-arm prospective	Single	23	II-III	58.6	0.96	0.91/0.09/0	0.04/0.39/0.57/0	NR	NR	0.35/0.63/0	nICT	Camr	CP+ABX	2
Xing 2021	two-arm prospective	Single	15	II/III/IVa	63.8	0.87	0.53/0.47/0	NR	0/0/0.60/0.40	0.27/0.53/0.20/0	0.20/0.47/0.33	nICT	Tori	DDP+PTX	2
			15	II/III/IVa	63.13	0.60	0.33/0.67/0	NR	0/0/0.87/0.13	0.20/0.53/0.27/0	0.20/0.67/0.13	nICT	Tori	DDP+PTX	2
Zhang 2021	One-arm prospective	Single	30	cT3-T4aN0-3M0 or cT-1-2N1-3M0	58.3	0.87	0.17/0.83/0	0.07/0.60/0.33/0	0/0/0.90/0.10	0.00/0.40/0.60/0	0/0.9/0.1	nICT	Sint	DDP+ABX	2
Yang 2021	One-arm prospective	Single	16	cT1N1-3M0 or cT-2-4aN0-3M0	60.5	0.88	0.81/0.19/0	0.19/0.50/0.31/0	0/0.13/0.81/0.06	0.13/0.63/0.19/0.06	0.25/0.63/0.13	nICT	Camr	CP+PTX	2
Duan 2021	One-arm prospective	Multi-center	23	T2-xNxM0	63.5	0.91	0.91/0.09/0	0.04/0.83/0.13/0	0/0.04/0.87/0.09	0.22/0.52/0.26/0	0.17/0.74/0.09	nICT	Sint	NDP+ABX+D	3
Duan 2022	One-arm prospective	Single	18	T2-4aNxM0	64	0.78	NR	0.00/0.83/0.17/0	0/0/0.94/0.06	0.39/0.50/0.11/0	0.39/0.56/0.06	nICT	Pemb	NDP+ABX/D	3
Yan 2022	One-arm prospective	Single	45	T2-4aNxM0	63.8	0.60	NR	NR	0/0.16/0.76/0.09	0.44/0.33/0.18/0.04	0.40/0.53/0.07	nICT	Tisl	CP+ABX	3
He 2022	One-arm prospective	Single	20	T3-4aN1-3M0	62.1	0.75	NR	0.00/0.70/0.30/0	NR	NR	0/0.80/0.20	nICT	Tori	CP+PTX	2
Gao 2022	One-arm prospective	Single	20	≥ cT3 or ≥ N+	58.3	0.85	NR	0.10/0.65/0.25/0	NR	NR	NR	nICT	Tori	DDP+D	2
Liu 2022	One-arm prospective	Multi-center	56	T2N1-3M0/ T3N0-3M0/ T4N0-3M0	61	0.75	0.70/0.30/0	0.02/0.48/0.50/0	0.02/0.25/0.68/0.04	0.16/0.39/0.38/0.07	0.23/0.68/0.09	nICT	Camr	DDP+ABX	2
Liu 2022	One-arm prospective	Multi-center	60	T1b-4a, N2-3 (≥3 stations), and M0-1	65	0.83	0.95/0.05/0	0.15/0.60/0.25/0	0/0.15/0.78/0.07	0.00/0.00/0.92/0.08	0/0.85/0.15	nICT	Camr	DDP+ABX	2
Xu 2022	One-arm prospective	Single	37	T2–4a-NanyM0 or T1N1–3M0	63.3	0.95	NR	NR	NR	NR	0.27/0.73(III-IV)	nICT	Camr	CP+ABX	NR
Li 2021	One-arm prospective	Single	20	T2-4a Nany M0	62	0.95	0.15/0.85/0	0.25/0.55/0.20/0	0/0/0.80/0.20	0.10/0.25/0.50/0.15	0.1/0.65/0.25	nICRT	Pemb	CP+PTX	2
Yang 2021	Retrospective	single	12	T2–3, N0–3	56	0.58	NR	0.08/0.50/0.42/0	NR	NR	0/0.17/0.67/0.17	nICT	Camr	ABX+SI	3
Ma 2022	Retrospective	single	34	T3-4a N1-3 M0,	61	0.91	0.74/0.27/0	0/0.74/0.27/0	0/0/0.77/0.24	0/0/0.47/0.53	0/0/0.41/0.59	nICT	Pemb/ Camr	DDP+PTX	2

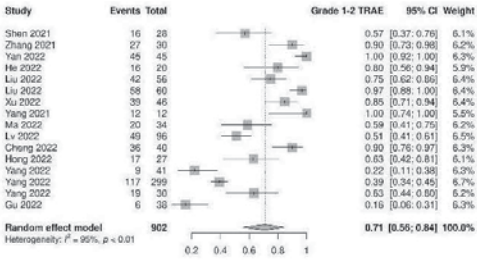
Table 1. Characteristics of included studies (continuation).

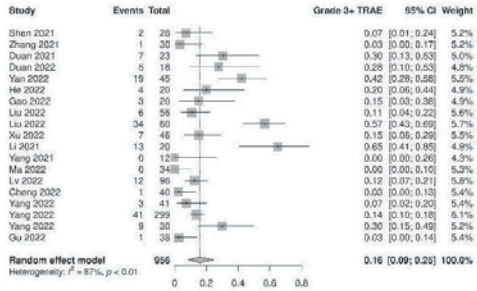
First author/ Year	Study type	Study center	Sample size	Clincial stage	Age (Median)	Male (%)	ECOG (0/1/2)	Tumor location (U/M/L/EGJ)	cT (1/2/3/4)	cN (0/1/2/3)	Turmor stage (II/III/Iv)	Inter-vention	ICI	CT regimen	cycles of nICT
Wu 2021	Retrospective	single	38	T3–4a, N1–3, M0	61	0.95	0/0.90/0.11	0.08/0.55/0.37/0	0/0.11/0.95/0.05	0/0.68/0.26/0.05	0/0/0.68/0.32	nICT	Camr/ Pemb/ Sint	DDP or CP + D or PTX	≥1
Zhang 2022	Retrospective	single	64	NR	NR	0.78	0.31/0.69/0	0.05/0.47/0.48/0	0/0.13/0.88(T3-4)	0.31/0.69(N1-2)/0	0/0.30/0.52/0.19	nICT	Camr	TP or FP	2or3
Huang 2021	Retrospective	single	23	II–Iva	59.2	0.91	NR	0.17/0.57/0.26/0	0/0.17/0.65/0.17	0/0.17/0.61/0.22	0/0.13/0.61/0.26	nICT	Pemb	NDP+D	2
Lv 2022	Retrospective	single	96	II–IVA	65	0.70	0.41/0.47/0.13	0.15/0.48/0.38/0	0/0.05/0.90/0.05	0.39/0.56/0.05/0	0/0.42/0.54/0.04	nICT	Sint	TP	2-4
Xiao 2022	Retrospective	single	57	T1-2N+M0 or T3-T4aN(any) M0,	66	0.83	NR	0.21/0.53/0.26/0	0/0.05/0.75/0.19	0.14/0.65/0.19/0.02	0/0.18/0.63/0.19	nICT	PD-1	DDP+PTX	2
Yu 2022	Retrospective	single	79	T2N+M0-T3-4N0/+M0	62.05	0.73	NR	0.16/0.67/0.16/0	0/0.15/0.70/0.15	0.34/0.66(N1-3)	0/0.04/0.94/0.03	nICT	PD-1	DDP or NDP + PTX	2
Cheng 2022	Retrospective	single	40	T1N+M0 or T2-4aN0-3M0	64.3	0.75	0.78/0.23/0	0.30/0.43/0.28/0	0/0.05/0.93/0.03	0.03/0.33/0.63/0.03	0/0.05/0.93/0.03	nICT	PD-1	DDP+PTX or 5-FU	2-4
Hong 2021	Retrospective	single	38	cT1-2N1-3M0 or cT-3-4aN0-3M0	58.8	0.58	NR	0.03/0.55/0.42/0	NR	NR	NR	nICT	Camr/ Pemb/ Sint	DDP+ABX	2-4
Hong 2022	Retrospective	single	27	cT1N1-3M0 or cT-2-4aN0-3M0;	58.9	0.82	NR	0.04/0.63/0.33/0	NR	NR	0/0.19/0.44/0.37	nICT	Camr/ Pemb/ Sint	TP	2-4
Zhou 2022	Retrospective	single	14	NR	NR	0.64	NR	0.07/0.86/0.07/0	0/0/1.00/0	0.07/0.57/0.29/0.07	NR	nICT	Tori	CP+PTX	2
Yang 2022	Retrospective	multi-center	41	NR	61	0.83	0.63/0.29/0.07	0.07/0.73/0.20/0	0/0.1/0.90/0	0.10/0.73/0.17/0	0/0.20/0.81/0.00	nICI	PD-1 and SHR-1316	none	NR
			299	NR	64	0.83	0.78/0.20/0.02	0.14/0.43/0.40/0.03	0.02/0.10/0.77/0.11	0.10/0.39/0.48/0.04	0.02/0.13/0.69/0.16	nICT		TP or FP	NR
			30	NR	62	0.93	0.70/0.30/0	0.23/0.53/0.17/0.07	0/0.03/0.70/0.27	0.10/0.27/0.43/0.20	0.03/0.1/0.53/0.33	nICRT		TP or FP	NR
Park 2020	Retrospective	single	16	T1N1-2 or T2-4aN0-2	58.5	0.81	NR	0.25/0.38/0.38/0	0.25/0.19/0.50/0.06	0.13/0.31/0.38/0.19	NR	nICRT	Pemb	CP+PTX	2
Yin 2022	Retrospective	single	34	cT1N1-3M0 or cT-2-4aN0-3M0	59	0.88	0.82/0.18/0	0.12/0.53/0.35/0	0/0.12/0.79/0.09	0.09/0.53/0.35/0.03	0/0.15/0.77/0.09	nICT	Camr	CP+PTX	2-4
Gu 2022	Retrospective	single	38	T1N+M0 or T2–4aN0–3M0	66	0.71	0.76/0.18/0.05	NR	0/0.08/0.92/0	0.24/0.13/0.63/0	0/0.24/0.76/0.00	nICT	PD-1	DDP+PTX	2-4

Note: nICT, immune checkpoint inhibitor in combination with chemotherapy; nICRT, immune checkpoint inhibitor in combination with chemotherapy and radiotherapy; Nivo, Nivolumab; Pemb, Pembrolizumab; Camr, Camrelizumab; Tori, Toripalimab; Sint, Sintilimab; Tisl, tislelizumab; CP, carboplatin; DDP, Cisplatin; NDP, nedaplatin; ABX, albumin paclitaxel; PTX, paclitaxel; D, Docetaxel; TP, Platinum+Taxanes; FP, Platinum+Fluorouracil; NR, not report.


Study Events Total pCR 95% CI Weight
Shen 2021 9 27 0.33 [0.17; 0.54] 3.1%
Yang 2022 5 20 0.25 [0.09; 0.49] 2.5%
Xing 2021 4 11 0.36 [0.11; 0.69] 1.6%
Xing 2021 1 13 0.08 [0.00; 0.36] 1.8%
Zhang 2021 4 23 0.17 [0.05; 0.39] 2.8%
Yang 2021 5 18 0.31 [0.11; 0.59] 2.1%
Duan 2021 6 17 0.35 [0.14; 0.62] 2.2%
Duan 2022 6 13 0.46 [0.19; 0.75] 1.8%
Yan 2022 18 36 0.50 [0.33; 0.67] 3.7%
He 2022 3 16 0.19 [0.04; 0.46] 2.1%
Gao 2022 2 12 0.17 [0.02; 0.48] 1.7%
Liu 2022 16 51 0.31 [0.19; 0.46] 4.5%
Liu 2022 20 51 0.39 [0.26; 0.54] 4.5%
Xu 2022 8 37 0.22 [0.10; 0.38] 3.7%
Li 2021 10 18 0.56 [0.31; 0.78] 2.3%
Yang 2021 4 12 0.33 [0.10; 0.65] 1.7%
Ma 2022 8 34 0.24 [0.11; 0.41] 3.6%
Wu 2021 13 38 0.34 [0.20; 0.51] 3.8%
Zhang 2022 27 64 0.42 [0.30; 0.55] 5.0%
Hwang 2021 7 21 0.33 [0.15; 0.57] 2.6%
Lv 2022 29 96 0.30 [0.21; 0.40] 5.8%
Xiao 2022 18 57 0.32 [0.20; 0.45] 4.7%
Cheng 2022 15 40 0.38 [0.23; 0.54] 3.9%
Hong 2021 5 38 0.13 [0.04; 0.28] 3.8%
Hong 2022 5 27 0.19 [0.06; 0.38] 3.1%
Yang 2022 4 33 0.12 [0.03; 0.28] 3.5%
Yang 2022 72 282 0.26 [0.21; 0.31] 7.6%
Yang 2022 11 26 0.42 [0.23; 0.63] 3.0%
Yin 2022 12 34 0.35 [0.20; 0.54] 3.6%
Gu 2022 9 37 0.24 [0.12; 0.41] 3.7%
Random effect model 1200 0.30 [0.26; 0.33] 100.0%
Heterogeneity: I^2 = 41%, p = 0.01
0.2 0.4 0.6

Study Events Total MPR 95% CI Weight
Yang 2022 10 20 0.50 [0.27; 0.73] 5.3%
Zhang 2021 12 23 0.52 [0.31; 0.73] 5.7%
Duan 2021 9 17 0.53 [0.28; 0.77] 4.8%
Duan 2022 9 13 0.69 [0.39; 0.91] 4.0%
Yan 2022 26 36 0.72 [0.55; 0.86] 7.2%
He 2022 7 16 0.44 [0.20; 0.70] 4.6%
Gao 2022 5 12 0.42 [0.15; 0.72] 3.8%
Liu 2022 30 51 0.59 [0.44; 0.72] 8.3%
Liu 2022 35 51 0.69 [0.54; 0.81] 8.3%
Xu 2022 18 37 0.49 [0.32; 0.66] 7.3%
Li 2021 16 18 0.89 [0.65; 0.99] 5.0%
Yang 2021 5 12 0.42 [0.15; 0.72] 3.8%
Wu 2021 16 38 0.42 [0.26; 0.59] 7.4%
Lv 2022 60 96 0.62 [0.52; 0.72] 10.1%
Hong 2021 16 38 0.42 [0.26; 0.59] 7.4%
Yin 2022 17 34 0.50 [0.32; 0.68] 7.0%
Random effect model 512 0.56 [0.50; 0.63] 100.0%
Heterogeneity: I^2 = 49%, p = 0.01
0.2 0.4 0.6 0.8


Study Events Total Grade 1-2 TRAE 95% CI Weight
Shen 2021 16 28 0.57 [0.37; 0.76] 6.1%
Zhang 2021 27 30 0.90 [0.73; 0.98] 6.2%
Yan 2022 45 45 1.00 [0.92; 1.00] 6.3%
He 2022 16 20 0.80 [0.56; 0.94] 5.9%
Liu 2022 42 56 0.75 [0.62; 0.86] 6.4%
Liu 2022 58 60 0.97 [0.88; 1.00] 6.4%
Xu 2022 39 46 0.85 [0.71; 0.94] 6.4%
Yang 2021 12 12 1.00 [0.74; 1.00] 5.6%
Ma 2022 20 34 0.59 [0.41; 0.75] 6.2%
Lv 2022 49 96 0.51 [0.41; 0.61] 6.5%
Cheng 2022 36 40 0.90 [0.76; 0.97] 6.3%
Hong 2022 17 27 0.63 [0.42; 0.81] 6.1%
Yang 2022 9 41 0.22 [0.11; 0.38] 6.3%
Yang 2022 117 299 0.39 [0.34; 0.45] 6.7%
Yang 2022 19 30 0.63 [0.44; 0.80] 6.2%
Gu 2022 6 38 0.16 [0.06; 0.31] 6.3%
Random effect model 902 0.71 [0.56; 0.84] 100.0%
Heterogeneity: I^2 = 95%, p < 0.01
0.2 0.4 0.6 0.8 1


Study Events Total Grade 3+ TRAE 95% CI Weight
Shen 2021 2 28 0.07 [0.01; 0.24] 5.2%
Zhang 2021 1 30 0.03 [0.00; 0.17] 5.2%
Duan 2021 7 23 0.30 [0.13; 0.53] 5.0%
Duan 2022 5 18 0.28 [0.10; 0.53] 4.8%
Yan 2022 19 45 0.42 [0.28; 0.58] 5.5%
He 2022 4 20 0.20 [0.06; 0.44] 4.9%
Gao 2022 3 20 0.15 [0.03; 0.38] 4.9%
Liu 2022 6 56 0.11 [0.04; 0.22] 5.6%
Liu 2022 34 60 0.57 [0.43; 0.69] 5.7%
Xu 2022 7 46 0.15 [0.06; 0.29] 5.5%
Li 2021 13 20 0.65 [0.41; 0.85] 4.8%
Yang 2021 0 12 0.00 [0.00; 0.26] 4.3%
Ma 2022 0 34 0.00 [0.00; 0.10] 5.3%
Lv 2022 12 96 0.12 [0.07; 0.21] 5.8%
Cheng 2022 1 40 0.03 [0.00; 0.13] 5.4%
Yang 2022 3 41 0.07 [0.02; 0.20] 5.4%
Yang 2022 41 299 0.14 [0.10; 0.18] 6.1%
Yang 2022 9 30 0.30 [0.15; 0.49] 5.2%
Gu 2022 1 38 0.03 [0.00; 0.14] 5.4%
Random effect model 956 0.16 [0.09; 0.25] 100.0%
Heterogeneity: I^2 = 87%, p < 0.01
0 0.2 0.4 0.6 0.8

P-029

CXCL5 AS A POTENTIAL BIOMARKER FOR PREDICTING IMMUNOTHERAPY EFFICACY IN LOCALLY ADVANCED RESECTABLE ESOPHAGEAL SQUAMOUS CELL CARCINOMA

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OBJECTIVES
Immunotherapy has been proven effective for advanced esophageal squamous cell carcinoma (ESCC). However, the potential predictive biomarkers of immunotherapy have limited data. Previous studies have found that CXCL5 is a potential biomarker for predicting immunotherapy efficacy. Herein, this study aimed to explore whether the high expression of CXCL5 in ESCC patients is related to better prognosis and clinical results after immunotherapy.

METHODS
This study enrolled thirty-two ESCC patients who received neoadjuvant immunotherapy followed by esophagectomy planned 4-6 weeks after preoperative therapy. According to postoperative pathological results, the patients were divided into a major pathological response(MPR) group and a non-MPR group. Endoscopic and postoperative pathological samples were tested to compare the differences in CXCL5 expression between the two groups.

RESULTS
Before receiving neoadjuvant immunotherapy, CXCL5 expression in the stroma of the MPR group was significantly higher than that of the non-MPR group ($p=0.017$). And there were no significant differences in the expressions of CCL19, CD163, CD56, CD4, and CD8 between the two groups. After immunotherapy, the expressions of CCL19 ($p<0.01$), CXCL5 ($p=0.02$), CD163 ($p=0.016$), CD56 ($p=0.048$), CD4 ($p=0.027$) and CD8 ($p<0.01$) in the stroma of MPR group were all lower than those of non-MPR group.

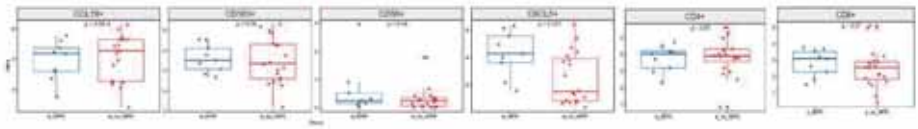
CONCLUSIONS
The expression level of CXCL5 correlates with the efficacy of immunotherapy for ESCC patients. High expression of CXCL5 predicts better prognosis and clinical results.

Disclosure: No significant relationships.
Keywords: Esophageal Cancer, Esophageal Squamous Cell Carcinoma, Immunotherapy, Biomarker.

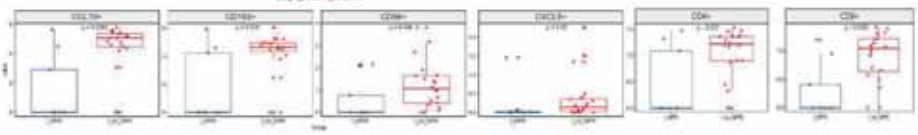
Table. 1 Patient characteristics at baseline based on pathological response.

Characteristics	All patients N = 32	Patients with major pathological response N = 10	Patients without major pathological response N = 22	P-value
Age(Mean ± SD)	60.9±8.3	66.5±7.0	58.82±8.2	0.034
Sex				
Male	28(87.5%)	9(90%)	19(86.4%)	1.000
Female	4(12.5%)	1(10%)	3(13.6%)	
Smoking	24(75%)	9(90%)	15(68.2%)	0.380
Drinking	22(68.8%)	8(80%)	14(63.6%)	0.440
Clinical Stage				
III	25(78.1%)	8(80%)	17(77.3%)	1.000
IVa	7(21.9%)	2(20%)	5(22.7%)	
Tumor location				
Middle Third	14(31.3%)	5(50%)	9(40.9%)	0.712
Lower Third	18(56.3%)	5(50%)	13(59.1%)	

the expression level of CCL19,CD163,CD56,CXCL5,CD4 and CD8 in the MPR group and non-MPR group before immunotherapy



the expression level of CCL19,CD163,CD56,CXCL5,CD4 and CD8 in the MPR group and non-MPR group after immunotherapy



P-030

POSTOPERATIVE DRAINAGE TIME FOR AIR LEAKS AFTER LUNG RESECTION FOR NON SMALL CELL LUNG CANCER (NSCLC) - A RETROSPECTIVE COHORT ANALYSIS

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OBJECTIVES

With the advance of minimally invasive thoracic surgical techniques, postoperative hospitalization is shorter, and recovery is faster. However, chest drainage may be a limiting factor for hospital discharge, extending the hospital stay. Therefore, it is vital to understand the elements that could affect it so we can develop ways to prevent it. This study aims to assess the parameters that influence chest drainage for air leaks following anatomical lung resection for lung cancer.

METHODS

We queried our institutional database of lung cancer resection for all patients between June 2009 to December 2022 who underwent lobectomy or anatomical segmentectomy. The primary outcome was chest tube drainage time due to an air leak. We excluded patients who underwent wedge resection and pneumonectomy and those who developed chylothorax or postoperative bleeding. Univariable comparisons were performed with chi-square, Mann-Whitney, and Kruskal-Wallis tests, and multivariable with logistic regression modeling.

RESULTS

We analyzed 743 patients, 56.5% women, with a median age of 66.2 years. Most patients (83.7%) had the treatment in the public healthcare system. 72.8% had a positive smoking history. The median overall chest drainage time was 3 days (IQR 2-4). Baseline characteristics associated with lower chest drainage time were female and younger patients, private healthcare, negative smoking history, absence of emphysema, and lower BMI. Open surgery had a higher median drainage time vs. VATS and RATS ($P<0.001$). Lobectomy had a median drainage time of 3 days (IQR 2-5) vs. segmentectomy 2 days (IQR 1-3) ($P<0.001$). The right upper lobectomy had a higher drainage time than every other lobectomy ($P<0.001$) (Table 1). On multivariable analysis, the following features were statistically significant for lower drainage time: emphysema, lobectomy, surgical approach, and postoperative in the ICU.

CONCLUSIONS

The chest drainage time after anatomical resection was longer in patients with pulmonary emphysema, lobectomy, open approach and postoperative admission in the ICU.

Disclosure: No significant relationships.
Keywords: Drainage Time, Postoperative, Lung Cancer Surgery, Lobectomy.

Table 1. Chest drainage time after lung resection in days.

	N (%)	Median	p25	p75	P
Gender					<0.001
Male	43.5	3	2	6	
Female	56.5	2	1	4	
Healthcare system					<0.001
Private	16.7	2	5	2	
Public	83.7	3	3	1	
Smoke history					<0.001
Never smoker	27.2	2	1	4	
Former smoker	52.2	3	2	5	
Active smoker	20.6	3	2	5	
Pulmonary emphysema					<0.001
No	69.7	2	1	4	
Yes	30.3	4	2	6	
Surgical approach					<0.001
Thoracotomy	28.5	4	3	6	
VATS	47.5	2	2	4	
RATS	24.0	2	1	3	
Type of resection					<0.001
Lobectomy	87.2	3	2	5	
Segmentectomy	12.8	2	1	3	
Lobectomy					<0.001
Right Upper Lobe	33.8	3	2	7	
Left Upper Lobe	23.0	3	2	5	
Right Middle Lobe	6.9	2	1	3	
Right Lower Lobe	18.0	3	2	4	
Left Lower Lobe	18.3	2	2	4	
Complex segmentectomy					0.84
No	50.0	3		1	
Yes	50.0	3		3	
Postoperative ICU admission					<0.001
No	56.8	2	1	3	
Yes	43.2	4	2	7	

P-031

ANALOGY BETWEEN PREDICTED AND OBSERVED FORCED EXPIRATORY VOLUME (FEV1) AFTER LUNG RESECTION FOR POST-TUBERCULOSIS (TB) SEQUELAE

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OBJECTIVES

Background: Surgical resection of compromised areas in the lung provides a curative solution to the patients with Post-TB sequelae. Preoperative evaluations are carried out to assess respiratory sufficiency. Predicted Postoperative Forced Expiratory Volume in 1 second (PPO FEV1) has been shown to be an independent predictor of perioperative mortality and morbidity. PPO FEV1<40% predicted is considered high risk for perioperative complications.
Objective: To prospectively assess the concurrence between predicted and observed postoperative values of FEV1 after lung resection for Post-TB sequelae.

METHODS

52 consecutive patients undergoing lung resection for Post-TB sequelae were prospectively evaluated with complete preoperative and postoperative (1 & 6 months) measurements of FEV1. PPO FEV1 and observed postoperative values of FEV1 were tested for normality assumption using Shapiro-Wilk Normality test & were compared by means of the paired t test or the Wilcoxon signed rank test, as appropriate. The precision of PPO FEV1 at 1 and 6 months was subsequently evaluated by plotting the cumulative predicted postoperative values against the observed ones.

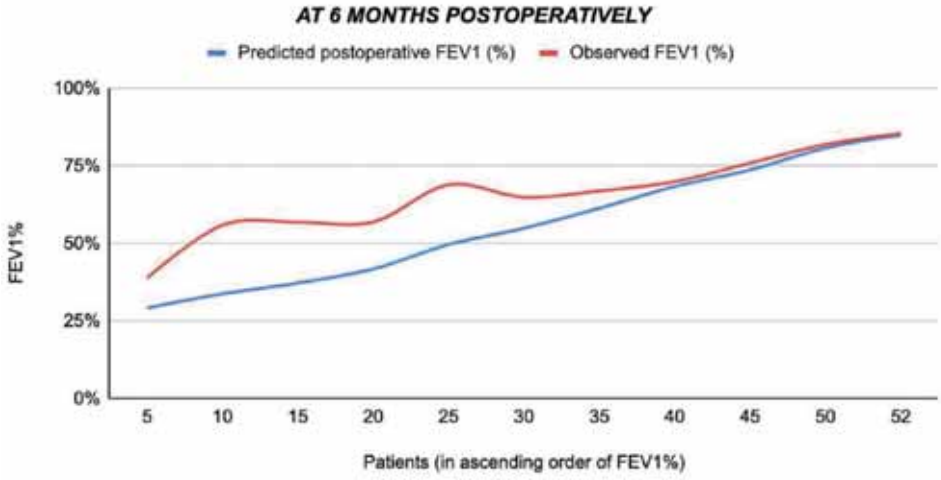
RESULTS

After lung resection, observed FEV1 values at 1 month were 5.35% higher but statistically insignificant (p value = 0.09) while 10.64% higher at 6 months (p value = 0.001) when compared to PPO FEV1. The plot of the cumulative predicted and observed postoperative values at 6 months showed that ppoFEV1 predicted more accurately at higher levels of ppoFEV1 (observed values abutting predicted values).

CONCLUSIONS

It was inferred that observed values were underestimated by prediction of postoperative function particularly at lower values in patients of Post-TB Sequelae. Since, there is a difference in the lung condition of Post-TB Sequelae patients with restrictive or fibrotic process in contrast to the emphysematous lungs for patients with lung cancer; hence the role of PPO FEV1 as a preoperative risk assessment tool needs to be relooked in these groups of patients.

Disclosure: No significant relationships.
Keywords: Tuberculosis, Post-TB Sequelae, PPO-FEV1.


AT 6 MONTHS POSTOPERATIVELY
Predicted postoperative FEV1 (%)
Observed FEV1 (%)
100%
75%
50%
25%
0%
FEV1%
5
10
15
20
25
30
35
40
45
50
52
Patients (in ascending order of FEV1%)

P-032

ROLE OF POSITRON EMISSION TOMOGRAPHY (PET) SCAN AND CONTRAST ENHANCES COMPUTED TOMOGRAPHY IN PREDICTING NATURE OF ANTERIOR MEDIASTINAL MASSES

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European Institute of Oncology, Milan, Italy

OBJECTIVES
Clinical diagnosis of anterior mediastinal masses remains a challenging task. We compared positron emission tomography scanning with 2-fluoro-2-deoxy-glucose/computed tomography (FDG-PET/CT), contrast enhanced CT (CT-CE), and pathologic data in distinguishing benign from malignant thymic lesions.

METHODS
We reviewed 188 patients (104 men; median age, 57 years) with thymic mass who had FDG-PET/CT and CT-CE between January 2004 and December 2020. PET scans were analyzed by standardized uptake value (SUV). Correlations among FDG PET/TC, CT-CE and pathological characteristics of thymic mass were evaluated. ROC curve analysis was performed to determine the ideal cut-off value of SUVmax to predict the nature of thymic neoplasm. Pathology revealed benign lesion in 80 patients (40 cysts, 24 hyperplasia and 16 normal thymic parenchyma) and malignant lesion in 108 patients (52 AB, 24 B1, 16 B2, 4 B2/B3, 4 B3 and 8 C).

RESULTS
FDG PET/CT exams were interpreted as positive in 116 cases and negative in 72 cases. Of these 116 positive cases, 104 cases were true positive (sensitivity 90%) and 12 cases false positive. Specificity was 83% (60 true negative/72) while positive and negative predictive values were 90% and 83%, respectively. CT-CE in all benign cases correctly identified well-defined margins of masses (specificity 87% and predictive negative value 100%). Among malignant lesions, CT-CE revealed mediastinal fat with infiltration of adjacent organs in 96/108 patients (sensitivity 100%, predictive positive value 89%). Mean SUVmax of benign lesions was 2.4 ± 1.5 while for malignant lesions was 5.9 ± 3.4 (Student's t-test, $p= 0.002$). The ideal cut-off value of pretreatment SUVmax that predicted the complete response of CRT was 3.0 in the ROC analysis [AUC 0.930 (0.840-0.987)].

CONCLUSIONS
FDG PET/CT and CT-CE are two non-invasive complementary and useful techniques, which can be used to distinguish benign from malignant thymic lesions and to help surgeon for accurate surgery planning.

Disclosure: No significant relationships.
Keywords: PET Scan, Computed Tomography, Mediastinum.

P-033

THE FEASIBILITY OF PECTUS BAR INSERTION COMBINED WITH PARTIAL STERNOTOMY IN THE TREATMENT OF PECTUS EXCAVATUM DEVELOPING AFTER CONGENITAL HEART SURGERY

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OBJECTIVES

Pectus Excavatum (PE) after congenital heart surgery has a high possibility of cardiac injury during Nuss bar insertion due to previous heart surgery related postoperative substernal adhesion. And, so bar insertion must be performed after sufficient substernal adhesiolysis to reduce the risk of cardiac injury.
The purpose is to analyze the surgical results and feasibility of Nuss bar insertion combined with partial re-sternotomy in the treatment of PE developing after the congenital heart surgery.

METHODS

Between July 2011 and December 2022. 15 PE patients with previous congenital heart surgery underwent 16 Nuss bar insertion combined with partial re-sternotomy(figure 1).

RESULTS

The mean age was 6.00±3.33 years old. Average duration from CHS to Nuss operation, operation time, chest tube duration, and hospital stay were 743.62±39.78 months, 146.25±64.78 minutes, 5.13±4.11 days, 8.87±4.59 days respectively. 5 of 15 underwent pectus bar removal. Except one who had early bar removal due to delayed infection of bar insertion site(Table 1). The mean duration from bar insertion to removal, operation time, hospital stay were 23.87± 8.38 months, 76.00±32.62 minutes, and 4.40±5.16 days respectively.

CONCLUSIONS

The pectus bar insertion procedure with partial re-sternotomy and substernal adhesiolysis has been shown to be a safe and effective approach for the repair of PE after congenital heart surgery.

Disclosure: No significant relationships.
Keywords: Key1 Pectus Excavatum, Key 2 Congenital Heart Surgery, Key3 Pectus Bar Insertion.

M:F	9:6
Age(moths)	6.00±3.33
Type of heart surgery	VSD Closure (6) ASD Closure (2) TOF Total correction n(3) Fontan operation(1) Heart transplantation(1) Rasteli operation (1) Berry syndrome total correction (1)
Pectus index	4.89±2.20
Asymetric index	0.97±0.04
Bar insertion results (n=15)	
Duration from congenital heart surgery to pectus (months)	743.62±39.78
Operation time(min)	146.25±64.78
Estimated blood loss(ml)	59.33±40.90
Chest tube duration (days)	5.13±4.11
Hospital stay (days)	8.87±4.59
Complications	3 case Early cardiac injury during sternal dissection, used cardiopulmonary bypass late early bar removal (post 1year) due to delayed infection of bar insertion sites re-operation due to correction failure

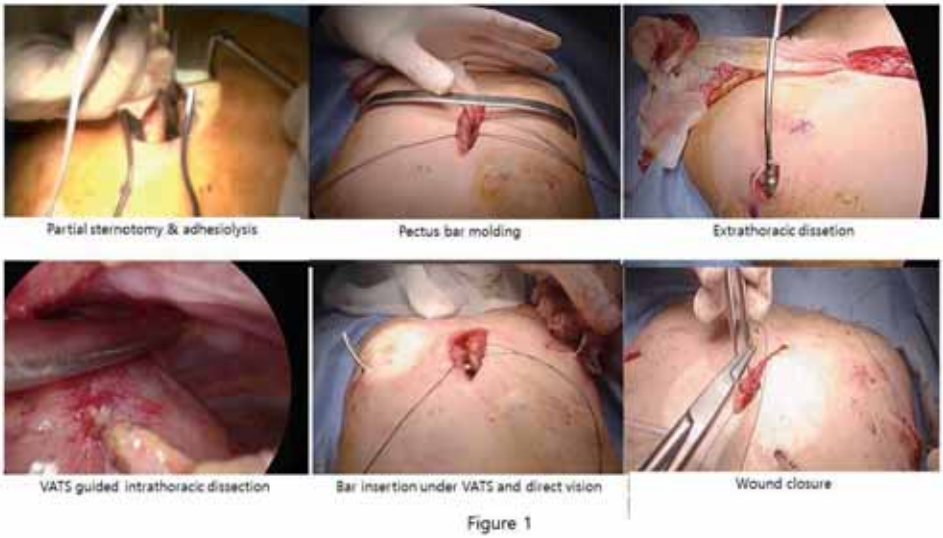
Partial sternotomy & adhesiolysis
Pectus bar molding
Extrathoracic dissetion
VATS guided intrathoracic dissection
Bar insertion under VATS and direct vision
Wound closure

Figure 1

P-034

ACUTE POST-PARTUM RESPIRATORY FAILURE SECONDARY TO PULMONARY ARTERIOVENOUS MALFORMATION

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OBJECTIVES

Pulmonary arteriovenous malformation (PAVM) is a rare condition of an abnormal connection between an artery and vein. Pregnancy can unmask PAVMs leading to hemoptysis or dyspnea, but no reported incidents of acute respiratory insufficiency. Here, we present the first reported case of post-partum acute hypoxia secondary to undiagnosed PAVM.

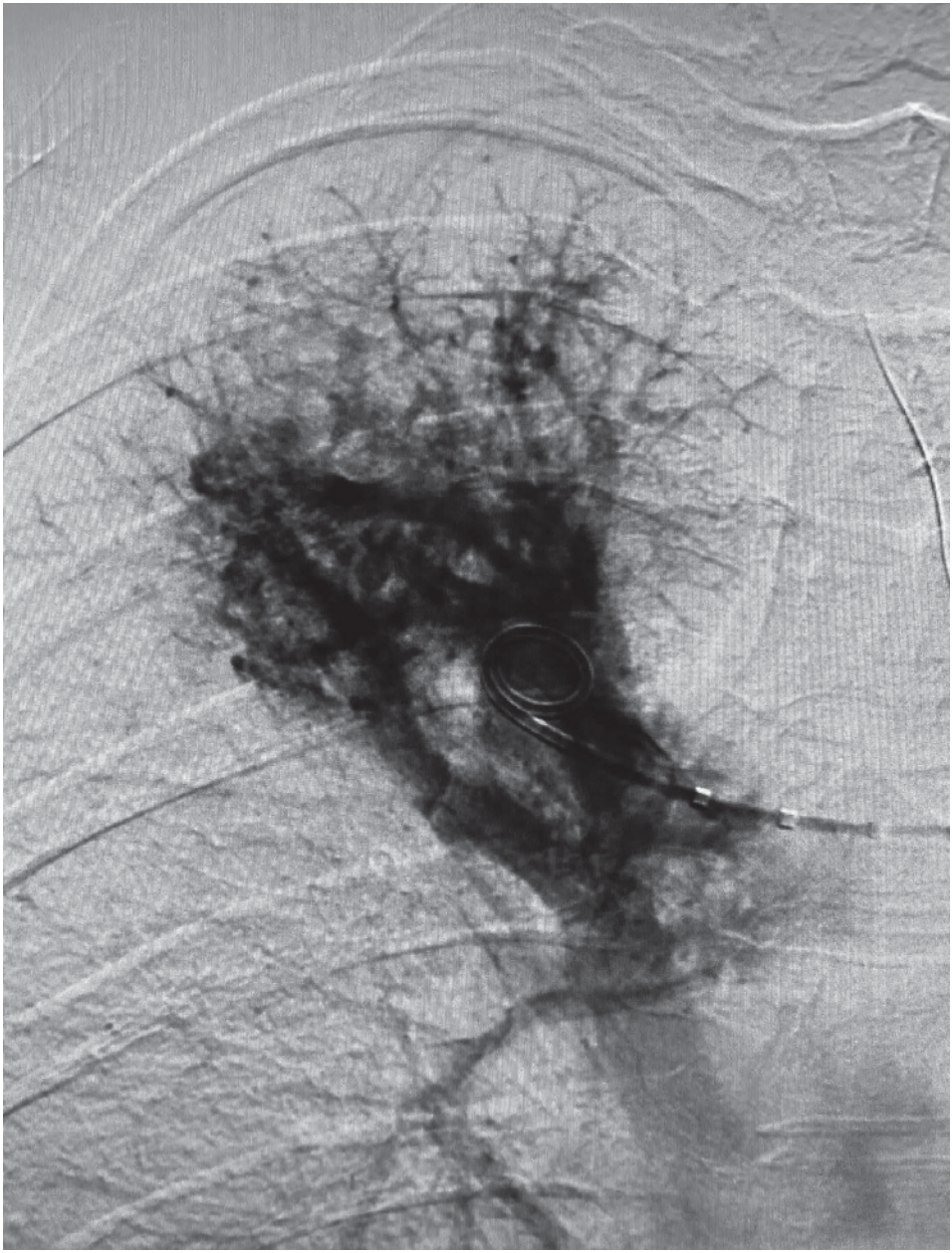
CASE DESCRIPTION

A 23-year-old female with no past medical history had a normal vaginal delivery, with immediate post-partum respiratory insufficiency requiring high-flow nasal cannula. She was weaned to 4 liters of oxygen, but still had an oxygen saturation of 80% and heart rate of 140 beats per minute when ambulating. She denied history of dyspnea and had no findings consistent with telangiectasia. An echocardiography showed a positive bubble study, significant right to left shunting, but no intracardiac abnormality. A chest CT scan to rule out pulmonary embolism (PE) revealed a right upper lobe PAVM. She underwent an angiogram for coil embolization, which was aborted due to the extent of her PAVM (Figure 1). A robotic right upper lobectomy was performed, with ligation of her pulmonary artery prior to her pulmonary veins. While on 100% inhaled oxygen and single lung ventilation, her intraoperative saturation immediately increased from 85% to 100% after division of her truncus. She was discharged home on post operative day 1 with an oxygen saturation of 98-100% on room air.

CONCLUSIONS

PAVM is a rare condition that can be exacerbated by increased blood volume, cardiac output and venous distension, which all occur in pregnancy. This case demonstrates the need to rule out PAVM in post-partum hypoxia if an acute PE is not present. The intraoperative video highlights the careful tissue handling needed for an extremely large PAVM to avoid intraoperative bleeding, as well as the need to ligate the artery prior to the vein to prevent pulmonary rupture.

Disclosure: No significant relationships.



P-035

CURRENT LUNG CANCER SCREENING GUIDELINES CONTRIBUTE TO DISPARITIES IN INCIDENCE AND MORTALITY

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OBJECTIVES
Lung cancer is the leading cause of cancer-related deaths in the United States, with non-White smokers often bearing the burden of the highest rate of lung cancer mortality. This is often due to being diagnosed at a later stage, leading to poor prognosis and outcome. We assess here how the eligibility criteria for lung cancer screenings set by the U.S. Preventive Services Task Force and the Centers for Medicare and Medicaid Services contribute to a later lung cancer diagnosis in non-White smokers.

METHODS
This paper analyzes data from the National Health and Nutrition Examination Survey, an annual survey conducted by the Centers for Disease Control and Prevention that gathers health and nutrition data from a representative sample of the U.S. population. After implementing USPSTF exclusion, the final cohort of participants was 5001, which consisted of 2669 former smokers and 2332 current smokers.

RESULTS
Out of 608 participants eligible for lung cancer screening 77.5% were Non-Hispanic White (NHW) and 8.7% were Non-Hispanic Black (NHB) participants versus 69.4% and 10.8%. among 4,393 ineligible participants. Age, pack-years, and age along with pack-years are the most frequent reasons for ineligibility. Lung cancer screening ineligible NHW participants were statistically significantly older and smoking more pack-years than the other ethnic groups. NHB participants among ineligible group has higher urinary cotinine levels as compared to NHW participants.

CONCLUSIONS
This analysis underscores the need for more individualized risk estimates when determining eligibility for lung cancer screening, and should include biomarkers of smoking exposure. The analysis shows that current screening criteria which rely solely on factors such as age and pack years contribute to lung cancer racial disparities.

Disclosure: No significant relationships.
Keywords: Lung Cancer Screening; Cotinine; Biomarkers; Race; Low Dose CT.

P-036

RADIOLOGY-PATHOLOGY COMPARATIVE PERFORMANCE IN CLINICAL STAGE I NON SMALL CELL LUNG CANCER (NSCLC) TUMORS

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[2]*St Luke's Hospital, Kansas City, United States*

OBJECTIVES

This study aimed to quantify the agreement rate between the total tumor size or total size of solid component of different nodule types (pure ground-glass, part-solid or solid) on preoperative CT imaging and compare to the postoperative pathology tumor size using the 8th edition of the TNM lung staging system T-descriptor classification.

METHODS

Our prospectively maintained institutional database was queried retrospectively. All patients who underwent surgery for cT1N0M0 NSCLC from January 2015 through September 2022 were identified. Patients with incomplete data were excluded. Measurements of solid and invasive component size were stratified as ≤1cm, >1-2cm, and >2cm. We performed an agreement analysis between CT and pathology measurements. Kappa coefficient was used to assess the level of agreement between the two measurements. Kappa <0.4 was considered poor, 0.4-0.75 was considered moderate to good, and >0.75 was considered excellent.

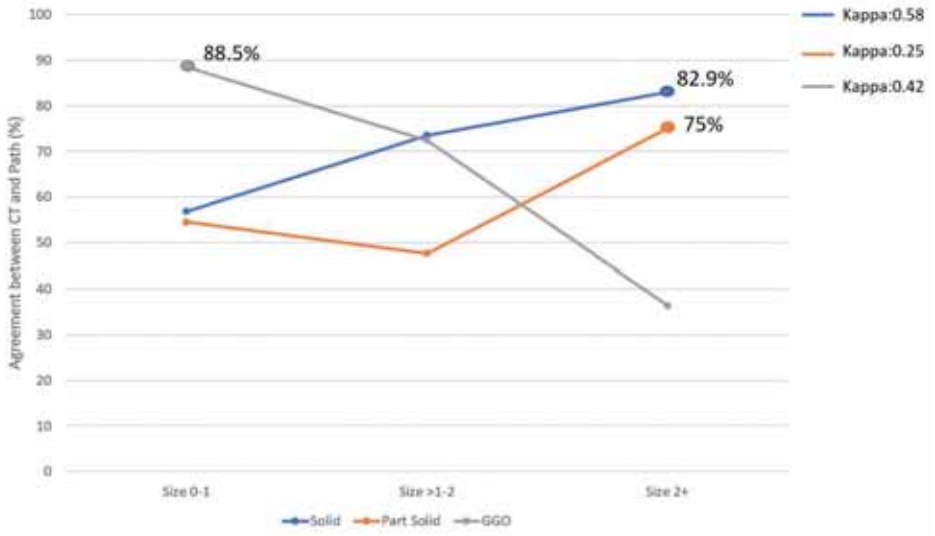
RESULTS

During the study period, 622 patients underwent surgery for cT1N0M0 NSCLC. For pure ground-glass nodules, kappa = 0.42 [0.29-0.55], indicating moderate agreement between radiological and pathological measurement, although agreement was higher at smaller sizes, as 88.5% of nodules ≤1cm and 72.4% of nodules >1-2cm remained the same size classification. For part-solid nodules, kappa = 0.25 [0.18-0.33] indicating minimal agreement. For solid nodules, kappa = 0.58 [0.48-0.68], indicating moderate agreement, but agreement was higher at larger sizes, as 73.5% of nodules >1-2cm and 82.9% of nodules >2 cm remained the same size classification.

CONCLUSIONS

Though we rely on the chest CT measurements to classify the T descriptor in patients with NSCLC, the comparative performance between image and pathology varied according to the tumor type and tumor size and overall, it was higher for solid nodules. It is important for radiologists to recognize the potential pitfalls and limitations of imaging interpretation to precisely classify the clinical stage of lung cancer.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Pulmonary Nodule, Diagnostic Imaging, Pathology.



P-037

PULMONARY CARCINOSARCOMA AND TRACHEOBRONCHIAL ASPERGILLOSIS: A CASE REPORT OF AN EXTREMELY RARE COMBINATION

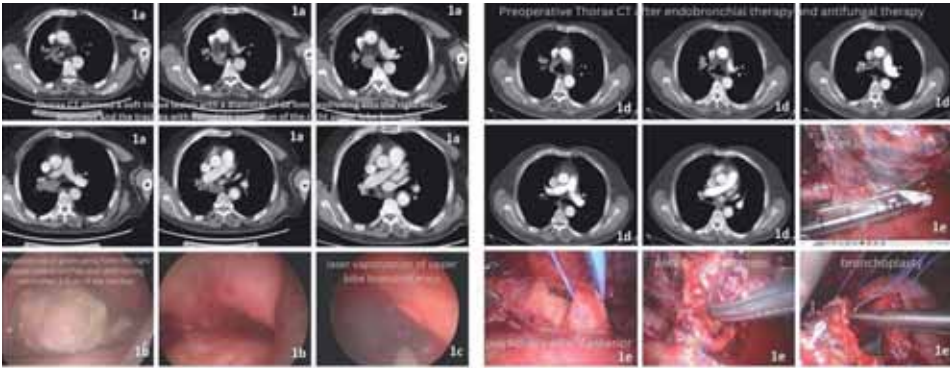
Hüseyin Melek[1], Ezgi Demirdögen[2], Tolga Evrim Sevinç[1], Gizem Gedikoglu Pirim[1], Elçin Süleymanoglu[1], Ahmet Ursavas[2], Ahmet Sami Bayram[2], Cengiz Gebitekin[2]
[1]*Uludag University, Faculty of Medicine, Thoracic Surgery Department, Bursa, Turkey*
[2]*Uludag University, Faculty of Medicine, Chest Disease Department, Bursa, Turkey*

OBJECTIVES
Carcinosarcoma of the lung is a very rare malignant tumor composed of a mixture of carcinoma and sarcoma elements. Literature shows that carcinosarcoma concurrently occuring with tracheobronchial aspergillosis has only been reported in 2 previous cases. This case report video presents an extremely rare combination of primary pulmonary carcinosarcoma occurring with tracheobronchial aspergillosis.

CASE DESCRIPTION
A 76-year-old male was admitted to the hospital due to cough and dyspnea. His past medical history revealed that 12 years prior, he had radiotherapy for prostate carcinoma, hypothyroidism, and chronic atrial fibrillation. Thorax CT showed a soft tissue lesion with a diameter of 32mm protruding into the right main bronchus and the trachea with complete occlusion of the right upper lobe bronchus. Rigid bronchoscopy revealed a polypoid lesion protruding from the right upper lobe bronchus and obstructing more than 2/3rds of the trachea. Following endobronchial laser vaporization and resection, pathological examination revealed that the mass was tracheobronchial aspergillosis. Antifungal treatment was initiated. Another bronchoscopy was performed for clearing the main bronchus one week after, which had the same pathological result. Because of the clinician's suspicion, pathology was consulted with another center, despite complete resolution of symptoms. The pathology consultation was reported as carcinosarcoma. On PET/CT, the mass had a SUVmax of 12.3, with no lymph node or distant metastases. Following 1 month of antifungal therapy, the patient underwent VATS right upper lobectomy with bronchoplasty. The postoperative follow-up was unremarkable and the patient was discharged after five days without any complications. The patient has been in our outpatient follow-up for one years, and there is no recurrence of symptoms.

CONCLUSIONS
Tracheobronchial aspergillosis may conceal endobronchial carcinosarcoma, leading to difficulties in determining the diagnosis and selecting the proper treatment. Combination treatment with intravenous antifungal drugs, endobronchial therapy, and VATS lobectomy is effective in cases of tracheobronchial aspergillosis and carcinosarcoma.

Disclosure: No significant relationships.


1a
1b
1c
Preoperative Thorax CT
1d
1e
bronchoplasty

P-038

TARGET SELECTION FOR LUNG VOLUME REDUCTION: TIME TO CHANGE OUR TOOLS?

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Golden Jubilee National Hospital, Glasgow, United Kingdom

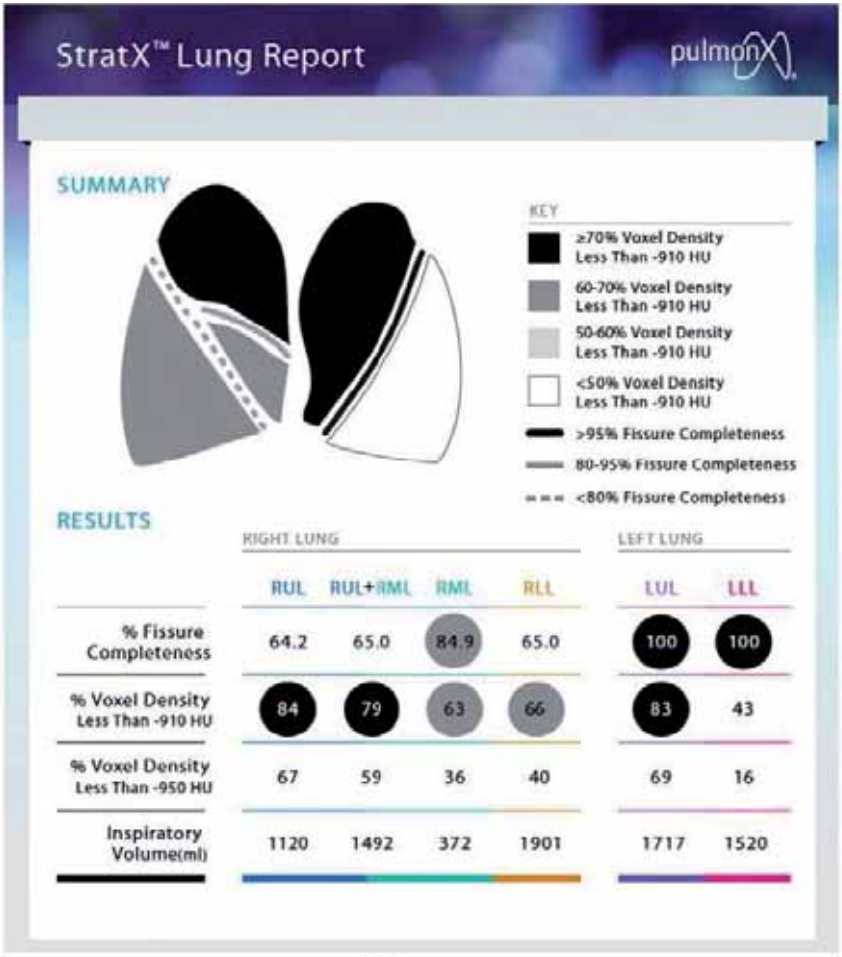
OBJECTIVES
Target selection in lung volume reduction (LVR) is as important as physiology. Work-up includes ventilation/perfusion scan (VQ), lately adopting anatomical lobar quantification. StratX analysis evaluates fissure integrity (FI) non-invasively as a prerequisite for LVR with Zephyr valves, but also incorporates information on quantitative CT and lobar volumes. We aimed to assess if StratX could not only avoid invasive determination of FI (ID-FI), but also predict VQ results.

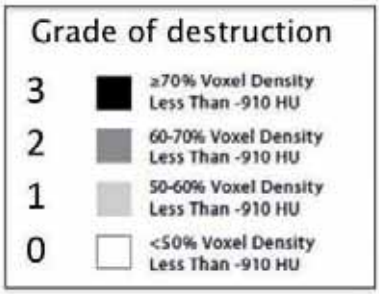
METHODS
All StratX tests obtained by our institution were reviewed (2018-2022). All patients were potentially eligible for LVR based on standard physiology. Grade of destruction (GD) ranged from 0 to 3. Difference between highest and lowest GD returned a grade of heterogeneity (GH) from 0 to 3 (Fig.1). StratX-target and VQ-target were then derived and compared.

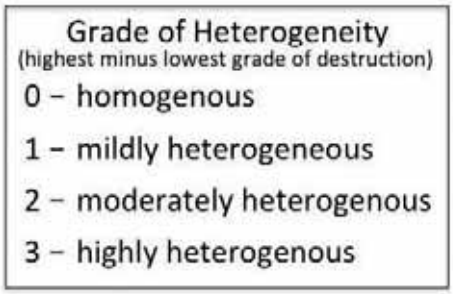
RESULTS
138 StratX were reviewed. Results would potentially avoid ID-FI in 69%, with FI more frequently confirmed on the left (62vs46%) and incompleteness on the right (21vs7%). Heterogeneous distribution was more frequent than homogenous (68vs32%), with 25% showing lower lobe predominance. After exclusion of 47 patients with non-anatomical/absent VQ, 91 anatomically paired StratX underwent full comparative analysis. For the right side, concordance between StratX-target and VQ-target was 100% for GH ≥2, 96% for GH=1 and RUL target, 60% for GH=1 and RLL target. For the left side, confirmation was 100% for GH=3, 95% for GH=2, 84% for GH=1. On average, if highest GD=3, 98% non-discordance occurred, dropping to 94% with GD=2 and 84% with GD=1. When GH=0, VQ could instead indicate a target in 76% on the right and 55% on the left.

CONCLUSIONS
StratX not only confirmed to be useful at avoiding ID-FI, but could accurately predict VQ results particularly in case of moderate-high heterogeneity, moderate-high destruction, upper lobe target and right side, rendering VQ potentially redundant in some of these instances.

Disclosure: No significant relationships.
Keywords: Lung Volume Reduction.


StratX™ Lung Report
pulmonX
SUMMARY
KEY
≥70% Voxel Density Less Than -910 HU
60-70% Voxel Density Less Than -910 HU
50-60% Voxel Density Less Than -910 HU
<50% Voxel Density Less Than -910 HU
>95% Fissure Completeness
80-95% Fissure Completeness
<80% Fissure Completeness
RESULTS
RIGHT LUNG
LEFT LUNG
RUL
RUL+RML
RML
RLL
LUL
LLL
% Fissure Completeness
64.2
65.0
84.9
65.0
100
100
% Voxel Density Less Than -910 HU
84
79
63
66
83
43
% Voxel Density Less Than -950 HU
67
59
36
40
69
16
Inspiratory Volume(ml)
1120
1492
372
1901
1717
1520


Grade of destruction
3
≥70% Voxel Density Less Than -910 HU
2
60-70% Voxel Density Less Than -910 HU
1
50-60% Voxel Density Less Than -910 HU
0
<50% Voxel Density Less Than -910 HU


Grade of Heterogeneity
(highest minus lowest grade of destruction)
0 – homogenous
1 – mildly heterogeneous
2 – moderately heterogenous
3 – highly heterogenous

P-039

PRECISE SEGMENTECTOMY WITH INTRAOPERATIVE MARGIN ASSESSMENT USING RADIOFREQUENCY IDENTIFICATION WIRELESS LOCALIZATION TECHNIQUE

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OBJECTIVES

Indocyanine green (ICG) demarcation line limited to the pleural surface may be unable to definitively secure adequate surgical margins for a tumor located at the edge of the targeted segment. To secure the surgical margins, we introduced a novel wireless localization technique using radiofrequency identification (RFID) markers. We aimed to analyze the outcomes of this technique.

METHODS

We retrospectively reviewed 45 consecutive patients with 45 lesions from September 2021 to December 2022 in our institution. Markers were placed lateral to the lesions by electromagnetic navigation bronchoscopy. In addition to systemic ICG injection, surgeons determined the resection line based on the strength of wireless signals and cut into an adjacent segment in a non-anatomical manner.

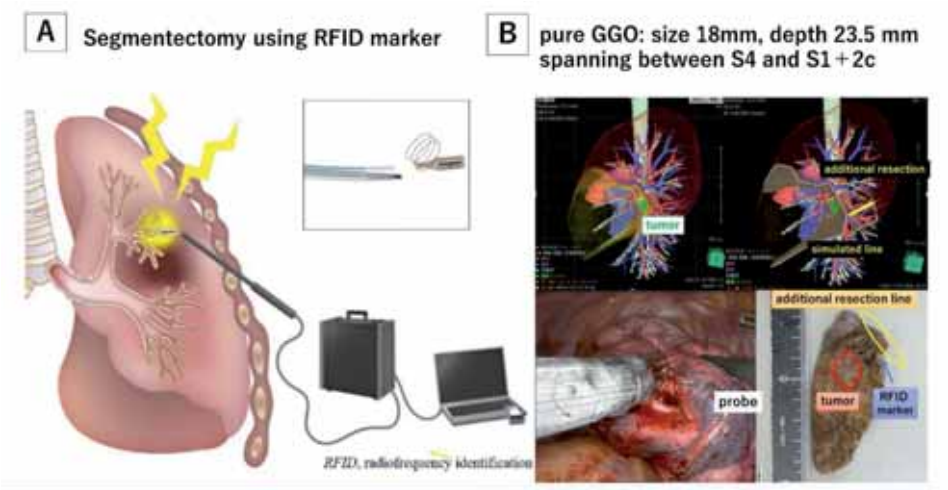
RESULTS

A total of 48 markers were placed for 45 lesions (median size: 10.0 mm, IQR: 7.6–13.8; median depth from the pleura: 23.5 mm, IQR: 19.3–30.5). The surgeries were video-assisted thoracoscopic surgery (n=12) and robot-assisted thoracoscopic surgery (n=33). Complex segmentectomy was performed in 37/45 patients (82.2%). The median surgical margin (from tumor to intersegmental plan) using three-dimensional CT imagery was 7.1 mm (IQR, 3.5–8.7). The median marker–lesion and median marker–pleura distances were 16.1 mm (IQR, 7.5–18.9) and 20.9 mm (IQR, 15.9–25.1), respectively. In 15/45 cases (33.3%), RFID markers were detected outside of the targeted segment undyed with ICG. Pathological examination showed that the tumors were atypical adenomatous hyperplasia (n=1), adenocarcinoma in situ (n=9), minimally invasive adenocarcinoma (n=12), adenocarcinoma (n=15), metastatic tumor (n=2), and other (n=4). The pathological stages were 0 (n=10), 1A1 (n=22), 1A2 (n=4), and 2B (n=1). The tumor resection rate was 100.0% with a median surgical margin of 15.0 mm (IQR, 12.0–21.5), which was greater than the simulated margin.

CONCLUSIONS

In segmentectomy, RFID markers provided larger surgical margins than the preoperative simulated surgical margins.

Disclosure: No significant relationships.
Keywords: Segmentectomy, Surgical Margin, Localization, Thoracoscopy, Radiofrequency Identification.



Approach (n=45)	Simple segmentectomy	Complex segmentectomy
VATS (n=21)	4	17
RATS (n=24)	4	20

P-040

SYSTEMIC INFLAMMATION INFLUENCES THE PROGNOSIS OF RADICALLY RESECTED NON-SMALL CELL LUNG CANCER AND CORRELATES WITH THE IMMUNOSUPPRESSIVE MICROENVIRONMENT

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Peking University People's Hospital, Beijing, China

OBJECTIVES
The impact of host condition on the prognosis of non-small cell lung cancer (NSCLC) and the interaction between host and NSCLC remain unclear. This study investigated the impact of baseline systemic inflammation on the prognosis and characteristics of radically resected NSCLC.

METHODS
This study consisted of a cohort study and an exploratory study of the institutional prospective database. All participants underwent video-assisted thoracoscopic lobectomy as the primary treatment. Systemic inflammation was assessed before surgery using the advanced lung cancer inflammation index and the systemic inflammation response index. Next-generation sequencing and multiplex immunofluorescence analysis were conducted to delineate tumor characteristics.

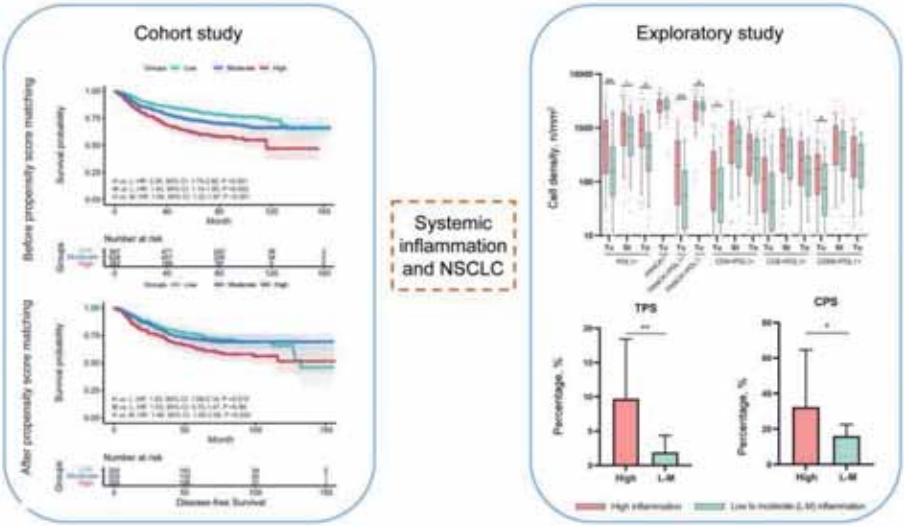
RESULTS
In the cohort study including 1507 participants, the prevalence rates of low, moderate, and high systemic inflammation before surgery were 39.6%, 41.7%, and 18.7%, respectively. High inflammation was associated with poor disease-free survival and overall survival before and after propensity score matching and in multivariable analysis. The subgroup analysis highlighted systemic inflammation in the prognosis analysis of adenocarcinoma at an early stage. In the exploratory study including 217 adenocarcinomas, the prognostic performance of baseline systemic inflammation was validated. High inflammation was associated with an increased abundance of PDL1+ tumor cells and PDL1+ tumor-infiltrated immune cells in tumor tissues with an elevated tumor proportion score and combined positive score. However, no significant association between systemic inflammation and tumor genomic mutations was detected.

CONCLUSIONS
Collectively, baseline systemic inflammation was independently associated with the prognosis of radically resected NSCLC. The correlation between high inflammation and the immunosuppressive microenvironment could be a novel thread for anticancer therapy.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Systemic Inflammation, Tumor Microenvironment, Video-Assisted Thoracoscopic Lobectomy.

Systemic inflammation impact prognosis and microenvironment of NSCLC

- This study consisted of a cohort study (n=1507) and an exploratory study (n=217) based on institutional database.
- The advanced lung cancer inflammation index and the systemic inflammation response index were used.
- The nest-generation sequencing and multiplex immunofluorescence analysis were conducted.



- The high inflammation was associated with poor disease-free survival before and after propensity score matching.
- The high inflammation was correlated with immunosuppressive tumor microenvironment but not genomic mutations.
- The interaction between systemic inflammation and local environment indicated novel therapeutic strategy.

HR: hazard rates; CI: confidence intervals; TPS: tumor proportion score; CPS: combined positive score.

P-041

TP53 MUTATION AND IMMUNOHISTOCHEMISTRY ARE ACCURATE PREDICTION MARKERS FOR EARLY-RELAPSE OF SURGICALLY RESECTED STAGE I-III LUNG ADENOCARCINOMA

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[1]Department of Thoracic Surgery, Tokyo Medical and Dental University, Tokyo, Japan
[2]Department of Respiratory Medicine, Tokyo Medical and Dental University, Tokyo, Japan
[3]Soka Municipal Hospiral, Soka, Japan
[4]Bioresource Research Center, Tokyo Medical and Dental University, Tokyo, Japan
[5]Research Core, Tokyo Medical and Dental University, Tokyo, Japan
[6]Department of Thoracic Surgery, Kurashiki Central Hospital, Kurashiki, Japan

OBJECTIVES

TP53 is a strong tumor suppressor gene and its deactivation contributes carcinogenesis and additionally clinical outcomes. In chemotherapy for metastatic non-small cell lung cancer (NSCLC), NSCLC patients with deactivated TP53 have worser prognosis than without. However, prognostic impact of TP53 deactivation for early-relapse of surgically resected NSCLC patients remains unclear.

METHODS

A cohort of 170 cases of primary stage I-III NSCLC which underwent complete resection at Tokyo Medical and Dental University (TMDU) between 2016 and 2019 was screened for TP53 mutations using panel testing and association studies between TP53 mutations and clinical data including histology and postoperative recurrence was performed. These association data between TP53 mutation and postoperative recurrence were then validated using clinical and genetic data from 604 patients of MSK-IMPACT study in The Cancer Genome Atlas (TCGA). In addition, immunohistochemistry (IHC) of p53 was also performed for some subset of TMDU population.

RESULTS

Mutations in TP53 were recurrently observed (35.3%, 60/170) in this study. In histology stratified analysis, patients with lung adenocarcinoma (LADC) histology showed clinically negative association with TP53 mutations (log-rank test, p=0.02) but patients with non-adenocarcinoma histology did not. This statistical trend was validated in the TCGA LADC cohort (log-rank test, p=0.01). Additional IHC of p53 for patients with LADC histology showed high correlation between TP53 mutation and p53 abnormal IHC staining. (Spearman correlation r=0.6256).

CONCLUSIONS

TP53 mutation was a potentially worse prognostic marker in surgically resected LADC and IHC of p53 could be a surrogate method to identify the worse prognostic group.

Disclosure: No significant relationships.

Keywords: TP53, Lung Adenocarcinoma, Early Relapse, Immunohistochemistry.

P-042

DIGITAL THREE-DIMENSIONAL (3D) MODELS DISPLAYED ON MONITOR IN THE OPERATING ROOM FOR INTRAOPERATIVE LUNG NODULES LOCALIZATION

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University of Campania, Naples, Italy

OBJECTIVES
To propose an intraoperative guide consisting of digital 3D models displayed on monitors in the operating room during resection of peripheral nodules that are difficult to palpate.

METHODS
CT scan images were reconstructed with 3D-Slicer software to create digital 3D models. Therefore, these were displayed on monitor in the operating room during resections in VATS. Lung nodules were identified in reconstructed lobes that were put in transparency. Digital 3D models were transferred to a monitor in operating room to provide a real-time guidance during surgery to localize the lung nodules and perform typical or atypical resections. We evaluated the accuracy of the localization technique with 3D models and the impact on operating time. Results: Our analysis

RESULTS
Our analysis included eighty-five patients in the "traditional group" and eighty-five in the "3D group". The average operating time taken from the identification of the pulmonary nodule until its removal was 7.41 minutes (SD 4.21) in the traditional group and 5.07 minutes (SD 0.96) in the 3D group. The comparison of the operating time averages of the two group was carried out with the 2-two-tail Student t test that showed a P value < 0.001. In the T1a subgroups the mean was 13.87 minutes (SD 2.59) vs 5.52 minutes (SD 1.01), p-value < 0.001 statistically significant. In the T1b subgroup the mean was 5.05 (SD 0.84) vs 4.91 (SD 0.92), p-value = 0.5112. In the T1c group the mean was 4.69 (SD 0.89) vs 4.85 (SD 0.88), p-value = 0.5136.

CONCLUSIONS
3D reconstruction of lung anatomy with open-source segmentation software is simple and available in all centers. Digital 3D models displayed on monitor in the operating room guided the real time localization of lung nodules and surgical resections for peripheral nodules difficult to palpate during VATS.

Disclosure: No significant relationships.
Keywords: 3D Models, Lung Nodule.

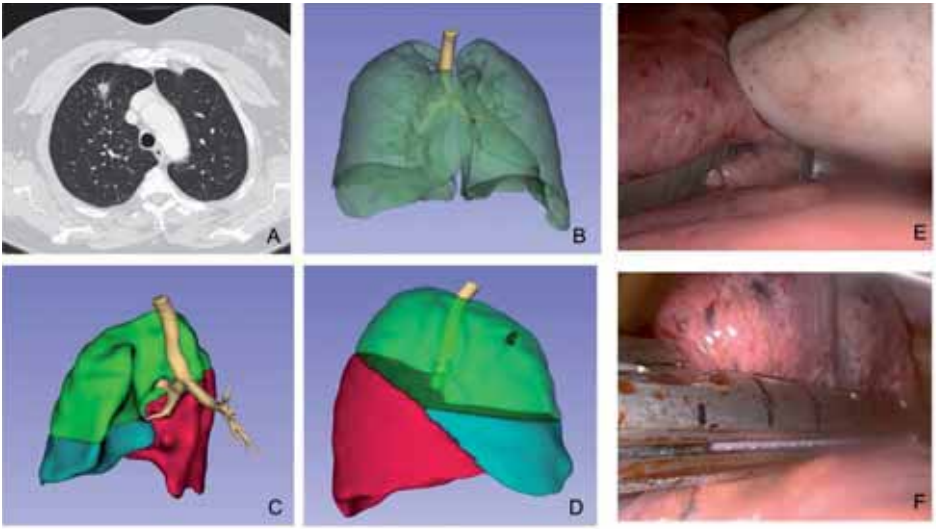

Figure 3. A 61-years-old woman with adenocarcinoma. (A) Ct scan showed a nodule in RUL; (B) Reconstruction of lungs andtracheobronchial airways; (C) Segmentation of right lung lobes; (D) RUL in trasparency showed the lung nodule; (E) palpation of the nodule; (F) wedge resection.

P-043

LONG INTRATHORACIC TRACHEAL RESECTION AND COMPLEX RECONSTRUCTION WITH AUTOLOGOUS FOREARM FREE FLAP

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OBJECTIVES

To highlight a case of a long intrathoracic tracheal resection and reconstruction using an autologous forearm free flap.

CASE DESCRIPTION

Tracheal resection with reconstruction can present a technically challenging scenario, especially in long segment resections. It is generally accepted that the maximum length of tracheal resection is 6cm, even when using the most extensive surgical release maneuvers. Tracheal resections greater than 6cm require complex surgical reconstruction using some form of tracheal replacement. In the past, orthotopic trachea, autologous organs, and prosthetic materials have all been used, but with suboptimal results and complications. More recently, there has been success using fasciocutaneous free flaps combined with cartilage support.

In this case study, we discuss a 66 year-old male who presented with a rare, malignant tracheal tumor causing significant respiratory compromise. He underwent chemotherapy, multiple rigid bronchoscopy procedures with debulking and tracheal stents but continued to have readmissions with airway obstruction. He was treated by a multidisciplinary team comprising of cardiac surgery, thoracic surgery and otorhinolaryngology to perform a long segment tracheal resection under cardiopulmonary bypass. A 6cm circumferential and 10cm hemicircumferential tracheal resection was performed under cardiopulmonary bypass assistance, with reconstruction using an autologous forearm fasciocutaneous free flap with pre-implanted cadaveric cartilage. To the best of our knowledge, this case is one of the longest intrathoracic tracheal resections with reconstruction and demonstrates the safety and feasibility of this procedure.

CONCLUSIONS

Long segment tracheal resections require complex surgical techniques for reconstruction. As demonstrated in this case, tracheal reconstruction can be safely performed using an autologous forearm free flap with cadaveric cartilage implants.

Disclosure: No significant relationships.

P-044

ROBOTIC PULMONARY SEGMENTECTOMY WITHOUT PRE-OPERATIVE TISSUE DIAGNOSIS IN THE ERA OF LUNG CANCER SCREENING

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OBJECTIVES
Management of small suspicious lung nodules, located deep in the lung parenchyma, can be challenging. Routine pre-operative tissue diagnosis is associated with significant use of resources and morbidity. We hypothesize that minimally invasive pulmonary segmentectomy without pre-operative tissue diagnosis is an acceptable diagnostic and therapeutic approach for small lung nodules deemed highly suspicious for malignancy by an experienced thoracic surgery team.

METHODS
We reviewed the outcomes of 257 consecutive anatomical pulmonary segmentectomies performed between (5/2017-4/2022), using our institutional Society of Thoracic Surgery General Thoracic Surgery Database. We excluded the VATS and open (37 and 17) segmentectomies to rule out the benefit of nodule palpation. Remaining 203 robotic segmentectomies were included in the study. Descriptive statistics were summarized using chi-square tests and Fisher's exact test for categorical variables, and Wilcoxon tests and independent samples t-test for continuous variables. (Table 1)

RESULTS
Total of 137 robotic segmentectomies performed without tissue diagnosis. Seventeen patients had intraoperative wedge resection with frozen section followed by completion segmentectomies. Remaining 120 (87.5%) patients had upfront robotic segmentectomies without pre-operative or intra-operative tissue confirmation and 111 of 120 (92.5%) lesions were malignant. Overall, in the whole cohort 125 out of 137 (91.2%) had malignant pathology, 122 (89%) primary lung cancers and 3 (2.1%) metastatic lesions. Twelve (8.7%) patients had benign lesions, including 3 enlarging hamartomas with increase uptake on Positron Emission Tomogram (PET) scan.

CONCLUSIONS
Robotic pulmonary segmentectomy without tissue diagnosis for highly suspicious lung nodules is an acceptable diagnostic and curative option in high volume centers with almost 90% diagnostic accuracy and low mortality. These results do question the enthusiasm for routine biopsy of suspicious lung nodules detected during lung cancer screening. Larger prospective studies are needed to validate these results.

Disclosure: No significant relationships.
Keywords: Robotic, Segmentectomy, Tissue Diagnosis, Lung Cancer.

Table 1: Robotic Segmentectomy Without Tissue Diagnosis.

VARIABLE	SEGMENTECTOMY (N=137)
Total Robotic Segmentectomy without Tissue diagnosis	137
Intra op Wedge for Tissue Dx	17(12.4%)
Segmentectomy without wedge	120(87.5%)
Malignant Pathology in segmentectomy without wedge	111(92.5%)
Age (Mean; Median)	70/67
Male; Female	69M:69F
Median BMI	27.4
Median FEV 1.0	80 %
Median DLCO	69%
Current smoker at time of resection	44 (32.1%)
Pre-op home O2	25 (18.2%)
Pathological Stage 0	7 (5.1%)
Pathological Stage 1A	83(60.5%)
Pathological Stage 1B	20(14.5%)
Pathological Stage IIA	1(0.7%)
Pathological Stage IIB	7(5.1%)
Pathological Stage IIIA	3(2.1%)
Pathological Stage IVA	1(0.7%)
Metasectomy	3(2.1%)
Benign Disease	12(8.7%)
OR time (Median) (	2hour 19min
All cause Return to OR within 30 days	4 (2.9%)
All cause Readmission within 30 days	18 (13.1%)
Postoperative Air leak > 5days	24 (17.5%)
Postoperative Pneumonia	5 (3.6%)
Postoperative Respiratory failure	1 (0.07%)
Postoperative Pneumothorax requiring chest tube	11 (8%)
Postoperative Arrhythmia requiring treatment	10 (7.2%)
Blood Transfusion	5 (3.6%)
Mortality at 30 days	1 (0.7%)
Median Postoperative Length of Stay	3

P-045

PD-L1 EXPRESSION IS ASSOCIATED WITH WORSE PROGNOSIS IN PATIENTS UNDERGOING MULTIMODALITY TREATMENT INCLUDING SURGERY FOR MALIGNANT PLEURAL MESOTHELIOMA: A SINGLE-CENTER EXPERIENCE

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OBJECTIVES

Malignant pleural mesothelioma (MPM) is a rare disease with dismal survival and thus prognostic biomarkers are urgently needed in order to improve treatment outcomes. However, the association of different immunohistochemical (IHC) biomarkers with overall survival (OS) in MPM is still controversial.

METHODS

Formalin-fixed paraffin-embedded (FFPE) tumor samples and clinical data from 57 consecutive MPM patients receiving standard treatment without immunotherapy were retrospectively collected from a single-center. Programmed cell death ligand 1 (PD-L1) (tumor proportion score (TPS) and combined positive score (CPS)), BRCA1 associated protein-1 (BAP1) and Integrin-linked kinase (ILK) expressions were measured by IHC and correlated with clinical parameters and long-term outcome.

RESULTS

31 (54%) patients received curative intent multimodality treatment (MMT) including surgery. PD-L1 TPS ≥1%, PD-L1 CPS ≥1%, loss of BAP1 and ILK ≥50% was found in 28 (49%), 38 (66%), 39 (68%) and 45 (78%) patients, respectively. No significant associations were found between PD-L1 TPS, PD-L1 CPS, BAP1 and ILK expressions and clinicopathological parameters such as stage, age or histological subtype. Patients undergoing MMT tended to have superior OS (median OS 25 versus 15 months, p=0.08). Notably, in patients undergoing MMT PD-L1 TPS ≥1% was associated with significantly worse OS compared to patients without PD-L1 expression (median OS 14 versus 46 months, HR 2.5, 95% CI 1.01-6.37, p=0.04). There was no significant correlation between PD-L1 CPS, BAP1 or ILK and OS in the whole cohort or in the subgroup of patients undergoing MMT.

CONCLUSIONS

In this single-center cohort, PD-L1 TPS ≥1% was associated with significantly worse OS in the subgroup of patients undergoing MMT. Further studies with larger cohorts are warranted to further investigate the value of PD-L1 expression in surgically treated MPM patients.

Disclosure: No significant relationships.
Keywords: Mesothelioma, Multimodality Treatment, Biomarker.

P-046

PREOPERATIVE DIAGNOSIS OF SOLITARY PULMONARY NODULES WITH A NOVEL HEMATOLOGICAL INDEX MODEL

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OBJECTIVES
Preoperative noninvasive diagnosis of the benign or malignant solitary pulmonary nodule (SPN) is still important and difficult for clinical decision and treatment. This study aimed to assist in the preoperative diagnosis of benign or malignant SPN by blood biomarkers.

METHODS
Two hundred and eighty-six patients were recruited for this study. The serum FR+CTC, TK1, TP, TPS, ALB, Pre-ALB, ProGRP, CYFRA21-1, NSE, CA50, CA199, and CA242 were detected and analyzed.

RESULTS
In the univariate analysis, Age, FR+CTC, TK1, CA50, CA19.9, CA242, ProGRP, NSE, CYFRA21-1, and TPS showed the statistical significance of correlation with malignant SPNs ($P<0.05$). The highest performing biomarker is FR+CTC (odd ratio [OR], 4.47; 95%CI: 2.57-7.89; $P<0.001$). The multivariate analysis identified that age (OR, 2.69; 95%CI: 1.34-5.59, $P=0.006$), FR+CTC (OR, 6.26; 95%CI: 3.09-13.37, $P<0.001$), TK1 (OR, 4.82; 95%CI: 2.4-10.27, $P<0.001$) and NSE (OR, 2.06; 95%CI: 1.07-4.06, $P=0.033$) are independent predictors. A predicting model based on age, FR+CTC, TK1, CA50, CA242, ProGRP, NSE and TPS was developed and presented as a nomogram, with a sensitivity of 71.1% and specificity of 81.3%, and the AUC was 0.826 (95% CI: 0.768-0.884).

CONCLUSIONS
The novel predicting model based on FR+CTC showed much stronger performance than any single biomarker, and it can assist predict benign or malignant in SPNs.

Disclosure: No significant relationships.
Keywords: Pulmonary Nodules, Diagnosis, Biomarkers, Hematological Index Model, Nomogram.

Table 1 Baseline characteristics of benign and malignant SPN.

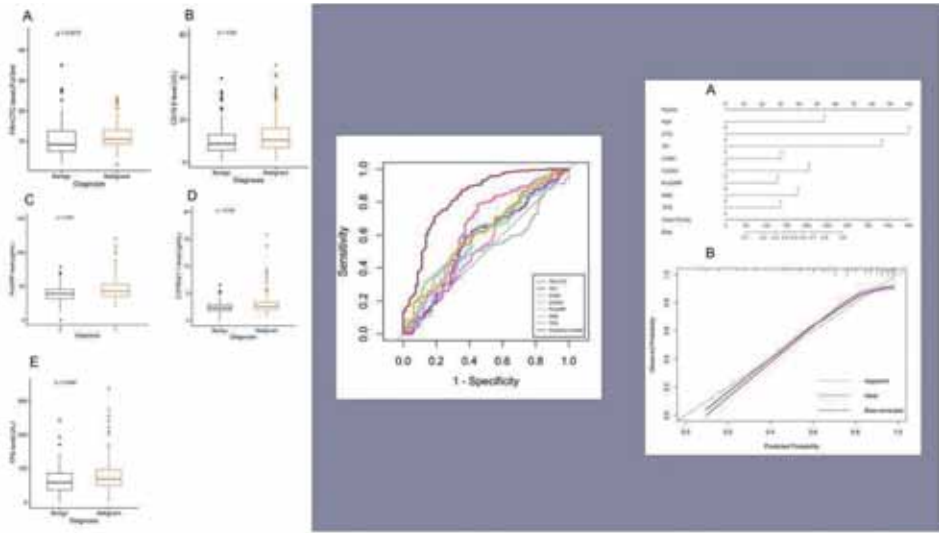
Characteristics	Overall (N=271)	Benign SPN (N=80)	Malignant SPN (N=191)	P value
Age (mean (SD), years)	57.24 (10.94)	52.48 (9.51)	59.24 (10.91)	<0.001
Sex (n, %)				
Female	140 (51.7)	44 (55.0)	96 (50.3)	0.563
Male	131 (48.3)	36 (45.0)	95 (49.7)	
FR+CTC (median [IQR], FU/3 mL)	10.36 [8.49, 13.52]	8.91 [6.68, 13.36]	10.69 [9.16, 13.59]	0.001*
TK1 (median [IQR], pM)	2.03 [1.46, 2.80]	1.82 [1.36, 2.66]	2.15 [1.50, 2.84]	0.073
TP (median [IQR], g/L)	64.30 [60.55, 67.25]	64.30 [61.25, 67.70]	64.30 [60.40, 67.20]	0.614
ALB (median [IQR], g/L)	39.10 [37.30, 41.70]	39.80 [37.00, 42.30]	39.10 [37.30, 41.60]	0.755
PALB (median [IQR], mg/L)	227.60 [202.90, 260.85]	229.10 [203.87, 262.45]	226.90 [202.70, 259.80]	0.968
CA50 (median [IQR], U/L)	5.89 [3.96, 8.64]	5.03 [3.47, 7.60]	6.19 [4.15, 8.95]	0.063
CA19.9 (median [IQR], U/L)	9.83 [6.46, 15.14]	8.66 [5.65, 12.95]	10.44 [6.90, 15.96]	0.026*
CA242 (median [IQR], U/L)	3.49 [2.05, 5.89]	3.38 [1.65, 5.49]	3.53 [2.24, 5.94]	0.14
ProGRP (median [IQR], pg/mL)	41.03 [34.22, 48.30]	38.67 [31.34, 44.99]	42.60 [34.99, 52.46]	0.003*
NSE (median [IQR], ng/mL)	9.99 [8.75, 11.49]	9.89 [9.15, 10.60]	10.09 [8.61, 11.70]	0.585
CYFRA21.1 (median [IQR], ng/mL)	2.46 [1.91, 3.20]	2.32 [1.75, 2.92]	2.56 [2.01, 3.34]	0.024*
TPS (median [IQR], U/L)	63.47 [45.85, 92.80]	57.92 [36.19, 84.44]	68.14 [48.30, 96.30]	0.007*

Table 2 Univariate and multivariate analysis of distinguishing malignant SNPs.

	Univariate analysis			Multivariate analysis		
Characteristic	HR	95%CI	p	HR	95%CI	p
Sex (male)	1.21	0.72-2.05	0.477	-	-	-
Age (>=60 years old)	3.44	1.93-6.4	<0.001*	2.69	1.34-5.59	0.006*
$FR^{+}CTC$ (FU/3 mL)	4.47	2.57-7.89	<0.001*	6.26	3.09-13.37	<0.001*
TP (g/L)	1.93	0.48-12.84	0.408	-	-	-
TK1 (pM)	2.41	1.42-4.16	0.001*	4.82	2.4-10.27	<0.001*
ALB (g/L)	0.69	0.41-1.17	0.166	-	-	-
PALB (mg/L)	0.74	0.44-1.26	0.263	-	-	-
CA50 (U/L)	2.26	1.33-3.87	0.003*	1.75	0.87-3.55	0.118
CA19.9 (U/L)	2.19	1.28-3.82	0.005*	-	-	-
CA242 (U/L)	2.56	1.35-4.85	0.004*	2.31	0.99-5.53	0.055
ProGRP (pg/mL)	2.37	1.39-4.1	0.002*	1.68	0.87-3.27	0.121
NSE (ng/mL)	2.11	1.21-3.79	0.01*	2.06	1.07-4.06	0.033*
CYFRA21.1 (ng/mL)	1.98	1.13-3.58	0.02*	-	-	-
TPS (U/L)	2.23	1.3-3.91	0.004*	1.74	0.92-3.36	0.093

Table 3 The diagnosis values of haematological biomarkers.

Biomarker	Cutoff	Specificity	Sensitivity	AUC	95%CI	P?(CTC reference)
$FR^{+}CTC$	9.005	0.550	0.785	0.623	0.540-0.705	-
TP	74.45	0.975	0.047	0.481	0.405-0.556	0.012*
TK1	1.965	0.625	0.592	0.569	0.492-0.646	0.377
ALB	39.85	0.500	0.591	0.512	0.434-0.590	0.067
PALB	239.25	0.450	0.623	0.502	0.425-0.579	0.037*
CA50	5.24	0.550	0.649	0.572	0.495-0.649	0.382
CA19-9	10.375	0.675	0.513	0.586	0.51-0.661	0.527
CA242	1.705	0.288	0.864	0.557	0.479-0.634	0.262
ProGRP	41.085	0.650	0.560	0.614	0.542-0.687	0.873
NSE	10.515	0.725	0.445	0.521	0.449-0.593	0.075
CYFRA21-1	2.83	0.738	0.414	0.587	0.513-0.660	0.504
TPS	67.155	0.675	0.518	0.604	0.530-0.678	0.725
Prediction model*	-	0.813	0.711	0.826	0.768-0.884	<0.001



P-047

SIGNIFICANCE OF VIDEO-ASSISTED THORACIC SURGERY (VATS) IN THE SURGICAL TREATMENT OF ACUTE HEMOTHORAX: EXPERIENCES FROM A MAXIMUM CARE CENTER

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OBJECTIVES
Thoracic trauma is associated with high patient morbidity and mortality. Trauma guidelines recommend thoracotomy (THK) for surgical treatment of acute intrathoracic injuries. Compared to video-assisted thoracoscopy (VATS) this represents a significant additional burden for the patient. The feasibility, benefits and limitations of VATS in the acute trauma setting are analyzed here.

METHODS
Monocentric retrospective cohort analysis of all patients who underwent surgery for acute intrathoracic bleeding between 01/2017 and 12/2021. Patients with thoracic trauma and bleeding following thoracic interventions were included. Patient characteristics, type of injury, surgical findings, intra- and postoperative course and complications were recorded.

RESULTS
93 patients (71% male, 66±18 years, ASA 3.38±0.85) underwent surgery for acute hemothorax: VATS n=60; THK n=33. Of these, 43/93 (46.2%) patients had acute chest trauma. 17% of VATS patients and 52% of THK patients were hemodynamically unstable at the start of surgery and required catecholamines. 10 patients (17%) had to be converted to THK. Reasons for this were pre-existing pulmo-pleural adhesions (n=7), intrathoracic bleeding that could not be controlled by VATS (n=2) and unmanageable 1-lung ventilation (n=1). The operating times (74±48 vs 125±69 minutes, p<.001) and intraoperative bleeding amounts (319±506 vs 728±871 ml, p=0.008) differed significantly between groups. In 43% of the VATS patients and in 76% of the THK patients there were postoperative complications (in particular infections, respiratory insufficiency, secondary bleeding). Length of hospital stay (12±12 vs 23±24 days, p=0.026), duration of ventilation (81±258 vs 166±186 hours, p=0.001) and intensive care stay (5±11 vs 13±13 days, p=0.001) differed significantly. Mortality in the VATS group was significantly lower (7 vs 24%, p=0.028).

CONCLUSIONS
VATS is possible in more than 2/3 of the trauma patients including haemodynamically unstable patients. In the acute surgical setting, less than 20% of VATS interventions have to be converted.

Disclosure: No significant relationships.
Keywords: Thoracic Trauma, Hemothorax, VATS.

P-048

THREE-DIMENSIONAL (3D) THORACOSCOPIC SELECTIVE RAMICOTOMY: THE ULTIMATE SURGICAL TECHNIQUE FOR PALMAR-AXILLARY HYPERHIDROSIS?

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OBJECTIVES
Sympathectomy is a consolidated technique in palmar-axillary hyperhidrosis management. However, despite T2-free approach, compensatory sweating (CS) onset rate is still conditioning the surgical choice. Selective ramicotomy (SR) consists in gray rami interruption leaving white rami communicantes and sympathetic chain intact. Dividing only selected postganglionic fibers instead of entire nerve trunk should avoid disruption of fibers that innervate skin areas other than the upper extremity and preserve the regulatory feed-back mechanism preventing CS.

METHODS
Prospective case series. Patients underwent T2-T4 postganglionic interruption, performed on a 3D biportal VATS platform using a multi-joint-end articulating monopolar hook, for palmar/palmar-axillary hyperhidrosis HDSS score D (Hyperhidrosis Disease Severity Scale), refractive to conservative treatment. Preoperative data included: age, weight, height, sex, BMI. Intraoperative outcomes: palmar temperature increase (at least 0.8°C for adequacy), each side operative time. Postoperative outcomes: surgical complications, hospital stay. Follow-up outcomes at 3-6-12 months: relief of symptoms (using HDSS), CS occurence/intesity (1-absent, 2-mild, 3-embarrassing or moderate, 4-disabling or severe, and 5-extreme), hands dryness and gustatory sweating (following Lee's scale), overall satisfaction (using a five-point scale). Descriptive statistics were expressed as mean (± SD) for continuous variables; discrete variables as percentage for each group.

RESULTS
34 SR (17 patients) performed without complications from may 2022. Demographics and postoperative outcomes are reported in table 1. Median operative time was 31 minutes. At a median follow-up of 5 months 15 (88,3%) patients had HDSS score A and 2 (11,7%) B. No failure/recurrences (score C-D) recorded. CS: non "severe" cases, 2 "minor" cases (11%) recorded. Nobody presented gustatory sweating. Complete satisfaction obtained in 16 cases (94%).

CONCLUSIONS
Despite small population and ongoing follow-up, our data reinforce the latest few encouraging findings in literature and contradict the earlier unsatisfactory studies. Success may derive from

SR anatomical principles combined with the introduction of 3D vision and articulating devices ensuring greater accuracy.

Disclosure: No significant relationships.
Keywords: Ramicotomy, Hyperhidrosis, 3D, VATS, Compensatory Sweating.

	Selective Ramicotomy (17 patients - 34 surgeries)
Age	
Mean (SD)	28.4 (10.7)
Sex	
Men	12 (70%)
Women	5 (30%)
Height (cm)	
Mean (SD)	168.3 (8.9)
Weight (kg)	
Mean (SD)	67.5 (11.7)
BMI	
Mean (SD)	22.9 (2.3)
Each side operative time (minutes)	
Mean (SD)	28 (6)
Postoperative hospital stay	
Mean (SD)	1.13 (0.27)
HDSS	
A	15 (88.2%)
B	2 (11.8%)
C	0 (0%)
D	0 (0%)
Hands too dry	
NO	16 (94.5%)
YES	1 (5.5%)
Need hand cream	
NO	17 (100%)
YES	0 (0%)
Happy result	
1 very unhappy	0 (0%)
2 unhappy	0 (0%)
3 dissatisfied	0 (0%)
4 not completely happy	1 (5.5%)
5 very happy	16 (94.5%)
Compensatory sweating	
1 no	15 (88.2%)
2 intermitting or minor	2 (11.8%)
3 embarassing	0 (0%)
4 disabling	0 (0%)
5 severe	0 (0%)

P-049

UNIPORTAL VIDEO-ASSISTED LUNG RESECTION VERSUS ROBOTIC-ASSISTED LUNG RESECTION, IS THERE A DIFFERENCE?

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OBJECTIVES
There has been increasing adoption of robot-assisted (RATS) and uniportal (uVATS) thoracic surgery for lung resection. We undertook a single-institution retrospective study, comparing these approaches.

METHODS
An analysis was performed of patients who underwent lung resection by either uVATS or RATS. Operations were performed between 7/1/20-7/1/21. Two surgeons (one experienced in RATS, the other experienced in multi-portal VATS, with recent adoption of uVATS) performed all operations. Patients with known or suspected lung cancer or metastases were included. In addition to baseline characteristics, adverse events (as defined by STS), subjective pain scores (scale 1-10), and morphine equivalent dose (MED) requirement were compared for post-operative days (POD) 1 to 4. For patients with lung cancer, recurrence-rates, overall and recurrence-free survival were evaluated.

RESULTS
There were 128 (50 uVATS and 78 RATS) patients. Although uVATS patients were older (70 versus 65 years; p=0.015), there was no difference in baseline FEV1%, DLCO%, body mass index and ASA scores. Mean procedure times and adverse events rates were similar. Four major complications occurred (all unanticipated return to the operating room). 30-day and 90-day mortality was zero. RATS was associated with shorter hospital stay (2.6 versus 4 days; p=0.019) and improved lymph node (15.3 versus 9.9; p=0.003) dissection. Conversely, uVATS was associated with lower pain scores and MED requirement, and was significantly lower on POD 3-4. Ninety-four patients (uVATS;n=38, RATS;n=56) had primary lung cancer. Median follow-up was 15.6 months. Recurrence occurred in 4/34 (10.5%) uVATS and 7/56 (12.5%) RATS patients (p=0.77). There were no differences in overall or recurrence-free survival.

CONCLUSIONS
UVATS and RATS lung resections were associated with similar post-operative adverse event rates. Lymph node dissection was improved with RATS, but oncological outcomes were similar. UVATS was associated with improved pain control and lower morphine requirement. Prospective studies will help further clarify differences between these approaches.

Disclosure: No significant relationships.
Keywords: Uniportal Video-Assisted Thoracic Surgery (VATS), Robotic-Assisted Thoracic Surgery (RATS), Minimally Invasive Surgery.

	Uniportal VATs	Robotic VATs	Significance (p)
Pain score – Day 1 (Scale 1-10)	4.50	4.97	0.197
Pain score – Day 2	4.37	4.92	0.212
Pain score – Day 3	**2.97**	**4.23**	**0.030**
Pain score – Day 4	**2.67**	**4.82**	**0.014**
Morphine equivalent dose (MED) – Day 1	23.82	33.30	0.178
MED – Day 2	22.23	30.04	0.263
MED – Day 3	**12.12**	**26.17**	**0.026**
MED – Day 4	**11.56**	**38.09**	**0.009**

P-050

SHORT AND LONG-TERM OUTCOMES OF DIFFERENT SEGMENTECTOMY INDICATIONS

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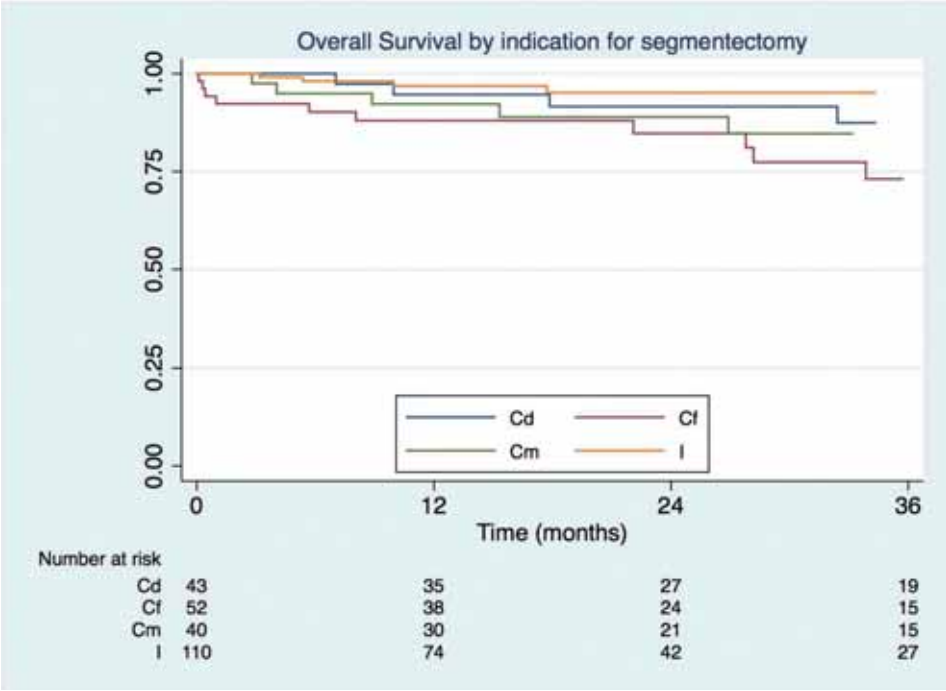
OBJECTIVES
To evaluate whether different indications for segmentectomy are associated with different postoperative and long-term outcomes.

METHODS
Retrospective single centre analysis on all consecutive patients undergoing segmentectomy (January 2017-May 2022). Segmentectomies were defined as: Intentional (I) in patients fit for lobectomy with lung cancer smaller than 2 cm or non-wedgeable metastases; Compromised functional (Cf) in patients unfit for lobectomy; Compromised diagnostic (Cd) in patients with unfeasible or inconclusive diagnosis and suspicion of cancer; Compromised multiple (Cm) in patients with multifocal disease or previous lung resection for another lung cancer. Analysis of Variance was used to assess differences in postoperative mortality and Cox regression analysis for differences in Overall Survival(OS) adjusting for confounders.

RESULTS
245 segmentectomies were included. The distribution of the different types was as follows: I:110, Cf:52, Cd:43, Cm:40. The total cardiopulmonary morbidity was 14% with no difference between the different types of segmentectomies (ANOVA, p=0.247). Total mortality was 1.6%. All 4 deaths occurred in the Cf group (7.7%, ANOVA, p=0.003). 187 patients had a final pathologic diagnosis of primary NSCLC. This proportion was lower in the Cd group (47%) (Fisher's exact p<0.0001). Three year and median overall survival was as follows: I 95% (95% CL 87-98) median NR; Cf 73% (95% CL 54-85) median 58 months (IQR 34-67); Cd 87% (95% CL 69-95) median NR; Cm 85% (95% CL 66-93) median NR(Figure). Cox regression analysis showed that Cf and Cm groups had a 4.3-fold (p<0.001) and 2.7-fold (p=0.016) risk of death compared to I group after adjusting for other patient and surgery related factors. The OS in cT1N0 NSCLC, was as follows: I 95%; Cf 70%; Cd 100%; Cm 92% (logrank p=0.019).

CONCLUSIONS
The indication for segmentectomy appears to be associated with short and long term outcomes, with Cf segmentectomies having the highest mortality and poorest prognosis.

Disclosure: No significant relationships.
Keywords: Segmentectomy, Lung Cancer.


Overall Survival by indication for segmentectomy
1.00
0.75
0.50
0.25
0.00
Cd
Cf
Cm
I
0
12
24
36
Time (months)
Number at risk
Cd 43 35 27 19
Cf 52 38 24 15
Cm 40 30 21 15
I 110 74 42 27

P-051

REGION ESTIMATED TO BE RESECTABLE BY PULMONARY WEDGE RESECTION PREOPERATIVELY: DIFFERENCES BETWEEN EXPERT SURGEONS AND TRAINEES

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[2]*Department of Clinical Information Engineering, The University of Tokyo Graduate School of Medicine, Tokyo, Japan*

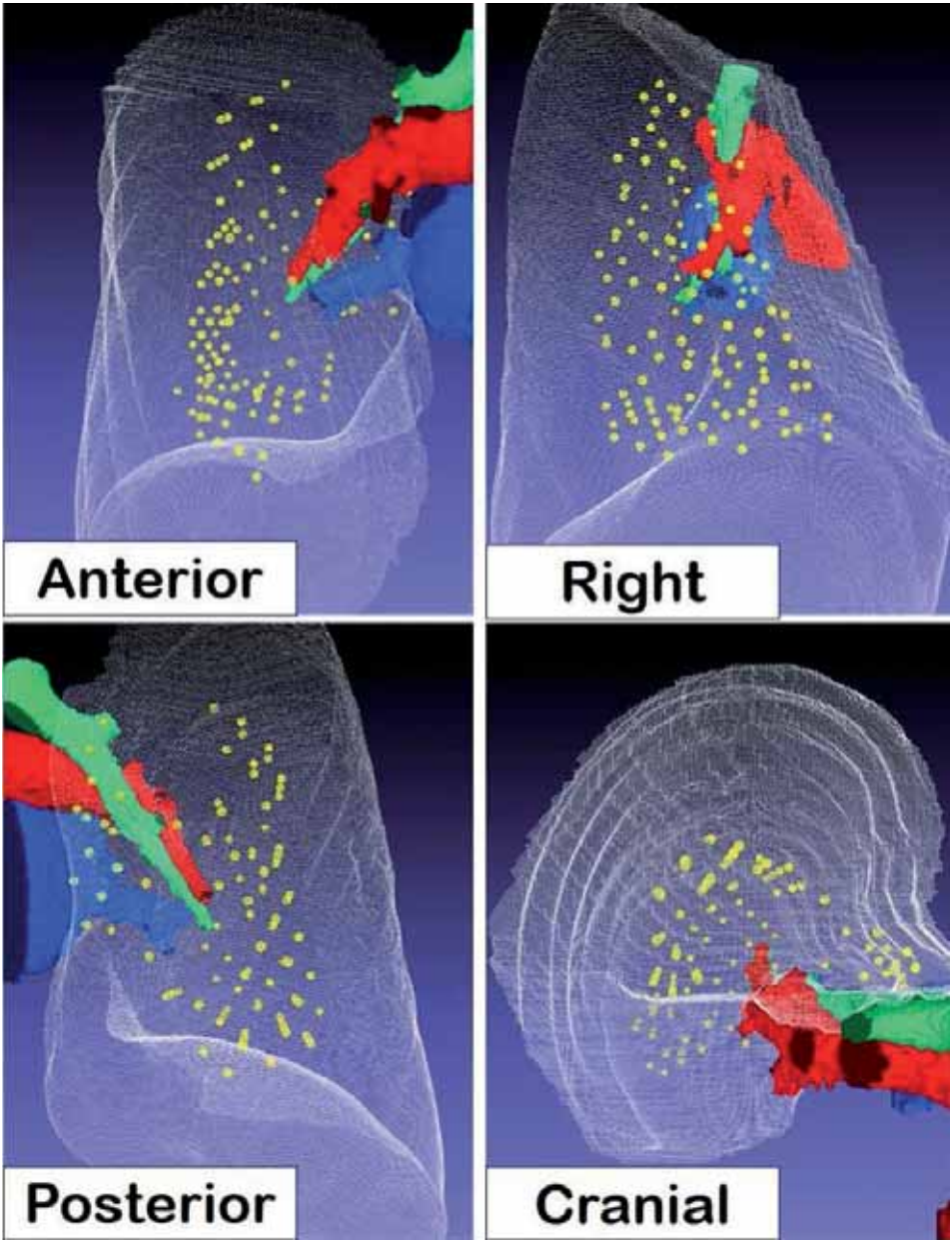
OBJECTIVES
The decision of whether to perform thoracoscopic pulmonary wedge resection (TWR) based on preoperative computed tomography (CT) can vary among thoracic surgeons. We used engineering methods to investigate whether the region estimated preoperatively to be resectable by TWR varies depending on the proficiency level of the surgeon.

METHODS
The participants were four expert surgeons, (Group E) and six trainees (Group T). 1263 dots were placed in a grid on the CT images of the right lower lobe of a patient. Using originally developed software, each surgeon judged whether they could resect each dot by TWR. All dots were tabulated, and classified as resectable (R) if >75% of the participants determined them to be resectable, or as non-resectable (NR) otherwise.

RESULTS
Median experience of the surgeons was 17 years in group E and 8 years in group T. The mean number of dots determined as resectable was significantly higher in group E (1,117±43) than in group T (1,043±96) (P=0.03). In the tabulated results, the number of R dots was 1084 for group E and 970 for group T. All R dots for group T were also in those for group E. The 114 R dots that were determined to be resectable by group E alone were mostly located in the deep regions of the base of the lung, deep in the fissure, or on the large ovoid surface of the lower lobes, rather than being scattered (Figure).

CONCLUSIONS
It is known that anatomical location can have a profound impact on the nature of a TWR. Compared with the trainees, the present experts judged that they could resect deeper regions of the lungs, even in regions that are typically considered difficult to resect through TWR.

Disclosure: No significant relationships.
Keywords: Sublobar Resection, VATS, Surgical Education.


Anterior
Right
Posterior
Cranial

P-052

AMG-510 AND CISPLATIN COMBINATION INCREASES ANTITUMOR EFFECT IN LUNG ADENOCARCINOMA WITH MUTATION OF KRAS G12C: A PRECLINICAL AND TRANSLATIONAL RESEARCH

Lei-Lei Wu[1], Wen-Mei Jiang[2], Guo-Wei Ma[2], Dong Xie[1]
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[2]*Sun Yat-sen University Cancer Center, Guangzhou, China*

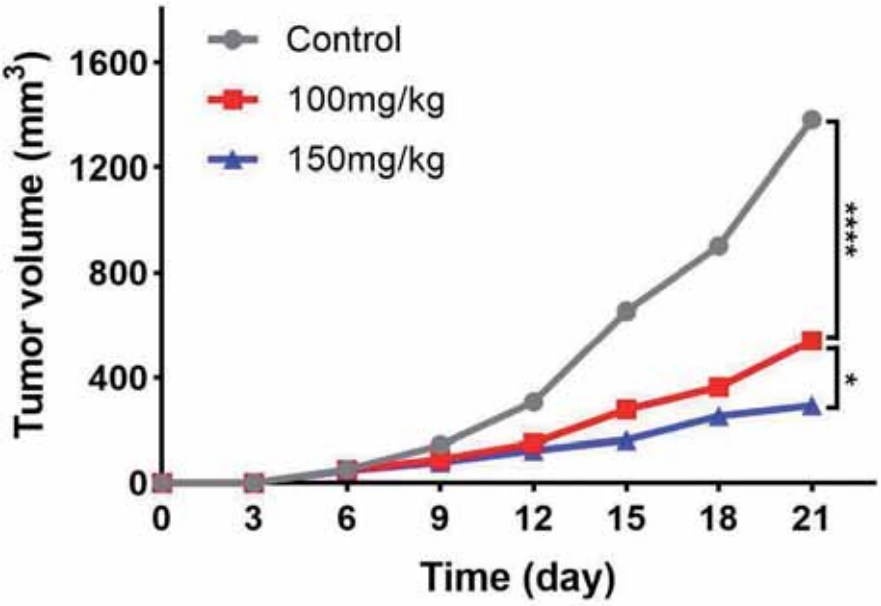
OBJECTIVES
This study aimed to explore the antitumor effect of Osalmid in lung adenocarcinoma by experiments in vitro and in vivo.

METHODS
To determine the IC50 value of the Osalmid in NCI-H322, NCI-H1975, and NCI-H23 cell lines, we used Cell Count Kit8 (CCK-8) after 72h of drug treatment. The H1975 cells (2*106/150μL) were injected under the skin after one-week feeding. The mice were classified into three groups randomly (control, 100mpk, and 150mpk) when the tumor size was about 50-135mm3. Mice in the control group did not receive any drug; mice in the 100mpk group and 150mpk group were administered by intraperitoneal injection at 100 or 150 mg/kg per mouse every day. The student's t-test was used to compare the difference between the two groups.

RESULTS
The IC-50 value of H1975, H23, and H322 were 150uM, 200uM, and 391uM, respectively. We selected the H1975 for further animal experiments. On day 21, the mean tumor volumes were 1382.9mm3, 542.6mm3, and 292.8mm3 in control, 100mpk, and 150mpk groups, respectively (student's t-test, all $P<0.05$). The mean weights of tumors were the largest in the control group among all mice (1.11g). In addition, compared with the control group (19.8g), the mean weights of the mice were larger in the 100mpk (20.5g) and 150mpk (21.2g) groups.

CONCLUSIONS
This study confirmed that Osalmid has an antitumor effect in lung adenocarcinoma through experiments in vitro and in vivo.

Disclosure: No significant relationships.
Keywords: AMG-510, KRAS G12C, Cisplatin, Combination.


Control
100mg/kg
150mg/kg
Tumor volume (mm3)
1600
1200
800
400
0
0
3
6
9
12
15
18
21
Time (day)
****
*

P-053

ROBOTIC ASSISTED TRANSCERVICAL LYMPHADENECTOMY FOR STATIONS 1, 2L, 3, AND 4L USING THE XI SYSTEM IN A PATIENT WITH RIGHT LEPIDIC LUNG ADENOCARCINOMA

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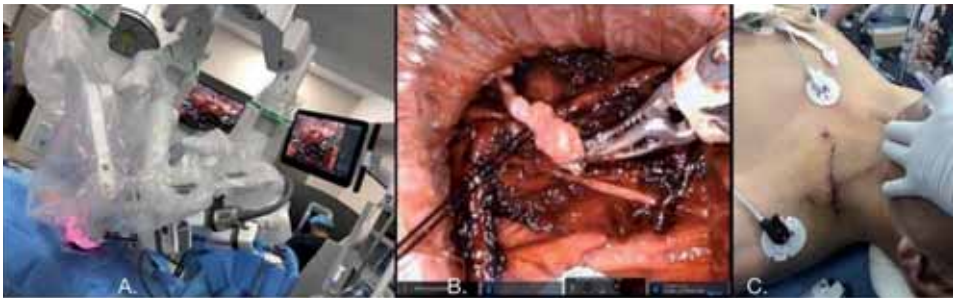
Instituto Cardiovascular de Minima Invasion, Guadalajara, Mexico

OBJECTIVES
To report the innovative use of the DaVinci Robotic System in the transcervical mediastinal evaluation of a patient with lung cancer.

CASE DESCRIPTION
We present a 62-year-old man with right T4 lung adenocarcinoma operated with a robotic-assisted mediastinal complete lymphadenectomy for left levels 1,2,3 and 4. The procedure offered better visualization of vascular structures and complete harvesting of interested ganglia. We propose this innovative approach as an option for lung cancer staging.

CONCLUSIONS
Transcervical DaVinci surgery for mediastinal staging is feasible. We need a lot of experience and reproducibility to recommend its routine use.

Disclosure: No significant relationships.
Keywords: Robotic Assisted Thoracic Surgery, Lung Cancer, Mediastinal Evaluation.



P-054

WHEN DO WE NEED TWO DRAINS AFTER VATS LOBECTOMY FOR LUNG CANCER? A PROGNOSTIC MODEL FOR INTRAOPERATIVE DECISION-MAKING

Oleg Pikin, Andrey Ryabov, Oleg Aleksandrov, Glushko Vladimir, Konstantin Kolbanov, Vladimir Bagrov
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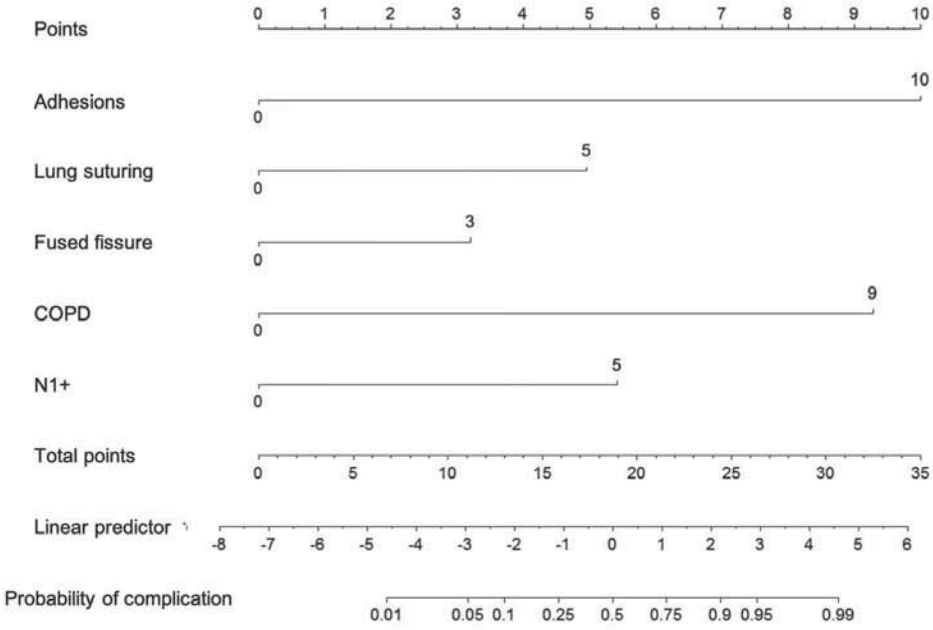
OBJECTIVES
Traditionally, the standard and widely accepted practice in thoracic surgery has been to place apical and basal drains for complete drainage of the pleural cavity after a lobectomy. With the development of VATS, it was shown that the use of a single chest tube provided the same clinical outcomes. However, sometimes tension pneumothorax occur postoperatively with the need for additional pleural drainage. The aim of this study was to develop a prognostic model for insertion of two pleural tubes after VATS lobectomy.

METHODS
This was a retrospective multicenter study of patients who underwent VATS lobectomy for lung cancer in our center via a standardized multiport approach from 2016 to 2022. In all cases, a single drain was used postoperatively. We used a machine learning algorithm and data synthesis to expand the patient selection according to Riley's method. A total of 1458 cases were analyzed in this study. After determining the prognostically significant factors, we performed binary logistic regression analysis using reverse step-by-step inclusion of variables according to the Akaike information criterion. After validation of the model by Bootstrap (400 iterations) and with the original dataset, a nomogram was created.

RESULTS
The rate of tension pneumothorax was 4.53% (n = 66). The most significant variables associated with the need for additional drainage were adhesions, intraoperative lung suturing, fused interlobar fissure, enlarged pulmonary lymph nodes, COPD ($p < 0.001$). The C-index of the model was 0.957, the mean absolute calibration error was 0.6%, and the slope of the calibration curve was 0.959. A score of 26 points indicated a 95% risk of postoperative pneumothorax.

CONCLUSIONS
The nomogram achieved good predictive performance for tension pneumothorax after minimally invasive lobectomy for lung cancer. High-risk patients could be identified and additional drainage may be placed intraoperatively to reduce the risk of lung collapse in the postoperative period.

Disclosure: No significant relationships.
Keywords: VATS Lobectomy, Air Leak, Drainage, Pneumothorax.


Points
0 1 2 3 4 5 6 7 8 9 10
Adhesions
0 10
Lung suturing
0 5
Fused fissure
0 3
COPD
0 9
N1+
0 5
Total points
0 5 10 15 20 25 30 35
Linear predictor
-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6
Probability of complication
0.01 0.05 0.1 0.25 0.5 0.75 0.9 0.95 0.99

P-055

A DIGITAL INTRA-OPERATIVE CHECKLIST TO IMPROVE THE OUTCOME OF MINIMALLY INVASIVE ESOPHAGECTOMY

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[2]*Surrey Thoracic Surgery Group, Surrey, Canada*

OBJECTIVES
In this longitudinal study, we evaluated the impact of dissemination of a digital checklist for improving the outcomes of minimally invasive esophagectomy (MIE).

METHODS
The checklist guides operating room (OR) staff, including surgeons and nurses, in conducting MIE by displaying the technical details of the procedure, divided into small, consumable steps, intra-operatively. Each step includes a digital preference card (list of preferred equipment, materials, and instruments), as well as pictures to distinguish instruments and video guides for OR staff to refer to during the procedure.
We evaluated intra and post-operative outcomes before and after dissemination of the checklist, as well as surveying intra-operative nursing staff to evaluate users' satisfaction with the checklist.

RESULTS
We prospectively reviewed 165 consecutive patients undergoing MIE by a single surgeon between 2009 and 2022. There were 89 (54.0%) MIEs performed prior to the checklist (2009-2016) and 76 (46.0%) after (2017-2022). The total cohort consisted of 131 (79.4%) males. The mean age was 68 (range: 37-94). Ivor-Lewis MIE was performed in 145 (87.9%) patients. Mean operative duration prior to dissemination of the checklist was 377 minutes (IQR: 331-420) and 349 minutes (IQR: 311-393) after. Mortality rates were 2 (2.2%) 30-day and 7 (7.9%) 90-day before and 1 (1.3%) 30-day and 2 (2.6%) 90-day after. The conversion rate was 22 (24.7%) before and 7 (9.2%) after. The re-admission rate was 14 (15.7%) before and 8 (10.5%) after. The median hospital length of stay was 9 days (IQR: 7-13) before and 8 days (IQR: 7-10) after. Nursing staff (n=21) reported 95% satisfaction with ease of use, 88% with practicality, and 90% likelihood to reuse the checklist.

CONCLUSIONS
The introduction of a digital intra-operative checklist appears to be associated with an improved outcome in MIE. Further randomized trials are needed to study the impact of a checklist on the outcomes of MIE.

Disclosure: No significant relationships.
Keywords: Minimally Invasive Esophagectomy, Surgical Checklist, Mie, Thoracic Surgery, Digital Surgical Checklist.

Table 1. Outcome analysis of checklist before and after dissemination (n = 165).

Outcome	Before (n=89)	After (n=76)	*p*-value
Mean operative duration (mins)	377	349	0.02
Complication rate (%)	54	44	0.178
In-hospital mortality (%)	6.7	1.3	0.069
30-day mortality (%)	2.2	1.3	0.649
90-day mortality (%)	7.9	2.6	0.125
Conversion to open (%)	24.7	9.2	0.012
Re-admission rate (%)	15.7	10.6	< 0.001
Median length of stay (days)	9	8	0.048

P-056

LAPAROSCOPIC HELLER'S CARDIOMYOTOMY WITH ANGLE OF HIS ACCENTUATION FOR ACHALASIA CARDIA: FIVE YEARS AND BEYOND

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All India Institute of Medical Sciences, Delhi, India

OBJECTIVES
The choice of anti-reflux procedure with laparoscopic Heller's cardiomyotomy (LHCM) in patients of achalasia cardia is debatable. We have earlier described LHCM with angle of His accentuation (AOH) as a viable option. In the present study, we describe the symptomatic outcome of patients undergoing LHCM with AOH beyond 5 years.

METHODS
A cohort of patients of achalasia cardia who underwent LHCM and AOH from January 2010 and onwards with a minimum follow-up of 5 years were included in the study. The patients were followed up in terms of symptom relief and improvement in Disease-specific health-related quality of life for achalasia (A-DSQoL). The successful outcome was defined as Eckardt ≤ 3 and DeMeester's heartburn score ≤ 1. Symptom scores and A-DSQoL scores were compared at the initial presentation and last follow-up. Prevalence of esophagitis was also noted in patients consenting for endoscopy (LA-C and above were considered as GERD).

RESULTS
Out of 61 patients, complete pre-operative and follow-up records were available for 58. The demographic details and results are mentioned in Table 1. At a median follow-up of 84 months (60-145 months), the mean preoperative Eckardt score improved significantly (7.43±1.73 to 1.50±1.54, $p<0.001$) with 51 patients (88%) having a successful outcome. Fifty-six (96.5%) patients had an improvement in the calibrated A-DSQoL score (61.78±11.27 to 32.22±15.43, $p<0.001$). fourteen patients had significant heartburn (DeMeester's score of ≥ 2) preoperatively, out of which 12 (86%) had relief of heartburn. Among the rest 44 patients, new onset significant heartburn developed in 7 (16%) patients. Out of 27 patients who consented to endoscopy, 4 had esophagitis with 2 (7.4%) having LA C/D esophagitis.

CONCLUSIONS
LHCM with AOH provides significant symptomatic relief in achalasia cardia with acceptable heartburn rates in the long term. This may be considered a preferred surgical option.

Disclosure: No significant relationships.
Keywords: Achalasia Cardia, Angle Of His Accentuation, Eckardt Score, DeMeester Heartburn Score, Esophagitis.

Parameters	Value	
Mean age	34.36±11.59	
Sex: Male (%)	35 (60%)	
Prior history of dilatation (n)	19 (32.8%)	
Mean pre-operative weight (kg)	50.96±12.08	P< 0.001
Mean post-operative weight (kg)	60.5±11.74	
Mean operative duration (minutes)	130.09±22.4	
Type of Achalasia (n= 43) Type 1 Type 2 Type 3	 2 (4.65%) 37 (86.05%) 4 (9.3%)	
Mean hospital stay (days)	3.17±1.11	
Eckardt score Preop Post-op	 7.43±1.73 1.50±1.54	P<0.001
A-DSQoL Pre-op Post-op	 61.78±11.27 32.22±15.43	P<0.001

P-057

SPONTANEOUS RUPTURED CONGENITAL BRONCHIAL DIVERTICULUM PRESENTING WITH TOTAL LUNG COLLAPSE AND CHRONIC EMPYEMA THORACIC: A CASE REPORT

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[2]*Siriraj hospital, Mahidol university, Bangkok, Thailand*

OBJECTIVES

Tracheobronchial diverticulum are a rare entity which can be divided into 2 subtypes; 1. Congenital type which is a true diverticulum with all tracheobronchial layers. 2. Acquired type which only consists of mucosal layer. Ruptured bronchial diverticulum are very rare condition. We would like to present a case of successful bronchial diverticulum repair in a patient who had spontaneous ruptured congenital bronchial diverticulum presenting with total lung collapse and chronic empyema thoracic.

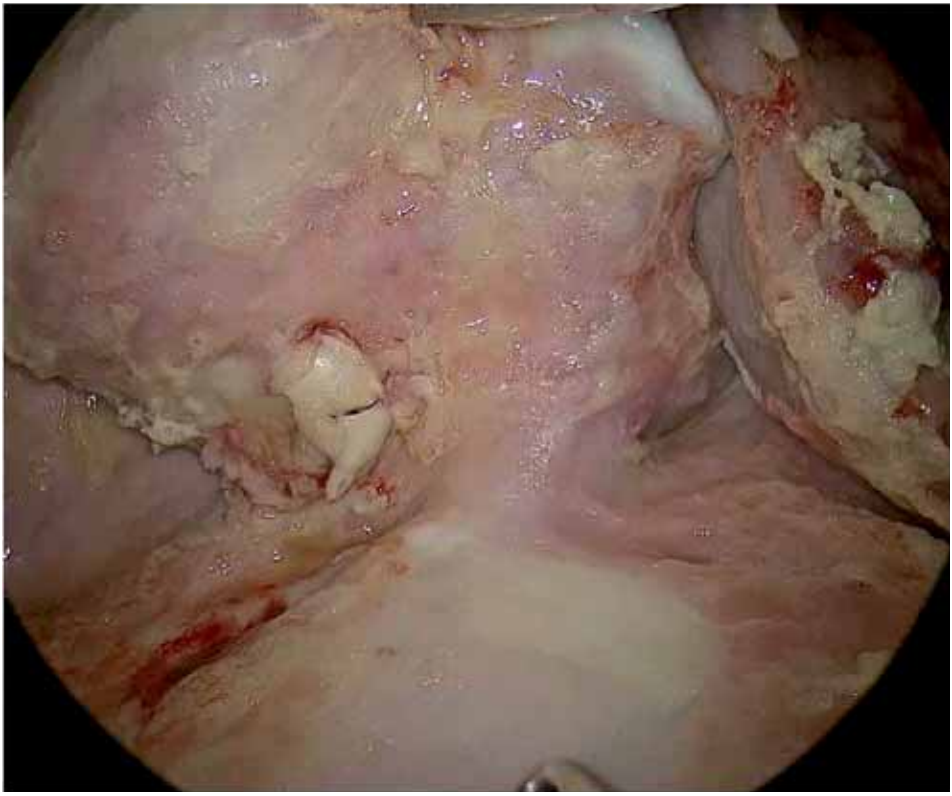
CASE DESCRIPTION

A 65-year-old man presented at local hospital with 6 weeks dry cough, low grade fever and weight loss. He was initially treated as bronchitis. Later CXR showed total lung collapse. Preliminary diagnosis was ruptured lung bleb. ICD was placed which found air leak and turbid yellow fluid. CXR showed partial lung reexpansion. CT chest showed trapped RLL, RML and RLL with residual pleural effusion. We plan for FOB, VATS chest washout decortication. FOB showed multiple bronchial diverticulum seen at RM, RUL, RLL bronchi, varying in size 3-10 mm. Thoracoscopy showed diffusely thickened visceral and parietal pleura, foul smell greenish fibrin mostly at basilar area. Upon removal of fibrin, Ruptured bronchial diverticulum was found along with infected material remained inside at RLL close to RLPV with large air leak upon right lung ventilation. Chest washout was performed. We decided to use hybrid VATS minithoracotomy in order to perform primary repair by using horizontal mattress of Prolene 4/0 with pledget reinforcement. Decortication was then performed. No air leak was found at sutured site. The patient did well postoperatively.

CONCLUSIONS

To the best of our knowledge, this is the first case of ruptured bronchial diverticulum. Combined with chronic empyema thoracis, it made the operation very challenging. We considered primary repair with suture and decortication was the best option at that moment.

Disclosure: No significant relationships.
Keywords: Bronchial Diverticulum, Empyema Thoracis, Ruptured Bronchial Diverticulum.



P-058

MULTIPLE SYSTEMIC-PULMONARY ARTERY MALINOSCULATIONS A CASE REPORT

Aran Gilead
RAMBAM Healthcare Campus, Haifa, Israel

OBJECTIVES

Malinosculations are a broad spectrum of congenital bronchopulmonary malformations in which abnormal communications of various pulmonary structures occur. This spectrum includes airways, pulmonary and systemic arteries, and veins. In this report, we describe a very rare and severe case of multiple systemic-pulmonary artery malinosculations.

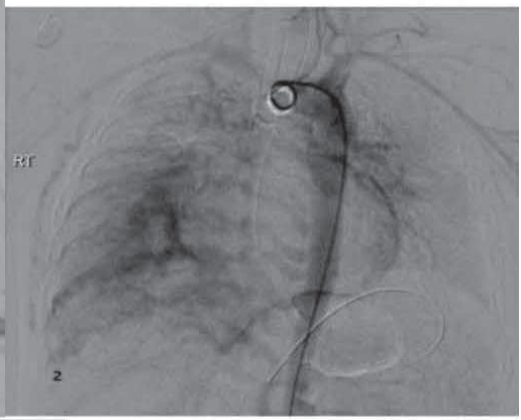
CASE DESCRIPTION

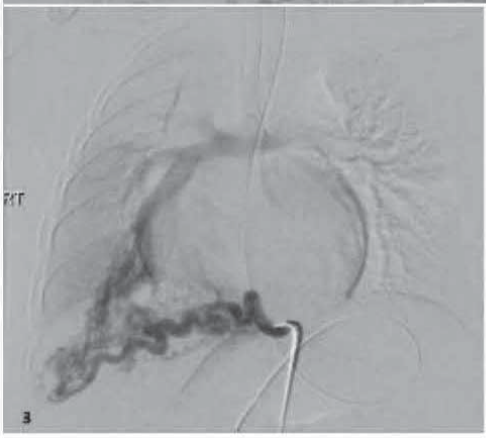
A 5-year-old female has experienced recurrent episodes of massive hemoptysis which started at the age of 6 months. Initial imaging studies demonstrated normal appearing intercostal arteries (figure 1) and a right upper lobe bleeding, originating from a pathologic bronchial artery. She was treated with embolization of a single bronchial artery, which achieved temporary remission. At 3 years old, she had another episode of massive hemoptysis. Repeat imaging studies were performed and documented the development of multiple intercostal to pulmonary arterial anastomoses (figure 2) mainly in the right lower lobe, with severe shunt and retrograde filling of the main pulmonary artery (figure 3). A multidisciplinary team was gathered and a step-wise plan was devised and executed. First, we performed embolizations of 8 abnormal intercostal arteries with coils, and 2 days after we performed a right lower lobectomy and ligated aberrant systemic arteries leading to the lungs. After completion of the treatment plan, the patient was followed for a year and has been free of significant hemoptysis

CONCLUSIONS

This is a very rare case of systemic- pulmonary malinosculation. We were able to document its progress during early childhood and successfully treat it. In such rare and challenging cases a multidisciplinary approach is needed and combining endovascular interventions and surgery should be considered.

Disclosure: No significant relationships.





1-Age 6 months, aortography- normal appearance of intercostal arteries
2- Age 3 years, aortography- notice new and pathologic intercostal arteries
3- Selective angiography of abberant artery, notice retrograde filling of pulmonary artery

P-059

PROGNOSTIC IMPACT OF C-REACTIVE PROTEIN-TO-ALBUMIN RATIO ON LUNG CANCER PATIENTS WITH COMORBID INTERSTITIAL PNEUMONIA

Hiromasa Yamamoto[1], Kei Matsubara[1], Kazuhiko Shien[1], Ken Suzawa[1], Mikio Okazaki[1], Riki Okita[2], Shinji Otani[3], Kazuhiko Kataoka[4], Tsuyoshi Ueno[5], Hidejiro Torigoe[6], Shinji Fujioka[7], Makio Hayama[8], Osamu Kawamata[9], Takahiko Misao[10], Hiroyuki Tao[11], Hideyuki Nishi[12], Masafumi Kataoka[13], Kota Araki[14], Motoki Matsuura[15], Eito Niman[16], Tomoaki Ohtsuka[17], Toshiharu Mitsuhashi[1], Takashi Tanaka[1], Shinichi Toyooka[1]

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[2]*NHO Yamaguchi-Ube Medical Center, Ube, Japan*
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[9]*Onomichi Municipal Hospital, Onomichi, Japan*
[10]*Kagawa Prefectural Central Hospital, Takamatsu, Japan*
[11]*Japanese Red Cross Himeji Hospital, Himeji, Japan*
[12]*Okayama Rosai Hospital, Okayama, Japan*
[13]*Okayama Saiseikai General Hospital, Okayama, Japan*
[14]*Chugoku Central Hospital, Fukuyama, Japan*
[15]*Hiroshima City Hiroshima Citizens Hospital, Hiroshima, Japan*
[16]*NHO Fukuyama Medical Center, Fukuyama, Japan*
[17]*Mitoyo General Hospital, Kanonji, Japan*

OBJECTIVES

Lung cancers with interstitial pneumonia (IP) are known to be a refractory disease. Systemic inflammatory response markers such as neutrophil-to-lymphocyte ratio (NLR) are related to be associated with outcomes in patients with various malignancies. The aim of this study is to investigate the relationship between systemic inflammatory response markers and the prognosis in lung cancer patients with IP.

METHODS

We investigated 196 treatment-naïve lung cancer patients with IP, who underwent surgical resection between 2012 and 2017 as a multicenter retrospective study consisting of 17 medical institutions. We reviewed clinicopathological characteristics including systemic inflammatory response markers and elucidated them to postoperative survival.

RESULTS

The overall 5-year survival after the lung resection was 39.7%. Preoperative systemic inflammatory response markers including NLR and C-reactive protein-to-albumin ratio (CAR)

were associated with overall survival of lung cancer patients with IP. Among them, preoperative CAR was an independent prognostic factor in multivariate analysis. We elucidated if CAR can be a determining factor for overall survival to decide the surgical procedures (wedge resection or lobectomy) before surgery for the cases of small-sized, invasive peripheral non-small cell lung cancer (NSCLC) with IP (≤ 3 cm diameter; consolidation-to-tumor ratio > 0.5; located in the outer one-third of the pulmonary parenchyma) with c-stage 0-I confirmed by thin-section CT. Although there is a trend that CAR can be a possible determining factor to select surgical procedures (lobectomy is favorable if CAR ≥ 0.044 whereas wedge resection is favorable if CAR < 0.044), we did not prove a significance.

CONCLUSIONS

Our results indicate that CAR is an independent prognostic factor for overall survival in treatment-naïve lung cancer patients with IP and might have the potential to decide the surgical procedures preoperatively for the cases of small-sized, invasive peripheral NSCLC with IP.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Interstitial Pneumonia, Acute Exacerbation, C-Reactive Protein-To-Albumin Ratio.

P-060

THYMIC MALT LYMPHOMA FROM A SINGLE THORACIC CENTER PERSPECTIVE

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Shanghai Chest Hospital, Shanghai, China

OBJECTIVES
Thymic MALT lymphoma is a rare type of lymphoma with indolent clinical course. Surgery with or without adjuvant therapy is the most reported treatment modality, yet its exact benefits being unclear. We investigated clinical features and prognosis of lymphoma patients who underwent surgical resection at our center.

METHODS
Thymic MALT lymphoma patients were selected from the surgical database at Shanghai Chest Hospital. Data of clinical, pathological, treatment and prognosis information were collected and analyzed.

RESULTS
From December 2008 to December 2020, a total number of 65 thymic MALT lymphoma patients underwent surgical resection at our center. Forty-four patients underwent thymectomy while 21 patients underwent tumor resection. Complete resection was achieved in all patients. Tumor invasion into mediastinal structures was shown in 8 patients (12.3%). Out of the 30 patients who underwent lymph node sampling, 12 patients showed regional lymph node involvement (40%). Adjuvant therapy including chemotherapy, radiation therapy, chemoradiation and rituximab monotherapy was administered in 10 patients (15.4%). The progression-free survival rate at 5 years was 96%, with one case of local recurrence and one case of disease progression of skin lesions. The use of adjuvant therapy displayed no evident benefits in terms of disease progression. The patient who experienced local recurrence did not receive total thymectomy or lymph node sampling.

CONCLUSIONS
For thymic MALT lymphoma patients, surgery offered pathological diagnosis and excellent local-regional control. Total thymectomy plus lymph node sampling should be routinely performed for more accurate staging and potential prognostic benefits. A less radical follow-up approach should be adopted after complete resection of thymic MALT lymphoma with no signs of disease dissemination to avoid overtreatment.

Disclosure: No significant relationships.
Keywords: Thymic MALT Lymphoma, Surgical Resection.

P-061

NO PNEUMONECTOMY PATIENT SURVIVES AFTER 16 YEARS WITH LUNG CANCER: A RETROSPECTIVE STUDY OF 20 YEARS

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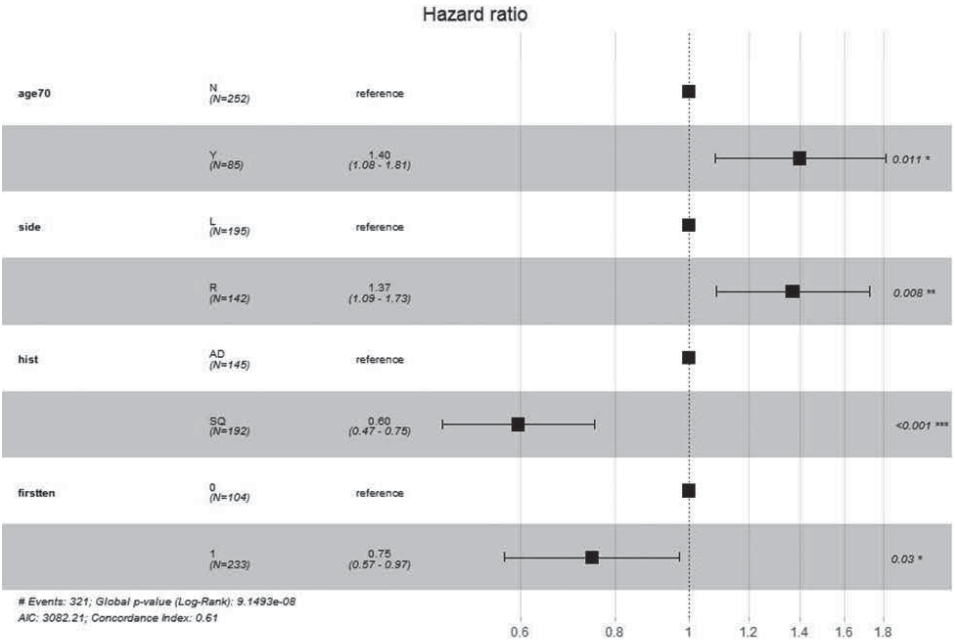
OBJECTIVES
The incidence of pneumonectomy for lung cancer in the UK is continuing to decline in the era of minimally-invasive thoracic surgery totalling approximately 3.5% of lung cancer resections annually. Literature is lacking for long-term survival of pneumonectomies. This study serves as an update to our previous results. Between 1998 and 2008, 233 patients underwent pneumonectomy compared to between 2009 and 2018 where 104 patients did.

METHODS
From January 1998 until December 2018, 337 patients underwent pneumonectomy. Data was retrospectively analysed for age, gender, laterality, histology and time period. The primary endpoint was mortality.

RESULTS
Operative mortality was 3.2% overall which was lower than the national average of 5.8% and Thoracoscore of 8%. In the last 5 years, there were no in-hospital, operative or 30-day mortality. 90-day mortality was 10%. Left-sided pneumonectomies had significantly better overall survival (2.68 vs. 2.03 years; $p = 0.0039$), squamous cell carcinoma (3.23 vs. 1.55 years; $p<0.0001$) as well as those aged less than 70 (2.48 vs. 1.92 years; $p=0.049$). There was no significant difference in survival between gender ($p=0.37$). Intervention from 1998 to 2008 had significantly greater survival compared to the latter ten years (2.53 vs 2.21 years; $p=0.032$). The Cox model shows that laterality, age, histology and time period remain significant with multivariate testing.

CONCLUSIONS
Our updated retrospective study has built on our previous results by reinforcing the operative success of pneumonectomies. The incidence of pneumonectomies is likely to decrease with the potential deployment of nation-wide lung cancer screening in the UK due to earlier detection. However, with an overall improvement in survival and managing risk factors, we have shown that the pneumonectomy still is a safe and effective strategy for aggressive disease.

Disclosure: No significant relationships.
Keywords: Pneumonectomy, Lung Cancer, Thoracic Surgery.


Hazard ratio
age70
N (N=252)
reference
Y (N=85)
1.40 (1.08 - 1.81)
0.011 *
side
L (N=195)
reference
R (N=142)
1.37 (1.09 - 1.73)
0.008 **
hist
AD (N=145)
reference
SQ (N=192)
0.60 (0.47 - 0.75)
<0.001 ***
firstten
0 (N=104)
reference
1 (N=233)
0.75 (0.57 - 0.97)
0.03 *
Events: 321; Global p-value (Log-Rank): 9.1493e-08
AIC: 3082.21; Concordance Index: 0.61
0.6
0.8
1
1.2
1.4
1.6
1.8

P-062

ESOPHAGEAL PERFORATION: THE MODERN EXPERIENCE FROM A HIGH-VOLUME CENTER

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OBJECTIVES
Current literature regarding esophageal perforation is restricted to centers with low yearly case volume and often includes patients managed more than 20 years ago. The purpose of this study is to provide a modern description of esophageal perforations from a high-volume center.

METHODS
This single institution, retrospective, cohort review was performed for patients treated for esophageal perforation from January 2014 to June 2022. We excluded cervical esophageal perforations not managed by thoracic surgery, perforations secondary to tracheoesophageal fistulas, calcified lymph nodes, malignancy, and radiation.

RESULTS
Eighty-eight patients treated for esophageal perforation met criteria. The mean yearly case volume was 11.7 cases per year. The most common etiology was Boerhaave's syndrome (58% [51/88]), followed by iatrogenic perforation (28% [25/88]). The most common location of perforation was the thoracic esophagus (75% [66/88]). 6% (5/88) of patients were managed non-operatively, 7% (6/88) were managed endoscopically, and 87% (77/88) were managed surgically. One patient failed initial non-operative management. Esophageal stents were placed in 38% (33/88) of patients, with 4 of those not requiring drainage or other procedure. 70% of patients (62/88) were managed with open techniques, while 17% (15/88) were managed with minimally invasive approaches. The mean anti-infective therapy duration was 18 days. Mean hospital length of stay, post-operative length of stay, and intensive care unit length of stay was 20.3, 20.5, and 6.9 days - respectively. Overall mortality during initial hospitalization was 6.8% (6/88). 24% of patients (21/88) were re-admitted to the hospital within 30 days of discharge.

CONCLUSIONS
Esophageal perforation represents a surgical emergency with high morbidity and mortality, yet lacks consensus clinical practice guidelines. In comparison to previous reports, our experience represents a higher case volume using modern practice patterns. Ideal prospective studies should aim to optimize treatment strategies in centers with high case volume.

Disclosure: No significant relationships.
Keywords: Esophageal Perforation, High-Volume, Modern.

P-063

DEEP LEARNING-BASED SOLID COMPONENT MEASURING ENABLED INTERPRETABLE PREDICTION OF TUMOR INVASIVENESS FOR LUNG ADENOCARCINOMA

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[2]*Dianei Technology, Shanghai, China*
[3]*Taizhou Hospital of Zhejiang Province affiliated to Wenzhou Medical University, Taizhou, China*
[4]*Department of Medical Statistics, School of Public Health, Sun Yat-sen University, Guangzhou, China*
[5]*Department of Clinical Oncology, Queen Elizabeth Hospital, Kowloon, Hongkong, Hong Kong SAR*
[6]*Northern General Hospital, Herries Rd, Sheffield, S5 7AU., Sheffield, United Kingdom*

OBJECTIVES
The nature of the solid component of subsolid nodules (SSNs) can indicate tumor pathological invasiveness. However, preoperative solid component assessment is still influenced by several factors and lack a reference standard. The performance of an artificial intelligence (AI) solid component measuring algorithm was assessed for preoperative invasiveness prediction in SSNs.

METHODS
In this retrospective study, an AI algorithm was proposed for measuring the solid components ratio in SSNs, which was used to assess the diameter ratio (1D), area ratio (2D), and volume ratio (3D). The radiologist measured each SSN's consolidation to tumor ratio (CTR) twice, four weeks apart. The area under the receiver-operating characteristic (ROC) curve (AUC) was calculated for each method used to discriminate an Invasive Adenocarcinoma (IA) from a non-IA and evaluate its pathological invasiveness. The AUC and the time cost of each measurement were compared. The consistency of the two measurements taken by the radiologist was also evaluated.

RESULTS
A total of 278 patients (mean age ± standard deviation, 52 years ± 12; 194 women) were included. Compared to the manual approach (AUC: 0.697), the AI algorithm (AUC: 0.811) had better predictive performance (P = .0027) in measuring solid components ratio in 3D. Algorithm measurement in 3D had an AUC no inferior to 1D (AUC: 0.806) and 2D (AUC: 0.796). The two measurements of the CTR, taken 4 weeks apart, have 7.9% of the cases in poor consistency. The measurement time cost by the radiologist is about 60 times that of the AI algorithm (P < .001).

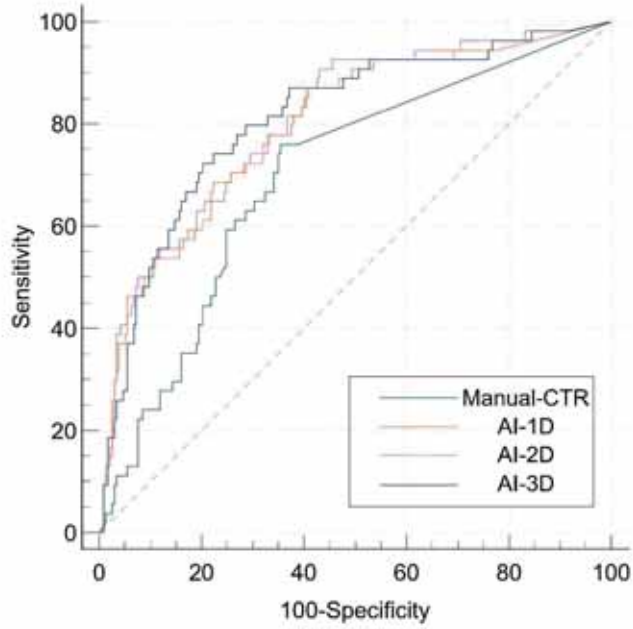
CONCLUSIONS

The 3D measurement of solid components using AI, is an effective and objective approach to predict the pathological invasiveness of SSNs. It can be a preoperative interpretable indicator of pathological invasiveness in patients with lung adenocarcinoma.

Disclosure: No significant relationships.
Keywords: Artificial Intelligence, Deep Learning, Subsolid Nodules, Computed Tomography, Lung Adenocarcinoma.

Methods	AUC		95%CI	Youden index	Sensitivity	Specificity
	1D	0.806	0.756 - 0.850	0.477	90.74	56.96
AI	2D	0.796	0.745 - 0.841	0.462	68.52	77.64
	3D	0.811	0.761 - 0.854	0.520	72.22	79.75
Manual	CTR	0.697	0.641 - 0.749	0.405	75.93	64.56
DenseSharp		0.849	0.802 - 0.888	0.567	68.52	88.19

3D 0.8110.761 - 0.8540.520 72.22 79.75
Manual CTR0.6970.641 - 0.7490.405 75.93 64.56
DenseSharp 0.8490.802 - 0.8880.567 68.52 88.19



P-064

IMPACT OF PRETREATMENT TISSUE BIOPSY ON PLEURAL METASTASIS IN LUNG CANCER

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OBJECTIVES

The basis for therapy planning of patients with NSCLC is histopathological confirmation of the lung tumor. CT-guided needle biopsy (CTGNB) has been established in recent years as an efficient alternative to endobronchial biopsy, especially for peripheral tumors. Due to the transthoracic access pathway, however, there is a possible risk of tumor cell spread along the biopsy channel with theoretical intrathoracic seeding i.e. with the formation of pleural recurrence. The aim of this single-center retrospective analysis was to investigate the incidence of pleural recurrence in lung cancer patients after CTGNB as compared to patients who were exclusively biopsied bronchoscopically.

METHODS

Hospital records were analyzed to identify patients with a primary diagnosis of lung cancer between 2010 and 2020 and pretreatment tissue biopsy. Patient's medical histories, radiological and pathological results and surgery records were reviewed with focus on postinterventional ipsilateral pleural recurrence (IPR). Pleural recurrence was diagnosed by pleural biopsy, fluid cytology, or progressive pleural nodules on chest CT imaging.

RESULTS

3400 consecutive patients met selection criteria. 2127 patients were diagnosed by bronchoscopic biopsy and 1273 by CTGNB. Median follow-up was 21 months in the bronchoscopy and the CTGNB group as well. 233 cases of IPR were recorded. In stage II lung cancer, there was a significantly higher incidence of IPR in the CTGNB group (p=0.0357, log-rank test; 2-year incidence 6,8% vs 3,4%). In stage I, a similar trend was observed. Subgroups were similar in age, sex, histology, T and N stage, but differed with more surgical treatment in the bronchoscopy group. For locally advanced and metastatic cancer, pretreatment biopsy did not significantly affect pleural recurrence.

CONCLUSIONS

CT-guided needle biopsy of mainly peripheral lesions might slightly increase the risk of pleural recurrence in stage I+II lung cancer after more than 2 years. In advanced disease, the modality of biopsy did not affect pleural recurrence.

Disclosure: No significant relationships.
Keywords: Lung Biopsy, Pleural Recurrence, CT, Bronchoscopy, Lung Cancer.

P-065

CORONAVIRUS (COVID)-19 INFECTION PRIOR TO LUNG RESECTION IS ASSOCIATED WITH POSTOPERATIVE COMPLICATIONS

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OBJECTIVES
It is unknown whether the respiratory damage caused by COVID-19 infection is permanent. We hypothesize that previous COVID-19 infection could be associated with post-operative complications. Thus, we aimed to investigate the relationship of a prior COVID-19 infection with post-surgical complications and outcomes of thoracic surgery for lung cancer.

METHODS
A retrospective study was performed on patients who underwent resections for lung cancer between January 1st, 2020 and July 1st, 2022. Perioperative hospital course, postoperative complications, and comorbidities were compared between patients with and without a history of COVID-19 infection prior to surgery.

RESULTS
A total of 795 patients underwent a thoracic procedure, 361 of which underwent a resection for lung cancer. Patients with a prior COVID-19 infection (n = 21) had significantly more postoperative complications than patients without a history of COVID-19 infection (n = 340, $p < 0.05$). These included ventricular arrhythmia requiring treatment (19%), infection requiring IV antibiotics (9.5%), pneumothorax (9.5%), pneumonia (4.8%), and hypoxia requiring reintubation (4.8%). Only 20% of patients who were diagnosed with COVID-19 <30 days prior to surgery had complications, versus 63% for patients infected >30 days prior to surgery. Further, patients with a prior COVID-19 infection had an increased length of hospital stay, with a mean of 6.29 (IQR, 3-6) versus 4.36 (IQR, 3-5, $p < 0.05$) days. COVID-19 infection was independently associated with increased post-operative complications after adjustment for age, BMI, gender, and stage (OR 2.59 [95% CI 1.05-6.37]).

CONCLUSIONS
Following a COVID-19 infection, patients undergoing lung cancer resections were at an increased risk of postoperative complications as well as longer hospital stays. This suggests that a previous COVID-19 infection should be considered as a potential risk factor for complications following lung cancer resections.

Disclosure: No significant relationships.
Keywords: COVID19, Lung Cancer, Resection, Post-Operative Complications.

	Univariate	Multivariate
n = 361	OR (95%CI)	OR (95% CI)
Prior COVID-19 Infection yes/no	2.60 (1.07-6.32)	2.56 (1.04-6.32)
Gender		
Male vs Female	0.69 (0.44-1.07)	0.64 (0.39-1.02)
Age (years)		
40-54	1.0 (ref)	1.0 (ref)
55-69	1.23 (0.47-3.09)	1.37 (0.52-3.62)
> 69	1.14 (0.45-2.88)	1.27 (0.49-3.28)
BMI (kg/m^2)		
< 40	1.0 (ref)	1.0 (ref)
40-50	0.76 (0.45-1.30)	0.69 (0.39-1.20)
> 50	1.08 (0.61-1.92)	0.93 (0.51-1.72)
AJCC Stage		
Stage I	1.0 (ref)	1.0 (ref)
Stage II	2.72 (0.81-9.12)	2.72 (0.79-9.34)
Stage III	0.76 (0.15-3.81)	0.71 (0.14-3.66)

P-066

CORRELATION BETWEEN OXIDATIVE STRESS AND POSTOPERATIVE COURSE IN PATIENTS UNDERGOING LUNG RESECTION FOR NON SMALL CELL LUNG CANCER

Davide Amore[1], Ylenia Pecoraro[1], Carolina Carillo[1], Camilla Poggi[1], Pasquale Pignatelli[2], Roberto Carnevale[2], Massimiliano Bassi[1], Emilia Mottola[1], Francesco Ferrante[1], Anastasia Centofanti[1], Rita Ferrerira Vaz Sousa[1], Valerio Sebastianelli[1], Antonio Pio Evangelista[1], Francesco Maria Mattoccia[1], Marco Anile[1], Jacopo Vannucci[1], Tiziano De Giacomo[1], Federico Venuta[1], Daniele Diso[1]

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[2]*Sapienza Università di Roma, Dipartimento di scienze cliniche internistiche, anestesiologiche e cardiovascolari, Rome, Italy*

OBJECTIVES

Lung resections are burdened by high incidence of postoperative complications and mortality. The aim of the study was to evaluate the extent of oxidative stress in patients undergoing pulmonary resection for lung cancer and whether this could affect the development of complications and 30-day mortality. N-acetylcysteine (NAC) was administered to a group of patients to evaluate if it induced a postsurgical inhibition of oxidative stress and an improvement of the postoperative course.

METHODS

Seventy-five patients underwent lung resection, 30 of whom received NAC; a peripheral venous blood sample was taken from all patients the day before surgery (T0), on the first postoperative day (T1) and on IV (T2) and all underwent fibrobronchoscopy for collecting a bronchoalveolar lavage (BAL) before (T0) and at the end of surgery (T1). Oxidative stress was evaluated NOX2 (NADPH oxidase 2) and IL-10 (Interleukin-10) and values were compared with Student's T test and Mann-Whitney's U test. The categorical variables were compared with a chi-square test to evaluate their possible prognostic correlation in terms of complications and mortality.

RESULTS

Twenty patients (26.6%) reported complications; one patient died of causes unrelated to surgical resection. There was a significant increase in serum NOX2 between T0 and T1 ($p = 0.039$) and between T0 and T2 ($p = 0.011$). In the group of patients who had complications, comparing them with those with a regular course, serum NOX2 at T1 was higher ($p = 0.028$). Patients receiving NAC had lower NOX2 and higher IL-10 values at T2 than control patients ($p = 0.001$ and 0.00, respectively).

CONCLUSIONS

Seems that after pulmonary resection there is an alteration of the inflammatory state due to the induction of oxidative stress and that, in various ways, it correlates with the postoperative course.

Disclosure: No significant relationships.

Keywords: Lung Cancer, Oxidative Stress, Postoperative Course, Lung Resections.

P-067

EVALUATION OF THE IMPACT OF A PNEUMATIC SURGICAL ROBOT WITH HAPTIC FEEDBACK FUNCTION

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OBJECTIVES
Robotic-assisted surgery has the advantages of low patient burden and precision without unsteady hand movements. However, the lack of tactile sensation may result in unexpected iatrogenic organ damage. The objective of this study was to investigate the impact of haptic force feedback function on surgical manipulation.

METHODS
The Saroa (Riverfield Inc., Tokyo, Japan) is a pneumatically driven robot that provides real-time haptic feedback to the surgeon. Using the Saroa robot, four examinees performed puffed rice transfer and pig lung resection tasks with the feedback function turned on and off. Puffed rice transfer task was to transfer 20 puffed rices from the left compartment to the right in the training box. Pig lung resection task consisted of the following procedures, which were (I) interlobar, (II) vascular, (III) bronchial dissection, and (IV) lymph node resection. The force applied to the forceps in each task and the time to task completion in the puffed rice transfer task was measured.

RESULTS
Puffed rice transfer task: The mean time to task completion was 129 sec and 150.5 sec (P = 0.28) with the haptic feedback function on and off, respectively; the mean grasping force of the surgeons was 0.59N and 1.89N (feedback on vs off, respectively) (P = 0.09). Pig lung resection task: Mean grasping force of the surgeon (feedback on vs. off) was (I) 1.58N vs. 2.98N (P = 0.01), (II) 1.42N vs. 2.86N (P = 0.004), (III) 1.86N vs 2.98N (P = 0.04), and (IV) 1.44N vs. 2.69N (P = 0.06).

CONCLUSIONS
The force applied to the forceps was weaker in both tasks when the haptic feedback function was turned on, suggesting that the feedback function allows the gentle handling of the tissues, which improves safety in robotic surgery.

Disclosure: Adviser for Riverfield Inc.
Keywords: Surgical Robot, Robotic-Assisted Surgery, Haptic Feedback Function.

Examinees	FB	Mean grasping force (N)	Variance	Integral force (N)	Time to task completion (s)
A	Off	1.35	0.76	4766	118
	On	0.42	0.07	1190	115
B	Off	2.83	0.70	19523	172
	On	1.00	0.55	6656	168
C	Off	0.65	0.32	2630	169
	On	0.28	0.02	761	120
D	Off	2.74	0.70	8662	143
	On	0.64	0.10	2137	113

FB Feedback; *s* second

P-068

NONINVASIVE DETECTION OF ANY-STAGE LUNG CANCER USING CIRCULATING MICROBIAL DEOXYRIBONUCLEIC ACID (DNA)

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[2]*Beijing Institute of Radiation Medicine, Beijing, China*

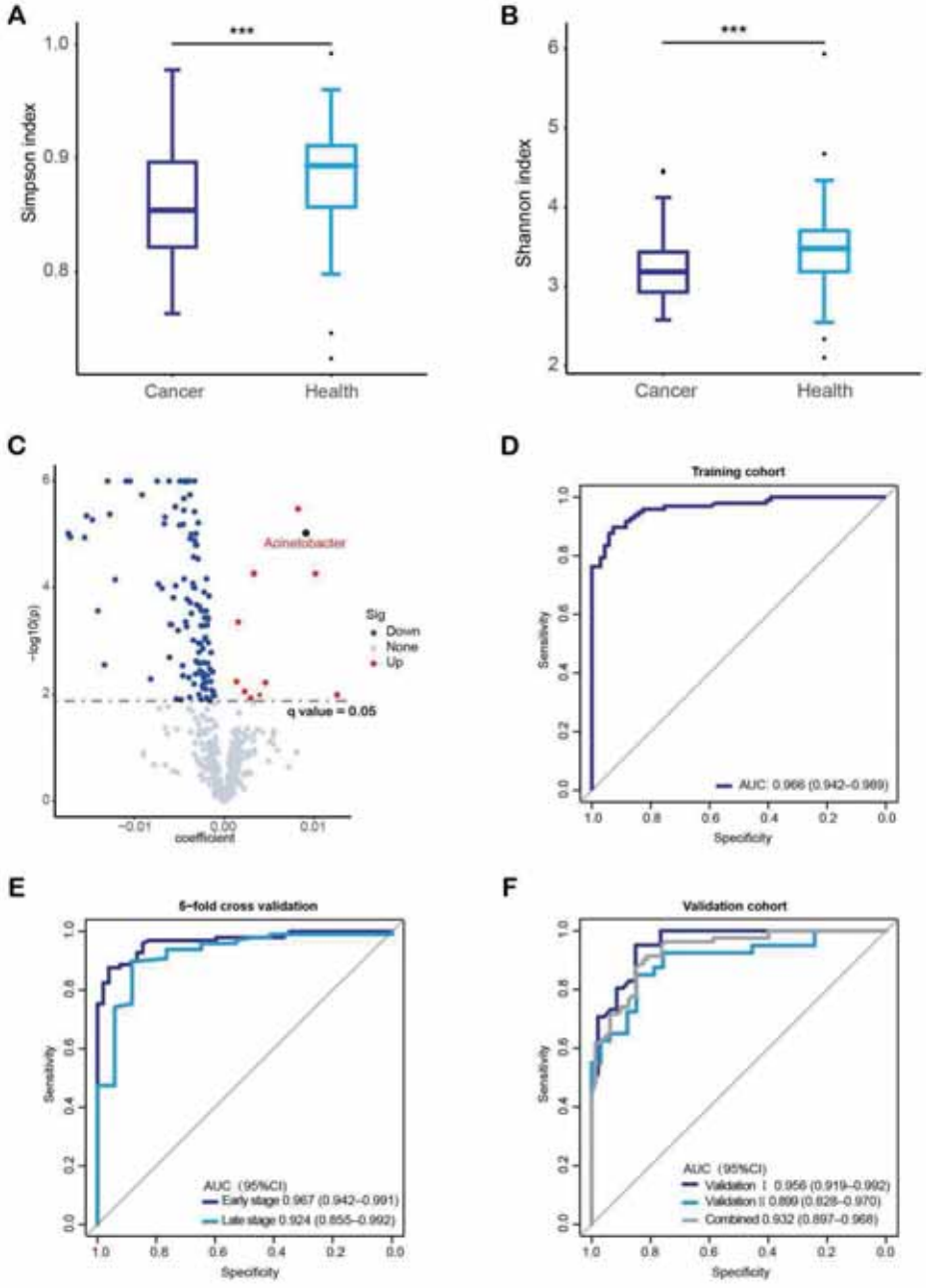
OBJECTIVES
Lung cancer mortality is exacerbated by late-stage diagnosis. Emerging evidence indicates the potential clinical significance of specific microbial signatures as diagnostic biomarkers, in multiple cancers. However, no studies have systematically interrogated circulating microbial profiles in lung cancer (LC) patients, particularly as a novel non-invasive, early detection assay.

METHODS
This study included 150 cancer and 197 non-cancer participants. The participants' plasma specimens were profiled by whole-genome sequencing, with sequencing reads classified using Kraken2 and Bracken. Followed by the MaAsLin2 method to identify microbial features between LC patients and healthy controls (HC). The machine learning model was built in the training cohort and evaluated in two independent validation cohorts.

RESULTS
A significant decrease of alpha diversity was identified in serum specimens from LC patients compared to HC. We observed a shift in microbial taxa between each group—at the phylum, genus, and species level, with Pseudomonas azotoformans as the most prominent species in the LC group. Interestingly, MaAsLin2 analysis identified 148 significant microbial features between LC patients and HC. Among these features, the abundance of Acinetobacter, a known microbe enriched in LC, was significantly higher in LC than that in HC. Next, we developed the machine learning model based on significant features in the training cohort (cancer: 69, healthy: 97), which is highly effective to identifying early LC of stage I [Area Under the Curve (AUC): 0.942-0.991]. This model yielded superior sensitivity of 83.3% at 95.1% specificity for Cohort Validation I (AUC: 0.956), and sensitivity of 75.8% at 87.5% specificity for Validation II (AUC: 0.899), respectively. The model's high performance remained consistent when sequencing depth was down to 0.5× in an additional cohort (AUC: 0.998).

CONCLUSIONS
This study describes unique circulating microbial profiles in LC patients, that are further utilized to establish a novel diagnostic approach for LC.

Disclosure: No significant relationships.
Keywords: Lung Cancer; Early Detection; Circulating Microbial DNA; Machine Learning.


A
Simpson index
***
Cancer
Health
B
Shannon index
***
Cancer
Health
C
Acinetobacter
Sig
Down
None
Up
q value = 0.05
-log10(p)
coefficient
D
Training cohort
Sensitivity
Specificity
AUC 0.966 (0.942–0.989)
E
5-fold cross validation
Sensitivity
Specificity
AUC (95%CI)
Early stage 0.967 (0.942–0.991)
Late stage 0.924 (0.855–0.992)
F
Validation cohort
Sensitivity
Specificity
AUC (95%CI)
Validation I 0.956 (0.919–0.992)
Validation II 0.899 (0.828–0.970)
Combined 0.932 (0.897–0.968)

P-069

NONINVASIVE DETECTION OF ESOPHAGEAL SQUAMOUS CELL CARCINOMA WITH LYMPH NODE METASTASIS USING SERUM METABOLOMIC SIGNATURES

Haiming Chen[1], Yiming Lu[2], Mantang Qiu[1]
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[2]*Beijing Institute of Radiation Medicine, Beijing, China*

OBJECTIVES
Lymph node metastasis has been proven to be the important prognostic factor for esophageal squamous cell carcinoma (ESCC). Recently metabolic reprogramming was also observed in lymph node metastasis (LN+) of ESCC. This study aims to systemically profile metabolic alterations in LN+ ESCC, and discover potential metabolite biomarkers to discriminate LN+ ESCC from ESCC without lymph node metastasis (LN- ESCC).

METHODS
Untargeted metabolomics was detected in an exploratory set of 38 participants, 21 tissue samples and 17 serum samples, respectively. Besides, serum samples of 130 participants, 43 LN+ ESCC and 87 LN- ESCC were analyzed by targeted metabolomics.

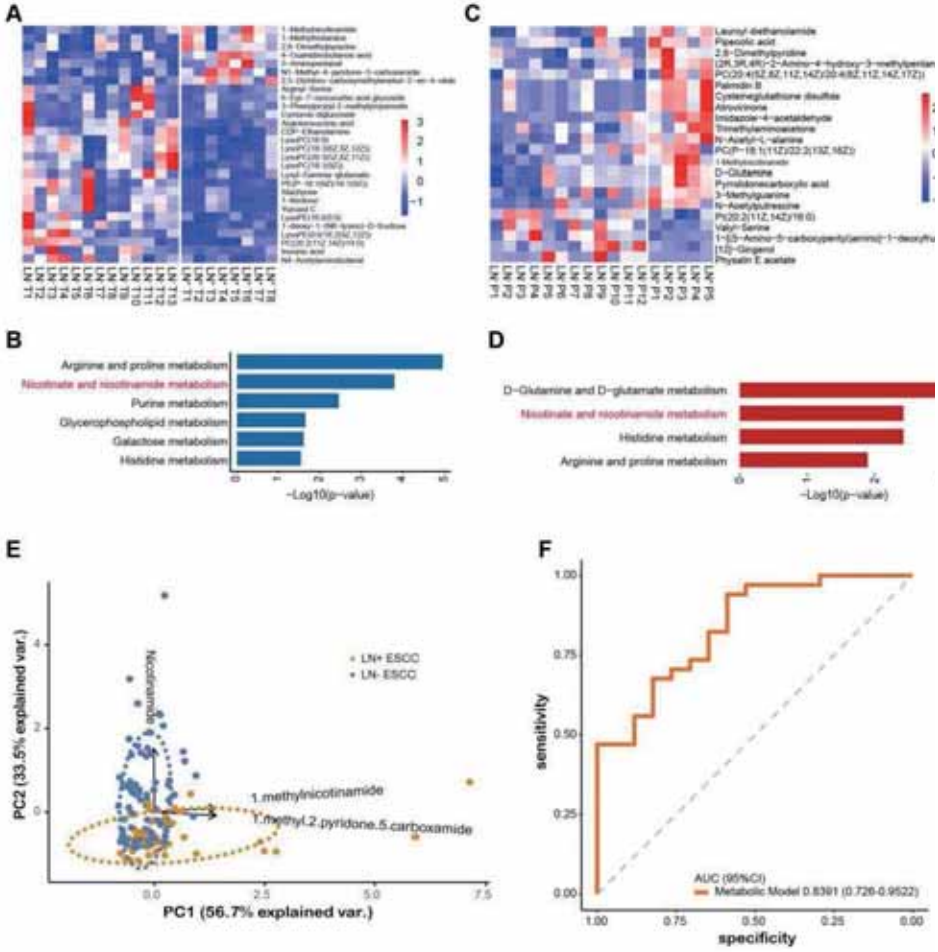
RESULTS
For untargeted metabolomics, there were pervasive metabolite differences in the metabolic profile of tissue samples (8 LN+ ESCC and 13 LN- ESCC) and serum samples (5 LN+ ESCC and 12 LN- ESCC). A striking enrichment in 1-methylnicotinamide (MNA) was detected in LN+ ESCC compared to LN- ESCC. Additionally, pathway analysis revealed that nicotinate and nicotinamide metabolism was highly upregulated in LN+ ESCC at both tumor and serum levels. Next, the metabolites in nicotinate and nicotinamide metabolism, including nicotinamide, MNA, and 1-methyl-2-pyridone-5-carboxamide (2-PYR), were analyzed by targeted metabolomics. The abundances of MNA and 2-PYR in LN+ ESCC were higher than that in LN- ESCC, whereas the abundance of nicotinamide was increased in LN- ESCC. Besides, based on the 3 metabolites, multivariate PCA analysis revealed that LN+ ESCC could be distinguished from LN- ESCC. Motivated by these observations, we constructed machine-learning classifiers with the 3 metabolites-based biomarkers, which showed an AUROC = 0.839 (95%CI: 0.726-0.952) in the test set (17 LN+ ESCC patients and 34 LN- ESCC patients).

CONCLUSIONS
Our study identifies the dysregulated metabolites of nicotinate and nicotinamide metabolism in LN+ ESCC and constructs a detection method to stage ESCC patients. These results suggest promising application of this approach in prognostic prediction and tailored therapeutics.

Disclosure: No significant relationships.

Keywords: Esophageal Squamous Cell Carcinoma, Lymph Node Metastasis, Metabolomics, Serum Biomarkers.

	Training set		**Test set**	
	LN^+ (n=26)	LN^- (n=53)	LN^+ (n=17)	LN^- (n=34)
Gender				
Male	15	34	14	23
Female	11	19	3	11
Age	63.7±8.3	63.5±9.0	63.2±10.8	63.3±8.4
Smoking Status				
Ever-smokers	6	16	3	11
Never-smokers	20	37	14	23
Alcohol intake history				
Yes	6	11	3	11
No	20	42	14	23
T Stage				
T3	17	14	13	11
T2	6	13	1	11
T1	3	21	3	9
Tis	0	5	0	3


A
C
B
Arginine and proline metabolism
Nicotinate and nicotinamide metabolism
Purine metabolism
Glycerophospholipid metabolism
Galactose metabolism
Histidine metabolism
−Log10(p−value)
D
D−Glutamine and D−glutamate metabolism
Nicotinate and nicotinamide metabolism
Histidine metabolism
Arginine and proline metabolism
−Log10(p−value)
E
PC2 (33.5% explained var.)
PC1 (56.7% explained var.)
Nicotinamide
1.methylnicotinamide
1-methyl-2-pyridone-5-carboxamide
LN+ ESCC
LN- ESCC
F
sensitivity
specificity
AUC (95%CI)
Metabolic Model 0.8391 (0.726-0.9522)

P-070

PROGNOSTIC FACTORS IN LUNG METASTASECTOMY OF DISSEMINATED SARCOMA DISEASE: DREAM, UTOPIA OR REALISM?

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[2]*Department of Surgery. Autònoma Univertity of Barcelona, Barcelona, Spain*

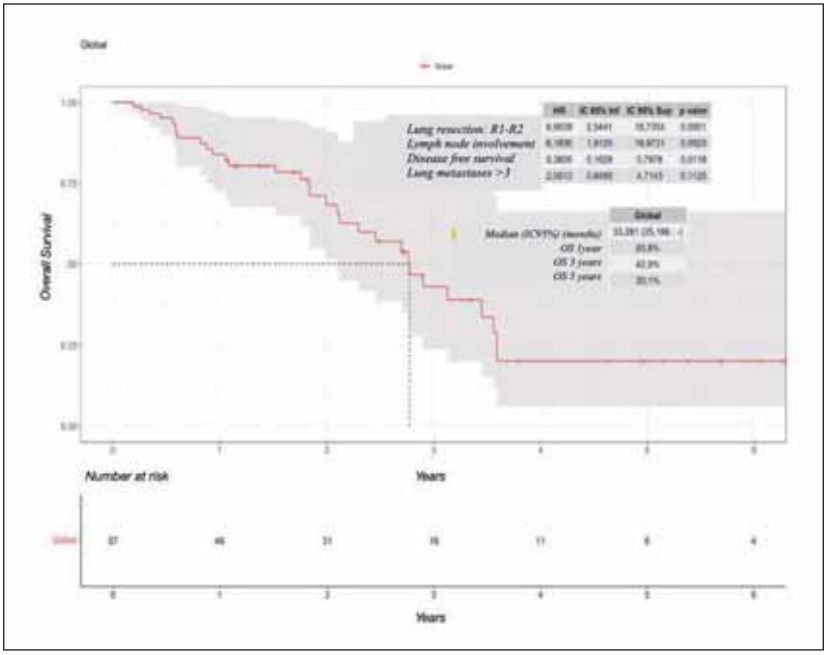
OBJECTIVES
Patients with a primary tumor of sarcomatous origin may present distant metastases in up to 50% of cases, being the lung the main target organ. The selection of the subset of patients who underwent surgical resection is crucial. There are well-established criteria for pulmonary metastasectomy, but multiple factors will influence the patient's outcome and, also, these factors will play as prognostic factors for recurrence and survival.
The main objective of this study is to identify which prognostic factors are associated with better survival after pulmonary metastasectomy.

METHODS
The design of the study was observational, descriptive, and prospective of patients affected by lung metastases from sarcoma and who underwent pulmonary metastasectomy from June 2014 to January 2021. We analyzed different subgroups according to the histological subtype of sarcoma, surgical approach, type of lung resection, disease synchronicity, lymph node involvement, and disease free time.

RESULTS
57 patients were included, 34 men and 23 women with a mean age of 52.8 +/- 14 years. A total of 80 pulmonary metastasectomy were performed. In the multivariate analysis, we identified prognostic factors that improve overall survival (OS): performing a complete resection (R0), disease-free time longer than one year, the number of metastases resected less than 3, and the non-existence of lymph node involvement. The median overall survival was 33.2 months (95% CI 25.1 ; -). Overall survival one year after surgery was 84%, 43% at 3 years, and 20% at 5 years, respectively.

CONCLUSIONS
In our series, we have identified several prognostic factors that influence the OS of patients with lung metastases from sarcoma: performing a complete resection, disease-free time longer than twelve months before lung resection, the number of metastases resected less than 3 and the non-existence of lymph node involvement.

Disclosure: No significant relationships.
Keywords: Lung Metastasectomy, Sarcoma, Prognostic Factors.


Global
Lung resection: R1-R2
Lymph node involvement
Disease free survival
Lung metastases >3
Global
Median (IC95%) (months)
OS 1 year
OS 3 years
OS 5 years
Overall Survival
Number at risk
Years
Years

P-071

INTERIM ANALYSIS OF AN ONGOING STUDY EVALUATING PREVENTIVE AORTIC STENT GRAFT IMPLANTATION PRIOR TO MAJOR THORACIC TUMOR RESECTION AND A REVIEW OF THE LITERATURE

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OBJECTIVES
There is limited data in the literature on the use of thoracic aortic stent graft implantation (TEVAR) to facilitate en-bloc resection of tumors that have invaded the aortic wall. After TEVAR, extended resections can be performed, avoiding aortic wall replacement or catastrophic situations such as life-threatening bleeding from aortic injury.
The aim of this interim analysis was to demonstrate the feasibility of TEVAR without increased risk of perioperative morbidity and mortality.

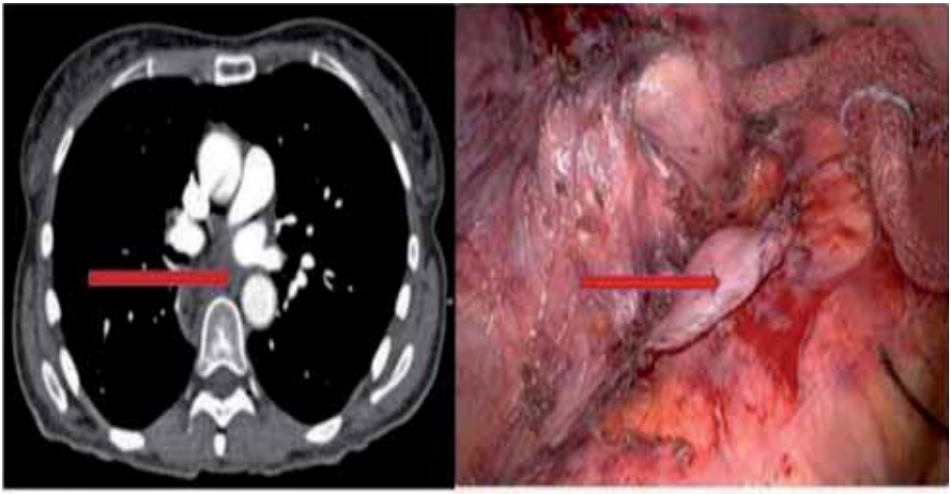
METHODS
A retro- and prospective data analysis was performed including all consecutive patients with suspicious aortic wall infiltration on preoperative imaging, who received a TEVAR implantation prior to resection of thoracic malignancy between 1/2008 and 12/2022. In addition, a literature review was conducted (Table).

RESULTS
Thirteen patients (median age 67 years, range 23-75, 62% female) have been treated at our institution so far. Nine patients received neoadjuvant therapy. In all patients it was possible to implant the stent graft with sufficient overlap at the level of the tumor mass. In 69% the proximal landing zone was located in aortic zone 3 to 4. No postoperative endograft related morbidity, especially no spinal cord ischemia, no stroke, no postoperative bleeding or access site complications, as well as no dissection or aortic rupture was observed.
In nine patients, aortic wall infiltration was confirmed intraoperatively, and a partial non-circumferential resection of the aortic wall was necessary (graph).
The 30-day mortality rate was 15% (one case) due to respiratory failure and ARDS as well as postoperative empyema. Eight patients died during a median follow up of 11 months (0.7-94).

CONCLUSIONS
In this, to the best of our knowledge, largest analysis to date, the results of previous smaller series were confirmed. Aortic stent grafting prior to thoracic tumor resection allows extensive resections while maintaining low morbidity and a low 30-day mortality risk.

Disclosure: No significant relationships.
Keywords: Aorta - Stent Graft - Major Surgery- Tumor Resection.

Study	Total patients	Age (mean)	Days between stenting and surgery	Endograft related complication (0=No 1=yes	30-Day mortality 0= No 1= yes	Mean FU (months)
Collaud et al.	5	52 (median)	1 - 27	0	NA	39
Walgram et al.	3	58	0-28	0	NA	24
Sato et al.	6	66	NA	1	NA	17.6 (median)
Marulli et al.	9	61	NA	0	NA	NA
Tommaso et al.	5	58	NA	0	NA	21
Danial et al.	9	62	7 (1-18)	0	0	25 (median)



Left: Preoperative CT scan with the mass in the posterior mediastinum and suspected aortic wall infiltration
Right: Intraoperative view of partial resected tumor from the aortic wall

P-072

LONGTERM-OUTCOME OF MESOTHELIOMA PATIENTS TREATED WITH INTRACAVITARY CISPLATIN-FIBRIN THERAPY AFTER SURGERY - RESULTS OF A PHASE I/II CLINICAL TRIAL

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OBJECTIVES
Pleural mesothelioma has a high risk of recurrence. Promising preclinical results of intracavitary cisplatin-fibrin after (extended) pleurectomy/decortication were followed by phase I and II clinical trials. Long-term outcomes from these patients were compared to historical controls who also underwent multimodal therapy.

METHODS
Patient data were collected between 2008 and 2021, in a prospective observational cohort study. Kaplan-Meier curves were compared between the treatment (n=25) and historical control group (n=65) for overall survival and in-treatment-recurrence-free survival. Time-varying hazard ratios were estimated from a Cox model including the covariates gender, Charlson Comorbidity Index (CCI), tumor stage and histology. Odds ratios were estimated for the outcomes post-OP major morbidities, reoperation, severe side effects, Clavien Dindo ≥ 3 and between-group differences were estimated for duration of hospitalization.

RESULTS
Baseline characteristics were comparable between the two groups. Kaplan-Meier curves for overall survival seemed to suggest that patients benefit from the new treatment in the beginning until 17 months, but after that, the survival probability was smaller in the treatment group. The overall average estimated hazard ratio for in-treatment-field recurrence or death of treatment vs. control was 0.81 (95% CI 0.48 to 1.38). Adjusted odds ratios of treatment vs. control were 1.38 (95% CI 0.53 to 3.63) for post-operative major morbidities, 1.14 (0.38 to 3.21) for reoperation and 0.19 (0.01 to 1.09) for severe side effects (table).

CONCLUSIONS
In this observational comparison, final conclusions can not be drawn for any of the outcomes that intracavitary therapy is better than standard of care, due to the small sample size. Intracavitary therapy is wanting to have a protective effect against in-treatment-field recurrence with no increase in severe side effects. Larger trials would be needed to confirm the flipping of the Kaplan-Meier curves for overall survival.

Disclosure: No significant relationships.
Keywords: Phase I/II, Intracavitary Therapy, Pleural Mesothelioma, Clinical Trial.

Variable	Overall	Standard of care	Cisplatin/ Fibrin	SMD
n	90	65	25	
Side effects (%)				0.233
No	14 (15.6)	9 (13.8)	5 (20.0)	
yes	74 (82.2)	55 (84.6)	19 (76.0)	
Missing	2 (2.2)	1 (1.5)	1 (4.0)	
Severe side effects (%)				0.437
no	74 (82.2)	51 (78.5)	23 (92.0)	
yes	12 (13.3)	11 (16.9)	1 (4.0)	
Missing	4 (4.4)	3 (4.6)	1 (4.0)	
Post-OP morbidities = yes (%)	86 (95.6)	61 (93.8)	25 (100.0)	0.362
Post-OP major morbidities (%)				0.395
no	46 (51.1)	34 (52.3)	12 (48.0)	
yes	40 (44.4)	27 (41.5)	13 (52.0)	
Missing	4 (4.4)	4 (6.2)	0 (0.0)	
Clavien Dindo Max (%)				0.874
none	10 (11.1)	10 (15.4)	0 (0.0)	
I	29 (32.2)	18 (27.7)	11 (44.0)	
II	21 (23.3)	18 (27.7)	3 (12.0)	
IIIa	8 (8.9)	4 (6.2)	4 (16.0)	
IIIb	18 (20.0)	12 (18.5)	6 (24.0)	
IVa	3 (3.3)	2 (3.1)	1 (4.0)	
V	1 (1.1)	1 (1.5)	0 (0.0)	
ClavienDindo≥ 3 (%)	30 (33.3)	19 (29.2)	11 (44.0)	0.310
Reoperation (%)				0.364
no	63 (70.0)	45 (69.2)	18 (72.0)	
yes	23 (25.6)	16 (24.6)	7 (28.0)	
Missing	4 (4.4)	4 (6.2)	0 (0.0)	
30-day mortality = yes (%)	0 (0.0)	0 (0.0)	0 (0.0)	<0.001
90-day mortality = yes Missing (%)	1 (1.1)	1 (1.5)	0 (0.0)	0.177
LOS (median [IQR])	16.5 [13.0, 24.8]	15.0 [12.0, 25.0]	20.0 [15.0, 22.0]	0.328

P-073

CLINICAL IMPACTS OF EGFR MUTATION ON THE OUTCOMES OF NON-SMALL-CELL NON-SQUAMOUS LUNG CANCER PATIENTS RECEIVING CISPLATIN-BASED ADJUVANT CHEMOTHERAPY

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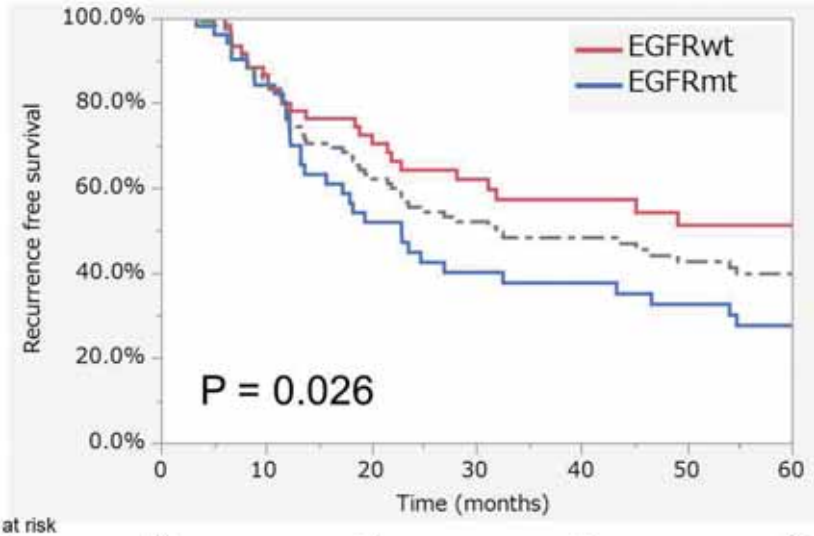
OBJECTIVES
To elucidate the efficacy of postoperative cisplatin-based chemotherapy for non-small-cell non-squamous carcinoma harboring epidermal growth factor receptor (EGFR) mutation.

METHODS
We retrospectively reviewed the non-small-cell non-squamous lung cancer patients who underwent complete surgical resection from 2010 to 2021 followed by cisplatin-based adjuvant chemotherapy in our institution. We classified them into the EGFR wild type (EGFRwt) group and the EGFR mutation (EGFRmt) group. The primary endpoint was 5-year recurrence free survival and the secondary outcome was 5-year overall survival. The Cox proportional hazard analysis was performed using pT, pN, micropapillary subtype, lymphatic (ly) and vascular (v) invasion factor, EGFR mutation and cycles of adjuvant chemotherapy as recurrence predictive factors.

RESULTS
A total of 111 patients were included (EGFRwt: 60 cases, EGFRmt: 51 cases) and pathological stage distribution was not significantly different between the two groups; however, pN tended to be higher in the EGFRmt group than the EGFRwt group. Five-year recurrence free survival was significantly better in the EGFRwt group (51.2 % vs. 27.6 %, $p = 0.026$). On the other hand, there was no significant difference in 5-year overall survival (82.5 % vs. 72.2 %, $p = 0.629$). The multivariable analysis demonstrated that EGFR mutation, pT, pN, and ly were significant predictive factors in recurrence free survival.

CONCLUSIONS
Conventional cisplatin-based adjuvant chemotherapy might be less effective for EGFR mutated lung cancer patients undergoing complete resection. The results suggests that postoperative osimertinib therapy is a reasonable option for preventing recurrence.

Disclosure: No significant relationships.
Keywords: Lung Cancer, EGFR Mutation, Adjuvant Chemotherapy, Recurrence Free Survival.



Patient at risk				
EGFRwt	60	36	21	15
EGFRmt	51	23	15	10

P-074

IS THERE SIGNIFICANCE IN PRIMARY TUMOR RESECTION FOR NON-SMALL CELL LUNG CANCER WITH UNEXPECTEDLY DETECTED PLEURAL DISSEMINATED NODULES IN THE ERA OF TARGETED THERAPY?

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OBJECTIVES
Non-small cell lung cancer (NSCLC) patients with pleural dissemination are generally contraindicated for surgery. However, several studies have demonstrated the survival benefit of primary tumor resection for the patients with unexpectedly detected pleural dissemination at thoracotomy. We investigated the survival benefit of primary tumor resection for NSCLC patients with unexpectedly detected pleural disseminated nodule in the era of targeted therapy.

METHODS
Of the 3668 patients with NSCLC who underwent surgery without induction therapy between 2000 and 2019, we retrospectively evaluated 85 (2.3%) patients with unexpectedly detected pleural disseminated nodule. Survival analyses was performed with Kaplan-Meier methods and Cox proportional hazards regression.

RESULTS
Fifty-four were male and the median age was 66. Seventy-two were diagnosed as adenocarcinoma. Exploratory thoracotomy was performed in 21 and primary tumor resection was performed in 64 patients, including pneumonectomy in 3, lobectomy in 39, and sublobar resection in 22. Epidermal growth factor receptor gene mutation and anaplastic lymphoma kinase rearrangement were detected in 32 and 3 cases, respectively. Among them, 30 patients received targeted therapy. The overall survival (OS) was no significant difference between primary tumor resection and exploratory thoracotomy (5year OS: 29.5% vs 26.8%, $p = 0.83$). Multivariable analysis revealed that sex ($p = 0.03$) and targeted therapy ($p < 0.01$) were independent prognostic factors for OS. Primary tumor resection did not improve OS both in patients who received targeted therapy and the who did not.

CONCLUSIONS
Primary tumor resection did not improve the prognosis for NSCLC with unexpectedly detected pleural disseminated nodules in the era of targeted therapy.

Disclosure: No significant relationships.
Keywords: Pleural Dissemination, Primary Tumor Resection, Targeted Therapy.

P-075

CLINICAL SIGNIFICANCE OF 4L LYMPHADENECTOMY IN SOLID DOMINANT STAGE I NON-SMALL CELL LUNG CANCER IN THE LEFT UPPER LOBE

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OBJECTIVES
International guidelines have not addressed whether station 4L lymph node dissection (LND) should be performed routinely for non-small cell lung cancer (NSCLC), and the significance of 4LND for early- stage NSCLC is unknown.

METHODS
We evaluated 325 patients who underwent complete resection and mediastinal LND for radiologically solid dominant clinical (c)-Stage I left upper lobe NSCLC between 2008 and 2020. Solid dominant was defined as a consolidation tumor ratio >0.5, on thin-section computed tomography. After matching, postoperative complications and outcomes between the 4L LND and non-4L LND groups were compared. Predictors of 4L metastasis was also identified using logistic regression analysis.

RESULTS
4LND was performed in 207 patients (64%), and 4L metastasis was detected in 10 patients, including metastases with hilar or aortic-pulmonary zone metastases in 8 and skip metastasis in 2. Matching yielded 100 pairs. Recurrent nerve paralysis was more frequent in the 4LND group ($p = 0.024$) with no significant differences in the overall survival (OS) (5y OS: 86.4% vs. 88.4%, $p = 0.961$) and recurrence-free survival (RFS) (5y RFS: 77.5% vs. 80.7%, $p = 0.984$) between the 4L LND and non-4L LND groups. Logistic regression analysis determined solid component size >20 mm ($p = 0.035$) and computed tomography findings of pleural indentation ($p = 0.039$) as clinical risk factors for 4L metastasis. For the diagnosis of 4L metastasis, the specificity and sensitivity for solid component size ≤ 20mm without pleural indentation were 100% (0/10) and 40.6% (80/197), respectively.

CONCLUSIONS
4LND had a higher frequency of recurrent nerve palsy, although no survival improvement was observed in solid dominant c-Stage I left upper NSCLC. 4LND may be omitted for solid component size ≤ 20mm without pleural indentation.

Disclosure: No significant relationships.
Keywords: 4L Lymphadenectomy, Solid Dominant, Clinical Stage I, Non-Small Cell Lung Cancer.

P-076

SALVAGE SURGERY AFTER IMMUNOTHERAPY FOR UNRESECTABLE MALIGNANT PLEURAL MESOTHELIOMA

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OBJECTIVES

The results of the Checkmate-743 trial showed the benefit of nivolumab/Ipilimumab in chemotherapy-naive unresectable advanced or recurrent malignant pleural mesothelioma, and the drug has been approved in Japan from 2021.

CASE DESCRIPTION

The patient is a 73-year-old male with a history of occupational exposure to asbestos. He was diagnosed with a right pleural effusion, and was referred to our department for close examination and treatment. Chest CT showed multiple nodules and diffuse pleural thickening of the right pleura, mainly on the mediastinal side, and a tumor extending around the inferior vena cava at the base of the lung. We diagnosed epithelial malignant pleural mesothelioma by biopsy, but the tumor was considered unresectable based on imaging findings, and the patient was treated with nivolumab/ipilimumab. After 3 courses of treatment, the tumor that was seen before the treatment was almost completely gone on imaging evaluation. During treatment, the patient developed type I diabetes mellitus due to irAE, but Salvage surgery was performed under strict glycemic control. The pathological specimens showed no residual tumor cells(Ef3, pathological complete response[pCR]).

CONCLUSIONS

With the advent of Nivolumab/Ipilimumab for malignant pleural mesothelioma, Salvage surgery is expected to be considered more often for T4 and non-epithelial type patients who were previously not candidates for surgery. We report our experience with Salvage surgery after introduction of Nivolumab/Ipilimumab in our department.

Disclosure: No significant relationships.
Keywords: Malignant Pleural Mesothelioma, Nivolumab/Ipilimumab, Pleurectomy/Pneumonectomy.

P-077

THE IMPACT OF MULTIDISCIPLINARY MANAGEMENT ON LUNG TRANSPLANT: ONE INSTITUTION'S EXPERIENCE

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OBJECTIVES
Two different models of lung transplant (LT) management are present worldwide: surgeon focused versus multidisciplinary collaboration between the surgical and medical team. Within our program, there was a switch from the former to the latter management style. We report our institution's outcomes under both models.

METHODS
At our institution, LT management style transitioned on 9/1/2020. All patients who underwent LT from 2/1/2018 to 10/31/2022, excluding heart-lung recipients, were evaluated. Patients were divided into Era 1: 2/1/2018-8/31/2020, which is the surgeon focused group, and Era 2: 9/1/2020-10/31/2022, which is the multidisciplinary group. Transplant metrics evaluated were percent single versus bilateral LT and intraoperative support usage. Transplant outcomes evaluated were postoperative extracorporeal membrane oxygenation (ECMO) usage when no preoperative ECMO, rate of blood transfusion, tracheostomy, deep venous thrombosis (DVT), short-term mortality and 1 year survival.

RESULTS
A total of 222 LT were performed in that time: 79 in Era 1; 143 in Era 2. LT volume was 24 in 2018, 40 in 2019, 28 in 2020, 53 in 2021, and 81 in 2022. No significant differences were noted in the recipient age, LAS, time to transplant, or preoperative ECMO use (Table 1). The rate of bilateral LT increased significantly (54% vs 93%), while the intraoperative support use decreased significantly (94% vs 55%). Postoperative ECMO use without preoperative ECMO (15% vs 6%), blood transfusion rate (85% vs 55%), and DVT rate (35% vs 12%) all significantly decreased in Era 2. Direct cost decreased by 25% in Era 2 compared to Era 1. Short term mortality and 1 year survival were similar in both cohorts.

CONCLUSIONS
Multidisciplinary management in recipient selection, donor acceptance, type of LT performed, and post-surgical management is associated with improved outcomes for patients with decreased cost. Furthermore, multidisciplinary management increases team performance, facilitating programmatic growth while maintaining high quality outcomes.

Disclosure: No significant relationships.
Keywords: Lung Transplant, Critical Care, Multidisciplinary Management.

	Era 1 Surgeon focused n = 79	Era 2 Multidisciplinary management n = 143	p value
Recipient Characteristics			
Age, median (IQR), year	63 (56-68)	60 (53-67)	0.32
Lung Allocation Score, median (IQR)	39 (35-50)	38 (34-50)	0.46
Time to transplant, median (IQR), days	33 (14-87)	26 (8-64)	0.22
Preoperative ECMO%, (n)	18% (14)	10% (15)	0.13
Transplant Metrics			
Bilateral lung transplant, (n)	54% (43)	93% (132)	<0.00001
Intraoperative ECMO or bypass support, (n)	94% (75)	55% (78)	<0.00001
Transplant Outcomes			
Postoperative ECMO without preoperative ECMO, (n)	15% (10/65)	6% (8/128)	0.04
Blood transfusion, (n)	85% (67)	55% (78)	<0.00001
Tracheostomy, (n)	19% (15)	13% (18)	0.19
Deep vein thrombosis, (n)	35% (28)	12% (17)	<0.0001
Mortality at 30 days, (n)	1% (1)	2% (3)	0.66
Mortality at 90 days, (n)	5% (4)	3% (5)	0.57
1 year survival, (n)	92% (73)	94% (135)	0.55

P-078

TUMOR VOLUME DOUBLING TIME CORRELATES WITH PATHOLOGICAL SUBTYPE IN CLINICAL STAGE IA LUNG ADENOCARCINOMA

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OBJECTIVES
In lung cancer, tumor volume doubling time (VDT) indicates tumor aggressiveness. Despite the association of pathological lepidic patterns, adenocarcinoma in situ (AIS), and minimally invasive adenocarcinoma (MIA) associated with ground-glass opacity on computed tomography (CT) in lung adenocarcinoma, the relationship between other pathological subtypes and CT findings has not been fully explored. Therefore, this study analyzed the relationship between VDT and pathological subtypes among lung adenocarcinoma with radiologically pure-solid on CT.

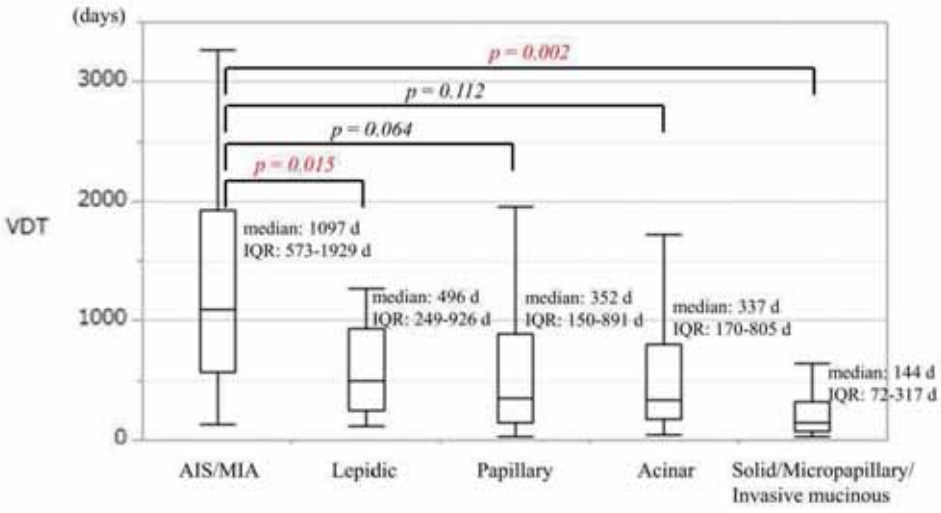
METHODS
This was a single-center study of 252 patients who underwent pulmonary resection for clinical stage IA lung adenocarcinoma with radiologically pure-solid on CT from 2006 to 2022. The eligible cases were classified into 5 groups according to the subtypes that accounted for the largest component: AIS/MIA, lepidic, papillary, acinar, solid/micropapillary/invasive mucinous group. VDT was measured using CT axial images. VDT was measured using CT axial images. VDT (days) = (T2- T1) x log 2/(log V2 - log V1). T2: the date of CT just before surgery. T1: the date of CT when lung nodule was first detected. V1, 2: tumor volume at T1, 2.

RESULTS
There were 5 AIS, 20 MIA, 18 lepidic, 58 acinar, 101 papillary, 40 solid, 1 micropapillary, and 9 invasive mucinous patterns. Median VDT was AIS/MIA, 1097 days; lepidic, 496 days; papillary, 352 days; acinar, 337 days; and solid/micropapillary/invasive mucinous, 144 days. Regarding the VDT, there was a significant difference between the AIS/MIA group and the lepidic or the solid/micropapillary/invasive mucinous group. Multivariable analysis identified SUVmax (odds ratio 1.233, $p<0.001$), and VDT (odds ratio 0.999, $p=0.028$) as independent predictors of solid/micropapillary group.

CONCLUSIONS
Nodules with longer VDT are more likely to be in the AIS/MIA group, while nodules with shorter VDT may be more likely to be in the solid/micropapillary/invasive mucinous group. The VDT is a useful predictor of solid/micropapillary group in clinical stage IA adenocarcinoma.

Disclosure: No significant relationships.
Keywords: Adenocarcinoma, Tumor Volume Doubling Time, Pathological Subtype.

Figure


(days)
VDT
3000
2000
1000
0
p = 0.002
p = 0.112
p = 0.064
p = 0.015
median: 1097 d
IQR: 573-1929 d
median: 496 d
IQR: 249-926 d
median: 352 d
IQR: 150-891 d
median: 337 d
IQR: 170-805 d
median: 144 d
IQR: 72-317 d
AIS/MIA
Lepidic
Papillary
Acinar
Solid/Micropapillary/
Invasive mucinous

P-079

PD-L1 EXPRESSION CAN PREDICT UNEXPECTED NODAL METASTASIS IN CLINICAL NODE NEGATIVE EARLY STAGE NSCLC UNDERWENT ROBOTIC LOBECTOMY AND SYSTEMATIC LYMPHADENECTOMY

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OBJECTIVES

Despite a correct preoperative staging, unexpected nodal metastasis after surgery are still significantly detected. Given the promising role of neoadjuvant chemo-immunotherapy, the definition of novel predictive factors of nodal metastases is an extremely important issue. In this study we aim to analyze the upstaging rate in patients with early stage NSCLC without evidence of nodal disease in the preoperative staging underwent robotic lobectomy and radical lymphadenectomy.

METHODS

Patients who underwent lobectomy and systematic lymphadenectomy for early stage NSCLC without evidence of nodal disease at the preoperative staging with PD-L1 evaluation after surgery were evaluated. Exclusion criteria were the neoadjuvant treatment, EGFR mutation, ALK rearrangements, an incomplete resection and no adherence to preoperative guidelines. Patients with PD-L1 expression more than 1% where classified as PD-L1 positive.

RESULTS

A total of 359 patients were included in the study. 172 patients where female, the median age was 68 (61-72). A total of 145 patients showed a PD-L1 expression >1%. The variables that showed a significant correlation with the upstaging rate at the univariate analysis were the PD-L1 status, the number of resected lymph nodes and the diameter of the tumor. This results was confirmed in the multivariate analysis (tab.1), with an OR of 1.895 (CI95% 1.093-3.286, p=0.02) for PD-L1 status, 1.087 (CI95% 1.048-1.127, p=0.0001) for the number of resected nodes and 1.817 (CI95% 1.214-2.719, p=0.004) for cT status.

CONCLUSIONS

Our results showed that in a homogeneous cohort of patients with clinical node early stage NSCLC the expression of PD-L1 >1% combined with the number of resected lymph nodes and the tumor diameter can predict the nodal metastasis in a significant way.

Disclosure: No significant relationships.
Keywords: NSCLC, Early Stage, PD-L1, Upstaging, Robotic Surgery.

Univariate Analysis							
					95% CI		
	Total (n=359)	Upstaged (n=82)	Non-upstaged (n=277)	Odd-ratio	Lower limit	Upper limit	p-value
Age, median (IQR)	68 (61 - 72)	67 (61 - 71)	68 (62 - 67)	0.997	0.962	1.034	0.884
Sex, male (%)	187 (52.1)	47 (57.3)	140 (50.5)	1.314	0.799	2.16	0.281
Smoke history (%)	262 (72.9)	43 (52.4)	114 (41.1)	1.122	0.872	1.123	0.343
clinical T stage,n (%)							
cT1	178 (49.6)	28 (34.2)	150 (54.2)	0.879	0.801	0.992	0.006
cT2	146 (40.7)	42 (51.2)	104 (37.5)	2.163	1.261	3.711	0.005
cT3	35 (9.7)	12 (14.6)	28 (8.3)	2.795	1.248	6.259	0.012
Harvested nodal station, median (IQR)	5 (4 - 6)	5 (5 - 6)	5 (4 - 6)	1.289	1.006	1.651	0.045
Harvested lymph nodes, median (IQR)	14 (10 - 18)	17 (13 - 22)	13 (10 - 17)	1.078	1.042	1.115	<0.001
PD-L1>1%	145 (40.4)	44 (53.6)	101 (36.5)	2.018	1.226	3.321	0.006
Multivariate Analysis							
Clinical T stage				1.817	1.214	2.719	0.004
Harvested lymph nodes				1.087	1.048	1.127	<0.001
PD-L1>1%				1.895	1.093	3.286	0.02

P-080

DEEP LEARNING ALGORITHM FOR AUTOMATIC PREDICTION OF VISCERAL PLEURAL INVASION OF LUNG CANCER BASED ON SURGICAL VIDEO

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OBJECTIVES
Visceral pleural invasion (VPI) is an important prognostic indicator in lung cancer that is difficult to predict. We aimed to develop a deep learning algorithm that predicts VPI using videos of lesions.

METHODS
We included 346 patients who underwent thoracoscopic surgery at our department from 2015 to 2021, corresponding to 3800 images. The patient data and image data were divided into training set, validation set and testing set. The algorithm was developed based on the ResNet architecture used for image feature extraction and classification. All images were labeled for lesions and processed to fit the algorithm. We recruited two thoracic attendings and one radiologist to identify VPI using intraoperative video and preoperative CT, respectively. The performance of the algorithm was evaluated by comparison with the performance of the attendings and the radiologist.

RESULTS
At the patient level, the algorithm had satisfactory AUC values in the training set (0.85), validation set (0.83) and testing set (0.81). The DeLong test showed statistic difference between the algorithm and two attendings and a radiologist in the training set ($p<0.001$, $p<0.001$, $p<0.001$), validation set ($p=0.006$, $p=0.002$, $p=0.026$) and testing set ($p=0.008$, $p=0.012$, $p=0.007$). At the image level, the algorithm also outperformed two attendings and a radiologist with significantly great AUC values in the training set (0.83 vs. 0.52 vs. 0.53 vs. 0.65; $p<0.001$, $p<0.001$, $p<0.001$), validation set (0.78 vs. 0.50 vs. 0.54. vs. 0.68; $p<0.001$, $p<0.001$, $p=0.048$) and testing set (0.79 vs. 0.53 vs. 0.60 vs. 0.58; $p<0.001$, $p<0.001$, $p<0.001$).

CONCLUSIONS
The video-based deep learning algorithm could satisfactorily predict VPI and achieved expert-level performance better than thoracic attending surgeons and the radiologist we recruited.

Disclosure: No significant relationships.
Keywords: Thoracoscopic Surgery, Deep Learning, Visceral Pleural Invasion, ResNet.

P-081

ULTRASOUND GUIDED ERECTOR SPINAE PLANE IN THE MANAGEMENT OF THORACIC PAIN SYNDROME FOLLOWING VATS LOBECTOMY

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OBJECTIVES
The ultrasound-guided erector spinae plane block (ESP) is a regional technique proven to help both acute postoperative analgesia and chronic neuropathic pain conditions. The study aims to investigate the efficacy of ESPB in comparison to conventional regional anesthesia techniques after Vats Lobectomy.

METHODS
We included 155 consecutive patients undergoing VATS lobectomy from November 2019 to December 2022. All patients were randomly divided into two group: the observation group underwent induction of routine general anesthesia and thoracic paravertebral block and control group underwent ultrasound-guided ESP block combined with general anesthesia. The blocks were performed with ultrasound guidance by injecting 60 mL of ropivacaine, with 10 ml of saline solution and with or without steroid, into a fascial plane between the deep surface of erector spinae muscle and the transverse processes of the thoracic vertebrae T5.

RESULTS
We conducted a retrospective single-center study. Postoperative eating, first anal exhaust, leaving bed, and hospitalization time in the control group were shorter than those in the observational group ($P<0.05$). the incidence of postoperative complications was decreased significantly in the observation group ($P<0.05$). VAS scores at rest and during exercise in the observation group were lower than those in the control group ($P<0.05$). All the patients had excellent immediate pain relief following each ESP block. The ESP blocks were combined with optimization of multimodal analgesia, resulting in significant improvement in the pain experience in all patients.

CONCLUSIONS
The analgesic effect of ultrasound-guided ESP block is significant after VATS Lobectomy. The easy and utility of this procedure and the promising results reported from our patient showed Ultrasound guided ESP block with general anesthesia offers superior post-operative analgesia compared to general anesthesia alone.

Disclosure: No significant relationships.
Keywords: Thoracic Pain, Erector Spinae Plane Block, Ultrasound.

P-082

EFFECT OF SURGERY WAITING TIME IN THE PROGRESSION OF NON-SMALL CELL LUNG CANCER

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OBJECTIVES
In our national Health System there is an objective to operate within the first 45 days after a cancer diagnosis in order to avoid progression, other societies advice surgery treatment non-after one moth. However, no priority according clinical stage has been suggested. The primary aim of this study was to determine if one month or 45 days is a suitable waiting time after diagnosis of lung cancer. Secondary aim was to assess if more advanced clinical stages need priority when scheduling surgery.

METHODS
Patients submitted to lung resection for non-small cell lung cancer from January 2021 to December 2022 were selected. Pure ground-glass opacities tumors were excluded. Clinical and pathological staging was carried out through 8th edition of TNM in lung cancer. Date of cTNM was determined by the last image test performed, and pTNM the surgery date. Patients were divided in 3 groups according the time between these two dates (<30 days, 30-45 days, and >45 days). Increase of TNM during waiting time was considered as progression. A univariable and multivariable analysis was conducted to determine differences in progression index and stage.

RESULTS
225 patients were included in the study, 177 (78.7%) in the group of >45 days, 33 (14.7%) in 30-45 days group and 15 (6.7%) in less than 30 days group. Table 1 (tabla5) shows the summary of T,N, and M changes for each group. A Fisher's exact test didn't describe statistically significant differences between groups (p=1).

CONCLUSIONS
Although the objective has been defined to intervene in patients within the first 45 days of diagnosis, no statistically significant differences have been observed between the initial staging and that obtained on the day of surgery.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Non-Small Cell Lung Cancer, Progression.

Factor	Category	<30 days	30-45 days	>45 days
T	No change	33,5 % (5)	57,6 % (19)	53,1 % (93)
	Increase	40,0 % (6)	15,1 % (5)	31,9 % (56)
	Descrease	26,7% (4)	27,3 % (9)	14,9 % (26)
N	No change	60,0 % (9)	79,0 % (26)	78,9 % (138)
	Increase	20,0 % (3)	12,0 % (4)	14,9 % (26)
	Decrease	20,0 % (3)	9,0 % (3)	6,2 % (11)
M	No change	100,0 % (15)	99,0 % (32)	97,7 % (172)
	Increase	-	1,0 % (1)	1,7 % (3)
	Decrease	-	•	0,6 % (1)

P-083

IS PNEUMONECTOMY TRULY A DISEASE IN ITSELF? A SINGLE CENTER EXPERIENCE OF PNEUMONECTOMY FOR LUNG CANCER IN JAPAN

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OBJECTIVES
"Pneumonectomy is a disease in itself." Pneumonectomy is challenging, and the proverb was widely accepted in thoracic surgeon. We have made efforts to avoid pneumonectomy by various plastic surgery techniques and there have been many reports on the results of such efforts. In contrast, we became able to evaluate for patient tolerability and tumor malignant potential accurately, which led us to get long-term survival even after pneumonectomy in patients who have been selected and operated by expert surgeons. In this study, we performed a retrospective analysis of lung cancer who underwent pneumonectomy at Juntendo Hospital to examine the true indications and significance of pneumonectomy.

METHODS
Of the 4796 patients of lung cancer who underwent thoracic surgery at Juntendo University school of Medicine between 2008 and 2021, 109 lung cancer patients (2.3%) underwent pneumonectomy, excluding completion pneumonectomy, which had observation period at least 1 year were enrolled. Multivariate analyses of prognostic factors were performed, and the overall survival (OS) rates were assessed using the Kaplan–Meier method.

RESULTS
The 5-years overall survival was 36.7% and the mean follow-up period was 868 days. In the results of multivariate analyses, operation side (left/right, P=0.027) was significant factor after adjusting other clinical factors, such as age, sex, restrictive ventilatory failure (%VC<80%), obstructive ventilatory failure (FEV1%<70%), medical history (heart disease, lung disease, diabetes), neoadjuvant chemotherapy, and cancer stage in the multivariate analysis. A significant difference in OS was observed between patients who underwent left side pneumonectomy (5 years OS: 48%) and right side (5 years OS: 28%) pneumonectomy (P=0.003, 95%CI: 1.322 to 3.991).

CONCLUSIONS
Left-sided Pneumonectomy is a valuable option in the surgical treatment of advanced lung cancer when the indication is determined and operated by an experienced center.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Pneumonectomy.

P-084

CONSERVATIVE TREATMENT OF TRACHEAL LESION WITH SELF-EXPANDABLE TRACHEAL STENT

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OBJECTIVES

Iatrogenic tracheal rupture (ITR) represents a rare but life-threatening condition requiring timely diagnosis and appropriate treatment. Surgical repair has always been the gold standard approach. Conservative treatment in selected cases is gaining an emerging role. We report a case of a iatrogenic tracheal tear in an adult woman intubated for elective abdominal surgery, conservatively and effectively treated with a self-expandable metal Y-shaped stent.

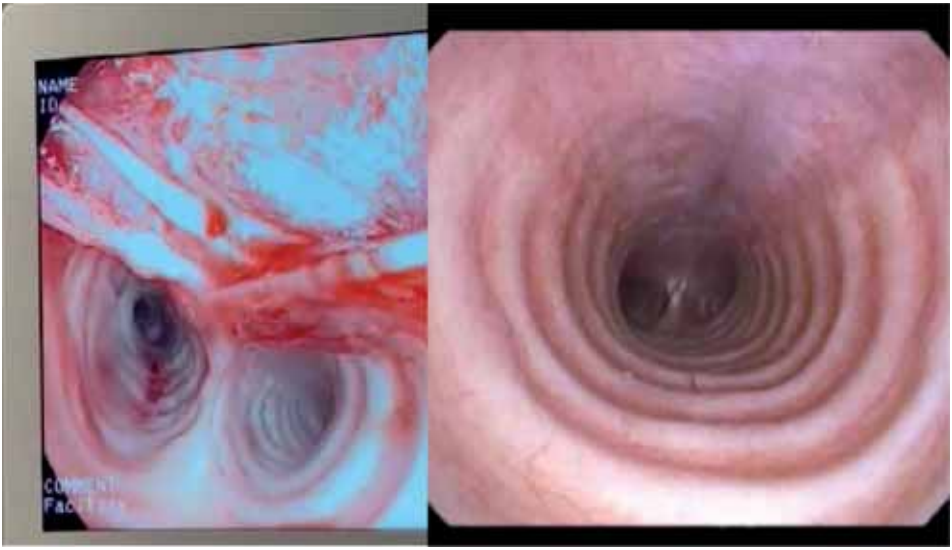
CASE DESCRIPTION

A 41-Year-old obese woman (BMI= 34.6) was referred to our department, for the suspicion of a tracheal tear, after cholecystectomy in general anesthesia. After extubation, the onset of dyspnea and subcutaneous emphysema led to reintubation and mechanical ventilation. A chest CT revealed bilateral pneumothorax, pneumomediastinum, and the tracheal dilatation lumen in correspondence with the cuff of the orotracheal tube. The endoscopic examination of the airways showed a longitudinal lesion of about 5 cm of the pars membranacea of the distal trachea. Surgical tracheostomy was performed, and two orotracheal tubes were placed through the tracheostomy in each of the main bronchi. On the seventh day, in general anesthesia and rigid bronchoscopy, we placed a Y-shaped tracheal stent. Then a tracheostomy tube was placed with the tip and the cuff inside the stent's lumen, avoiding decubitus of the tracheal wall.
The next day the patient was placed in spontaneous breath, keeping the tracheostomy open, and was transferred to the hospital ward. A daily bronchial tree toilette was performed every day. Chest x-ray showed complete re-expansion of lungs. After 40 days, we removed the stent and observed a good resolution of the tracheal lesion.

CONCLUSIONS

The use of a tracheal stent provides a new strategy for the conservative treatment of tracheal tears. Even in a moderate entity, tracheal lesions of the distal trachea, Y-stent placement can be considered a treatment option.

Disclosure: No significant relationships.
Keywords: Tracheal Lesion, Tracheal Stent.



P-085

SHORT- AND LONG-TERM OUTCOMES IN SURGICALLY RESECTED THYMIC TUMORS WITH PHRENIC NERVE INJURY: A MULTICENTRIC STUDY

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OBJECTIVES

The objective of the study is to evaluate the frequency, short- and long-term postoperative impact and possible predictors of severity of phrenic nerve injury in a multicenter cohort of patients undergoing thymectomy for thymic neoplasms.

METHODS

This retrospective multicenter study included all patients undergoing surgery for resectable thymic neoplasm between 2010 and 2020, with or without myasthenia gravis, with pre- or postoperative phrenic nerve lesion, analyzing the short and long term post-operative course.

RESULTS

In 72 of 404 patients (17.8%) a phrenic nerve lesion was found after thymectomy. 1.7% of cases already had preoperative paralysis due to neoplastic infiltration. More than 50% of the patients had Masaoka stage III/IVa. Sternotomy or sternothoracotomy were performed in 76% of cases. The phrenic nerve was intentionally resected in 52 cases (72%), more frequently on the left side. In the short term, we found a higher risk of postoperative complications in presence of a reduced baseline respiratory function, excessive BMI, preoperative diaphragmatic paralysis and right phrenic nerve resection. Over the long term, patients developed a symptomatic form of diaphragmatic paralysis in 16.7% of cases, with a higher risk in case of poor respiratory function or excessive BMI. A significant decrease of approximately 30% in FEV1 and FVC values between baseline and postoperative measurements was observed. The treatment of diaphragmatic palsy by means of plication was observed in 6 cases (8.3%), all on the left side and mostly during surgery for disease recurrence.

CONCLUSIONS

Phrenic nerve iatrogenic injury after thymectomy for thymus neoplasms is not infrequent and involves a greater perioperative risk in case of obesity, right nerve resection and reduced basal respiratory function. The long-term clinical consequences are manifest in a small proportion

of patients.The identification of patients who may obtain a quality of life improvement after diaphragmatic repair is crucial.

Disclosure: No significant relationships.
Keywords: Phrenic Nerve Injury, Thymectomy, Thoracic Surgery, Diaphragm, Plication.

P-086

COMPOSITE MESH: A BRIDGE PROCEDURE FOR REFRACTORY PANCREATIC EFFUSION - SEQUELAE OF POROUS DIAPHRAGM SYNDROME

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OBJECTIVES

Management of refractory pancreatic effusion secondary to Porous diaphragm syndrome (PDS) is a challenge. Although the surgical interventions for fenestration closure include sewing the defect, fibrin glue sealing, parietal pleurectomy, and talc pleurodesis has been reported previously; however, the role of composite mesh placement in treating PDS has never been reported earlier. Through these cases, we now describe a novel treatment with composite mesh to seal the type 1 PDS as a bridge procedure followed by pancreatic intervention in patients requiring early thoracic intervention to preclude the disease process.

CASE DESCRIPTION

Three male patients with a known diagnosis of pancreatic effusion, refractory to conservative medical and chest tube treatment, presented with recurrent respiratory symptoms. Examination revealed elevated blood counts and C-reactive protein, low albumin, very high pleural fluid amylase/lipase, mildly altered liver/renal function tests, severe computed tomography severity index (7-10), and early sepsis requiring early thoracic intervention. In addition to parietal pleurectomy and sterilization of the thoracic cavity, a composite mesh placement was done for type 1 PDS in all patients. The postoperative period was uneventful, with an improvement in blood parameters. Chest tubes were removed on day 7, day 8, and day 18 (due to persistent air leak) in three patients, respectively, and patients were discharged after 24 hours following good lung expansion on a chest x-ray. Endoscopic retrograde cholangiopancreatography (ERCP) was performed three weeks after discharge to evaluate the pancreatic duct. Sphincterotomy was performed in all three patients, while stent placement was successful in one patient. During follow-up evaluations at 3, 6, and 12 months, we observed improvement in nutrition status and pulmonary function with no recurrence.

CONCLUSIONS

We conclude that composite mesh placement can be considered a novel, innovative bridge technique for refractory pancreatic effusion management.

Disclosure: No significant relationships.
Keywords: Porous Diaphragm Syndrome, Composite Mesh.

P-087

FACTORS AFFECTING UNPLANNED READMISSION IN PATIENTS AFTER PULMONARY RESECTION FOR LUNG CANCER

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OBJECTIVES

To investigate the factors associated with unplanned hospital readmission and impact of readmission on survival in patients who underwent pulmonary resection for lung cancer.

METHODS

In the study, 712 patients were operated for primary lung cancer between January 1, 2004 and December 31, 2021. The patients were evaluated retrospectively. Unplanned readmissions in our hospital in the first 30 days after discharge were analyzed.The Factors affecting unplanned readmission rates were analyzed using uni- and multi-variate analyses.

RESULTS

Of the cases, 578 patients(81.2%) were male and 134 patients(18.8%) were female. The mean age was 61.16±9.85 years. The 30-day readmission rate was 14.7%. Readmission was mostly due to pulmonary causes. Age, number of comorbidities, Charlson comorbidity index, diabetes mellitus, hypertension, chronic renal failure, low hemoglobin level, surgeon performing the procedure, videothoracoscopic approach, resection with mediastinoscopy in a separate session, complications in the postoperative period, prolonged air leak, empyema, myocardial infarction and gastrointestinal complications were associated with readmission(Table). Thirty and 90 days mortalities were found to be high in hospitalized patients ($p=0.11$ and <0.001, respectively). Lower survival rate was found to be associated with readmission($p<0.001$).

CONCLUSIONS

Performing the surgery by correcting conditions such as low hemoglobin level, uncontrolled diabetes, hypertension and chronic renal failure and effectively preventing postoperative complications may reduce readmissions and increase the survival of the patients. Although it is difficult to predict possible readmission in the preoperative period, consideration of risk factors are recommended as a component of discharge planning.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Anatomical Resection, Postoperative Complications, Readmission.

Variables	Total number		Readmitted		Not readmitted		P-Value
	n	%	n	%	n	%	
Total patients	712	100	105	14.7	607	85.3	
Sex							0.108
Female	134	18.8	15	14.2	119	19.6	
Man	578	81.2	90	85.8	488	80.3	
Age ,Mean ±SD	61.1±9.9		63.1±9.5		60.8±9.9		0.028
Number of Comorbidity; Median (min-max)	1(0-7)		2(0-7)		1(0-6)		0.004
CCI; Median(min-max)	5(3-10)		5(3-10)		5(3-10)		0.005
Diabetes	128	17	29	27.6	99	16.3	0.005
Hypertension	244	34	52	49.5	192	31.6	<0.001
COPD	98	13	15	14.2	83	13.6	0.867
Coronary artery disease	155	21	26	24.7	129	21.2	0.421
Chronic renal failure	19	2.6	6	5.7	13	2.1	0.048
Another Malignant	71	9	11	10.4	60	9.8	0.852
Tuberculosis history	45	6	9	8.5	36	5.9	0.303
Neoadjuvant therapy	82	12	7	6.6	75	12.3	0.092
Neoadjuvant chemotherapy	24	3	4	3.8	20	3.2	0.769
Neoadjuvant radiotherapy	6	0.8	1	0.9	5	0.8	0.617
Neoadjuvant chemo radio-therapy	52	7.3	2	1.9	50	8.2	0.023
Smoking history							0.831
Former	174	24.4	24	22.8	150	24.7	0.683
Never	65	9.1	11	10.4	54	8.8	0.936
Current	473	66.4	70	66.6	403	66.3	0.956
pck-years,Median(min.max)	40(0-200)		40(0-200)		40(0-200)		0.881
RP; Median(min.max)	7(3-260)		8(3-121)		6.5(3-260)		0.847
hemoglobin(g/dL); Median(min.max)	13.1(8.2-17.3)		12.6(8.2-17.3)		13.3(8.2-17)		0.003
DH; Median(min.max)	221(89-1040)		245(106-768)		219(89-1040)		0.139
VBC; Median(min.max)	7.9(1.1-23.7)		8(2-23.7)		7.9(1.1-23.7)		0.992
lbumin(g/dL); Median(min.max)	4.3(2.1-5.7)		4.3(2.7-5.7)		4.3(2.1-5.2)		0.807
UV; Median(min.max)	11(0-47)		9(0-28)		11(0-47)		0.173
urgeon (5 groups)							0.017
te FEV1 %; Mean±SD	81.3±18.7		82.5±17.0		81.2±19.0		0.510
te FVC %; Mean ± SD	91.5±17.8		90.6±18.7		91.7±17.6		0.616
te FEV1/FVC; Mean ± SD	87.1±15.3		89.6±15.6		86.7±15.4		0.079
tart with VATS	275	38	54	51.4	221	36.4	0.004
tinuary site							0.998
Right	400	56	59	56.1	341	56.3	
Left	312	44	46	40.9	266	43.8	
hatus of mediastinoscopy and esection							0.044
Resection	250	35.1	52	49.5	198	32.6	
Mediastinoscopy + resection	230	32.3	25	23.8	205	33.7	
lomplementary Resection							0.736
Var	46	6.4	6	5.7	40	6.5	
Yok	666	93.5	99	94.3	567	93.4	
hest Wall Resection							0.20
Yes	53	7.4	11	10.4	42	6.9	

No	659	92.6	94	89.5	565	93.1	
Tumor size (cm); Mean ± SD	3.7±2.4		3.5±2.2		3.7±2.4		0.537
Histological diagnosis							0.650
Adenocarcinoma	335	46.7	48	45.7	285	46.9	
Squamous cell carcinoma	270	37.9	36	34.2	234	38.5	
Adenosquamous	24	3.3	5	4.7	19	3.1	
Typical carcinoid	15	2.1	3	2.8	11	1.8	
Atypical carcinoid	14	1.9	2	1.9	13	2.1	
Pleomorphic carcinoma	15	2.1	3	2.8	12	1.9	
Others	41	5.7	8	7.6	33	5.4	
Surgical Border							
Negative	664	95	96	91.4	568	93.5	0.418
Positive	48	7	9	8.5	39	6.4	0.231
Lymph Node							
N0	540	75	85	7.6	455	74.9	0.185
N1	161	22.6	19	8.5	142	23.3	0.251
N2	38	5.3	5	4.7	33	5.4	0.776
Stage							0.206
Stage 1	395	55.0	63	60	332	54.6	
Stage 1A;	63	8.8	9	8.5	54	8.8	
Stage 1A2	125	17.2	27	25.7	96	15.8	
Stage 1A3	117	16.4	16	15.2	101	16.6	
Stage 1B	92	12.9	11	10.4	81	13.3	
Stage 2	213	29.9	32	30.4	181	29.8	
Stage 2A	52	7.3	6	5.7	46	7.5	
Stage 2B	161	22.6	26	24.7	135	22.2	
Stage 3	104	14.1	10	9.5	94	15.4	
Stage 3A	92	12.9	9	8.5	83	13.6	
Stage 3B	12	1.6	1	0.9	10	1.6	
Drain time(day) Median (min.max)	5(3-40)		5(2-28)		5(3-40)		0.557
Hospital Stay (day) Median (min.max)	6(2-54)		6(2-31)		6(2-54)		0.925
Postoperative Complications	385	54.0	71	67.6	314	51.7	0.001
Hemorrhage	84	11.7	14	13.3	70	11.5	0.597
Acute kidney failure	33	4.6	5	4.7	28	4.6	0.947
Pneumonia	88	12.3	15	14.2	73	12.1	0.516
Atelectasis	40	5.6	7	6.6	33	5.4	0.613
Prolonged Air Leak	264	37	49	46.6	215	35.4	0.028
Myocardial Infarction	6	0.8	4	3.8	2	0.3	<0.001
Empyema	6	0.8	4	3.8	2	0.3	<0.001
Gastrointestinal System	34	4.7	11	10.4	23	3.7	0.001
Urinary System	21	2.9	3	2.8	18	2.9	0.592
Arrhythmia	43	6.1	6	5.7	39	6.4	0.782
Bronchoscopy	56	7.8	8	7.6	48	7.9	0.919
Requirement for tube thoracostomy after drain extraction	11	1.5	5	4.7	6	0.9	0.057
Delirium	11	1.5	1	0.9	10	1.6	0.394
ICU	18	2.5	2	1.9	16	2.6	0.660
Surgery							0.046
Open thoracotomy	456	64	56	53.3	400	65.8	
VATS	212	29.7	41	39.0	171	28.1	
Hibrit	44	6.2	8	7.6	36	5.9	
Resection							0.316
Pneumonectomy	79	11.1	10	9.5	69	11.4	
Bilobectomy	59	8.3	7	6.7	52	8.6	
Sleeve lobectomy	13	1.8	2	1.8	9	1.5	
Lobectomy	549	77.1	81	77.1	468	77.1	
Segmentectomy	12	1.7	3	2.9	9	1.5	
Comparison of early and late discharge							0.851
Hospital stay<= 7	28	8.1	8	7.6	50	8.2	
Hospital stay > 7	654	91.8	97	92.3	557	91.7	
Discharge with drain	20	2.8	5	4.7	15	2.4	0.198
Years of surgery							0.473
2004	4	0.6	0	0	4	0.7	
2005	12	1.7	0	0	12	2	
2006	20	2.8	2	1.9	18	3	
2007	16	2.2	0	0	16	2.6	
2008	38	5.3	2	1.9	36	5.9	
2009	36	5.1	3	2.8	33	5.4	
2010	44	6.2	5	4.8	39	6.4	
2011	61	8.6	10	9.5	51	8.4	
2012	48	6.7	6	5.7	42	6.9	
2013	57	8.0	11	10.5	46	7.6	
2014	51	7.2	8	7.6	43	7.1	
2015	29	4.1	6	5.7	23	3.8	
2016	27	3.8	3	2.9	24	4	
2017	42	5.9	10	9.5	32	5.3	
2018	68	9.6	11	10.5	57	9.4	
2019	51	7.2	9	8.6	42	6.9	
2020	45	6.3	7	6.7	38	6.3	
2021	63	8.8	12	11.4	51	8.4	
Mortality at 30 days	3	0.4	2	1.9	1	0.1	0.011
Mortality at 90 days	12	1.6	8	7.6	4	0.6	<0.001
Survival; Median ±SD	111 ±10.2		48 ±15.6		122 ±10.1		<0.001

(LDH: Lactate dehydrogenase, COPD: Chronic obstructive pulmonary disease, FEV1: Forced expiratory volume in 1st second, FVC: Forced ventilatory capacity; forced ventilatory capacity, SD: standard deviation, VATS: Video assisted thoracoscopic surgery)

P-088

A PROSPECTIVE FOLLOW UP ANALYSIS TO DETERMINE CHANGES IN QUALITY OF LIFE OF PATIENTS UNDERGOING LUNG RESECTION FOR POST TUBERCULOSIS SEQUELAE

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OBJECTIVES

Tuberculosis remains one of the world's deadliest communicable diseases. In 2021, an estimated 10.6 million people fell ill and 1.5 million died from the disease. Up to 50% of microbiologically cured Pulmonary TB leads to irreversible lung damages, known as Post-TB Sequelae/Post-TB Chronic Lung Disorders (PTBLDs), some requires surgical interventions. The potential benefit (survival) of surgery must always be weighed not only against perioperative morbidity and mortality, but also against residual health-related Quality of Life (QoL) measures.
Objective: To evaluate the changes in QoL of patients undergoing lung resection for Post TB Sequelae from preoperative state to that of 1 and 6 months follow up.

METHODS

This is a prospective observational study on 52 consecutive patients assessed by means of the SF-36 Health Survey, preoperatively and at 1 and 6 months postoperatively. Differences between mean of Quantitative data were compared by Student t/Mann Whitney U test while significance of changes over time were compared by means of repeated measures analyses of variances with adjusted (Games-Howell post-hoc test) pairwise comparisons. Qualitative data were expressed in percentage and statistical differences between proportions were tested by the Chi square test or Fisher's exact test.

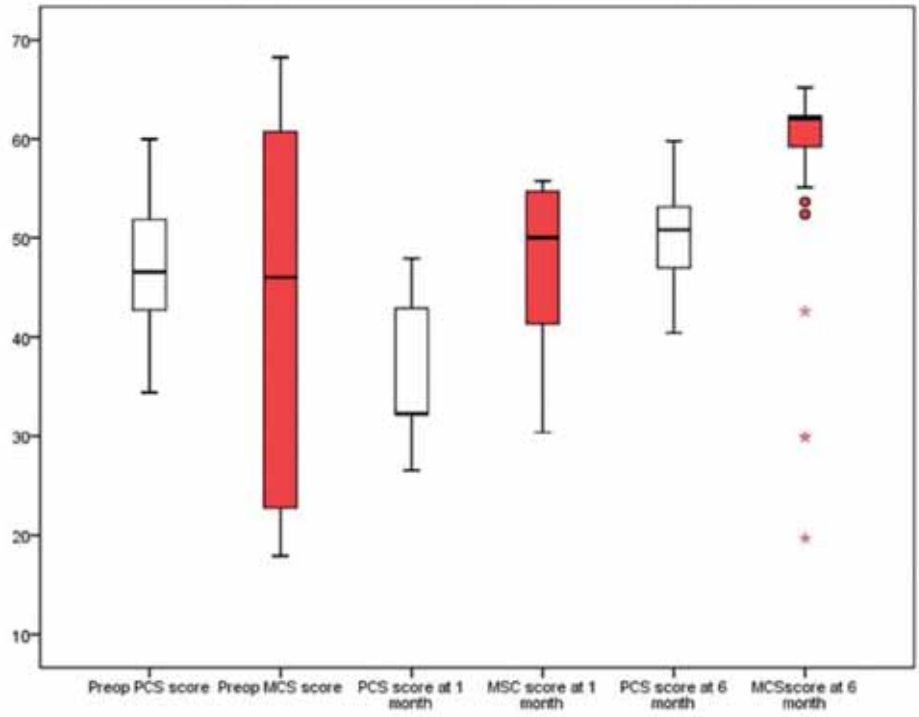
RESULTS

Compared with preoperative values, the Physical Composite Scale (PCS) significantly reduced at 1 month (47.06 versus 35.97, $p < 0.001$) but completely recovered at 6 months (47.06 vs 50.18; $p < 0.001$) whereas the Mental Composite Scale (MCS) was significantly better at 1 month (41.36 vs 47.04; $p = 0.012$) and immensely improved at 6 months (41.36 vs 58.62; $p < 0.001$).

CONCLUSIONS

Patients with Post-TB Sequelae have a severely impacted QoL owing to the frequent symptoms exacerbations. Lung resections provide a curative solution to these patients in their symptoms and also improve their QoL in the long run.

Disclosure: No significant relationships.
Keywords: Quality Of Life, Post Tuberculosis Sequelae, Tuberculosis.


70
60
50
40
30
20
10
Preop PCS score
Preop MCS score
PCS score at 1 month
MSC score at 1 month
PCS score at 6 month
MCSscore at 6 month

P-089

USEFULNESS OF FINAL TRANSECTION OF THE PROXIMAL PULMONARY ARTERY IN ROBOTIC LEFT UPPER LOBECTOMY

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OBJECTIVES
A surgical procedure that takes advantage of the features of robotic surgery has not yet been established. Since the pulmonary artery runs around the left upper bronchus, there is a risk of injuring blood vessels in the blind spot of the bronchus when cutting the bronchus. Robotic arm holds the tissue under constant tension, so even if the pulmonary artery is left to last, the pulmonary artery will not be injured by unexpected tension. In this study, we examined the usefulness of final transection of proximal pulmonary artery in robotic left upper lobectomy.

METHODS
Of the 453 robotic lung resections performed at our institution from 2017 to 2022, we evaluated 49 cases in which a simple left upper lobectomy was performed. Patients who underwent bronchus followed by pulmonary artery transection were defined as the bronchus anterior transection group (BAT group, n=38), and those who underwent pulmonary artery followed by bronchus transection were defined as the pulmonary artery anterior transection group (PAT group, n=11). In addition, comparisons were made regarding patient characteristics and perioperative outcomes of the two groups. P-values less than 0.05 were considered statistically significant.

RESULTS
There were no differences in age, gender, smoking history, or tumor size. The BAT group tended to have shorter operative times (median 173 vs. 191 minutes, p=0.0496) and less blood loss (median 5 vs. 10 ml, p=0.0544). Median postoperative hospital stay was 6 days in both groups. There was no difference in complication rates and no 30-day mortality. There was no active intraoperative bleeding in the BAT group, but there were two cases of intraoperative pulmonary artery bleeding in the PAT group (0 vs 18%, p=0.0073), one requiring emergency open thoracotomy conversion.

CONCLUSIONS
Final transection of the most proximal site of pulmonary artery in robotic left upper lobectomy was safe and effective.

Disclosure: No significant relationships.
Keywords: Robotic Surgery, Pulmonary Artery Injury, Surgical Procedure.

Variables	BAT group Br→PA n=38	PAT group PA→Br n=11	*p-Value*
Age, median (range)	69.5 (27-85)	74 (44-79)	0.8468
Sex, male	14 (37%)	5 (45%)	0.6057
Clinical maximum tumor size (mm), median (range)	28 (13-61)	24 (9-72)	0.7734
Operative time (min), median (range)	173 (94-313)	191 (116-348)	0.0496
Console time (min), median (range)	114 (41-260)	131 (69-235)	0.1811
Blood loss (ml), median (range)	5 (1-150)	10 (3-2460)	0.0544
Blood transfusion	0	1 (9%)	0.0621
Intraoperatibe pulmonary artery bleeding	0	2 (18%)	0.0073
Intraoperative air leakage	18 (47%)	6 (55%)	0.6750
Postoperative hospital stay (days), median (range)	6 (3-11)	6 (4-13)	0.3458
Postoperative complications (CD grade ≥ IIIa)	8 (21%)	5 (45%)	0.1065
Thirty-day mortality	0	0	-

P-090

DONOR AGE IS AN INDEPENDENT RISK FACTOR FOR PRIMARY GRAFT DYSFUNCTION AND SURVIVAL AFTER LUNG TRANSPLANTATION IN PATIENTS WITH FIBROTIC LUNG DISEASE

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OBJECTIVES
The choice of donor organs in lung transplantation (LTX) has long been subject to debate, especially with an aging donor and recipient population. The aim of this study is to analyze the incidence and outcome of size, age, and gender mismatch in our lung transplantation cohort with a focus on patients with restrictive lung disease.

METHODS
We retrospectively analyzed the medical records of 231 patients who underwent LTX at our institution between 03/2003 and 12/2021. Statistical analysis was performed using SPSS and GraphPad software.

RESULTS
230 patients were included in the study. A donor ≥55 years of age was associated with a higher incidence of severe primary graft dysfunction (PGD2/3) (p=0.03) and reduced survival after lung transplantation (p=0006). Interestingly, this factor was only highly significant in patients with underlying fibrotic lung disease (p=0.0001). The cause of death in these patients was mostly sepsis and consecutive multi organ failure. In recipients with non-restrictive pulmonary disease, donor age did not seem to influence either postoperative PGD or long-term survival (p=0.35 and p=0.7 respectively). Oversizing of ≥10% compared to the recipients' predicted total lung capacity (pTLC) had no statistically significant effect (p=0.08). Gender mismatch, the recipient's age, the donor's history of smoking and undersizing of donor lungs also revealed no relevant effect on organ functionality or survival.

CONCLUSIONS
In recipients with underlying restrictive pulmonary disease a donor ≥55 years of age was associated with a higher incidence of severe PGD and reduced survival after LTX, as opposed to patients with non-restrictive lung disease. Most studies are conducted with a heterogeneous recipient cohort. Therefore, more studies are needed to further analyse the impact of the patients' underlying disease on organ selection.

Disclosure: No significant relationships.
Keywords: Lung Transplantation, Fibrotic Lung Disease, Donor Age, Survival, Primary Graft Dysfunction.

P-091

SAFETY AND OUTCOME OF ROBOT-ASSISTED THORACOSCOPIC DIAPHRAGM PLICATION

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OBJECTIVES
Diaphragmatic plication can be performed by various surgical techniques and is the treatment of choice in unilateral symptomatic diaphragm paralysis (DP). The aim of this study was to prospectively assess the safety and outcome of a standardized robot-assisted thoracoscopic (RATS) plication technique.

METHODS
41 patients with persistent DP were treated by RATS diaphragmatic plication in the period between 4/18 - 5/22. A full portal robotic 3-arm approach using a DaVinci X-System was applied. Diaphragm plication was performed by Teflon pledget reinforced mattress stitches with non-resorbable sutures. In obese patients with atrophic tissue additional reinforcement was achieved by a monofilament mesh fixed in onlay-technique. Outcome was assessed by lung function tests and a standardized diaphragmatic paralysis questionnaire (DPQ, according to Kosse NJ et al. ICVTS 2021;32(2):244-249). Results are given as mean +-SD. The Wilcoxon Signed Rank Test was applied for statistical analysis.

RESULTS
Age was 57+-11 years and BMI 30+-4 kg/m2. Skin-to-skin time was 110+-30 min and console time 77+-18 min. There was neither any conversion nor any grad III-V complication according to Clavien-Dindo. Length of stay was 5+-2 days. Readmission-rate within 3-months was 2,4%. Recurrence was observed in 4,9% at 3 months follow-up. FEV1 and vital capacity were significantly increased 3-months after operation (FEV1: preop 63+-12%; 3-month: 71+-12%; $p<0.001$). Along with lung function DPQ summit score was improved (DPQ score preop: 39+-16; 3-months: 65+-16 points; $p<0.001$).

CONCLUSIONS
RATS is a feasible and safe minimal-invasive surgical approach for diaphragm plication resulting in improved lung function and quality of life. The proposed DPQ represents an excellent tool to quantitatively asses quality of life following diaphragmatic plication.

Disclosure: No significant relationships.
Keywords: RATS, Diaphram Plication.

P-092

CONGENITAL H-TYPE TRACHEOESOPHAGEAL FISTULA IN AN ADULT PATIENT MANAGED BY RIGHT VIDEO-ASSISTED THORACIC SURGERY (VATS)

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OBJECTIVES

Congenital H-type tracheoesophageal fistulas are rare. We present a 32-year-old female with chronic cough, frequent lung infections and asthma since childhood and congenital H-type fistula.

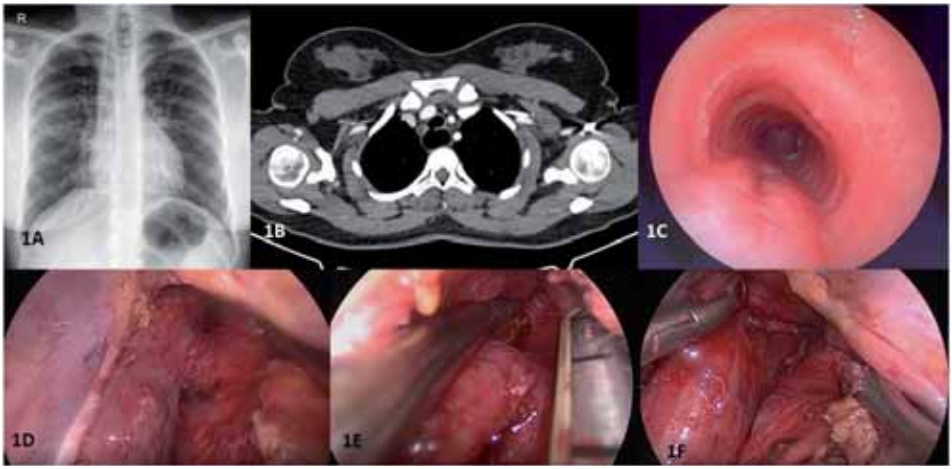
CASE DESCRIPTION

The fistula was visible in CT scan and esophagus was dilated on chest X-ray (Figure 1A and 1B). It was noticed ten cartilage rings above the carina at T1-T2 level at the membranous part during bronchoscopy (Figure 1C). She was otherwise healthy. She was 156 cm and 72 kg (BMI 29.6). A partial sternal split and a tracheal resection anastomosis with closure of fistula would be needed through a cervical approach. Thus, we decided to divide the fistula with right VATS. A biportal VATS was performed with incisions on 4th and 6th intercostal space on the anterior axillary line. Azygos vein was divided. Mediastinal pleura was opened. The fistula was identified close to the apex of the chest (Figure 1D). It was dissected completely, and care was taken not to injure recurrent laryngeal nerves. Stapler was introduced from another port on the 8th intercostal space for a proper angle (Figure 1E). Fistula was divided with a 35 mm curved vascular load (Figure 1F). The mucosal line on the esophagus was reinforced with two separate 3/0 polyglactin sutures. Patient was extubated in the operating room and discharged on postoperative day 3 without any complications.

CONCLUSIONS

There are few case reports in literature about this rare clinical situation. The location of fistula was challenging. Approach site and avoidance of any injury to recurrent laryngeal nerves or membranous part of the trachea were critical concerns. These goals were achieved with a right multiportal VATS approach and proper placement of stapler tip through a correct angle.

Disclosure: No significant relationships.


R
1A
1B
1C
1D
1E
1F

P-093

PROGNOSTIC ROLE OF SOLID, SUBSOLID, AND PURE GROUND GLASS OPACITY (GGO) NODULES OF THE LUNG: A RETROSPECTIVE OBSERVATIONAL STUDY

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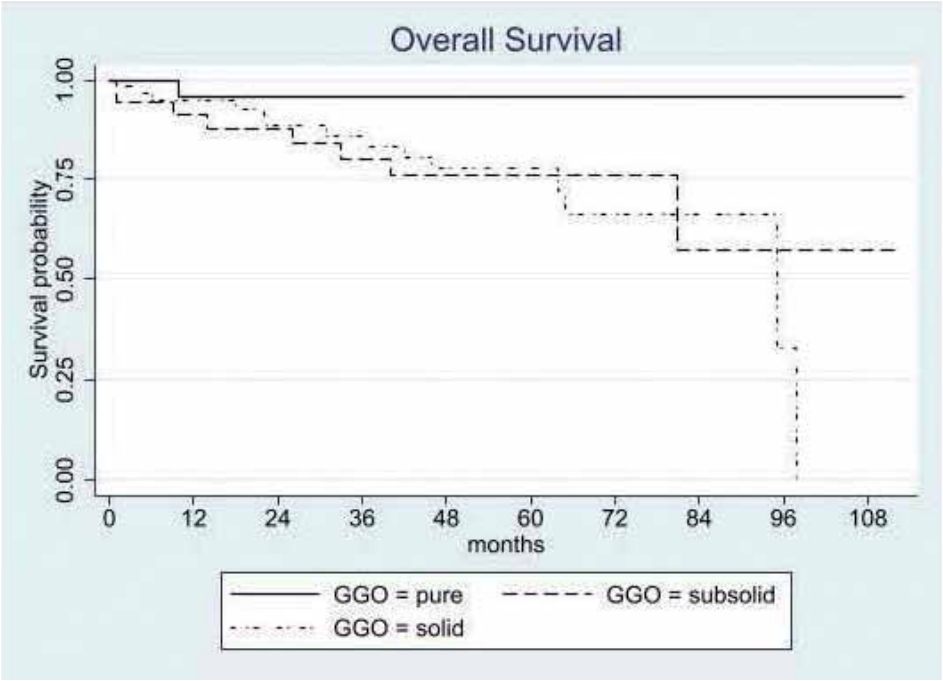
OBJECTIVES
A GGO nodule is a radiological finding characterized by a faded opacity hiding a pre- invasive or invasive adenocarcinoma. GGO can be: 1) pure, or 2) subsolid. The transformation of GGO nodules into solid is a strong indicator of malignancy. Current guidelines suggest 5-years follow-up for pure or subsolid GGOs. This study highlights a similar overall survival (OS) trend for subsolid GGO and solid nodules, compared to pure GGO.

METHODS
This is a retrospective observational study. 133 patients underwent lobectomy between 2010-2021 were analyzed. Density was evaluated by chest CT. Consolidation tumor ratio (CTR) was divided into three groups: pure GGO (Group 1, CTR < 0.5, n = 30), subsolid nodule (Group 2, 0.5 > CTR < 1, n = 37), solid nodule (Group 3, CTR = 1, n = 66). Pearson's chi-square test was used for categorical variables. Overall survival was estimated by Kaplan-Meier, log-rank test for univariate analysis, and Cox's regression for multivariate analysis.

RESULTS
Overall survival (OS) was related to the nodule density for the three groups (Log-rank test p= 0.0440). The 5-years survival was: Group 1= 96% (IC 95%, 73–99%), Group 2= 76% (IC 95%, 56–88%), and Group 3= 78% (IC 95%, 62–88%). Multivariate analysis age adjusted showed that both Group 2 (HR=8.37; IC 95%, 1.03–68.12), and Group 3 (HR=8.66; IC 95%, 1.06– 70.90) have an increased risk compared to Group 1. A similar trend of survival was observed for Group 2 versus and Group 3.

CONCLUSIONS
Patients with pure GGO showed the highest survival rate. Moreover, for Groups 2 and 3, a similar OS trend was observed. Therefore, for pure GGO, a long-term follow-up may be justified, although, for subsolid nodules, surgery should be considered as the first option. This needs to be analyzed in detail in further multicentric studies.

Disclosure: No significant relationships.
Keywords: Ground Glass Opacity, Consolidation Tumor Ratio, Subsolid Nodules.


Overall Survival
Survival probability
0.00
0.25
0.50
0.75
1.00
0
12
24
36
48
60
72
84
96
108
months
GGO = pure
GGO = subsolid
GGO = solid

P-094

THE USE OF CAPNOGRAPHY IN THE IDENTIFICATION OF TRUE AIR LEAKS AFTER SURGERY

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OBJECTIVES
Air leak (AL) is a frequent adverse event after thoracic surgery. Current drainage systems might under/overestimates alveolopleural fistulas leading to several errors in chest drainage management. When AL occurs, the concentration of the principal gas in the pleural space should be similar to that of air exhaled. Accordingly, we tried to develop a new method to identify AL analyzing pCO2 levels in the air flow from the chest drainage using a capnography.

METHODS
This is a prospective observational study of 104 patients who underwent VATS surgery between January 2020 and July 2021. Digital drainage systems were used to detect AL.
Unpaired t test or Mann-Whitney U test for non-parametric variables were applied to discrete or continuous data, and the chi-square test was applied to dichotomous or categorical data. A Cox proportional hazards model was used to evaluate the association between CO2 levels and air leaks.

RESULTS
Patients' characteristics are shown in Table.1. Chest drainage median duration was 2 days (range 1-30). Sixteen of 82 patients (19,5%) that had a parenchymal resection, reported an AL with a median value of 67 ml/min. Patients with AL at the electronic system had higher CO2 levels (median 24mmHg) from the chest drainage ($p<0.001$). Moreover, higher AL were correlated with higher CO2 levels (OR 1.24, 95% CI 1.15-1.33, $p<0.001$). At a final analysis, the detection of CO2 levels was a positive predicting factor for identification of AL (Figure.1).

CONCLUSIONS
Intrapleural CO2 could be an effective tool to assess AL. The linear association between variables allows to hypothesize a role of CO2 in the identification of AL. Further studies should be performed to identify a CO2 cut-off that will standardize the management of the chest drainage.

Disclosure: No significant relationships.
Keywords: Air Leak, Drainage, Complications, PCO2.

Table.1. Patients' Characteristics.

	No air leaks (87 pts)	Air leaks (17 pts)	p Value
Age (mean)	61.67 (12.37)	67.12 (12.56)	0.101
Sex Males Females	 41 (47.1%) 46 (52.9%)	 10 (58.8%) 7 (41.2%)	0.378
BMI	26.64 (4.50)	26.70 (5.22)	0.962
Type of surgery • anatomical lung resections • mediastinal tumor removal • reintervention for air leaks • non-anatomical lung resection • pleural biopsy	 54 (62.1%) 19 (21.8%) 2 (2.3%) 10 (11.5%) 2 (2.3%)	 15 (88.2%) 1 (5.9%) 0 (0%) 1 (5.9%) 0 (0%)	0.336
Air leaks in 1 POD • digital drain leaks (ml) • intrapleural CO2 levels (ml)	 0.0 (0.0-0.0) 4.0 (0.0-7.7)	 67.0 (30.0-80.0) 24.0 (18.0-30.0)	 <0.001* <0.001*
Drainage removal (days)	2.22 (2.30)	8.18 (7.0)	0.003*
Drainage reinsertion (pts)	3 (3.4%)	2 (11.8%)	0.143

Notes: Data are presented as mean (SD), median (P25–P75) or n (%). *p<0.05. Abbreviations: pts: patients; BMI: body mass index; POD: postoperative days.

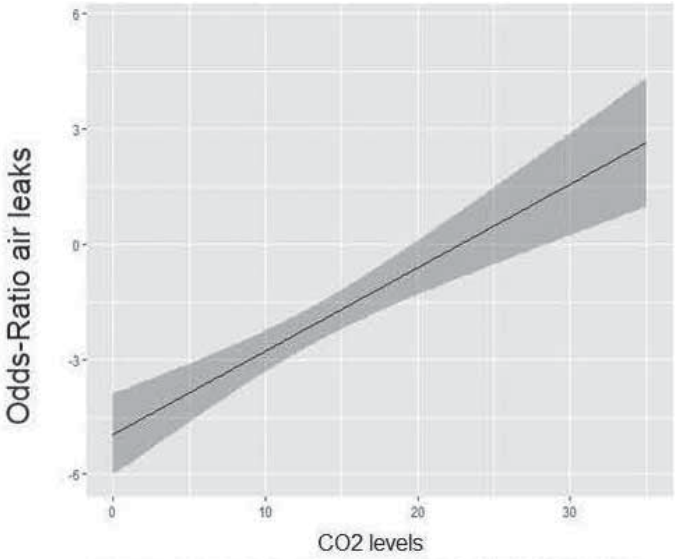

Figure.1: Association between CO2 levels and air leaks.

P-095

CONTIGUOUS MAJOR VISCERAL RESECTIONS IN LARGE MEDIASTINAL TUMORS, SAFETY AND LONG-TERM OUTCOMES- IS IT WORTH IT?

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OBJECTIVES
Surgery forms the mainstay of treatment in mediastinal tumors which might entail multivisceral resections in large tumors for complete clearance. We aim to analyze the perioperative and long-term outcomes of major visceral resections in mediastinal tumors.

METHODS
Retrospective analysis of a prospectively maintained mediastinal tumor database at a tertiary cancer center between, January 2011-December 2021. Mediastinal tumors necessitating major visceral resection (Vascular, anatomic lung, chest wall) due to tumor invasion were included. Data pertaining to demographics, multimodality treatment, peri operative outcomes and follow up were obtained from electronic medical records and analyzed using SPSS 26.0.

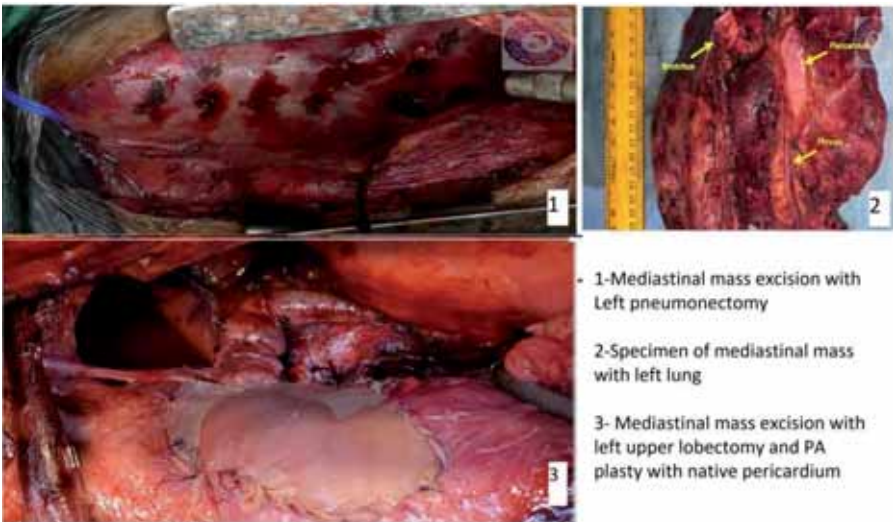
RESULTS
380 mediastinal tumors were resected during this period, 15.7% (60) needed a major visceral resection & multiple visceral structures in 8% (5). Mean age was 33 years. Germ cell tumor accounted for 50% (30) of the tumors followed by thymic tumors 26.7% (16). Mean tumor size was 12.7cm. Access was through median sternotomy in 81.7% (49) and thoracoscopic surgery was feasible in one. Anatomical Lung resection was performed in 75% (45) of the patients with 36.7% (22) needing pneumonectomy. Vascular resections were performed in 25% (SVC-6, Brachiocephalic vein-8, PA plasty-1) and sternal resection in 2. Mean blood loss was 1600ml and mean duration of surgery was 300 minutes. Mean ICU and hospital stay were 1.85 days and 8.78 days respectively. Major complications (≥IIIa) were seen in 13.3% (8) with mortality seen in 1 patient due to a bronchopleural fistula. R0 resection was achieved in 88.3% (53) and 72% (43) were disease free at a median follow up of 28 months. 5-year OS was 62.75%.

CONCLUSIONS
Major visceral resections can be performed safely in large mediastinal tumors. These young patients recover well from major surgery with minimal morbidity and go on to have good overall survival.

Disclosure: No significant relationships.
Keywords: Large Mediastinal Tumors, Pneumonectomy, Vascular Resection.

Characteristics	N
Multivisceral resections	60
Male : Female	47:13
Induction therapy	39 (65%)
Histology	
Germ cell tumor	30
Thymic tumors	16
Sarcoma	9
Others	5
Approach	
Median sternotomy	49
Clam shell	4
Lateral thoracotomy	3
Sternotomy with lateral extension	1
Thoracoscopy	1
Sternal resection	2
Organ resected	
Lobectomy/Bilobectomy	23
Pneumonectomy	22
Superior Vena cava	6
Brachiocephalic vein	8
Pulmonary artery	1
Sternum	2
More than 1 structure	5
Mean blood loss	1600 ml
Mean duration of surgery	300 minutes

Characteristics	N
Post operative complications	
(Clavien Dindo scale)	
I	2
II	5
IIIa	5
IIIb	2
IV	1
V	1
Mean ICU stay	1.85 days
Mean Hospital stay	8.7 days
Resection status	
R0	53(88.3%)
R1	5 (8.3%)
R2	2 (3.4%)



1-Mediastinal mass excision with Left pneumonectomy

2-Specimen of mediastinal mass with left lung

3- Mediastinal mass excision with left upper lobectomy and PA plasty with native pericardium

P-096

THE CLINICAL SIGNIFICANCE OF POSTOPERATIVE THROMBOCYTOSIS AFTER THORACOSCOPIC LOBECTOMY FOR LUNG CANCER

Beatrice Leonardi, Antonio Noro, Francesco Leone, Mary Bove, Giorgia Opromolla, Mario Martone, Rosa Mirra, Davide Gerardo Pica, Francesca Capasso, Vincenzo Di Filippo, Maria Antonietta Puca, Mario Grande, Giuseppe Vicario, Anna Rainone, Francesco Panini D'Alba, Maria Marvulli, Alessia Caputo, Massimino Messinò, Grazia Bergameo, Noemi Maria Giorgiano, Gaetana Messina, Giovanni Natale, Saveria Costanzo, Anna Cecilia Izzo, Giovanni Vicidomini, Antonello Sica, Alfonso Fiorelli
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OBJECTIVES
Thrombocytosis is a clinical condition generally associated with poor prognosis in patients with cancer. Thrombocytosis may be present after lung cancer resection, but the clinical significance of thrombocytosis remains unclear. Herein, we evaluated whether postoperative thrombocytosis was a negative prognostic factor in patients undergoing thoracoscopic lobectomy for lung cancer.

METHODS
It was a retrospective monocentric study including consecutive patients undergoing thoracoscopic lobectomy for lung cancer in the last three years. The outcome of patients with postoperative thrombocytosis (defined as platelet count ≥ 450 x 10^9/L measured at postoperative day 14) was compared with a control group. Postoperative morbidity, mortality, and survival were compared between the two groups to define whether thrombocytosis negatively affected outcomes.

RESULTS
Our study population included 183 patients; of these, 22 (12%) presented postoperative thrombocytosis: 10 (5%) mild thrombocytosis (700-900 x 10^9/L) and three (2%) severe thrombocytosis (900-1000 x 10^9/L). No significant differences were found regarding postoperative morbidity, mortality, and survival between two study groups (Table 1). Thrombocytosis was associated with higher rate of atelectasis and residual pleural effusion ($p < 0.001$). Patients with thrombocytosis were treated with 10 days of low-dose acetylsalicylic acid and no thrombotic events were observed. In all cases the platelet count returned to be within normal value at postoperative day 30.

CONCLUSIONS
Postoperative thrombocytosis seems to be a transient condition due to an inflammatory state and it does not affect the surgical outcome and survival after thoracoscopic lobectomy. Treatment with low-dose acetylsalicylic acid prevents thrombotic events.

Disclosure: No significant relationships.
Keywords: Lobectomy, Thrombocytosis, Lung Cancer, Thoracoscopy.

Variables	**Total (*n* = 183)**	**Thrombocytosis (*n* =22)**	**No thrombocytosis (*n* = 161)**	**p-value**
Operative time (minutes)	133 ± 99	136 ± 89	129 ± 79	0.56
Chest drainage (mL/day)	142 ± 60	146 ± 63	140 ± 70	0.25
Chest tube duration (days)	6.3 ± 4.1	5.9 ± 3.8	6.4 ± 4.3	0.35
Blood loss (mL)	282 ± 55	280 ± 50	285 ± 61	0.41
Transfusion	21 (11%)	2 (9%)	19 (11%)	0.70
Conversion	20 (10%)	2 (9%)	18 (10%)	0.73
Hospital stay (days)	7.2 ± 4.0	7.6 ± 3.5	6.8 ± 3.4	0.32
Complications, n (%):				
Patients with any complication	61 (33%)	4 (18%)	57 (35%)	0.10
Minor complications (grade I-II*)	50 (27%)	6 (27%)	44 (27%)	0.99
Major complications (grade III-IV*)	11 (6%)	1 (5%)	10 (6%)	0.75
Bronchoscopy for atelectasis	18 (10%)	8 (36%)	10 (6%)	< 0.001
90 – day mortality, n (%)	3 (2%)	0	3 (2%)	0.53
Median survival (months)	15 ± 4	15 ± 4	14.5 ± 5	0.45

P-097

LONG TERM ONCOLOGIC OUTCOME IN ROBOT-ASSISTED AND VIDEO-ASSISTED ANATOMICAL LUNG RESECTIONS FOR LUNG CANCER

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[5]*Independent Senior Biostatistician, Sainte-Anne, Guadeloupe*

OBJECTIVES

Our aim was to compare long-term outcomes in patients who underwent video-assisted thoracic surgery (VATS) and robotic-assisted thoracic surgery (RATS) anatomical lung resection for primary lung cancer.

METHODS

We retrospectively reviewed all consecutive patients who underwent RATS or VATS anatomical lung resection for lung cancer between July 2015 and December 2021 in our center. Primary outcomes were the overall survival (OS) and disease free survival (DFS).
We also performed a subgroup analysis comparing OS and DFS in RATS and VATS resections according to the pathological stage of disease.

RESULTS

A total of 763 patients treated with RATS (n=489) or VATS (n=274) were included in the study.
The perioperative characteristics of our cohorts are summarized in table 1.
There was no significant difference in OS between RATS and VATS groups (2 years: 87,6% vs 87,5%; 5 years: 72,5% vs 66,6%, respectively; p =0,775)
Subgroup analysis according to the pathological stage also did not show significant differences in OS between RATS and VATS approach.
There was a statistically significant difference in DFS between RATS and VATS groups (2 years DFS: 94% vs 87,9%; 5 years DFS: 90,5% vs 78,3%; p=0,001). Subgroup analysis according to the pathological stage also demonstrated a significant difference in DFS in stage I (2 years: 96,3% vs 92,8%; 5 years: 91,9% vs 84,3%, respectively; p=0,016) and stage III disease (2 years: 83,1% vs 63,6%; 5 years: 83% vs 45,5%, respectively; p=0,031).

CONCLUSIONS

In our series, RATS anatomical resection for lung cancer led to a significantly higher disease free survival compared to VATS approach. Subgroup analysis confirmed a significantly higher

DFS in RATS resection for pathological stage I and III. There was no difference in the overall survival in our groups comparing RATS and VATS resections.

Disclosure: No significant relationships.

	total n=763		**VATS n=274**		**RATS n=489**		**p value**
age (-/+ SD)	70.2	(-/+ 9.7)	69,4	(-/+ 9.6)	70.7	(-/+ 9.7)	
sex F	478	(62.6)	174	(63.5)	303	(62.0)	
smoker							
no	109	14,29%	30	10,95%	65	13,29%	
former	427	55,96%	190	69,34%	237	48,47%	
yes	119	15,60%	54	19,71%	79	16,16%	
unknown	108	14,15%	0	0.00%	108	22,09%	
PS							
<2	607	79,55%	216	78,83%	391	79,96%	
≥2	156	20,45%	58	21,17%	98	20,04%	
comorbidities							
COPD	176	23,07%	72	26,28%	104	21,27%	
AF	44	5,77%	14	5,11%	30	6,13%	
CAD/IHD	99	12,98%	39	14,23%	60	12,27%	
CKD	31	4,06%	12	4,38%	19	3,89%	
TIA/CVA	23	3,01%	8	2,92%	15	3,07%	
DM	93	12,19%	43	15,69%	50	10,22%	
previous cancer	194	25,43%	67	24,45%	127	25,97%	
surgery							
lobectomy	619	81,13%	216	78,83%	403	82,41%	
segmentectomy	144	18,87%	58	21,17%	86	17,59%	
cTNM							
cI	624	81,78%	235	85,77%	389	79,55%	
cII	95	12,45%	32	11,68%	63	12,88%	
cIII	38	4,98%	7	2,55%	31	6,34%	
unknown	6	0,79%	0	0,00%	6	1,23%	
pTNM							
pI	532	69,72%	185	67,52%	347	70,96%	
pII	136	17,82%	53	19,34%	83	16,97%	
pIII	95	12,45%	36	13,14%	59	12,07%	
mean FU (months)	36,2		50,8		28,1		
OS							0,001
OS 2y	87,5%		87,5%		87,6%		
OS 5y	67,6%		66,6%		72,5%		
DFS							0,775
DFS 2y	91,6%		87,9%		94,0%		
DFS 5y	84,1%		78,3%		90,5%		

P-098

THE CHALLENGING BREAKTHROUGH OF IN-SITU MALIGNANT PLEURAL MESOTHELIOMA: THE DAWN OF A NEW AGE?

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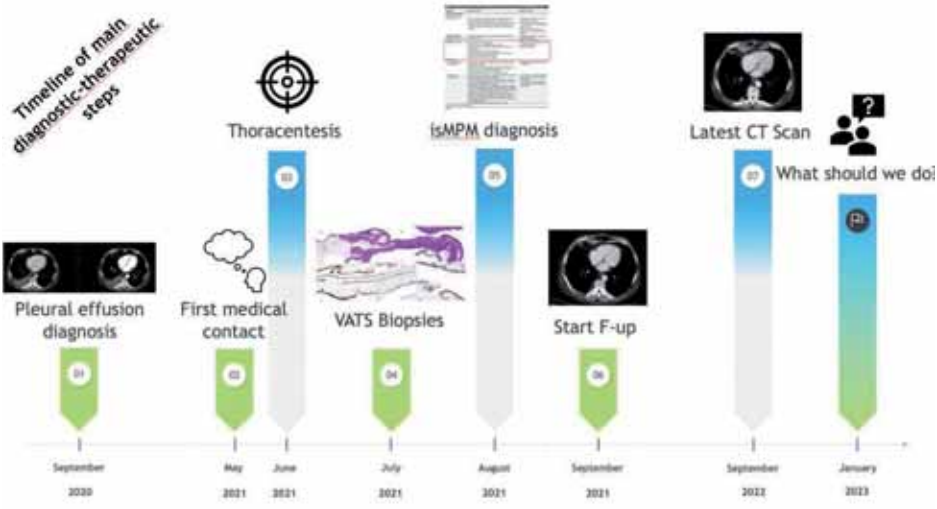
OBJECTIVES
Contemporary advances in molecular techniques have allowed in-situ malignant pleural mesothelioma (isMPM) to be diagnosed according to WHO criteria. Nonetheless, its management is entirely unknown. Here, we report our first challenging experience in handling a case of isMPM, aiming to raise awareness on both the existence of this new entity and the complexity of its diagnostic-therapeutic work-up in lack of any recommendation or knowledge of its natural history.

CASE DESCRIPTION
A 77-year-old man was referred to our Department for asymptomatic and stable right pleural effusion, accidentally revealed 8 months before, without any pleural thickening or pathologic contrast-enhancement. The cytologic examination after thoracentesis revealed atypical mesothelial cells with BAP1 loss. Although without recurring effusion at 1-month, right uniportal thoracoscopy was performed: given the lack of suspicious areas, multiple and extensive parietal pleural biopsies were randomly collected, talc pleurodesis was performed. Histologic examination revealed single layer of atypical mesothelial cells, characterized by loss of BAP1, without features of invasive growth. After multidisciplinary discussion, diagnosis of isMPM was made, and the patient was followed up with 3-monthly chest CT scan. The latest 24-month CT scan revealed a localized centimetric parietal pleural thickening.

CONCLUSIONS
Several diagnostic-therapeutic steps, as presented in Figure 1, will reveal lack of evidence-based univocal recommendations on management of isMPM. Our decisions were based on patient's characteristics and personal experience but are debatable, since each step harbors crossroads with multiple available choices. Together with the audience, we will assess pros and cons of each choice, attempting to find a consensus among the participants, up to the last challenging unanswered question: what should we do now? The isMPM breakthrough could change current clinical practice, but how do we have to deal with it? Could it really represent the dawn of a new age for MPM? To ESTS posterity the arduous sentence.

Disclosure: No significant relationships.
Keywords: Malignant Mesothelioma, In Situ Mesothelioma, Pleura, Diagnosis, Treatment.


Timeline of main diagnostic-therapeutic steps
Thoracentesis
isMPM diagnosis
Latest CT Scan
What should we do
Pleural effusion diagnosis
First medical contact
VATS Biopsies
Start F-up
September 2020
May 2021
June 2021
July 2021
August 2021
September 2021
September 2022
January 2023

P-099

IS THE SOLUBLE FORM OF THE RECEPTOR FOR ADVANCED GLYCATION END PRODUCTS A PREDICTOR OF PRIMARY GRAFT DYSFUNCTION AFTER LUNG TRANSPLANTATION?

Silvana Crowley Carrasco[1], Alberto García Salido[2], Alejandra Romero Román[1], Lucas Hoyos Mejía[1], Mariana Gil Barturen[1], Pablo Cordero Iglesias[1], Felipe Alayza Avendaño[1], Jose Manuel Naranjo Gómez[1], Mar Córdoba Peláez[1], David Gómez De Antonio[1], Jose Luis Campo-Cañaveral De La Cruz[1]
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OBJECTIVES
Description of inflammatory profile after lung transplantation (LT) is currently an area of increasing interest. The aim of this study is to describe the relationship between plasma levels of the soluble form of the receptor for advanced glycation end products (sRAGE) and the development of severe primary graft dysfunction (PGD).

METHODS
This retrospective study includes 36 bilateral LT from brain death donors performed between January-2014 and November-2016 in our institution. Patients requiring intraoperative cardiorespiratory support were excluded. Donors and recipients variables and postoperative outcomes were prospectively collected. Plasma levels of sRAGE were measured at 24 and 72 hours after LT using enzyme-linked immunosorbent assay (ELISA). PGD was scored according to 2016 International Society for Heart and Lung Transplantation (ISHLT) consensus guidelines.

RESULTS
Out of the 36 patients, 24 were men (66.6%), median age was 54.7 years (IQR 20-65 years) and median LAS score was 36.13 (IQR 29.4-56). The most frequent underlying disease was emphysema (52.8%). The incidence of PGD grade 0-1 at 72 hours was 55.6% (20 patients) and PGD grade 2-3 was 44.4% (16 patients). All the patients who developed PGD grades 2-3 at 72 hours had increased sRAGE plasma levels at 24 and 72 hours (odds ratio=1.46 per 250 pg/ml increase in recipients sRAGE levels at 24 hours, p=0.009; and odds ratio=1.44 in sRAGE levels at 72 hours, p=0.019). Incidence of chronic lung allograft dysfunction (CLAD) was similar between those patients developing PGD grade 0-1 and grade 2-3 (40% vs. 37.5%, p=0.878). Survival rate at 30 days, 1, 3 and 5 years was 100%, 91.6%, 86% and 80.5%, respectively.

CONCLUSIONS
The outcomes of our study suggest that plasma levels of sRAGE might be a predictive biomarker of moderate to severe PGD after LT. Further studies are needed to better understand its correlation to PGD clinical course.

Disclosure: No significant relationships.

Keywords: Receptor For Advanced Glycation End Products, Primary Graft Dysfunction, Lung Transplantation.

P-100

UNIPORTAL ROBOTIC ASSISTED BRONCHIAL, VASCULAR AND CARINAL SLEEVE RESECTIONS: EARLY EXPERIENCE WITH 33 CASES

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[11]*Hospital Santa Lucia, Brasilia, Brazil*

OBJECTIVES

To report the operative technique and short-term outcomes of our early experience in sleeve resections performed by uniportal robotic-assisted thoracic surgery (uRATS).

METHODS

A retrospective review of a prospectively maintained database identified patients who underwent uRATS sleeve resections using the da Vinci Surgical System Xi® from September 2021 to January 2023. We evaluated baseline characteristics, surgical approach and perioperative outcomes. Continuous data were expressed as mean ± standard deviations, while categorical variables were presented as the number of patients and percentages.

RESULTS

A total of 33 patients were enrolled (23 males and 10 females with an average age of 59.8 ± 1.4years). Primary lung cancer was the most common indication, in particular, squamous cell (30%), carcinoid (25%) and adenocarcinoma (21%) with a tumor size of 3.6 ± 0.2 cm. The approach was mainly pure uRATS using robotic staplers in 30 patients (91%). The approach was considered hybrid in 3 cases (9%) due to the placement of endoscopic staplers through the uniport. The most common sleeve type was bronchoplasty (88%), followed by bronchoangioplasty (9%) and angioplasty (3%). Left upper sleeve lobectomy was the most frequent procedure (18%), and there were 5 cases of sparing lung surgery (1 tracheal, 1 main carinal, and 3 second carinal reconstructions). The number of lymph nodes removed was 16.6 ± 0.8, and the number of stations was 4.4 ± 0.2. Surgical time was 176 ± 5.4 minutes, duration of chest drain was 4.7±

0,5 days, and hospital stay was 6.4 ± 0.5 days. One patient died during the first 30 postoperative days due to acute respiratory distress syndrome.

CONCLUSIONS

Uniportal RATS sleeve resections are feasible and safe, with results comparable to multiportal RATS in experienced hands. As it occurs with uniportal VATS, this approach demands a profound knowledge of specific technical details requiring time to master.

Disclosure: No significant relationships.
Keywords: Sleeve, RATS, Uniportal.

P-101

RIGHT RE-REDO-VATS LOWER LOBECTOMY WITH MIDDLE LOBE PRESERVATION AFTER A RIGHT UPPER LOBECTOMY FOR METACHRONOUS LUNG ADENOCARCINOMA: A CASE REPORT

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OBJECTIVES

To demonstrate the feasibility and the efficacy of middle lobe preservation to avoid pneumonectomy through a unique case of right re-redo-VATS lower lobectomy after a right upper lobectomy for metachronous lung adenocarcinoma.

CASE DESCRIPTION

The patient is a 68-year-old female, who underwent a VATS right upper lobectomy for a lung adenocarcinoma 6 years earlier and a reVATS S10 segmentectomy for suspected recurrence 3 years after. During the oncological follow-up, 5 new-onset nodules in the right lower lobe were detected: one of them was sampled and resulted positive for adenocarcinoma. The patient was conscious of the high probability of a completion pneumonectomy, for which she underwent all necessary pre-operative exams, including lung scintigraphy. However, by a right triportal re-redo-VATS approach only a right lower lobectomy was performed, with middle lobe preservation considering its great re-expansion at the end of the surgery, without macroscopic risks of lobar torsion. No residual lobe fixation system was employed.

The postoperative course was uneventful, and the patient was discharged on postoperative day 5. The final pathological examination confirmed the presence of 5 metachronous lung adenocarcinoma.

The respiratory function tests showed a natural reduction in the respiratory reserve after each surgery, with satisfactory values 3 months after the 3rd operation: FEV1 1.45 l(69%), FVC 1.96 l(78%), TLC 3.51 l(72%), RV 1.53 l(76%), DLCO 48%.

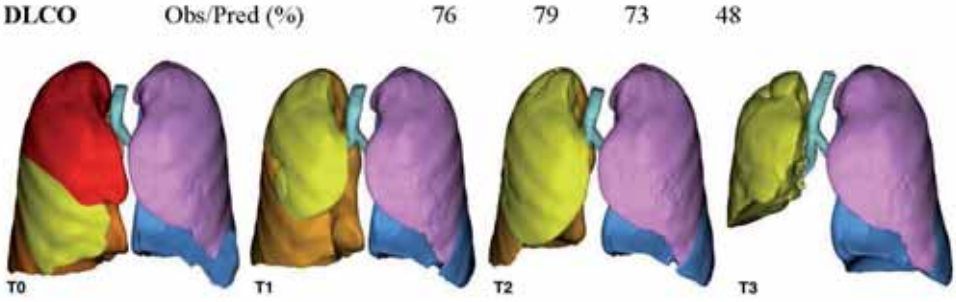
The volumetric calculations made on the preoperative (T0) and the postoperative CT-scans after the 1st(T1), the 2nd(T2) and 3rd(T3) surgery showed an excellent volumetric re-expansion capacity of the middle lobe. The value at T3(986.385 cm3) compared to T0(505.928 cm3) was almost twice as much(+94%).

CONCLUSIONS

In selected cases of re-operated patients, in which middle lobe re-expansion is appreciable both at CT-scan and after the re-inflation at the end of the surgery, its preservation can represent a valid surgical option to preserve the residual respiratory reserve.

Disclosure: No significant relationships.
Keywords: Lung Cancer , Middle Lobe Preservation, VATS, REDO-VATS.

			T0		T1		T2		T3	
ML Volume	cm^3		505.928		380.767		696.103		986.385	
ML Expansion	%		--		-24.74		+37.59		+94.96	
ML Density	HU		-837.364		-863.581		-852.470		-863.420	
VC	Observed (l)	Obs/Pred (%)	3.40	116.4	2.98	113	2.79	111	1.98	79
FVC	Observed (l)	Obs/Pred (%)	3.40	121.1	2.92	111	2.76	110	1.96	78
FEV1	Observed (l)	Obs/Pred (%)	2.75	116.3	2.51	113	1.97	94	1.45	69
FEV1/FVC	Observed (%)		80.88		85.71		71.55		73.93	
RV	Observed (l)	Obs/Pred (%)	2.06	104	1.95	98	1.75	87	1.53	76
TLC	Observed (l)	Obs/Pred (%)	5.25	102.9	4.93	99	4.55	93	3.51	72
DLCO	Obs/Pred (%)		76		79		73		48	



P-102

A RISK MODEL COMBINING CLINICAL AND PATHOLOGICAL FEATURES TO PREDICT PROGNOSIS FOR STAGE I LUNG ADENOCARCINOMA

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OBJECTIVES
We aim to build a risk model to better predict disease recurrence rate for stage I lung adenocarcinoma than conventional prediction system.

METHODS
Patients between January 2016 and December 2019 with stage I lung adenocarcinoma who underwent complete resection and did not require postoperative adjuvant treatment were enrolled. Information about pathology, gene mutation, clinical and follow-up were collected. The prediction model used LASSO analysis and machine learning to risk group generation and prediction of RFS. A concordance probability estimate (CPE) was used to assess the predictive ability of the prediction model.

RESULTS
There were 437 patients enrolled. In Multivariable analysis, age, respiratory comorbidity, grade 3(Hazard ratio[HR]: 1.043; 95%CI: 1.011-1.077; P = 0.005) and STAS (HR: 4.895; 95%CI: 2.212-10.831; P < 0.001) were independent predictors for RFS. Each patient was given an adjusted risk score and divided into different risk groups accordingly. The patients were divided into two groups which separate significantly in 5-year recurrence-free survival. The new prediction model performed better than the TNM-based model (CPE, 0.68 vs 0.56, P<0.05) for prediction of RFS.

CONCLUSIONS
In this article, we report a novel prediction model which improves the accuracy of predicting recurrence risk for stage I lung adenocarcinoma after complete surgical resection. This model can be used to identify early-stage patients at high risk of recurrence, and help further investigate how to improve their prognosis.

Disclosure: No significant relationships.
Keywords: Lung Adenocarcinoma, Gene Mutation, Pathological Feature, Recurrence, Prognosis Prediction.

P-103

CLINICAL SCORE FOR COLORECTAL CANCER PATIENTS WITH LUNG-LIMITED METASTASES UNDERGOING SURGICAL RESECTION: META-LUNG SCORE

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OBJECTIVES

Although no randomized study conveys clear and established indications for surgery, several retrospective studies have demonstrated survival advantages in certain subgroups of patients with metastatic colorectal cancer undergoing lung metastasectomy. Our study aimed to find a score that would correlate to clinical outcomes, in order to better select patients with lung metastases from colorectal cancer who could benefit from surgical resection.

METHODS

A retrospective multicentre cohort study was conducted on patients aged 18-85 who underwent colorectal lung metastasectomy with curative intent. Locoregional control of the primary neoplasm was mandatory to be considered for metastasectomy. Patients with a history of other cancers and extrathoracic disease were excluded from the study, except the cases with previously resected liver metastases or resectable synchronous liver lesions.

RESULTS

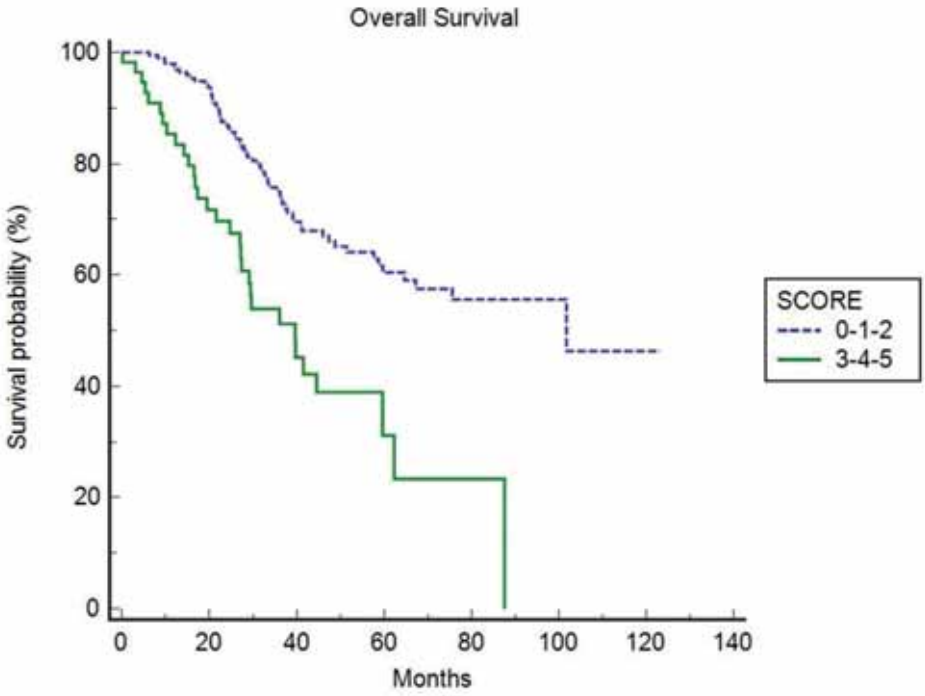
Clinical data from 260 consecutive colorectal lung metastasectomies were analysed. At univariate analysis, features associated with poor prognosis were increased serum CEA levels ($p=0.0001$), disease-free survival ≤ 12 months ($p=0.0043$), lung metastases > 2 cm in diameter ($p=0.0187$), multiple resectable nodules ($p=0.0083$) and the presence of nodal involvement with the primary colorectal tumour ($p=0.0011$). At COX regression model, these five characteristics retained their independent role for overall survival ($p<0.0001$) and were chosen as criteria to be assigned one point each for clinical risk. The resulting score was highly predictive of long-term outcomes ($p<0.0001$) after metastasectomy. According to score range 0-2 and 3-5, two

categories with good and bad prognosis were identified. A median overall survival of 101.7 months (95%CI 64.6-101.7) was found in the good prognosis group compared to 39.5 months (95%CI 27.3-87.5) in the poor prognosis patients (p<0.0001) (Fig.1).

CONCLUSIONS

In patients with lung metastases from colorectal cancer, our score (Meta-Lung Score) appeared to be a useful prognostic tool in selecting candidates for radical surgical treatment. In cases with bad prognosis score, alternative treatment approaches may be considered.

Disclosure: No significant relationships.
Keywords: Colorectal Cancer, Lung Metastasectomy, Prognostic Factor, Clinical Score.



P-104

OUTCOMES OF OBSERVATIONAL STRATEGY FOR CONGENITAL TRACHEAL STENOSIS - A RETROSPECTIVE COHORT ANALYSIS

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OBJECTIVES
Congenital tracheal stenosis (CTS) is a rare condition characterized by the presence of complete tracheal rings. Surgical reconstruction is the primary therapeutic option; however, the observational strategy is feasible in selected cases. Therefore, this study focuses on a group of patients with CTS set for observation only and their respective outcomes.

METHODS
We analyzed a cohort of patients diagnosed with CTS between January 2008 and December 2019 in a tertiary medical institution and selected those who were managed by observational strategy. In addition, we collected retrospective data from the medical records.

RESULTS
Ten patients were diagnosed with CTS (5 females, median age at diagnosis of 9 months). Six patients had associated congenital anomalies; the most common was a heart condition (83%). The mean stricture diameter was 4,6mm. Three cases had bronchial involvement, with 1 case of a tracheal bronchus. Seven patients had minor or no respiratory symptoms, and the diameter of their stenosis was larger than 4mm. The observational strategy in these patients was successful in 6 of them, and no interventions were needed. They remained clinically well during a mean follow-up of 42 months. One patient experienced worsening symptoms after tracheal laceration during attempted endoscopic dilatation and underwent slide tracheoplasty. Three patients required intubation before diagnosis; two were considered unfit to undergo tracheal surgery due to associated malformations (1 died of a worsening heart condition, and another underwent tracheostomy for ventilator weaning before hospital discharge). One case had the surgery contraindicated due to short tracheal morphology, was observed only, and died two months after hospital discharge from infectious complications.

CONCLUSIONS
Observational strategy for CTS is feasible for selected patients with minor symptoms and mild strictures since the airway grows and enables monitoring. However, the need for a tracheostomy was associated with a worse clinical condition and other comorbidities.

Disclosure: No significant relationships.
Keywords: Congenital Tracheal Stenosis, Non-Surgical Treatment.

P-105

ENHANCEMENT OF PRIMARY NON-SMALL CELL LUNG CANCER ORGANOID GROWTH USING THE TGF-B INACTIVATOR NOGGIN

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OBJECTIVES

For the development of a personalized treatment approach in non-small cell lung cancer (NSCLC), representative and individualized in-vitro model systems are required. Patient-derived organoids are promising model systems for future clinical applications such as an early assessment of treatment response. However, the establishment of primary NSCLC organoids is challenging and the conservation of histomorphological features and genetic aberrations remain a central issue. We therefore aimed to assess the effect of four different signaling molecules on the growth of primary NSCLC organoids.

METHODS

Surgically resected NSCLC tissue specimens were collected and processed. For organoid culture, cell suspensions were mixed with a gelatinous extracellular matrix and submersed in an advanced DMEM/F12-based growth medium. For each NSCLC specimen, organoid growth was assessed in five different medium compositions: a standard medium, a medium including A83-01 (ALK-inhibitor), a medium including Noggin (TGF-B inactivator), a medium including CHIR99021 (GDK3-inhibitor) and a medium including A83-01, Noggin and CHIR99021. Validation was performed by histology, immunohistochemistry and targeted next generation sequencing using the Oncomine Focus Assay (ThermoFisher Scientific).

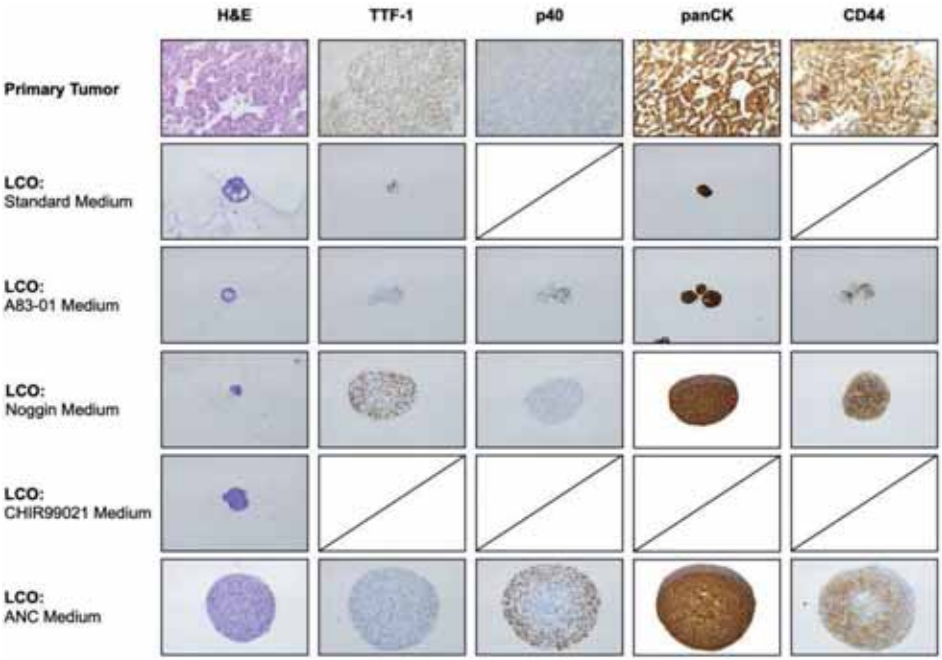
RESULTS

From 5 resected NSCLC samples, primary organoid cultures were successfully established and expanded during early passages. For each patient, the culture was performed synchronously using the abovementioned medium compositions. Upon histological and immunohistochemical validation, the organoids treated with Noggin-based medium showed an improved growth while maintaining the distinct characteristics of the parental tumor. While genetic aberrations were only present in 2 parental tumors including an EGFR-duplication and a KRAS pG12C mutation, the KRAS pG12C mutation was maintained in the Noggin-treated culture.

CONCLUSIONS

The addition of the TGF-B inactivator Noggin may improve the growth of NSCLC organoids while maintaining the identical histomorphological and genetic profile as detected in the parental tumor. A systematic use of Noggin may therefore support the establishment of primary NSCLC organoids for future clinical applications.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Organoid Model, Ex-Vivo Model, Cell Culture.



P-106

COMPUTERIZED LOBE-ORIENTATED QUANTIFICATION OF EMPHYSEMA IN A LUNG COMPUTED TOMOGRAPHY (CT) OF A PATIENT WITH SEVERE COPD USING THREE-DIMENSIONAL (3D) SLICER AND LUNG COMPUTED TOMOGRAPHY (CT) ANALYZER

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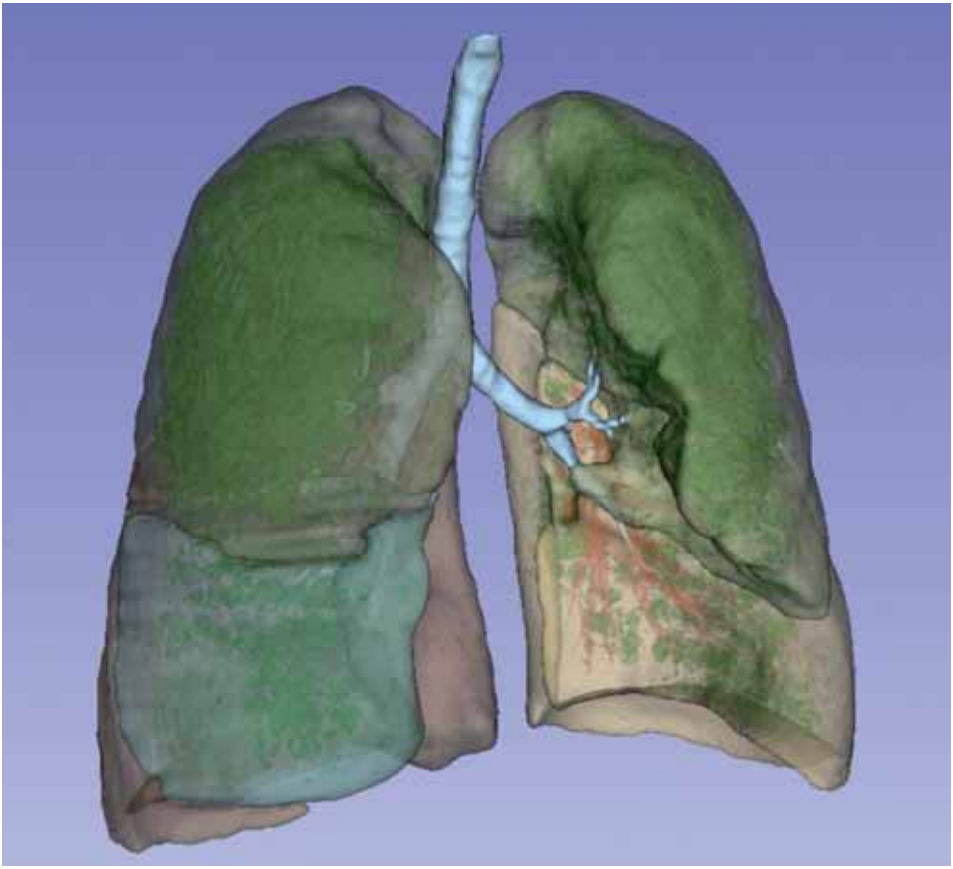
OBJECTIVES
Softwares and toolkits that can perform a three-dimensional lung segmentation from preoperative computed tomography (CT) images are becoming a fundamental component in the planning of thoracic procedures. Here, we report the use of an open-source program for lung segmentation in the preoperative assessment of a lung volume reduction surgery (LVRS) candidate with heterogenous lung emphysema.

CASE DESCRIPTION
We report the case of a 67-year old female patient with chronic obstructive pulmonary disease (COPD) GOLD 3, Risk Class D and heterogeneous lung emphysema. The patient is an ongoing smoker and under home oxygen therapy. In a pulmonary function test, a severe hyperinflation with a residual volume (RV) of 5.28l (281% predicted) a total lung capacity (TLC) of 7.22l (163% predicted) and a RV/TLC of 73% was revealed. The patient was therefore admitted for the evaluation of surgical or bronchoscopic LVR. Chest CT showed a markedly heterogeneous emphysema morphology. In order to measure volumes and destruction in milliliters, an automated three-dimensional segmentation of the lung parenchyma was performed using the LungCTAnalyzer extension of the free and open-source 3D Slicer medical imaging platform (www.slicer.org). Lung lobes were detected with TotalSegmentator AI and emphysematic areas were segmented using thresholding a standard Hounsfield unit range of -1050 to -950. Computer analysis took 110 seconds without manual intervention on a modern desktop PC with GPU. The right upper lobe was predominantly affected by emphysema (371 ml of 1036 ml [35.8%]) and would be the target structure for future interventions.

CONCLUSIONS
The LungCTAnalyzer extension of the free and open-source 3D Slicer medical imaging platform offers a fast, unbiased and reliable option for preoperative lung emphysema reconstruction and target zone identification before surgical or bronchoscopic LVR.

Disclosure: No significant relationships.
Keywords: Emphysema, COPD, Computerized Quantification, 3D Slicer, Lung CT Analyzer.



P-107

CONTINUOUS INTRAOPERATIVE NEUROMONITORING OF BILATERAL RECURRENT LARYNGEAL NERVES DURING VIDEO-ASSISTED THORACIC SURGERY IVOR LEWIS OPERATION-ITS SAFETY AND EFFICACY IN PREVENTING VOCAL CORD PARALYSIS

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OBJECTIVES

Vocal cord palsy(VCP) after recurrent laryngeal lymph node(LN) dissection is detrimental. We developed a technique of continuous intraoperative neuromonitoring(CIONM) of bilateral recurrent laryngeal nerves(RLNs) during video-assisted thoracic surgery(VATS) Ivor Lewis operation. There have been no reports of CIONM applied to minimally invasive Ivor Lewis operations, we performed this study to evaluate the safety and efficacy of our technique in preventing vocal cord palsy.

METHODS

From 2017 to 2022, 28 patients with primary esophageal squamous cell carcinomas underwent VATS Ivor Lewis operation with a total 2-field LN dissection. There were 19 patients in the unmonitored group and 9 patients in the CIONM group. The technique of RLN LN dissection in both groups was consistent with most of the dissection near the RLNs being done by sharp dissection avoiding the use of energy devices. An automated periodic stimulation(APS) probe was attached to the right RLN over the right subclavian artery and to the left RLN over the aortic arch for CIONM during the LN dissection. Clinical outcomes were analyzed.

RESULTS

There were no operative mortalities in both group. CIONM was successful in all the cases. The total operation time was similar with 372.5±15.5 and 388.9±24.5 minutes for the unmonitored group and CIONM group, respectively(P=0.563). There was no statistical difference in both groups' left and right harvested RLN lymph node number(P=0.725, P=0.115). There were 9 cases(47.3%) of immediate postoperative VCP in the unmonitored group, whereas there was only one hypomobile case(11.1%) in the CIONM group(P=0.098). Although statistically insignificant, there was no persistent VCP in the CIONM group whereas 7 (36.8%) was in the unmonitored group(P=0.062).

CONCLUSIONS

The CIONM of bilateral recurrent laryngeal nerves for VATS Ivor Lewis operation was safe and effective. There was a trend towards reduced immediate postoperative VCP and persistent VCP in the CIONM group. CIONM might be helpful in preventing VCP.

Disclosure: No significant relationships.
Keywords: Esophageal Neoplasms, Thoracic Surgery, Video-Assisted, Vocal Cords.

Variables	Unmonitored group (n=18)	CIONM group (n=9)	P value
Age (years)	69.7±7.9	63.0±2.9	0.018
Sex			1.000
Male	11	8	
Female	7	1	
Tumor location			0.095
Upper	1	0	
Middle	11	1	
Lower	7	8	
Neoadjuvant therapy			0.371
No	10	6	
Chemotherapy	4	0	
CCRT	5	1	
Postoperative staging			0.061
I	2	0	
II	8	5	
III	6	5	
IV	2	1	
Postoperative hospital stay (days)	24.2±7.9	19.6±2.9	0.405
Total operation time (minutes)	372.9±15.5	389.8±24.2	0.063
Thoracotomy conversion	0	0	1.000
CIONM data			
Success (rate, %)		16 (100%)	
Time for APT1 probe attachment for Right RLN		13.3±7.2	
Time for APT1 probe attachment for Left RLN		9.8±3.9	
Total CIONM time for Right RLN		15.6±10.9	
Total CIONM time for Left RLN		15.1±6.6	
Initial baseline amplitude (μV) for Right RLN		1104.4±274.9	
Final baseline amplitude (μV) for Right RLN		1106.7±142.9	
Initial baseline amplitude (μV) for Left RLN		669.1±140.9	
Final baseline amplitude (μV) for Left RLN		740.1±135.6	
Amplitude decrease < 50% baseline event for Right RLN		0	
Amplitude decrease < 35% baseline event for Left RLN		0	
Lymph node harvest			
Left RLN	6.94±2.56	4.67±3.28	0.125
Right RLN	2.74±2.16	4.11±3.90	0.111
Total thorax	31.66±10.66	30.67±10.81	0.819
Total thorax and abdominal	32.82±11.81	32.75±13.59	0.991
Postoperative complications ≥ Clavien-Dindo grade 2			
Immediate postop. VCP (rate, %)	8 (47.3%)	1 hypomobile (11.1%)	0.058
persistent VCP (rate, %)	7 (36.8%)	0 (0%)	0.063
Anastomotic site leakage (rate, %)	1 (5.3%)	0 (0%)	1.000
Respiratory complications (rate, %)	10 (52.6%)	2 (22.2%)	0.225
Cardiovascular complications (rate, %)	0 (0%)	0 (0%)	1.000
Chylothorax (rate, %)	0 (0%)	0 (0%)	
Operative Mortality	0	0	

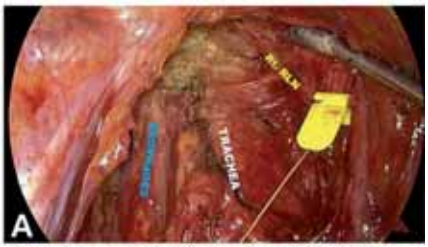

Fig A. After Rt. RLN LN dissection under CIONM

Fig B. After Lt. RLN LN dissection under CIONM

P-108

PREDICTION OF PATHOLOGICAL PLEURAL INVASION OF PERIPHERAL CT1 NON-SMALL LUNG CANCER BY DEEP-LEARNING ANALYSIS OF THORACOSCOPIC IMAGES: A PILOT STUDY

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OBJECTIVES

Sublobar resection for peripheral non-small cell lung cancer (NSCLC)(≤2 cm) is becoming one of the standard procedures. Retrospective studies demonstrated that pathological pleural invasion (pl) is a risk factor for local recurrence during sublobar resection. If pl can be predicted intraoperatively, converting to lobectomy may reduce the risk. A deep-learning algorithm predicting pl from thoracoscopic images was developed.

METHODS

Among consecutive patients who underwent radical thoracoscopic surgery for cT1N0M0 NSCLC (TNM 8th) from 5/2020 to 3/2022, 80 patients with pleural surface changes due to tumor (excluding cTis/1mi and peritumoral adhesions) on thoracoscopic images were included. The surgeon annotated the time when the tumor was recognizable on the video. A tumor recognition deep learning model using the ResNet50 architecture was constructed from images extracted from video and focus was visualized using Grad-CAM. From images with tumor recognition, the degree of pl (pl0 or pl1/2) was analyzed (trained on 64 patients, validated on 16 patients). Predictive ability was compared with the surgeon's intraoperative evaluation (PL) using McNemar's test.

RESULTS

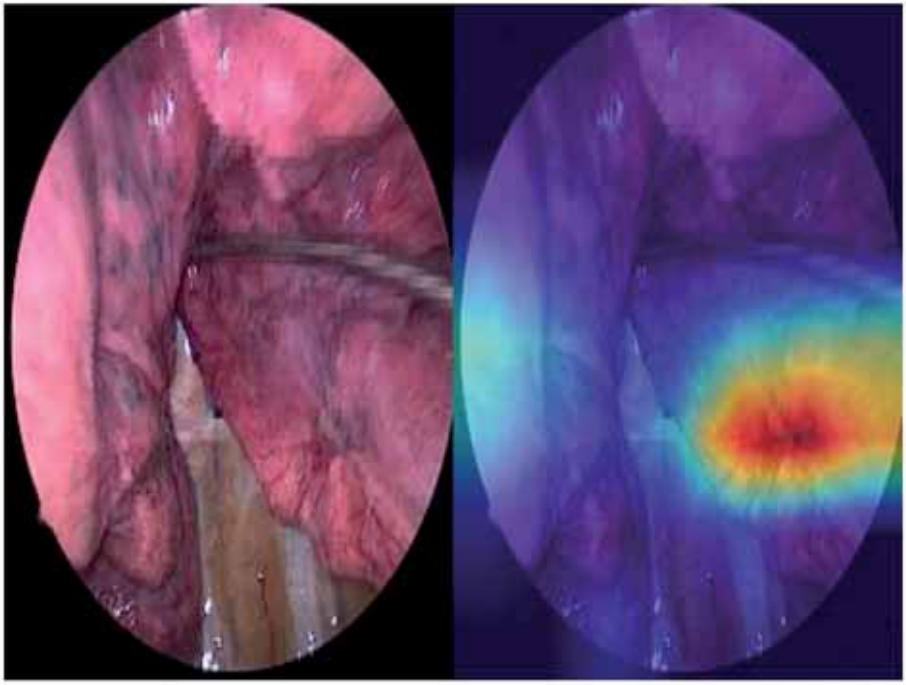
Among 80 patients (age 69±10, 42.5% female, tumor diameter 20±7 mm), pl1/2 were found in 18/4 patients, respectively. Compared to the pl0 group (N=58), the pl1/2 group (N=22) was significantly older, with larger solid diameter, more pure solid nodules, and higher SUVmax. Among the 422873 images extracted from all videos, 2074 showed tumors, of which 608 were pl1/2. The tumor recognizing algorithm had an accuracy of 0.78 and F1 score of 0.60. The accuracy of PL and deep learning in predicting pl was 0.75 and 0.69, respectively (p=0.32).

CONCLUSIONS

Deep learning analysis of thoracoscopic images of lung cancer surgery showed the possibility of localizing tumors with pleural changes and prediction of pl to a comparable degree to PL.

We will examine whether further learning can provide predictions outperforming those of surgeons.

Disclosure: No significant relationships.
Keywords: Deep Learning, Sublobar Resection, Thoracoscopic Surgery, Lung Cancer.



P-109

SEARCHING FOR ECTOPIC THYMUS IN ADULTS WITHOUT THYMIC DISEASE

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OBJECTIVES
Thymus is considered an involuted organ in adults without thymic disease. However, the presence of persistent normal thymic tissue in the mediastinum over the age of 40 has been anecdotally reported. The presence of non-mediastinal thymic tissue in adults has never been investigated. The aim of this study was to search for the presence of thymus in the pericardial fat pad in a cohort of adults operated on for pulmonary or pleural disease.

METHODS
A systematic biopsy of the pericardial fat pad behind the phrenic nerve was systematically performed in a series of 20 patients who underwent surgery for lung cancer or mesothelioma during the period April-September 2022. Specimens were analysed histologically and immunohistochemistry (IHC) was performed (CD3, CD5, panKRT, CD20, Tdt and CD68) when lymphoid aggregates, pseudocysts or Hassall's bodies were identified.

RESULTS
Samples were analysed in 19 patients, as one specimen was not adequately fixed. Median age of the cohort was 69 year. Presence of thymic tissue in the pericardial fat pat was identified in 2 cases (10.5%), both positives for CD5, CD20 and Tdt. Lymphoid aggregates were found in 4 patients (21%) and pseudocysts in 4 additional cases. These anomalies did not show a peculiar pattern at IHC.

CONCLUSIONS
Over the age of 60, thymic tissue is present in pericardial fat pad in 10% of cases and other structures related to thymus, such as lymphoid aggregates or pseudocysts, are detected in 40% of cases. The functional role of this tissue and the correspondent status of mediastinal thymus remain unclear.

Disclosure: No significant relationships.
Keywords: Ectopic Thymus, Adult Patients.

P-110

CHEST ULTRASOUND BY A THORACIC SURGERY RESIDENT; CAN WE RELAY ON TO DETECT POST-OPERATIVE PULMONARY COMPLICATIONS?

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Assiut University, Assiut, Egypt

OBJECTIVES

A daily chest X-ray is performed post thoracic surgical intervention till discharge. However, chest X-rays are exposing patients to ionizing radiation requiring patient movement with chest drains, difficult positioning, and time consuming. Using chest ultrasound. is a good alternative in expert hands because it is a bedside, more sensitive and accurate in detection of pulmonary complications. we hypothesis that a thoracic surgery resident with a short training program in chest ultrasound can get a comparable results to conventional chest x ray in detecting post-operative pulmonary complications. The aim of this study is to analyze the diagnostic agreement between chest x-ray and ultrasound evaluation by resident in the postoperative follow-up of thoracic surgery.

METHODS

Observational prospective study in postoperative thoracic surgery. Eighty- six adult patients underwent thoracic surgery were included. Every patient had a chest x-ray and chest US. Follow up at day 0 day 3 and day 5 post-operative.
The chest US examination for all patients was done by the same operator then results revised by an expert sonographer. chest US. and X-ray evaluations was to detect: pneumothorax, pleural effusion, pulmonary consolidation and interstitial pattern.

RESULTS

in detecting pneumothorax, both diagnostic procedures show substantial agreement (K=0.661, P<0.001). while for pleural effusion; both diagnostic procedures show moderate agreement (K=0.448, P<0.001), no cases developed interstitial pattern either at day 0, 3rd, and 5th day post-operatively. Totally both diagnostic procedures show perfect agreement (K=0.838, P<0.001). The time lag to perform chest US. was statistically lower than the time lag to perform chest x-ray ; median (range) was 7 (3 – 12) minutes versus 80 (40 – 150) minutes respectively (P<0.001).

CONCLUSIONS

diagnostic agreement between transthoracic ultrasound and X-ray is perfect for pulmonary consolidation, moderate for pleural effusion and pneumothorax . doing chest ultrasound by thoracic surgery resident is less time lag and easy bedside diagnostic tool.

Disclosure: No significant relationships.
Keywords: Transthoracic Ultrasound , Postoperative Complications , Thoracic Surgery, Chest X-Ray, Pleural Effusion.

P-111

WITHDRAWN

P-112

DEVELOPMENT OF A HIGHLY BIOMIMETIC TRACHEA TISSUE WITH "OUTER LAYER WITH C-SHAPED CARTILAGE/MIDDLE LAYER WITH VASCULARIZED ELASTIC FIBER/INNER LAYER WITH ANTIBACTERIAL AND ANTI-INFLAMMATORY NANOFIBER" FOR USE IN REPAIRING LONG-SEGMENTAL TRACHEA

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OBJECTIVES

To develop a highly biomimetic trachea tissue with "outer layer with C-shaped cartilage/middle layer with vascularized elastic fiber/inner layer with antibacterial and anti-inflammatory nanofiber" for use in repairing long-segmental trachea,

METHODS

The C-shaped porous polyurethane urea (PEUU) scaffold was prepared by mold casting and thermo-induced phase separation technology, and chondrocytes were implanted to regenerate C-shaped cartilage in vitro. Vascular endothelial growth factor (VEGF) was loaded into PEUU to prepare a tubular porous VEGF/PEUU scaffold for vascularized elastic fiber regeneration. The several C-shaped cartilages were nested in the VEGF/PEUU according to the normal tracheal structure and was implanted in vivo to promote the ingrowth of elastic fibers and capillary. A CeO2@Ce6/PEUU tube with antibacterial and anti-inflammatory functions was fabricated using electrospinning technology and was implanted into the inner wall of the above-prepared construct to build a three-layer highly bionic trachea. Finally, the bionic trachea was used to repair long-segment tracheal defect in a rabbit model, and the cartilaginization, vascularization and epithelization, as well as the antibacterial, anti-inflammatory and biomechanical functions were comprehensively evaluated.

RESULTS

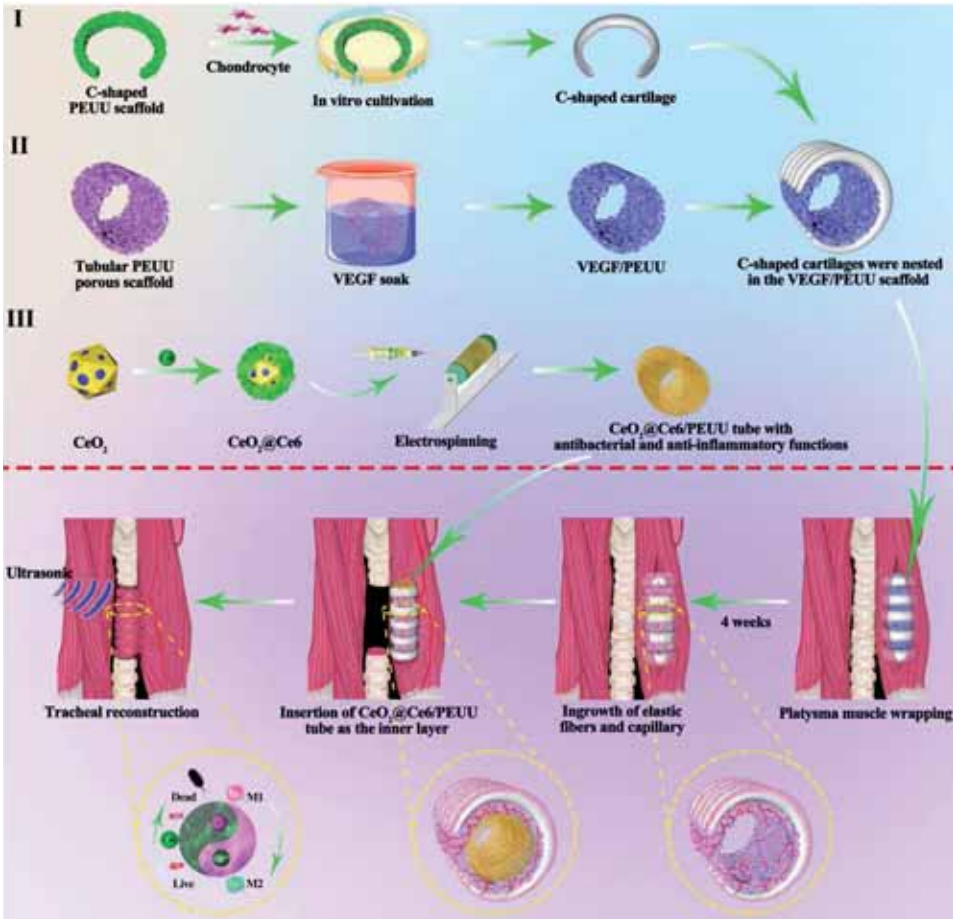
We successfully developed three components: 1) a porous PEUU scaffold with relaxation and contraction to generate C-shaped cartilages in vitro; 2) a tubular VEGF/PEUU scaffold with porous structure and proangiogenic effect to generate vascularized elastic fiber; 3) A tubular CeO2@Ce6/PEUU fibroid scaffold with antibacterial and anti-inflammatory function to convoy cartilage. Then, the above three "components" were successfully assembled into a tri-layered highly biomimetic trachea with "outer layer with C-shaped cartilage/middle layer with vascularized elastic fiber/inner layer with antibacterial and anti-inflammatory nanofiber" using a layered manner in vivo, and achieved superior Therapeutic outcome when repairing long-segmental trachea.

CONCLUSIONS

We successfully developed a highly biomimetic trachea to improve the function of tissue-engineered trachea and the layered assembly mode is expected to advance the clinical translation in repairing long-segmental trachea.

Disclosure: No significant relationships.

Keywords: Trachea Reconstruction; Tissue Engineering; Highly Biomimetic; Hierarchical Structure; Biomaterials.



P-113

TISSUE-ENGINEERED TRACHEA WITH ULTRA-LONG-TERM ANTI-INFLAMMATORY AND BIONIC MECHANICAL PROPERTIES FOR TRACHEAL DEFECT REPAIR

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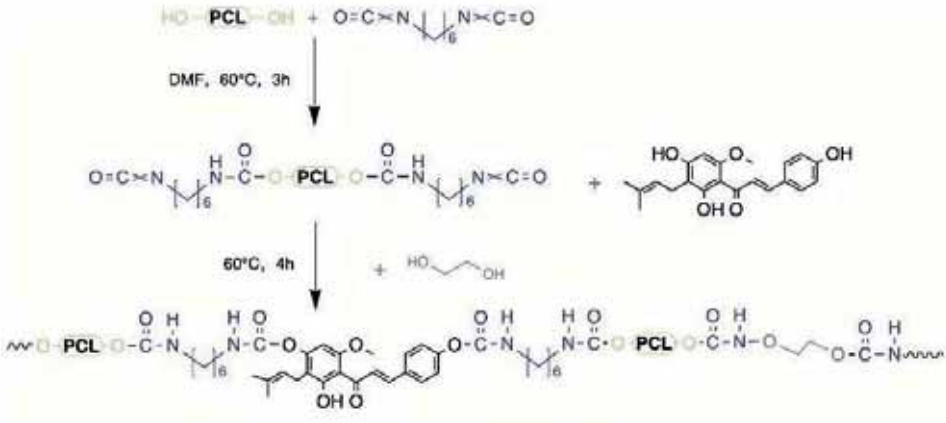
OBJECTIVES
We aimed to develop a functionalized xanthohumol/polyurethane (XN/PU) elastomer with ultra-long-term anti-inflammatory and bionic mechanical properties, and evaluate the feasibility of XN/PU elastomer in promoting tracheal cartilage regeneration and tracheal defect repairment.

METHODS
A natural anti-inflammatory small molecule, xanthohumol (XN), was applied to replace the chain extender in the synthesis of PU, and XN was embedded into the main chain of PU to form an ontologically modified XN/PU elastomer. The synthesis of XN/PU was evaluated using X-ray diffraction (XRD) and Fourier infrared spectroscopy (FTIR). The mechanical properties and drug release kinetics were evaluated in vitro. Subsequently, a porous XN/PU scaffold with tubular shape were prepared using 3D printing and thermotropic phase separation technologies. The cytocompatibility and cartilage formation capacity of tubular XN/PU scaffold was assessed by coculturing with chondrocytes. Finally, tubular XN/PU scaffold was used to orthotopically repair tracheal defect in a sheep model, and samples were assessed using histological and mechanical examinations after 4 months.

RESULTS
The XRD pattern and FTIR spectrum demonstrated the successful synthesis of XN/PU. In vitro study revealed ultra-long-term anti-Inflammatory and bionic mechanical properties of XN/PU. The mechanical test showed the XN/PU possessed bionic mechanical property, as compared to normal tracheal tissue in a goat. The in vitro drug release test demonstrated that the XN/PU showed ultra-long-term kinetics of over 4 months. In addition, in vitro study revealed superior anti-inflammation, satisfactory biocompatibility, and favorable cartilage regeneration capacity of XN/PU. Importantly, the tubular XN/PU scaffold significantly promote tracheal repair, as evidenced by smooth cartilage regeneration, re-epithelialization, no collapse or granulation tissue formation, and no obvious inflammatory cell infiltration over 4 months post-surgery.

CONCLUSIONS
We constructed a functionalized XN/PU elastomer with concurrent ultra-long-term anti-Inflammatory and bionic mechanical properties, and the XN/PU elastomer significant promotes tracheal defect repairment.

Disclosure: No significant relationships.
Keywords: Anti-Inflammatory, Ultra-Long-Term, Bionic Mechanical, Main-Chain Edited Modification, Tissue-Engineered Trachea.



黄酮骨本体功能修饰可降解聚氨酯的合成原理示意图

P-114

SEVEN OCCULT LYMPH NODE METASTASIS IS NOT A FAVORABLE FACTOR FOR RESECTED NON SMALL CELL LUNG CANCER (NSCLC) PATIENTS

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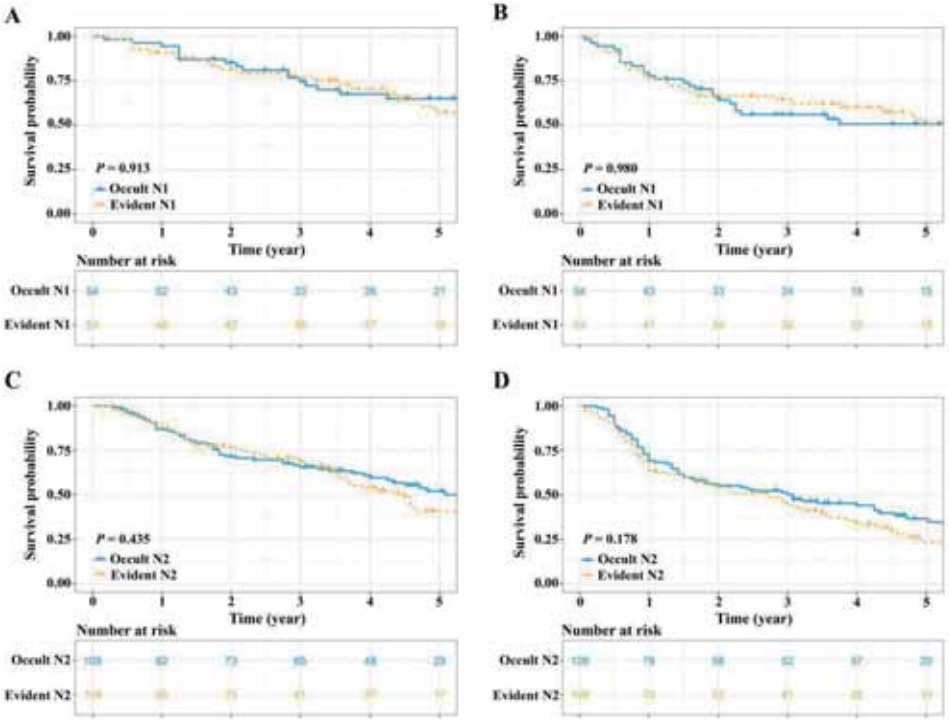
OBJECTIVES
This study was to compare the clinical presentations and survivals between the non-small cell lung cancer (NSCLC) patients with occult lymph node metastasis (OLNM) and those with evident lymph node metastasis (ELNM). We also intended to analyze the predictive factors for OLNM.

METHODS
Kaplan-Meier method with log-rank test was used to compare survivals between groups. Propensity score matching (PSM) was used to reduce bias. The least absolute shrinkage and selection operator (LASSO)-penalized Cox multivariable analysis was used to identify the prognostic factors. Random forest was used to determine the predictive factors for OLNM.

RESULTS
A total of 2,067 eligible cases (N0: 1,497 cases; occult N1: 165 cases; evident N1: 54 cases; occult N2: 243 cases; evident N2: 108 cases) were included. The rate of OLNM was 21.4%. Patients with OLNM were tend to be female, non-smoker, adenocarcinoma and had smaller-sized tumors when compared with the patients with ELNM. Survival curves showed that the survivals of the patients with OLNM were similar to those of the patients with ELNM both before and after PSM. Multivariable Cox analysis suggested that positive lymph nodes (PLN) was the only prognostic factor for the patients with OLNM. Random forest showed that clinical tumor size was an important predictive factor for OLNM.

CONCLUSIONS
OLNM was not rare. OLNM was not a favorable sign for resected NSCLC patients with lymph node metastasis. PLN determined the survivals of the patients with OLNM. Clinical tumor size was a strong predictive factor for OLNM.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Occult Lymph Node Metastasis, Survivals, Predictive Factors.


A
Survival probability
1.00
0.75
0.50
0.25
0.00
P = 0.913
Occult N1
Evident N1
0
1
2
3
4
5
Time (year)
Number at risk
Occult N1
Evident N1
B
Survival probability
P = 0.980
Occult N1
Evident N1
Time (year)
Number at risk
Occult N1
Evident N1
C
Survival probability
P = 0.435
Occult N2
Evident N2
Time (year)
Number at risk
Occult N2
Evident N2
D
Survival probability
P = 0.178
Occult N2
Evident N2
Time (year)
Number at risk
Occult N2
Evident N2

P-115

SURGICAL VERSUS NON-SURGICAL TREATMENT FOR ESOPHAGEAL SQUAMOUS CELL CARCINOMA IN PATIENTS OLDER THAN 70 YEARS : A PROPENSITY SCORE MATCHING ANALYSIS

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OBJECTIVES
The highest incidence of esophageal cancer is in East Asia, but as for advanced age people, there are also many non-tumor factors affecting overall survival (OS), such as cardiovascular and cerebrovascular diseases. Our purpose is to determine whether the older patients after esophagectomy had better OS than those treated with non-surgical treatment.

METHODS
Data were obtained from the Sichuan Cancer Hospital & Institute Esophageal Cancer Case Management Database (SCH-ECCM Database) and Department of Radiation Oncology Database. We retrospective analyzed esophageal cancer patients older than 70 years who underwent esophagectomy or radiotherapy/chemotherapy from Jan. 2018 to Dec. 2019. The patients were divided into two groups: surgery group (S group), and non-surgery group (NS group). Outcome measures depend on OS and progression-free survival(PFS).

RESULTS
At last, we performed PSM in the patients (Table 1). The median OS of the 140 patients was 23.8 months (95%CI, 11.3–36.3). The OS of the S group did not reach the median OS, and the average OS was 29.8 months (95%CI, 26.1–33.7). In contrast, the median OS in the NS group was only 16.8 months (95%CI, 8.8–24.7). The 1- year, 2-year, and 3-year OS rates in the S group were 76%, 61%, and 56%, respectively. In the NS group, the 1- year, 2-year, and 3-year OS rates were 56%, 38%, and 34%, respectively. The 1- year, 2-year, and 3-year OS rates were significantly lower in the NS group (HR, 0.553; 95%CI, 0.354–0.863; P=0.008; Figure 1). The 1- year, 2-year, and 3-year PFS rates in the S group and NS group were 73%, 54%, and 50%, and 52%, 34%, and 29%, respectively (HR, 0.629; 95%CI, 0.417–0.951; P=0.024; Figure 1).

CONCLUSIONS
Esophageal cancer patients older than 70 years who underwent esophagectomy had significantly better OS than those who underwent non-surgical treatment based on radiotherapy and/or chemotherapy.

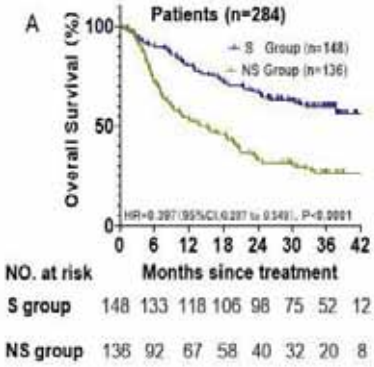
Disclosure: No significant relationships.
Keywords: Surgery , Non-Surgical Treatment, Overal Surval, Complication, Security.

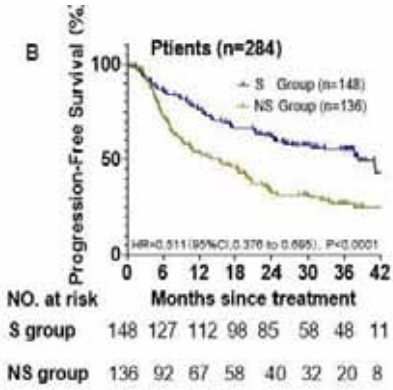
Table 1 Characteristics of patients.

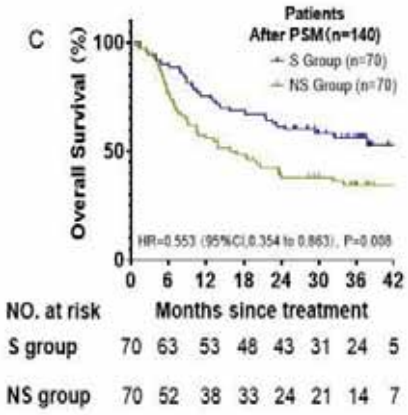
Characteristic	Patients (n=284)		P value	Patients after PSM (n=140)		P value
	Surgical (n=148)	Non-surgical (n=136)		Surgical (n=70)	Non-surgical (n=70)	
Age, years			0.005			0.83
<80	135	108		60	61	
	-91.20%	-79.40%		-85.70%	-87.10%	
≥80	13	28		10	9	
	-8.80%	-20.60%		-14.30%	-12.90%	
Sex			0.047			0.805
Male	125	102		57	56	
	-84.50%	-75.00%		-81.40%	-80.00%	
Female	23	34		13	14	
	-15.50%	-25.00%		-18.60%	-20.00%	
KPS			0.605			0.353
≥90	118	105		61	57	
	-79.70%	-77.20%		-87.10%	-81.40%	
≤80	30	31		9	13	
	-20.30%	-22.80%		-12.90%	-18.60%	
BMI			<0.001			0.753
<18.5	11	30		6	5	
	-7.40%	-22.10%		-8.60%	-7.10%	
≥18.5	137	106		64	65	
	-92.60%	-77.90%		-91.40%	-92.90%	
Tumor location			0.005			0.284
Upper	18	34		16	11	
	-12.20%	-25.00%		-22.90%	-15.70%	
Lower	130	102		54	59	
	-87.80%	-75.00%		-77.10%	-84.30%	
Unknown	0	0		0	0	
	0.00%	0.00%		0.00%	0.00%	
Clinical T stage			<0.001			0.698
T1	18	1		1	0	
	-12.20%	-0.70%		-1.40%	0.00%	
T2	26	13		9	9	
	-17.60%	-9.60%		-12.90%	-12.90%	

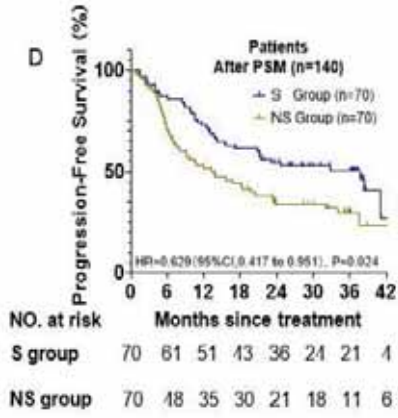
Table 1 Characteristics of patients (continuation).

Characteristic	Patients (n=284)		P value	Patients after PSM (n=140)		P value
	Surgical (n=148)	Non-surgical (n=136)		Surgical (n=70)	Non-surgical (n=70)	
T3	91	78		50	48	
	-61.50%	-57.30%		-71.40%	-68.60%	
T4	13	44		10	13	
	-8.80%	-32.40%		-14.30%	-18.60%	
Clinical N stage			<0.001			0.771
N0	32	7		7	6	
	-21.60%	-5.10%		-10.00%	-8.60%	
N+	116	129		63	64	
	-78.40%	-94.90%		-90.00%	-91.40%	
8th cTNM Sstage			<0.001			0.445
I	16	1		0	0	
	-10.80%	-0.70%		0.00%	0.00%	
?	33	13		12	12	
	-22.30%	-9.60%		-17.10%	-17.10%	
?	84	56		46	40	
	-56.80%	-41.20%		-65.70%	-57.10%	
?	15	66		12	18	
	-10.10%	-48.50%		-17.10%	-25.70%	
Basic disease	56	59	0.342	30	29	0.864
	-37.80%	-43.40%		-42.90%	-41.40%	
HBP	40	38	0.863	20	19	0.85
	-27.00%	-27.90%		-28.60%	-27.10%	
DM	15	9	0.287	10	3	0.042
	-10.10%	-6.60%		-14.30%	-4.30%	
CHD	4	7	0.286	2	4	0.676
	-2.70%	-5.10%		-2.90%	-5.70%	
COPD	14	12	0.909	10	5	0.172
	-9.50%	-8.80%		-14.30%	-7.10%	


A
Patients (n=284)
S Group (n=148)
NS Group (n=136)
Overall Survival (%)
100
50
0
HR=0.397 (95%CI,0.287 to 0.549), P<0.0001
0 6 12 18 24 30 36 42
Months since treatment
NO. at risk
S group 148 133 118 106 98 75 52 12
NS group 136 92 67 58 40 32 20 8


B
Ptients (n=284)
S Group (n=148)
NS Group (n=136)
Progression-Free Survival (%)
100
50
0
HR=0.511 (95%CI,0.376 to 0.695), P<0.0001
0 6 12 18 24 30 36 42
Months since treatment
NO. at risk
S group 148 127 112 98 85 58 48 11
NS group 136 92 67 58 40 32 20 8


C
Patients
After PSM(n=140)
S Group (n=70)
NS Group (n=70)
Overall Survival (%)
100
50
0
HR=0.553 (95%CI,0.354 to 0.863), P=0.008
0 6 12 18 24 30 36 42
Months since treatment
NO. at risk
S group 70 63 53 48 43 31 24 5
NS group 70 52 38 33 24 21 14 7


D
Patients
After PSM (n=140)
S Group (n=70)
NS Group (n=70)
Progression-Free Survival (%)
100
50
0
HR=0.629 (95%CI,0.417 to 0.951), P=0.024
0 6 12 18 24 30 36 42
Months since treatment
NO. at risk
S group 70 61 51 43 36 24 21 4
NS group 70 48 35 30 21 18 11 6

P-116

VENOUSTHROMBOEMBOLISM AND PULMONARY EMBOLISM OF ESOPHAGEAL CANCER PATIENTS AFTER TREATMENT: AN OBSERVATIONAL STUDY

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OBJECTIVES
Venousthromboembolism was 4-7 times in patients with cancer than others without. It was a risk factor for common complications after surgery and unexpected death in hospital, as well as the second leading cause of death in patients with cancer. However, due to the lack of relevant research in the field of esophageal cancer, our team summarized the data from Sichuan Cancer Hospital & Institute to describe.

METHODS
We screened esophageal cancer patients from the Sichuan Cancer Hospital & Institute from Jan. 2017 to Sep. 2021. The patients were divided into two groups: surgery group, and non-surgery group. The obtained data main included the occurrence of venousthromboembolism and pulmonary embolism in patients with esophageal cancer after surgical treatment and non-surgical treatment was recorded respectively.

RESULTS
We collected esophageal cancer patients 8759 patients, finally. The results showed that the rate of incidence of venousthromboembolism was 2.08% (182/8759). There were 3187 patients in the surgery group, and the incidence of postoperative venousthromboembolism was 1.85% (59/3187) and pulmonary embolism was 0.16% (5/3187), accounting for 8.47% (5/59) of postoperative venousthromboembolism. The incidence of venousthromboembolism and pulmonary embolism was 2.21% (123/5572) and 0.12% (7/5572) in the non-surgery group, accounting for 5.69% (7/123) of venousthromboembolism. There was no significant difference in the incidence of venousthromboembolism between the surgery group and the non-surgery group (P=0.261) and the incidence of venousthromboembolism with pulmonary embolism (P=0.529).

CONCLUSIONS
The incidence of venousthromboembolism in patients with esophageal cancer in our data from 2017 to 2021 was 2.08% (182/8759), and the incidence of venousthromboembolism was not affected by different treatment.

Disclosure: No significant relationships.
Keywords: Venousthromboembolism, Pulmonary Embolism, Esophageal Cancer.

P-117

LUNG CANCER INVADING THE CHEST WALL: THE SITE OF CHEST WALL INVASION AS A NEW PROGNOSTIC FACTOR

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[4]*IUCPQ, Quebec, Canada*

OBJECTIVES
Non-small-cell lung cancer (NSCLC) invading the chest wall is known to be at high risk of recurrence and of poor survival. In order to found new prognostic factors, we hypothesized that infiltration of the posterior chest wall represented a negative prognostic factor.

METHODS
We retrospectively reviewed the records of 92 patients operated on for NSCLC invading the chest wall in two academic institutions from January 1995 to December 2015. Pancoast tumors, incomplete resection or distant metastasis were excluded. Disease-free survival (DFS) and overall survival (OS) were estimated using the Kaplan–Meier method. Cox proportional hazards modelling was used to determine factors associated with DFS and OS.

RESULTS
There were 69 men and 23 women, their median age was 61. Neoadjuvant treatment had been administered in 15 patients (16.3%) and adjuvant treatment in 36 patients (39.1%). Surgery included a pneumonectomy in 21 patients (22.8%).
Invasion of the posterior chest wall was present in 44 patients (47.8%), anterior or lateral chest wall in 25 patients (27.2%). For the remaining 23 patients no clear data were available.
A median of 3 ribs was resected (range 1–7), and 67 patients (67%) underwent chest wall reconstruction. Pathologic reports included adenocarcinoma in 37 patients (40.2%), squamous cell carcinoma in 37 pts (40.2%), and other histology in 18 (19.6%).
Thirty-day mortality was 6.5%. Fifteen patients (17.2%) developed a major postoperatory complication. The 5-year OS was 32.1 %, the 5-year overall DFS was 28.9%. The 5-year overall survival for NSCLC invading the posterior chest wall was 48% while it was 12% in case of anterior or lateral invasion ($p<0.001$). Neoadjuvant or adjuvant treatment, N+ status, or histology did not influence this result.

CONCLUSIONS
Invasion of the posterior chest wall represented a positive prognostic factor in completely resected NSCLC. Definitive nodal status and perioperative treatment did not seem to influence this result.

Disclosure: No significant relationships.
Keywords: NSCLC, Chest Wall, Prognosis, Surgery.

P-118

ELASTOFIBROMA DORSI: A RARE SOFT-TISSUE BENIGN TUMOR. OUR 12-YEARS' EXPERIENCE

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OBJECTIVES
The objective of this study is to evaluate surgical and short-term outcomes of patients undergone surgery for elastofibroma dorsi, in a 12-year single center experience.

METHODS
Clinical, radiological and surgical prospectively collected data of 259 undergone elastofibroma dorsi surgical treatment, from Jan.2010 to Dec. 2022, were retrospectively reviewed.
In all patients, the physical suspicion of elastofibroma dorsi was confirmed by preoperative radiological examination (RMN, ultrasound or CT scan). Main symptoms were: discomfort, pain, arm paresthesia or hyposthenia.

RESULTS
One hundred-eighty patients were females (60.5%). The mean age was 60.6 ± 9.8 years. Eight patients(3.09%) were treated for recurrence after previous surgery in other center.
Sixty-two patients(23.93%) had bilateral lesions.
The most used radiological examination was RMN (147 patients, 57.76%), followed by ultrasound (132 patients, 50.97%) and CT scan (31 patients, 11.96%).

The mean time for surgery was 55 ± 15 min.
In 258 patients (99.61%) only one drainage tube (19 Fr in 66.31 % of patients and 15 Fr in 25.67%) was left in place, in one patient(0.39%) 2 tubes. In all cases an esthetic intradermal suture was permormed.
XX(72.89%) patients were discharged on I-post-operative day. The mean tube duration was 7.23 ± 3.28 days.
The mean size of elastofibromas removed was 8.09 ± 2.00 cm.
The main complications were: bleeding requiring surgical revision (5 patients, 1.93%), seromas (23 patients, 8.8%), wound infection (5 cases, 1.93%) that required surgical toilette in 2 cases (0.77%).
All patients had resolution of preoperative symptoms with good esthetic results.
Mortality was null.

CONCLUSIONS
In a high-volume center, surgical treatment of a quite rare pathology, as elastofibroma dorsi, seems to be safe and effective, with good post-operative outcomes.

Disclosure: No significant relationships.
Keywords: Elastofibroma Dorsi.

P-119

UNIFORM APPLICATION OF EN BLOC ESOPHAGECTOMY WITH 3-FIELD LYMPH NODE DISSECTION IN PATIENTS WITH CT3 ESOPHAGEAL SQUAMOUS CELL CARCINOMA: A COMPARATIVE STUDY WITH A TAILORED APPROACH

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OBJECTIVES
This study aimed to evaluate the influence of the uniform application of en bloc esophagectomy with 3-field lymph node dissection on prognosis in patients with cT3 esophageal squamous cell carcinoma.

METHODS
Patients undergoing curative surgery for cT3 squamous cell carcinoma from 2013 to 2020 were evaluated. Subtotal esophagectomy with 2-field lymph node dissection, including bilateral recurrent laryngeal nerve chain, was mandatory. En bloc resection or cervical lymph node dissection was added based on tumor location or preoperative treatment status (group 1). Since 2017, all patients underwent en bloc esophagectomy with 3-field lymph node dissection (group 2).

RESULTS
Overall, 118 patients were identified, including 37 patients in group 1 and 81 patients in group 2. There were no differences in age, sex, tumor location, and preoperative treatment status between the two groups, while group 2 patients showed more advanced cN stage (p=0.033). In group 1, en-bloc resection was performed in 5 (13.5%) patients, and cervical lymph node dissection was added in 15 (40.5%) patients. R0 resection rate was higher in group 2 (79 [97.5%] versus 29 [78.4%]; p=0.001), and this resulted from the high rate of positive radial margin in group 1 (4 [10.8%] versus 0 [0.0%]; p=0.009). The 5-year freedom from locoregional recurrences and the disease-free survival rate was 64.0% in group 1 and 79.7% in group 2 (p=0.023), and 40.2% in group 1 and 51.0% in group 2 (p=0.045), respectively. Multivariate analysis revealed that the risk of recurrence or death could be reduced in group 2 (hazard ratio 0.580, 95% confidence interval 0.339 - 0.993; p=0.047).

CONCLUSIONS
The present study demonstrates improved locoregional control and better disease-free survival with uniform application of en bloc esophagectomy with 3-field lymph node dissection. Further studies are necessary to validate this approach in the setting of neoadjuvant therapy.

Disclosure: No significant relationships.

Keywords: Esophageal Cancer, Squamous Cell Carcinoma, En Bloc Esophagectomy, 3-Field Lymph Node Dissection, Tailored Approach.

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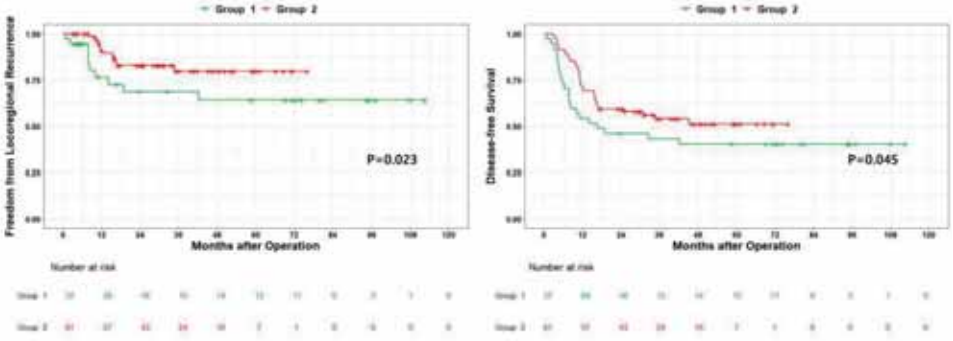

P-120

SLEEVE LOBECTOMY AFTER NEOADJUVANT THERAPY: AN EVOLVING EXPERIENCE FROM A HIGH-VOLUME CENTER

Tao Chen, Jiajun Deng, Yifan Zhong, Mengmeng Zhao, Xuefei Hu, Qiankun Chen, Yunlang She, Chang Chen
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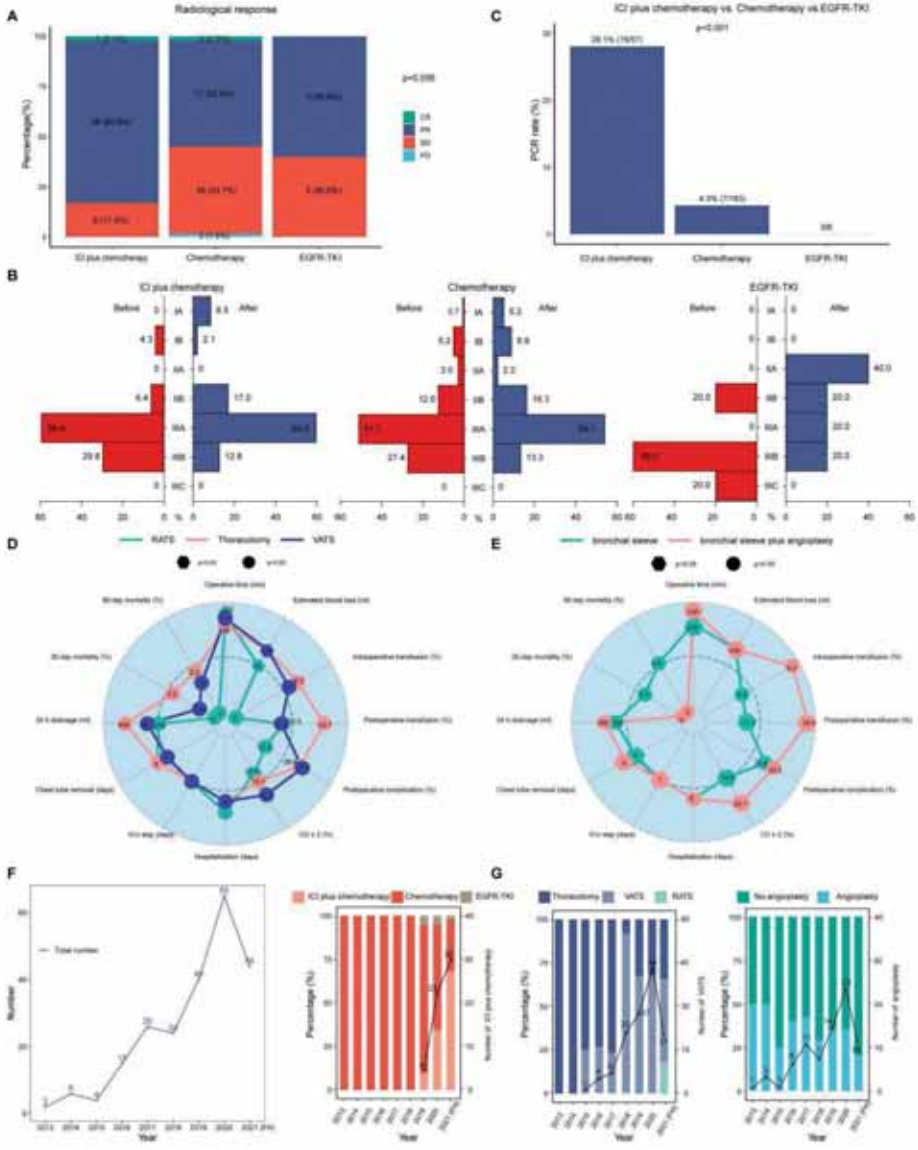
OBJECTIVES
To evaluate the feasibility of sleeve lobectomy after neoadjuvant therapy.

METHODS
Patients who underwent sleeve lobectomy following neoadjuvant therapy from January 2013 to June 2021 were identified. Perioperative outcomes were compared between neoadjuvant regimes, surgical approaches, and patients with/without angioplasty.

RESULTS
A total of 226 patients met the inclusion criteria. Among them, 57 (25.2%), 163 (72.1%), and 6 (2.7%) patients received neoadjuvant immune checkpoint inhibitor (ICI) plus chemotherapy, neoadjuvant chemotherapy, and neoadjuvant epidermal growth factor receptor-tyrosine kinase inhibitor (EGFR-TKI), respectively. The pathological complete response rate was much higher in the neoadjuvant ICI plus chemotherapy group (28.1% vs. 4.3% vs. 0, $p<0.001$). There were 93 (41.1%), 125 (55.3%), and 8 (3.6%) patients underwent thoracotomy, video-assisted thoracic surgery (VATS), and robot-assisted thoracic surgery (RATS), respectively. RATS was correlated with less blood loss (median, 100 vs. 100 vs. 75 mL, $p<0.001$), more lymph node dissected (median, 15 vs. 16 vs. 25, $p=0.013$) during surgery. Additionally, 75 (33.2%) patients underwent bronchial sleeve plus angioplasty. Angioplasty was associated with longer operative time (median, 200 vs. 230 min, $p<0.001$), more postoperative transfusion (11.3% vs. 22.7%, $p=0.039$), and longer chest tube removal time (median, 5 vs. 6 day, $p=0.007$). Overall, there were no statistical significances regarding postoperative complication rates between neoadjuvant regimes, surgical approaches, and patients with/without angioplasty.

CONCLUSIONS
Neoadjuvant ICI plus chemotherapy provided the best pathological response with comparable perioperative outcomes. Both VATS and RATS were safe and feasible. Angioplasty was associated with more postoperative care without adding complications.

Disclosure: No significant relationships.
Keywords: Sleeve Lobectomy, Neoadjuvant Therapy.


A
Radiological response
Percentage(%)
p=0.006
CR
PR
SD
PD
ICI plus chemotherapy
Chemotherapy
EGFR-TKI
C
ICI plus chemotherapy vs. Chemotherapy vs EGFR-TKI
p<0.001
PCR rate (%)
26.1% (18/57)
4.3% (1/163)
0/6
B
ICI plus chemotherapy
Chemotherapy
EGFR-TKI
Before
After
D
RATS
Thoracotomy
VATS
E
Bronchial sleeve
Bronchial sleeve plus angioplasty
F
Total number
Number
Year
ICI plus chemotherapy
Chemotherapy
EGFR-TKI
Percentage (%)
G
Thoracotomy
VATS
RATS
No angioplasty
Angioplasty

P-121

ENDOSCOPIC AND SURGICAL MANAGEMENT OF BENIGN SUBGLOTTIC AND TRACHEAL STENOSES- ARE THERE ANY FACTORS THAT PREDICT THE NEED FOR SURGICAL RESECTION?

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[2]*Institute of Immunology and Immunotherapy, University of Birmingham, Birmingham, United Kingdom*

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[4]*Department of Thoracic surgery University Hospitals Birmingham, Birmingham, United Kingdom*

OBJECTIVES

Management of benign subglottic and tracheal stenosis is challenging and requires close collaboration between otolaryngologists and thoracic surgeons. We sought to analyse our airway practice and see if there are any factors associated with the need for cricotracheal/ tracheal resection (CTR/TR) and reconstruction in cases of benign subglottic and tracheal strictures.

METHODS

We performed a retrospective analysis of a prospectively maintained database of all patients ages 16 and over with benign subglottic and tracheal stenoses that underwent endoscopic or surgical treatment at our institution between January 2005-January 2021. Data on demographics, pre-referral procedures, etiology, pre-, intra- and post-operative variables as well as long term outcomes was collected.

RESULTS

Seventy two patients were included, 79% female, median age was 43 (range 16-73), 80% were subglottic stenoses. Etiologies included idiopathic (49%), prolonged intubation (39%), autoimmune (10%) and amyloidosis (2%). 26% patients had treatment pre-referral and the median number of dilatations was 3 (range 0-17). 44% patients underwent resection with a mean LOS of 8.8±1.1 days. 56% had a laryngeal component removed. Interval between first dilatation and CTR/TR was 5 months (0-173 months). Anastomotic complications occurred in 22% (7 patients) who were managed with further endoscopic procedures and one patient had re-do tracheal resection. Patients who underwent surgery had significantly higher rate of pre-op intubation (56% versus 25%, p=0.004), pre-op tracheostomy (45% versus 22% , p=0.043) and number of affected airway sites (41% versus 10%, p=0.002). No patients had

permanent tracheostomy post endoscopic or surgical procedures and 85% were asymptomatic at last follow-up.

CONCLUSIONS

Endoscopic and open surgical airway interventions are successful in maintaining airway and avoiding permanent tracheostomies with good results. Further research is needed to identify those who would benefit the most from CTR/TR.

Disclosure: No significant relationships.
Keywords: Subglottic Stenosis, Endoscopic Management, Tracheal Resection.

P-122

RETROSPECTIVE REVIEW OF ANASTOMOTIC TECHNIQUES DURING ESOPHAGECTOMY IN 126 CONSECUTIVE PATIENTS: IS COMPLETELY STAPLED THE BEST?

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OBJECTIVES
Esophagectomy is a morbid procedure, with upwards of 40% rate of complications. Anastomotic leak is the leading contributory to morbidity and mortality and drives prolonged length of stay. We sought to evaluate our change in anastomotic technique from a sewn in anvil to a completely stapled end to end anastomosis (EEA).

METHODS
A retrospective review of single institution data was performed of patients undergoing esophagectomy from 2018 to 2022. The timeframe overlapped with transition of techniques for most anastomoses from a sewn in anvil to a stapled in anvil. Patient and outcome characteristics were collected, including approach to esophagectomy. Primary end point was overall rate of anastomotic leak; secondary outcomes were length of stay and 30-day mortality.

RESULTS
A total of 126 patients underwent esophagectomy during the collection period. The majority were male (113 patients) with a mean age of 64.1 years. Most patients underwent some version of a minimally invasive esophagectomy (116 patients – 65 laparoscopic/thoracoscopic; 51 robotic) versus 10 open procedures. Seventy-five patients underwent the sewn in EEA anastomosis compared to 46 patients with the stapled anvil EEA anastomosis. Five patients had a stapled modified Collard anastomosis. The leak rate was 13.8% in the sewn in cohort (11/80) compared to a leak rate of 4.3% in the stapled in cohort (2/46). The overall median length of stay was reduced for patients undergoing stapled in anvil as well (8 days stapled in vs. 11 days for sewn in). Mortality within 30 days or the same hospitalization for the entire cohort was one patient (0.8%).

CONCLUSIONS
A completely stapled EEA anastomosis is safe and may lead to a decreased leak rate compared to other methods. The decreased leak rate also likely decreases patient length of stay. Future research however is needed to determine if this method is truly superior is outcomes.

Disclosure: No significant relationships.
Keywords: Esophagectomy, Anastomotic Leak, Esophageal Cancer, Minimally Invasive Esophagectomy.

P-123

SURGICAL TREATMENT FOR HIGH-GRADE NEUROENDOCRINE CARCINOMA: SIGNIFICANCE AND PROGNOSTIC FACTORS

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OBJECTIVES
Among the high-grade neuroendocrine carcinomas (HGNEC), in our hospital, surgery is indicated for clinical N0 small-cell lung carcinoma (SCLC) and clinical N0-1 large-cell neuroendocrine carcinoma (LCNEC). This study aimed to investigate the significance of surgery through cumulative recurrence rate (CRR) evaluation.

METHODS
Patients with HGNEC who underwent resection between 2005 and 2019 were included. The CRR was calculated considering death from other diseases as a competing risk. Factors associated with recurrence were examined using multivariable analysis through Fine-Grey proportional hazard model with age, sex, histologic type, serum ProGRP level, surgical procedure, tumour size, pathological nodal metastasis, immunohistochemistry (IHC) positivity for both chromogranin A and synaptophysin, and adjuvant chemotherapy as covariates.

RESULTS
A total of 115 patients were included with a median follow-up period of 5.6 years. The 5-year overall survival rate and recurrence-free survival rate was 62% and 54%, respectively. There was no significant difference in CRR between 60 patients with SCLC and 55 patients with LCNEC (5-year CRR, SCLC 37% vs. LCNEC 38%, $p = 0.897$). All of the eight SCLC patients with cN1 disease were not preoperatively diagnosed.
Multivariable analysis revealed that serum ProGRP level (hazard ratio [HR] = 1.002, $p = 0.006$), IHC positivity (HR = 2.282, $p = 0.035$), and pathological nodal metastasis (HR = 2.294, $p = 0.041$) were significantly associated with recurrence.
Eighteen patients with ProGRP >72 pg/mL had a significantly poor prognosis (5-year CRR, 68% vs. 32%, $p = 0.004$), and 88 patients with positive IHC showed a high recurrence rate (5-year CRR, 41% vs. 24%, $p = 0.065$). Thirty-five patients with pathological nodal metastasis also had a tendency for recurrence (5-year CRR, 51% vs. 31%, $p = 0.058$).

CONCLUSIONS
Surgery for HGNEC showed a favourable curative rate. Serum ProGRP level, IHC positivity, and pathological nodal metastasis were factors associated with recurrence.

Disclosure: No significant relationships.
Keywords: Surgery, Neuroendocrine Carcinoma, Lung Cancer, Recurrence.

P-124

UNIPORTAL ANATOMIC SEGMENTECTOMY WITH INTRAOPERATIVE MAGNETIC-GUIDED OCCULT LESSION LOCALIZATION (M-GOLL), PREOPERATIVE COMPUTED TOMOGRAPY (CT)-GUIDED TAG DISPOSAL AND THREE-DIMENSIONAL (3-D) MULTIPLANAR RECONSTRUCTION

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OBJECTIVES

Share our experience in the use of magnetic-guided occult lession localization and it's usefullness on anatomic segmentectomies by minimally invasive surgery.

CASE DESCRIPTION

A 52-year-old patient with a lung adenocarcinoma, received surgical treatment (right-lower lobectomy) on 2019.
Disease free until 2021, a contralateral relapse was suspected in a CT-scan, reporting a cluster of small lesions. Bold-needle-aspiration biopsy confirmed malignancy.
There were 5 small nodules in the cluster, sized between 4 and 10,86mm. All of them located on 4th and 5th segments, bordering the 3rd.
PET-scan reported single-uptake area on the cluster site, without any mediastinal lymph nodes or distant metastatic disease.
Multidisciplinary team evaluation indicated surgical resection of the affected area, and surgical planning was supported by 3-D CT-scan-multiplanar reconstruction.

The surgical limit was marked with a steel seed (Magseed), disposed preoperatively by CT-guided punction.

A uniportal-VATS anatomical segmentectomy of the 4th and 5th segments was done, guiding the upper surgical limit by intraoperative magnetic-guided occult lesion localization (M-GOLL). We used Sentimag's probe through the surgical incision.

Unlike other intraoperative-tracing methods, Sentimag's numerical feedback can be translated to distance, allowing the surgical team to achieve safer surgical limits.

Anatomopathological study of the resected anatomical segment reported negative margins, with the hole cluster included.
The patient received chemotherapy afterwards, and nowadays recent control CT-scan (January 2023) reported no signs of local relapse.

CONCLUSIONS

M-GOLL has been recently adapted for pulmonary nodules and published its standards of use by our team.

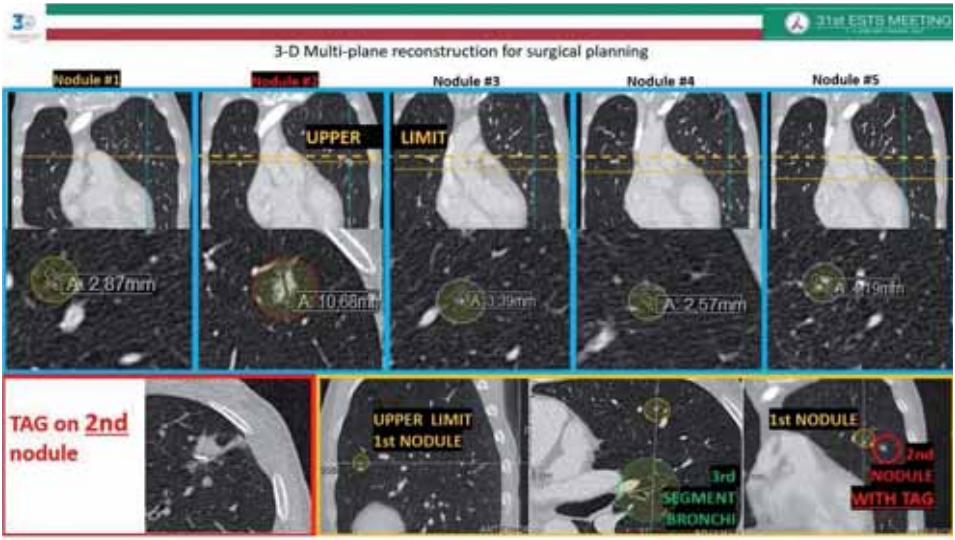
It's a very efficient resource to promote negative surgical margins, and allows confident surgical minimally invasive surgery on small and non-palpable pulmonary nodules, avoiding thoracotomies.

It can be used for central and peripheric lesions, no matter if it's a wedge resection, or an anatomical segmentectomy.

Careful and strategic surgical planning must be done, in order to leverage the most of this newly applied intraoperative-tracing device.

Disclosure: No significant relationships.

Keywords: Anatomic Segmentectomy, M-GOLL, Subsolid Pulmonary Nodules.



P-125

EPIFASCIAL CATHETER FOR POSTOPERATIVE PAIN MANAGEMENT IN THORACIC SURGERY: RESULTS OF A MONOCENTRIC PROOF OF CONCEPT STUDY

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OBJECTIVES
Surgical trauma is significant in thoracotomy and optimal pain management is central for the prevention of postoperative complications. Here we present the results of an easy-to-use modified catheter-based regional anesthetic procedure for thoracic surgery.

METHODS
Monocentric retrospective cohort analysis in thoracotomy patients between 01/2021 and 01/2022. Exclusion criteria were chest wall resection or reconstruction and incomplete data. For perioperative pain management, a catheter was placed under the serratus fascia (epifascial catheter, EFC) during thoracic closure and Ropivacain-hydrochlorid was continuously applied postoperatively. Patients received oral analgetics according to institutional standard. PDK patients and patients without catheter-based pain therapy (NC) served as control. Pain scores reported on the 1st and 4th postoperative day (POD), mean pain score over the first four PODs, opioid consumption in the first four PODs, incidence of nosocomial pneumonia, postoperative course and the presence of a post-thoracotomy syndrome 4-6 weeks after discharge were analyzed.

RESULTS
The study cohort consists of 57 patients (40 male): PDK (n=27), EFC (n=21), NC (n=9). There were no significant differences between the PDK and EFC group with regard to patient characteristics and surgical approach. There was a trend towards a higher mean pain score on the 1st and 4th POD in the EFC group and a higher mean opioid use in the EFC group in the first 4 PODs (36 .11 mg/d (CI 63.96-8.27) vs. 25.14 mg/d (CI 32.30-17.97) p= 0.38). Mean length of stay, duration of chest drain and ICU length of stay were similar in both groups. Incidence of nosocomial pneumonia (4.76% vs. 11.11% , p=0.44) and post-thoracotomy syndrome (38.10% vs. 48.15%, p=0.5) was reduced in the EFC group.

CONCLUSIONS
EFC therapy showed similar results in pain control compared to PDK. There was a trend towards a reduced incidence of nosocomial pneumonias and post-thoracotomy syndromes in the EFC group.

Disclosure: No significant relationships.
Keywords: Thoracic Surgery, Pain Management, Epifascial Catheter, Peridural Catheter, Study.

P-126

PROGNOSTIC IMPACT OF UNCERTAIN RESECTION (RUN) IN PATIENTS UNDERGOING SURGERY AS INITIAL TREATMENT FOR NON-SMALL CELL LUNG CANCER

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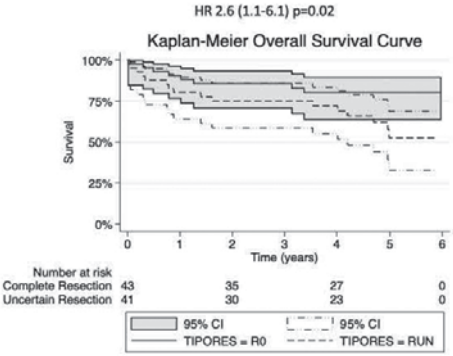
OBJECTIVES
The aim of this study is to assess the prognostic impact of uncertain resection (Run) compared to complete resection (R0) in patients operated for non-small cell lung cancer (NSCLC), according to the definitions of the International Association for the Study of Lung Cancer.

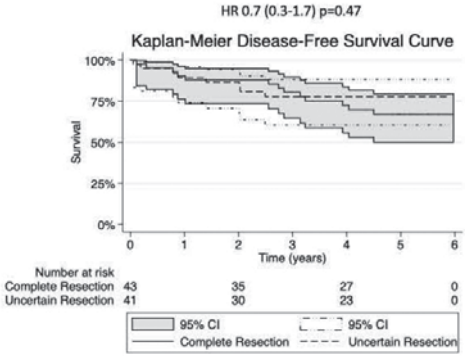
METHODS
84 patients with NSCLC who underwent VATS surgery defined by R0 or Run resection, in a single institution, between November 2016 and December 2017 were retrospectively reviewed. Patients who received induction treatment, wedge resection, pneumonectomy, or incomplete resection (R1, R2) were excluded from the analysis. 43 were classified as R0 and 41 as Run. 86.9% of the patients underwent lobectomy, 2.4% bilobectomy and 10.7% anatomical segmentectomy. Most common histology was adenocarcinoma (76.7% and 68.3% for R0 and Run respectively). Hilar and mediastinal lymph node dissection was performed in all patients: 50% underwent sampling, 40.5% systematic and 9.5% lobe specific lymph node dissection. 44% were pathologically staged as IA, 25% IB and 23.8% II. Overall survival and disease-free survival were analyzed using Kaplan-Meier method and Incidence Rate Ratio.

RESULTS
The most common reason for Run classification was less rigorous lymphadenectomy (97.6%), followed by presence of carcinoma in situ in the bronchial margin and positivity of the highest lymph node dissected (2.4%). Mean overall survival in the Run group was significantly lower (HR 2.6 [1.1-6.1]; p= 0.02), with a 5-year overall survival for the Run and R0 groups of 52.5% (32.9-68.8) and 80% (63.8-89.5) respectively. There were no significant differences in disease-free survival between the groups (5-year disease-free survival for Run and R0 of 77.8% [60.4-88.3] and 67% [50-79.4]).

CONCLUSIONS
In patients undergoing anatomic pulmonary resection (except pneumonectomy) by VATS, Run is associated with a worse overall survival, with no differences in disease-free survival.

Disclosure: No significant relationships.
Keywords: Non-Small Cell Lung Cancer, Uncertain Resection, Residual Tumour.


HR 2.6 (1.1-6.1) p=0.02
Kaplan-Meier Overall Survival Curve
Survival
100%
75%
50%
25%
0%
0
1
2
3
4
5
6
Time (years)
Number at risk
Complete Resection 43 35 27 0
Uncertain Resection 41 30 23 0
95% CI
95% CI
TIPORES = R0
TIPORES = RUN


HR 0.7 (0.3-1.7) p=0.47
Kaplan-Meier Disease-Free Survival Curve
Survival
100%
75%
50%
25%
0%
0
1
2
3
4
5
6
Time (years)
Number at risk
Complete Resection 43 35 27 0
Uncertain Resection 41 30 23 0
95% CI
95% CI
Complete Resection
Uncertain Resection

P-127

EMERGENCY TOTAL TRACHEAL REPLACEMENT IN HOSTILE ENVIRONMENT

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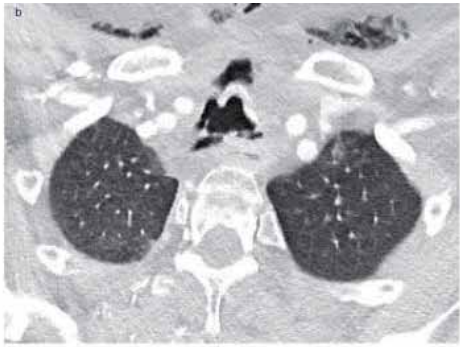
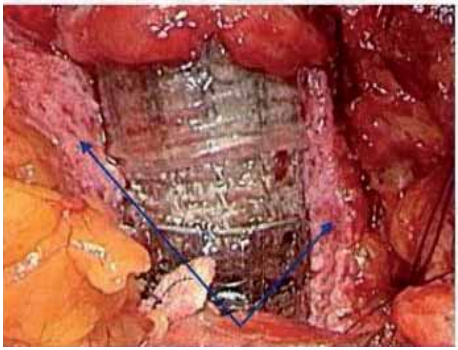
OBJECTIVES
Tracheal reconstruction is a surgical challenge, which is usually indicated for extensive tracheal resection (superior to 4cm in length or more than a third of tracheal length in adults). We report the case of a 42-year old patient who had circular tracheal replacement following a tracheal resection beyond 4cm due to R1-situation and anastomosis complete dehiscence on post-operative day 7.

CASE DESCRIPTION
A 42-year old patient with squamous-cell carcinoma of the right upper, the lower lobe and the trachea, all locally advanced without nodal or distant metastasis ((UICC IIIA), was initially treated with first-line combined radio- (60Gy) towards all 3 tumours and chemotherapy (Cisplatin/Paclitaxel) followed by a second-line treatment consolidation with Durvalumab. Re-Staging showed complete remission of the tumour in the upper- and lower lobes, but progression in the trachea with increased stenosis and subsequent dyspnoea. Interdisciplinary tumour board opted for surgical removal of the tracheal tumour. By median sternotomy, 4.5 centimetre-long tracheal resection was followed by direct end-to-end anastomosis after release-manœuvers, under flow-controlled ventilation . On post-operative day 7, the patient suffered from acute respiratory distress because tracheal suture failure in a septic environment. Under veno-venous extracorporeal membranous oxygenation, a total circular neo-trachea was reconstructed using a pedicled, de-epithelialized myocutaneous flap of the right pectoralis major muscle reinforced by 2 airway stents. Post-operative follow-up was marked by sternum-dehiscence, which necessitated prolonged VAC-therapy and closed with an muscle flap of the right rectus abdominis. Clinically, there was a continuous increased in performance under antibiotics, antifungal treatment, consistent physiotherapy and expanded inhalative therapy.

CONCLUSIONS
Tracheal reconstruction using a de-epithelialized muscle flap reinforced by airway stents is a viable alternative in emergency for suture failure in tracheal direct resection-anastomosis.

Disclosure: No significant relationships.
Keywords: Tracheal Resection, Tracheal Reconstruction, NSCLC.





P-128

ITERATIVE COMPREHENSIVE CANCER GENOME PROFILING OF THYMOMAS AND RECURRENT THYMOMAS: A PILOT STUDY TOWARDS PRECISION MEDICINE

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OBJECTIVES

Thymomas usually present with indolent clinical behavior but recurrences occur up to 15-20%. Molecular profiles of thymomas and recurrent thymomas are far to be defined. Herein, we report a comprehensive molecular evaluation of a highly-selected cohort of recurrent thymomas, matching bio-molecular results obtained from primary and relapses samples.

METHODS

Among 221 patients who underwent surgery for thymomas in two high-volume Institutions from 01/ 02 to 01/22, a total of 23 patients had a recurrent disease treated by re-do surgery (overall 40 surgical specimens available). TruSight_Oncology (TSO500HT) kit was performed on specimens allowing the evaluation of Tumour-Mutational-Burden (TMB), and Microsatellite-Instability (MSI) and Single_Nucleotide_Variants, insertions/deletions and Copy_Number_Alterations (CNAs) in 523 genes. Next Generation Sequencing was performed on the NovaSeq6000-platform (Illumina).Output data were analysed on the Clinical Genomics Workspace platform by PierianDx tool according to expertly curated genomic data, clinical practice guidelines, FDA therapeutics, and clinical trials through the Tier classification system.

RESULTS

The clinical characteristics and the molecular profiles were reported in the figure 1. Overall,

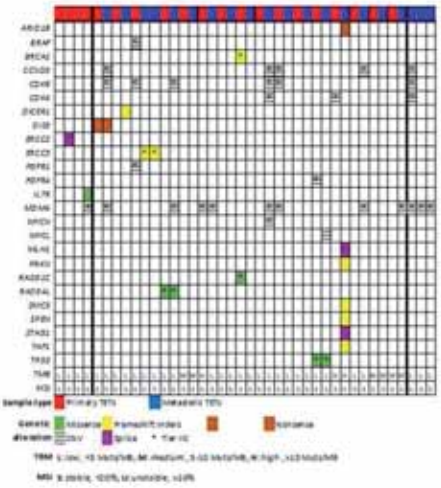
in both thymoma and recurrent thymoma relevant molecular findings was observed in 83% of cases, belonging mainly to cell cycle control (74%) and to DNA repair pathways (26%).No significant differences in the molecular profile of primary vs recurrent thymomas samples were identified.When exploring the associations between clinical variables and gene mutations, no significant differences were found. Based on NGS-results, an off-label treatment or clinical trial could be potentially proposed (in more than 50% of our cases, see Figure 1) when oncogenic variants classifiable as Tier-IIC are detected.

CONCLUSIONS

Relevant molecular findings of (recurrent)Thymoma belong to cell cycle control pathway and gene profile does not change when tumor relapses.By performing a comprehensive cancer genome profiling, we identified multiple potential target therapies and active clinical trials available, suggesting that a precision medicine approach on these patients could be further explored.

Disclosure: No significant relationships.
Keywords: Thymoma, Gene Profiling, Tumor Relapse, Next-Generation Sequencing.

Variables	Total N=23 (%)	Variables	Total N=23 (%)
Gender		**Intervention Type**	
Male	13 (56.5)	Radical Thymectomy	23 (100)
Female	10 (43.5)	**Adjuvant treatment**	
Age		No treatment	4 (17.4)
<60	10 (09.1)	Chemotherapy (CT)	2 (8.7)
>60	7 (30.4)	Radiotherapy (RT)	15 (65.2)
Miastenia Gravis		CT+RT	2 (8.7)
Yes	8 (34.7)	**Recurrence site**	
No	15 (65.2)	Lung	4 (17.4)
Masaoka		Nodule	2 (8.7)
II	5 (21.7)	Pleura	17 (73.9)
III	12 (52.2)	**Recurrence**	
IV	6 (26.1)	Single	8 (34.7)
Neoadjuvant treatment		Multiple	15 (65.2)
Yes	15 (65.2)	**Recurrence treatment**	
No	8 (34.7)	Surgery	6 (26)
Histology WHO		Surgery+CT	15 (65.2)
Low risk (A-AB-B1)	11 (47.8)	Surgery+RT	2 (8.7)
High risk (B2-B3)	12 (52.2)	**DFI TIMECTOMIA (months)**	48



P-129

EARLY PATIENT-REPORTED OUTCOMES AFTER MULTIPORTAL ROBOTIC-ASSISTED VERSUS VIDEO-ASSISTED THORACOSCOPIC SURGERY FOR EARLY-STAGE LUNG CANCER

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OBJECTIVES

Patient-reported outcomes can help identify patient-perceived differences between similar surgical procedures. This study aimed to compare early patient-reported outcomes between multiportal robotic-assisted thoracoscopic surgery (M-RATS) and multiportal video-assisted thoracoscopic surgery (M-VATS) for early-stage lung cancer.

METHODS

Patient-reported outcome data were prospectively collected using the Perioperative Symptom Assessment for Lung Surgery—a validated lung cancer surgery-specific scale. Symptom severity and functional status during the early postoperative period were compared between M-RATS and M-VATS. Both the proportion of moderate-to-severe scores and mean scores on the 0–10 scales were compared between the groups using generalized estimation equation models.

RESULTS

Of the 201 patients included,109 (54.2%) underwent M-RATS and 92 (45.8%) underwent M-VATS. Overall, 106 patients (52.7%) underwent sublobectomy and 95 (47.3%) underwent lobectomy. The median (range) length of postoperative hospital stay was 4 (2−19) days in the overall study group. After adjusting for confounders, patients in the M-RATS group reported less moderate-to-severe cough ($p = 0.034$), disturbed sleep ($p < 0.001$), fatigue ($p = 0.006$), distress ($p = 0.012$), and difficulty in walking ($p = 0.001$) during the 4-day postoperative hospitalization, and less moderate-to-severe pain ($p = 0.021$) and distress ($p = 0.013$) during the 7-day post-discharge than those in the M-VATS group. The results were similar when the mean scores were used for analysis. There were no significant between-group differences in the postoperative hospital stay or early complication rate (≥ grade I) (all $p > 0.05$). However, patients in the M-RATS group had less operative time ($p < 0.001$) and operative blood loss ($p < 0.001$), but higher cost ($p < 0.001$) than those in the M-VATS group.

CONCLUSIONS

Patients who undergo M-RATS may experience fewer moderate-to-severe symptoms and better functional status than those who undergo M-VATS for early-stage lung cancer in the early postoperative period.

Disclosure: No significant relationships.
Keywords: Patient-Reported Outcomes, Symptom, Multiportal Robotic-Assisted Thoracoscopic Surgery, Multiportal Video-Assisted Thoracoscopic Surgery, Early-Stage Lung Cancer.

Table 1: Demographic and clinical characteristics[a]

Variables	M-RATS (n = 109)	M-VATS (n = 92)	P
Age, median (range), y	53 (20-79)	52 (26-75)	0.287
Female	78 (71.6)	67 (72.8)	0.842
BMI, median (range), kg/m2	23.0 (16.4-36.1)	22.6 (15.2-33.8)	0.352
Smoking status			0.545
Never	86 (78.9)	75 (81.5)	
Current	17 (15.6)	10 (10.9)	
Former	6 (5.5)	7 (7.6)	
Comorbidity (Charlson Index)			0.601
No (0)	93 (85.3)	76 (82.6)	
Yes (≥1)	16 (14.7)	16 (17.4)	
ASA classification			0.942
≤1	98 (89.9)	83 (90.2)	
>1	11 (10.1)	9 (9.8)	
FEV1, median (range), L	2.3 (0.3-4.1)	2.4 (0.3-4.3)	0.151
FEV1%, median (range), %	96.3 (30.0-130.5)	96.4 (30.0-136.7)	0.615
Tumor location			0.703
Upper lobe	79 (72.5)	62 (67.4)	
Middle lobe	8 (7.3)	7 (7.6)	
Lower lobe	22 (20.2)	23 (25.0)	
Type of resection			0.323
Sub-lobectomy	54 (49.5)	52 (56.5)	
Lobectomy	55 (50.5)	40 (43.5)	
Number of chest tubes			<0.001
One	98 (89.9)	51 (55.4)	
Two or more	11 (10.1)	41 (44.6)	
Type of lymphadenectomy			<0.001
Systematic lymph node dissection	60 (55.1)	20 (21.7)	
Lymph node sampling	48 (44.0)	71 (77.2)	
Not performed	1 (0.9)	1 (1.1)	
Tumor pathological type			0.349
Adenocarcinoma	102 (93.6)	89 (96.7)	
Non-adenocarcinoma	7 (6.4)	3 (3.3)	

ASA: American Society of Anesthesiologists; BMI: body mass index; FEV1: forced expiratory volume in one second; FEV1%: percentage of predicted forced expiratory volume in 1 second; M-RATS: multiportal robotic-assisted thoracoscopic surgery; M-VATS: multiportal video-assisted thoracoscopic surgery.

[a]Values are presented as n (%) unless otherwise stated.

P-130

THE IMPORTANCE OF BRONCHOPLASTY AND/OR PULMONARY ANGIOPLASTY IN PRIMARY LUNG CANCER

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OBJECTIVES

Primary lung cancer patients who have centrally located or lymph node metastases often require lobectomy or greater. Although sleeve (broncho and/or vascular) lobectomy may be considered to preserve respiratory function and avoid pneumonectomy, the prognostic value of this procedure and its impact on postoperative adjuvant treatment is not clear. In present study, we examined the significance of sleeve resection in patients with primary lung cancer.

METHODS

We performed a retrospective study of cN1-2 cases among 1261 primary lung cancer patients who underwent radical lobectomy or greater (excluding pneumonectomy) at our department from January 2010 to November 2022. The patients were divided into two groups: those who underwent sleeve lobectomy (group A); and those who did not (group B), and their backgrounds were examined. Subsequently, the confounding factors were adjusted using propensity score matching, and perioperative outcome, overall survival (OS), and recurrence-free survival (RFS) were analyzed.

RESULTS

There were 134 eligible patients, 19 in group A and 115 in group B. There were no significant differences in age, gender, smoking history, and preoperative respiratory function between the groups. After adjusting for histology and pathological stage, no significant differences were found in operative time, blood loss, and duration of postoperative hospital stay. No significant differences showed in OS and RFS (5-yr OS:40.9% vs 42.7%, p=0.548; 5-yr RFS: 42.9% vs 44.8%, p=0.832). There were no significant differences in Grade 3 or higher postoperative complications and 90-day mortality. Rates of postoperative adjuvant chemotherapy were also not significantly different.

CONCLUSIONS

Cases using sleeve lobectomy were expected to have outcomes comparable to lobectomy cases in terms of both safety and cure, while avoiding pneumonectomy. Postoperative adjuvant chemotherapy was also considered to be almost equivalent to that of lobectomy. This technique should be used for the primary lung cancer patients with centrally located or lymph node metastasis, when necessary.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Sleeve Lobectomy, Bronchoplasty, Angioplasty.

	Sleeve lobectomy		
	Yes (n=19)	**No (n=19)**	**P-value**
Age	67±9.1	70.7±7.2	0.174
Sex Female/Male	3/16	6/13	0.688
BMI	22.9±2.7	21.9±1.4	0.447
PS 0/1/2	17/2/0	18/0/1	0.486
Smoking history Yes/No	17/2	17/2	1
FEV1(L)	2.33±0.5	2.24±0.71	0.662
%DLCO	99.1±16.3	94.8±9.9	0.573
%VC	112.1±9.3	96.9±12.0	0.052
Approach Thoracotomy/VATS	17/2	8/11	0.002
Tumor size (cm)	4.5±1.9	3.56±1.77	0.103
Duration of surgery (min)	300±90	259±142	0.284
Blood loss (ml)	234±182	186±307	0.558
Duration of post-Op. drainage (day)	4.7±3.3	4.3±3.9	0.735
Duration of post-Op. hosp. stay (day)	16.8±13.2	10.3±5.0	0.055
Any complication Yes/No	13/6	8/11	0.191
≥Grade 3 complication Yes/No	3/16 15.8%	3/16 15.8%	1
Induction therapy Yes/No	0/19	0/19	1
Adjuvant CTx Yes/No	10/9	10/9	1
Adjuvant RT Yes/No	0/19	0/19	1
Histology			1
Adeno-	8	8	
Squamous	8	8	
NET	1	1	
Large	0	0	
Others	2	2	
pStage			1
IIB	9	9	
IIIA	9	9	
IIIB	1	1	
90 day mortality (%)	0	0	1

P-131

PROGNOSTIC IMPACT AND CLINICAL UTILITY OF EUROLUNG2 RISK MODEL IN JAPANESE LUNG CANCER PATIENTS

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OBJECTIVES
The Eurolung risk models were developed from the ESTS database in 2016 to improve quality initiatives of lung cancer surgery. Of them, the mortality model (Eurolung2) has been reported not only to predict surgical mortality but also to be useful in estimating long-term prognosis. The objective of this study was to validate the Eurolung2 model in Japanese lung cancer patients.

METHODS
In this retrospective single-institutional study, we analyzed lung cancer patients who underwent lobectomy or more extensive resection between 2010 and 2017. The parsimonious Eurolung2 model required only six preoperative variables (age, sex, BMI, ppoFEV1.0, surgical approach, and operative procedure). We calculated the Eurolung2 score in eligible patients (N=1,240) and classified them into two classes based on their Eurolung2 score (class A, ≥2.2%; class B, <2.2%). The cutoff value (2.2%) was observed surgical mortality in the ESTS database. We assessed the prognostic impact and clinical utility of the model's predictions.

RESULTS
Median follow-up duration after surgery was 5.4 years. Even though Eurolung2 required only preoperative variables, class A included patients with significantly poor pathologic factors, i.e., pathological N status, microscopic lymph-vascular and pleural invasion, and intrapulmonary metastasis were positive, and poor postoperative overall survival than class B (log-rank, P<.001; HR, 2.909; 95% CI, 2.283–3.707) (Table). Time-dependent ROC curve analysis revealed that the Eurolung2 score correlated strongly with two-year overall survival (AUC, 0.758; 95% CI, 0.708–0.808), and decision curve analysis showed that Eurolung2 model had high net benefits for prediction within two-year overall death after lung cancer surgery (threshold probability, 5%–30%).

CONCLUSIONS
The Eurolung2 model could stratify the long-term prognosis for Japanese lung cancer patients after surgery. This model may be a valuable tool not only for multidisciplinary thoracic oncology teams to discuss treatment strategies for high-risk cases, but also for them to share the decision-making process with patients.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Surgery, Risk Model, Prognosis.

Variables	Class A (Eurolung2≥2.2%) N=400	Class B (Eurolung2<2.2%) N=840	P-value
Eurolung2 score, median (IQR)	3.66 (2.73–5.01)	0.97 (0.62–1.49)	<.001
Required variables on the Eurolung2 model			
Age, median (IQR)	71 (66–75)	65 (59–70)	<.001
Male sex, n (%)	347 (87)	318 (38)	<.001
BMI, median (IQR)	22.2 (20.5–24.2)	22.6 (20.3–25.1)	0.123
ppoFEV1.0%, median (IQR)	54.5 (47.4–60.0)	60.0 (55.1–64.8)	
Approach, n (%) Open VATS	 336 (84) 64 (16)	 173 (21) 667 (79)	<.001
Procedure, n (%) Lobectomy Bilobectomy Pneumonectomy	 352 (88) 23 (6) 25 (6)	 828 (98) 6 (1) 6 (1)	<.001
Pathologic variables			
Pathological Stage, n (%) 0/I/II/III	 4 (1)/184 (46)/109 (27)/103 (26)	 23 (3)/635 (76)/89 (11)/93 (11)	<.001
Pathological N (+), n (%)	138 (35)	145 (17)	<.001
Lymphatic invasion (+), n (%)	218 (55)	247 (29)	<.001
Vascular invasion (+), n (%)	286 (72)	317 (38)	<.001
Visceral pleural invasion (+), n (%)	184 (46)	163 (19)	<.001
Intrapulmonary metastasis (+), n (%)	40 (10)	36 (4)	<.001
Surgical outcomes			
Postoperative complications, n (%)	38 (10)	31 (4)	<.001
Surgical mortality, n (%)	4 (1)	1 (0.1)	.040
Five-year overall survival rate (95% CI) (%)	71.9 (67.1–76.1)	89.8 (87.5–91.7)	<.001

P-132

THE EFFECT OF SURGICAL METHOD ON SYSTEMIC INFLAMMATION IN NON-SMALL CELL LUNG CANCER: THORACOTOMY VERSUS VIDEO ASSISTED THORACIC SURGERY (VATS)

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OBJECTIVES

There is increasing interest in the prognostic role of systemic inflammation in non-small cell lung cancer(NSCLC).However, the effects of the surgical method on inflammation haven't been adequately studied.In our study, it was aimed to analyze the effect of surgical method on inflammatory biomarkers in patients who were operated for NSCLC.

METHODS

224 patients who underwent lung resection due to NSCLC with video-assisted thoracic surgery(VATS) or thoracotomy between January 2015 and December 2022 were included in the study.The effects of VATS and thoracotomy on neutrophil/lymphocyte ratio(NLR), lymphocyte/monocyte ratio(LMR), platelet/lymphocyte ratio(PLR), systemic pan-immune-inflamation index(SII) and pan-immune-inflammation value(PIV) values analyzed comparatively.

RESULTS

The demographic characteristics of the patients are summarized in Table-1. Cut-off values were calculated for each marker and patients were divided into two groups according to these values.Consistent with the literature, in our study, patients who underwent thoracotomy had longer chest tube removal time and hospital stay, and higher complication and mortality rates.(respectively; p=0.001, p<0.001, p=0.005, p=0.047). The mean postoperative NLR value was higher in the thoracotomy group than in VATS group (117.11 vs 96.46; p=0.047). Postoperative NLR, SII and PIV were above the cut-off values in 90.2%, 82.8% and 81% of thoracotomy patients, in 78%, 70% and 66% of VATS patients, respectively, and the difference was statistically significant. (respectively; p=0.021, p=0.047, p=0.024). When the increase in the mean values of biomarkers between the preoperative and postoperative periods was examined, it was shown that the increase in NLR was higher in the thoracotomy group (117,29 vs 95,84;p=0,039). In addition, it was determined that complication rates were higher in patients with NLR increase above the cut-off value between preoperative and postoperative periods (%55,3 vs %39,6;p=0,022).

CONCLUSIONS

In our study, it was shown that thoracotomy increased systemic inflammation more than VATS. This may be a factor associated with the increased complication rates in patients undergoing thoracotomy.

Disclosure: No significant relationships.
Keywords: Inflammation, Thoracotomy, VATS.

Variables	Number of Patients (n=224)	Rate (%)
Sex		
Female	40	17,9
Male	184	82,1
Age (years)		
Under 60	70	31,3
Over 60	154	68,8
Comorbidities		
Yes	155	69,2
No	69	30,8
Surgical Method		
Thoracotomy	174	77,7
VATS	50	22,3
Surgical Procedure		
Lobectomy	195	87,1
Sublobar Resection	29	12,9
Pathology		
Adenocarcinoma	122	54,5
Squamous cell carcinoma	81	36,2
Carcinoid tumor	1	0,4
Others	20	8,9
Stage		
1A1	11	4,9
1A2	48	21,4
1A3	38	17
1B	23	10,3
2A	4	1,8
2B	62	27,7
3A	32	14,3
3B	3	1,3
4	3	1,3
Complications		
Present	102	45,5
Absent	122	54,5
Mortality		
Present	50	22,3
Absent	174	77,7

P-133

PROGNOSTIC FACTORS AFFECTING SURVIVAL AFTER LUNG METASTASECTOMY FOR METASTATIC RENAL CELL CARCINOMA : SINGLE CENTER EXPERIENCE

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OBJECTIVES
Since nonsurgical therapy for metastatic renal cell carcinoma (mRCC) has limited efficacy, surgery seems to offer the best effectiveness in pulmonary resectable metastases.
This paper is aimed to address the role of pulmonary metastasectomy (PM) in patients affected by Lung Metastases (LM) from RCC and to analyse prognostic factors affecting overall survival (OS), disease-free interval (DFI) between primary RCC and first LM, and disease-free survival (DFS) after PM and before lung recurrence.

METHODS
Medical records of 45 patients underwent PM from January 2000 to March 2021, were collected and analysed with a mean FUP of 1120.43 +70.35 months.

RESULTS
The main RCC histology was clear cells (40, 88,8%). The principal type of lung metastasectomy was a wedge resection (35 cases, 77.7%). Thirty-day mortality was null.
The only independent prognostic factors affecting DFI at univariate analysis was the dimension of pulmonary metastases ≥2 cm (P=0.03).
The 5- and 10-year OS from the first lung operation were 68% and 54%, respectively. Independent prognostic factor influencing survival were: dimension of pulmonary metastases ≥2 cm (P=0.018), DFI ≥5 years (P=0.044), LM synchronous with RCC (p = 0.015) and (Karnofsky Performance Status Scale) KPSS < 80% (p < 0.004) .
Five- and 10-year DFI were 56% and 27% respectively. The main factors negatively influencing DFI were: male gender (p = 0.043) and KPSS < 80% (p = 0.007).
Five- and 10-year disease-free survival were 54% and 28%, respectively; multiple LM (p = 0.033), KPSS < 80% (p = 0.004) and histology of RCC other than clear-cells negatively influenced DFS.

CONCLUSIONS
Lung Metastasectomy in mRCC offers good results in terms of long-term efficacy and low morbidity especially in case of long DFI, reduced dimension of LM, KPSS > 80%, single metachronous LM with a long DFI from RCC diagnosis, and clear-cell histology.

Disclosure: No significant relationships.

Keywords: Lung Metastases, Metastasectomy, Metastatic Renal Cell Carcinoma, Kidney Tumor.

P-134

STROMAL KI67 HAS A PREDICTIVE VALUE IN DETERMINING OUTCOMES FOLLOWING EXTENDED PLEURECTOMY/DECORTICATION FOR MALIGNANT PLEURAL MESOTHELIOMA

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OBJECTIVES

Malignant pleural mesothelioma has a low survival rate. Multimodality treatment involves surgery (pleurectomy/decortication), chemotherapy or immunotherapy. It remains uncertain how patients with similar stage and histologic subtype have a wide variance in outcome. Ki67 is a proliferation marker which has shown prognostic value in other malignancies. We endeavoured to see if this would be true in mesothelioma.

METHODS

As part of a wider study, pleural tissue from 50 malignant pleural mesothelioma consecutive patients undergoing extended pleurectomy/decortication was collected during surgery. Tissue cores were stained in tissue microarray panels. Multiplex immunofluorescence was performed containing Ki67, pancytokeratin and DAPI (4′,6-diamidino-2-phenylindole). Another tissue microarray block consisting of tissue from 50 patients had been made. Results from these are still awaited and will be included in the full analysis.

RESULTS

The median age was 70.50, M:F=(3.8:1). Histology: epithelioid 89.58%, biphasic 10.42. 91.67% had microscopic residual tumor (R1). Median PFS and OS were 162.50 and 387.50 days respectively. PFS and OS had moderate correlation (0.68). Survival analysis of high Ki67 expression vs low Ki67 expression showed a significant difference when stromal proliferation ratio was used as the proliferation index (p=0.002), Surprisingly, this difference was not seen when tumor proliferation ratio was used(p=0.3).

CONCLUSIONS

Stromal Ki67 was shown to have strong predictive value in patients who underwent pleurectomy/decortication. This can help in future patient selection as it identifies patients most likely to benefit from surgery.

Disclosure: No significant relationships.
Keywords: Mesothelioma, Pleurectomy/Decortication, Survival.

P-135

PRIMARY PULMONARY ARTERY SARCOMA - DEMANDING AND MULTIDISCIPLINARY CHALLENGE - A CASE REPORT WITH A SURVIVAL OF 70 MONTHS

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OBJECTIVES

Primary pulmonary artery sarcomas (PPAS) are extremely rare tumours. There are less than 400 cases described in the literature. PPAS are often misdiagnosed as pulmonary emboli (PE) and usually involve the pulmonary trunk. The median overall survival in the literature without surgery is 2 months, with surgery less than 18 months.

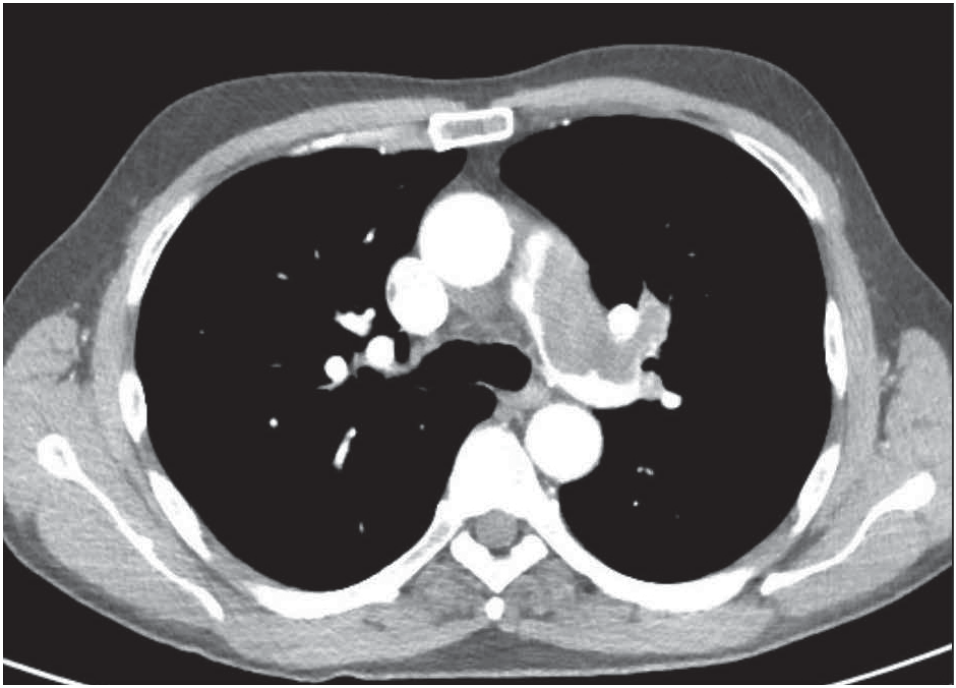
CASE DESCRIPTION

We describe a 61-year-old man with an undifferentiated pleomorphic PPAS confined to the pulmonary truncus, the central right and left pulmonary artery, initially misdiagnosed as a PE. Six months after therapeutic anticoagulation and increasing right heart failure a transluminal biopsy was taken that confirmed the high grade sarcoma. Pulmonary endarterectomy was performed followed by 6 cycles of adjuvant chemotherapy. 11 months after surgery hilar and mediastinal lymph node involvement was suspected. 2 cycles of palliative systemic therapy was given combined with radiation therapy. Further progress was seen and Trabectedin was given. 13 months later the patient underwent re-sternotomy with tumour excision of the right ventricle and pulmonary valve replacement by xenotransplant, and reconstruction of the myocardium. 14 months later re-re-sternotomy was performed due to relapse at the right ventricular septum and the left border of the RVOT with replacement of the tricuspid valve plus cryoablation of the RVOT distal the pulmonary valve.
Overall survival of the patient after diagnosis of PPAS was 70 months.

CONCLUSIONS

The PPAS is a mimicry in thoracic surgery. With multidisciplinary approach better outcomes can be achieved then seen in the literature. The primary surgical resection of the tumour is the cornerstone for local tumour control, haemodynamic stabilisation and improvement of quality of life. Adjuvant systemic therapy improves the outcome but recurrence is common. Multidisciplinary team work with the oncologists, cardiac surgeons and others can be necessary in the course and lead to further improvement of overall survival.

Disclosure: No significant relationships.
Keywords: PPAS, CTEPH.



P-136

INTERCOSTAL ARTERY ANEURYSM RUPTURE IN VON RECKLINGHAUSEN'S DISEASE: A RARE CASE OF SPONTANEOUS HEMOTHORAX

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OBJECTIVES
Von Recklinghausen neurofibromatosis is a genetic disorder characterized by the growth of tumors on the nerves. Vascular involvement is rare but particularly dangerous manifestation of the disease. Aneurysms arising from intercostals arteries are also rare malformations with silent clinical presentation that are often misdiagnosed.

CASE DESCRIPTION
We hereby present the case of a 62-year-old male with known Von-Recklinghausen disease that presented at the emergency department with acute onset of dyspnea, chest pain and rapidly growing left-sided spontaneous hemothorax. The patient underwent chest x-rays and CT scan which revealed moderate to large pleural effusion and unknown intercostal artery aneurysm rupture. He immediately underwent percutaneous angiography and treated with endovascular embolization followed by chest tube insertion. The patient had an uneventful recovery and he was discharged on the forth postoperative day.

CONCLUSIONS
Management of spontaneous hemothorax is a burning issue in contemporary thoracic surgery. Exploratory thoracotomy was considered the gold standard approach to treat intercostals artery rupture. However in recent years a more conservative approach with endovascular embolization has shown excellent results. Spontaneous hemothorax in patients with von Recklinghausen's disease is a life-threatening syndrome and it should not be forgotten in clinical practice.

Disclosure: No significant relationships.
Keywords: Von Recklinghausen, Intercostal Rupture, Hemothorax.

P-137

SURVIVAL OF PATIENTS WITH CN2-3 NON-SMALL CELL LUNG CANCER (NSCLC) DIAGNOSED BY VIDEO-ASSISTED MEDIASTINOSCOPIC LYMPHADENECTOMY (VAMLA) AFTER INDUCTION THERAPY

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OBJECTIVES

Transcervical lymphadenectomies for NSCLC primary staging represent a new paradigm. Firstly, these techniques can be considered part of the induction treatment because the mediastinum is simultaneously staged and downstaged. Secondly, because nodal mediastinal invasive restaging after induction therapy is unnecessary. Objective: to analyze the results of patients with cN2-3 NSCLC diagnosed by VAMLA who underwent trimodality treatment in terms of feasibility and survival.

METHODS

Prospective observational single-center study of 385 patients with cN0-1 NSCLC (by PET-CT) who underwent VAMLA from January 2010 to December 2021. Patients with cN2-3 NSCLC diagnosed by VAMLA and candidates for trimodality treatment (chemoradiotherapy plus surgery) were analyzed. Follow-up was completed in 12/2022. Median follow-up for surviving patients was 22 months (range, 2-151). Survival was analyzed using the Kaplan-Meier method; log-rank test was used for comparisons. A p-value of less than 0.05 was considered significant.

RESULTS

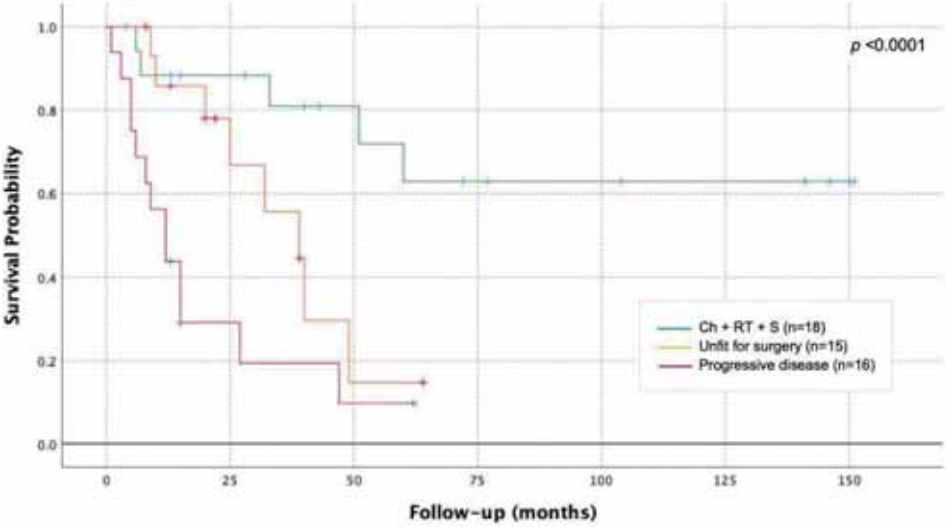
The rate of unsuspected N2-3 disease was 16% (62 patients). 49 patients (41 men; median age, 68; range, 45-81) were considered for trimodality treatment (cisplatin-based chemotherapy concomitant with radical radiotherapy [mean 54Gy, range 40-70Gy] plus lung resection). The results of restaging based on the PET-CT were: progression in 16 (32.7%) (mostly distant metastases), and stability of the primary tumor or partial response in 33 patients (67.3%). 18 (54.5%) out of 33 patients underwent lung resection; the remaining 15 were considered unfit for surgery. Regarding operated patients, in all cases, complete resection was achieved and 2 (11%) cases had a complete pathologic response. Morbimortality: no deaths and one atelectasis (solved with bronchoscopy). Figure 1 shows the survival curves of the whole series ($p<0.0001$).

CONCLUSIONS

1) VAMLA for patients with cN2-3 NSCLC candidates for trimodality treatment is feasible and avoids invasive mediastinal restaging. 2) The survival is better than expected for cN2-3 patients in whom lung resection can be achieved.

Disclosure: No significant relationships.
Keywords: VAMLA; Trimodality Treatment; N2 Disease; NSCLC.

Figure 1. Kaplan-Meier survival curve of those patients with cN2-3 diagnosed by VAMLA candidates to trimodality treatment (n=49): 1) Ch + RT + S: induction chemoradiotherapy plus surgery (green line); 2) patients unfit for surgery after induction therapy (orange line); patients with progressive disease after induction therapy (red line).



P-138

VIDEO-ASSISTED MEDIASTINOSCOPIC LYMPHADENECTOMY (VAMLA): PRELIMINARY RESULTS FOR RESTAGING CIIIA (N2) NON-SMALL CELL LUNG CANCER (NSCLC) AFTER INDUCTION THERAPY

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OBJECTIVES
Mediastinal downstaging as a criterion to select patients for resection requires a reliable restaging method to identify residual nodal disease before lung resection. To date, there are no published reports regarding video-assisted mediastinoscopic lymphadenectomy (VAMLA) for restaging. Objective: to analyze the accuracy and feasibility of VAMLA for restaging in patients with non-small cell lung cancer (NSCLC) cIIIA (N2) after induction therapy.

METHODS
Prospective observational single-center study of patients with NSCLC cN2-3 (diagnosed by endobronchial ultrasound-guided transbronchial needle aspiration [EBUS-TBNA]), treated with induction therapy who underwent restaging VAMLA from 2016 to 2022. Patients with negative VAMLAs underwent lung resection. Systematic nodal dissection was considered the gold standard to confirm negative VAMLAs. Pathologic findings were reviewed and staging values were calculated (including 95% confidence interval [CI]) using the standard formulas.

RESULTS
27 patients (23 men; median age: 63.5 years; range, 48-78) with cIIIA (N2) NSCLC received the following induction therapies: cisplatin-based chemotherapy concomitant with radical radiotherapy [mean 54Gy, range 40-70Gy) (n=23), chemoradiotherapy and immunotherapy (n=3) and tyrosine kinase inhibitor and immunotherapy (n=1). In all cases, VAMLA was feasible and the complete clearance of both paratracheal and subcarinal stations, achieved (median of 12 lymph nodes/patient resected; median of 4 stations/patient, explored). Rate of persistent unsuspected N2 of the whole series: 33% (9/27). Staging values: sensitivity, 100% (95% CI, 67.6– 100); specificity, 100% (95% CI, 84–100); positive predictive value, 100% (95% CI, 67.6-100); negative predictive value, 100% (95% CI, 84–100); and diagnostic accuracy, 100% (95% CI, 88-100). Complication rate was 15% (4 patients) being transient left recurrent laryngeal nerve palsy the commonest.

CONCLUSIONS
VAMLA for restaging NSCLC after induction therapy is feasible with a high accuracy. Therefore, VAMLA should be included in the restaging algorithms to select those patients with IIIA-NSCLC candidates to resection after induction therapy.

Disclosure: No significant relationships.
Keywords: Restaging, VAMLA, N2, Induction Therapy, NSCLC.

P-139

THE IMPACT OF PREVIOUS EXTRAPULMONARY MALIGNANCIES ON SURVIVAL OF SURGICALLY TREATED PRIMARY LUNG CANCER: A COMPREHENSIVE SYSTEMATIC REVIEW AND META-ANALYSIS

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OBJECTIVES
We conducted the first meta-analysis to compare the survival of lung cancer patients after surgical resection with previous extrapulmonary malignancies and those without.

METHODS
We systematically searched PubMed, Embase, and Corchrane Library to identify relevant studies up to April 1, 2022. Data for analysis were obtained directly from the text results or calculated from the Kaplan–Meier survival curve, which mainly included 5-year overall survival (OS) and recurrence-free survival (RFS). Pooled hazard ratios (HRs) and 95% confidence intervals (CIs) were analyzed by the fixed-effect model test or standard random-effect model test depending on the heterogeneity of the included studies. The Q-test and I2-test were used to assess heterogeneity. Sensitivity analysis was performed to examine the stability of the pooled results.

RESULTS
We finally included 7 retrospective studies consisting of 19723 surgically treated primary lung cancer patients with (7.7%) or without (92.3%) previous extrapulmonary malignancies. The final results showed that lung patients with previous extrapulmonary malignancies had an inferior OS (HR = 1.18, 95% CI = [1.07, 1.31], P = 0.001) than those without, but no significant difference of RFS(HR 1.15, 95% CI = [0.89–1.47], P = 0.29) was observed between the two groups. Moreover, when only focusing on stage I primary lung cancer patients with or without previous extrapulmonary malignancies, the results still hold true(OS :HR = 1.39, 95% CI = [1.04, 1.85], P = 0.02; RFS:HR 1.10, 95% CI = [0.82–1.49], P = 0.51, respectively). No significant heterogeneities and publication bias were observed among these studies.

CONCLUSIONS
Our meta-analysis showed that surgically treated primary lung cancer patients with previous extrapulmonary cancer history had a worse overall survival than these not. However, a history of previous extrapulmonary cancer was not associated with postsurgical lung cancer recurrence, and more large-scale prospective studies should be encouraged to update our conclusions.

Disclosure: No significant relationships.
Keywords: Previous Extrapulmonary Malignancy, Primary Lung Cancer, Surgery, Prognosis, Meta-Analysis.

Author (year)	5-year OS rate of all stage lung cancer		5-year RFS rate of all stage lung cancer		OS: pooled HR(95% CI) of all stage lung cancer		RFS: pooled HR(95% CI) of all stage lung cancer		5-year OS rate of stage I lung cancer		5-year RFS rate of stage I lung cancer		OS: pooled HR(95% CI) of stage I lung cancer		RFS: pooled HR(95% CI) of stage I lung cancer	
	Without PM	With PM	Without PM	With PM	HR	95% CI	HR	95% CI	Without PM	With PM	Without PM	With PM	HR	95% CI	HR	95% CI
Keita Nakao[14] (2019)	82.7	75.3	83	78.7	1.86	(1.17, 2.96)	1.41	(0.87, 2.29)	82.7	75.3	83	78.7	2.18	(1.24, 3.83)	1.33	(0.70, 2.53)
Hsin-Ying Lee[13] (2021)	94.3	88.8	NR	NR	1.89	(1.06, 3.37)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Pagès[11] (2013)	45	40	NR	NR	1.14	(0.99, 1.31)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Keiju Aokage[09] (2017)	74.4	77.7	62.7	66.5	1.06	(0.75, 1.50)	1.06	(0.79, 1.42)	74.4	77.7	62.7	66.5	1.14	(0.75, 1.73)	1.05	(0.75, 1.47)
Tamar B. Nobel[17] (2022)	73	73	NR	NR	1.14	(0.91, 1.43)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Aritoshi Hattori[18] (2014)	74.7	71.3	NR	NR	1.31	(0.91, 1.89)	NR	NR	74.7	71.3	NR	NR	1.27	(0.74, 2.18)	NR	NR
Tsubokawa N[19] (2015)	74.5	76.4	NR	NR	1.05	(0.71, 1.55)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

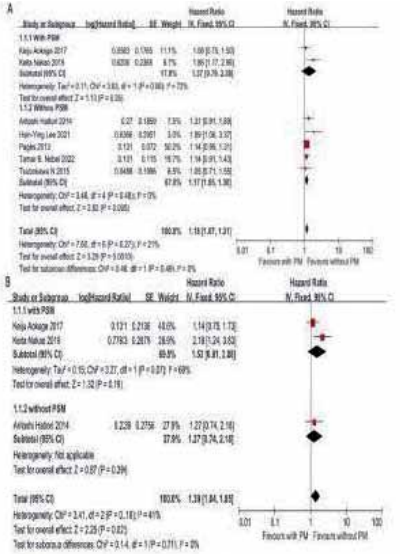

Figure 1. Forest plot of 5-year OS in surgically treated (A) all stage and (B) stage I lung cancer patients(In PSM subgroup analysis, because the heterogeneity was high, we used random-effects model for statistical analysis); PM, previous malignancy; OS, overall survival ; CI, confidence interval; PSM: propensity score-matched.

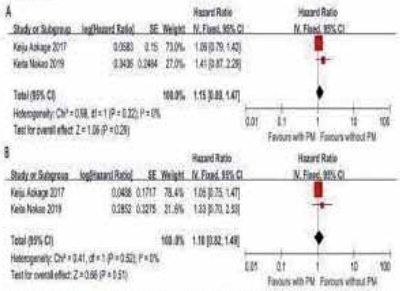

Figure 2. Forest plot of 5-year RFS of surgically treated (A) all stage and (B) stage I lung cancer patients; PM, previous malignancy; CI, confidence interval; RFS, recurrence-free survival.

P-140

NATIONAL POPULATION-BASED STUDY ON SURGICAL CARE FOR SPONTANEOUS PNEUMOTHORAX WITH SPECIFIC FOCUS ON PRIMARY SPONTANEOUS PNEUMOTHORAX

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OBJECTIVES
The optimal surgical strategy for primary spontaneous pneumothorax remains a matter of debate and variability in surgical practice is expected. This variation may influence outcome, such as complications and length of stay. This national population-based registry study provides an overview of current surgical practice and outcomes in the Netherlands and is a tool for further research.

METHODS
Between 2014-2019, patients who underwent pleurodesis and/or bullectomy were identified from the national audit database on lung surgery. Current surgical practice was described and a subgroup representing only patients with primary spontaneous pneumothorax was identified to compare outcomes (complications and length of stay) regarding the different surgical procedures (bullectomy only, pleurodesis only or combined).

RESULTS
A total of 3,476 surgeries were performed of whom 1,597 patients were defined as having primary spontaneous pneumothorax. Mean age of the primary spontaneous pneumothorax subgroup was 26 years (SD 6.5) and 82% was male. The most performed surgical procedure was bullectomy combined with pleurodesis (83%) through video assisted thoracoscopic surgery (98%). Overall morbidity was 13% (major 6%) of which persistent air leak (5%) had the highest incidence. The median length of stay was 4 days (IQR 3-6 days). No significant differences in complication rate and length of stay were seen between the different surgical procedures.

CONCLUSIONS
In the Netherlands, the preferred surgical procedure for treatment of primary spontaneous pneumothorax is bullectomy combined with pleurodesis. Postoperative morbidity and length of stay are relatively high in this young and healthy patient group. Since guidelines lack firm recommendations due to low quality evidence, research to optimize surgical care is necessary to decrease utilization of health care resources by minimizing complications and shortening length of stay.

Disclosure: No significant relationships.
Keywords: Spontaneous Pneumothorax, Surgical Technique, Postoperative Complications, Length Of Stay.

		Total	Pleurodesis	Bullectomy	Pleurodesis + Bullectomy	P-value
Patients*		1597 (100)	224 (14.0)	50 (3.1)	1323 (82.8)	
Surgical approach	VATS	1559 (97.6)	218 (97.3)	46 (92.0)	1295 (97.9)	<0.000
	Thoracotomy	11 (0.7)	3 (1.3)	3 (6.0)	5 (0.4)	
	Conversion	2 (0.1)	0 (0.0)	1 (2.0)	1 (0.1)	
	Other ?	25 (1.6)	3 (1.3)	0 (0.0)	22 (1.7)	
Gender	Male	1300 (81.5)	176 (78.6)	36 (72.0)	1088 (82.3)	0.090
	Female	296 (18.5)	48 (21.4)	14 (28.0)	234 (17.7)	
Age	Mean (SD)	25.8 (6.5)	25.3 (6.6)	26.3 (6.6)	25.9 (6.5)	0.460
Complications < 30 days		209 (13.1)	36 (16.1)	8 (16.0)	165 (12.5)	0.277
Clavien Dindo						
1 - 2		111 (7.0)	20 (8.9)	4 (8.0)	87 (6.6)	0.896
3		84 (5.3)	13 (5.8)	4 (8.0)	67 (5.1)	
4		14 (0.9)	3 (1.3)	0 (0.0)	11 (0.8)	
5		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Type of complications						
PAL > 5 days		80 (5.0)	14 (6.3)	4 (8.0)	62 (4.7)	0.376
Postoperative hematothorax		34 (2.1)	5 (2.2)	1 (2.0)	28 (2.1)	0.842
Postoperative infection		28 (1.8)	4 (1.8)	1 (2.0)	23 (1.7)	0.933
Other ??		77 (4.8)	15 (6.7)	1 (2.0)	61 (4.6)	0.155
Reintervention		91 (5.7)	16 (7.1)	3 (6.0)	72 (5.4)	0.904
LOS (days)	Mean (SD)	5.2 (3.9)	5.5 (3.8)	5.9 (7.0)	5.1 (3.8)	0.227
	Median (IQR)	4.0 (3.0-6.0)	4.0 (3.0-6.0)	4.0 (3.0-6.0)	4.0 (3.0-6.0)	0.180

Not all data were complete per characteristic, missing values are not presented in the table and hence denominators can slightly differ. VATS = video assisted thoracoscopic surgery, PAL = persistent air leak > 5 days, LOS = length of stay, SD = standard deviation, IQR = Interquartile range. * sum of percentages 100% in row for number of patients; ? approach not further described; ?? other complications included chylothorax (n=1), atelectasis (n=2), recurrent laryngeal nerve damage (n=1), bronchopleural fistula (n=1), air leak not further specified (n=46), complications not further specified (n=26).

"0">
VARIABLE
STATISTICAL DESCRIPTION
Sex
Male
92 (42.2%)
Female
126 (57.8%)

Age - years

Mean; SD
54.7; 15.3
Median
56.0
Q1-Q3
44.0 – 67.0
NA
1

Myasthenia Gravis
YES
135 (61.9%)
NO
82 (37.6%)
missing
1 (0.5%)

Tumor Dimension (cm)
Mean; SD
5.1; 2.8
Median
5.0
Q1-Q3
3.0 – 6.5

TNM
T1
189 (86.7%)
T2
7 (3.2%)
T3-4
21 (9.6%)
missing
1 (0.5%)

Completeness of resection
R0
212 (97.2%)
R+
5 (2.3%)
NA
1 (0.5%)

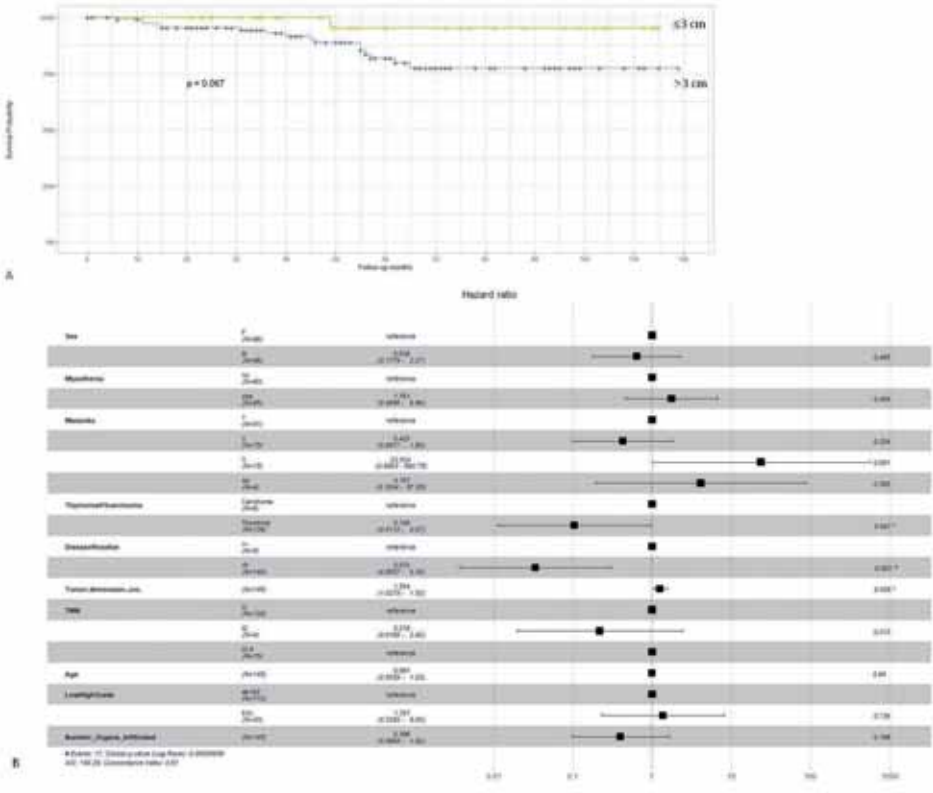
Number of Infiltrated Organs
0
181 (83.0%)
1
17 (7.8%)
2
16 (7.4%)
3
4 (1.8%)

Masaoka- Koga Classification
Stage 1
83 (38.1%)
Stage 2
106 (48.6%)
Stage 3
24 (11.0%)
Stage 4a
4 (1.8%)
missing
1 (0.5%)

Thymoma/Carcinoma
Thymoma
210 (96.3%)
Carcinoma
8 (3.7%)

WHO histology
A-B1-B2
168 (77.1%)
B3
38 (17.5%)
C
8 (3.6)
missing
4 (1.8%)

Adjuvant Treatment
Yes
108 (49.5%)
NO
104 (47.8%)
missing
6 (2.7%)


≤3 cm
>3 cm
p = 0.067
A
Hazard ratio
B

P-141

HOW BODY MASS INDEX (BMI) INFLUENCES SURGICAL MANAGEMENT IN VIDEO-ASSISTED THORACIC SURGERY (VATS) LOBECTOMY

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OBJECTIVES
The impact of obesity on outcomes of lung resections remains an important topic. Abnormal body mass index has been generally defined as a predictor of complications after major surgery. This study aims to verify the possible impact of BMI on the perioperative outcome of patients undergoing VATS lobectomy.

METHODS
A total of 204 patients undergoing VATS lobectomy between 2013 and 2018 were enrolled. In this study pre, intra and postoperative variables were considered. A body mass index of 30 or greater was considered obese. Patients were categorized as obese (BMI > 30 kg/m2), overweight (BMI 25 to <30 kg/m2), or normal weight (BMI < 25 kg/m2) and compared using univariate and multivariate analyses.

RESULTS
In the preoperative evaluation Mallampati's classification was correlated with the BMI. Analyzing the intraoperative features, obese patients showed a longer operative time ($p > 0.05$). In the postoperative period, overweighted or moderately obese cases had a shorter duration of chest drain and hospital stay but they developed frequently arrhythmias, pulmonary atelectasis and bronchial obstruction.

CONCLUSIONS
This study confirms the feasibility of VATS lobectomy even in obese patients. The postoperative complications in our population trace what in literature is called "obesity paradox," such as the presence of a better postoperative course of overweight and mildly obese patients in terms of hospital stay and duration of chest drain.

Disclosure: No significant relationships.
Keywords: Quality Of Care, Surgical Treatment, Patient Outcome.

P-142

SURGICAL MANAGEMENT AD OUTCOMES OF CATAMENIAL PNEUMOTHORAX: A EUROPEAN MULTICENTRE REAL-LIFE COMPARATIVE STUDY

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OBJECTIVES
Catamenial pneumothorax is still an underdiagnosed clinical condition, despite it accounts from 20 to 35% of spontaneous pneumothoraces affecting women in premenopausal age. The purpose of this study is to delineate the most appropriate surgical treatment comparing a fifteen-year experience of 4 European centres.

METHODS
A European multicentre retrospective cohort study was conducted. We evaluated all the spontaneous pneumothoraces occurring in women of child-bearing age. We only included histologically confirmed cases or the ones with evidence of diaphragmatic holes. 28 patients respected our criteria and have been evaluated. We compared their surgical treatment, in-hospital variables and rate of recurrence.

RESULTS
The characteristics of our population are depicted in Table1.
The surgical approach was VATS for 27 patients. 3 patients were converted to thoracotomy due to extended adhesions, 1 patient underwent straight axillary thoracotomy.
Diaphragmatic involvement was confirmed in 23patients; 18 of them got prosthetic replacement of the defect, 5 with biological mesh and 13 with synthetic graft.
Moreover, 24 patients received pleurodesis according to the centre expertise and surgeon's choice (abrasion, talc insufflation, floating ball) and in 3 patients pleurectomy was performed.
Chest drains were removed after a median of 5 days (range 2-8) and median hospital stay was 6 days (range 3-11). Median follow up was 71.5 months (range 1-166). During this period 10 recurrences occurred: 5 patients who received the synthetic mesh and 5 who had pleurodesis alone despite the diaphragmatic compromission.
Comparative analyses demonstrated a significative difference in recurrence rate in patients with no prosthesis (p=0,004). Furthermore, patients with synthetic mesh showed a significantly higher rate of recurrence versus the biological subgroup (p=0,005).

CONCLUSIONS

Our series demonstrates the safety and effectiveness of diaphragmatic prosthetic replacement when involved by endometriosis lesions. Notably our data also suggest that biological mesh should be preferred in this setting, showing excellent postoperative and long-term results.

Disclosure: No significant relationships.
Keywords: Catamenial Pneumothorax, Diaphragmatic Prosthesis, Thoracic Endometriosis.

P-143

INTERCOSTAL NERVE BLOCK AS ALTERNATIVE FOR THORACIC EPIDURAL ANALGESIA AFTER VATS FOR PNEUMOTHORAX: A MULTICENTER RETROSPECTIVE STUDY

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OBJECTIVES
In patients undergoing video-assisted thoracoscopic surgery for pneumothorax, the benefits and risks of single-shot intercostal nerve block as locoregional analgesia are not well known yet. We retrospectively compared the effectiveness of intercostal nerve blocks as a viable alternative to thoracic epidural analgesia regarding pain control and enhanced recovery.

METHODS
A multi-center retrospective data-analysis was performed in 260 patients undergoing video-assisted thoracoscopic surgery for pneumothorax receiving either thoracic epidural analgesia or intercostal nerve block. The primary outcome was proportion of NRS measurements ≥4 until postoperative day 3. Secondary outcomes included trend in pain scores, additional opioid use, length of stay, degree of mobility, postoperative complications and recurrence rate.

RESULTS
Compared to patients receiving thoracic epidural analgesia, patients treated with single-shot intercostal nerve block showed no difference in proportion of NRS ≥4 (15.5% [IQR 0.0-33.3] versus 10.0% [IQR 0.0-27.3] respectively, p=0.14), more frequently needed additional opioids on the day of surgery (17% versus 45%) and first postoperative day (19% versus 38%), had a shorter length of stay (4.5 days [IQR 3.0-7.0] versus 3.0 days [IQR 3.0-4.0], p=0.00), and were significantly more mobile until postoperative day 4, while having similar complications and recurrences. Patients receiving single-shot intercostal nerve block had higher postoperative pain scores early in course whereas patients with thoracic epidural analgesia had higher late (rebound) pain scores.

CONCLUSIONS
In a multi-modal analgesic setting with additional opioids, single-shot intercostal nerve block shows adequate pain control with an advantage in early mobilization and shorter length of stay

compared to thoracic epidural analgesia. The effect of the locoregional analgesic technique is highly dependent on other hospital-specific factors that enhance recovery after thoracic surgery.

Disclosure: No significant relationships.
Keywords: Pneumothorax, Intercostal Block, Epidural, ERATS.

Table: Primary and secondary outcomes per analgesic technique.

	Thoracic Epidural n=158 (%)	Intercostal nerve block n=102 (%)			p-value	
Primary outcome						
Proportion of measurements NRS ≥ 4 (median, IQR)	15.5% [0-33]	10.0% [0-26]			0.14	
Secondary outcomes						
Additional opioids	n (%)	dosage (mg, mean, SD)	n (%)	dosage (mg, mean, SD)	n (%)	dosage (mg)
Postoperative day 0	27 (17)	22.7 (18.9)	46 (45)	15.0 (19.0)	0.00	0.12
Postoperative day 1	30 (19)	33.3 (33.9)	40 (38)	30.2 (18.7)	0.00	0.65
Postoperative day 2	55 (35)	31.0 (24.6)	37 (36)	26.0 (17.1)	0.44	0.27
Postoperative day 3	61 (39)	26.5 (23.8)	22 (22)	22.8 (14.6)	0.01	0.51
Length of stay (median, IQR)	4.0 (3.0-7.0)		3.0 (3.0-4.0)		0.00	
Full mobility outside patient room	n (%)		n (%)			
Postoperative day 1	13 (12)		30 (35)		0.00	
Postoperative day 2	34 (30)		62 (65)		0.00	
Postoperative day 3	46 (51)		55 (81)		0.00	
Mortality	2 (1)		0		0.37	
Postoperative complications						
Clavien-Dindo 1-2	15 (10)		4 (4)		0.07	
Clavien-Dindo 3-4	22 (14)		11 (11)		0.55	
Recurrence rate (%, 95%-CI)	12 (7-18)		13 (6-20)		0.53	

P-144

IDENTIFY THE CLINICOPATHOLOGICAL CHARACTERISTICS OF LUNG CARCINOMA PATIENTS BEING FALSE NEGATIVE IN FOLATE RECEPTOR BASED CIRCULATING TUMOR CELL DETECTION

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OBJECTIVES
In lung cancer diagnosis, folate receptor (FR) based circulating tumor cell (CTC) has shown its ability to distinguish malignancy from benign disease to some extent. However, there are still some patients having lung carcinoma cannot be identified by FR-based CTC detection, studies comparing the characteristics between true positive (TP) and false negative (FN) patients are few. Thus, we comprehensively analyzed the clinicopathological characteristics of FN and TP patients in our current study.

METHODS
We collected 3573 patients who underwent surgery due to abnormalities in imaging examination. And 3420 patients were enrolled for further analysis. CTCs were enriched and detected by CytoploRare® Folate Receptor Positive Circulating Tumor Cell Detection Kit. According to the pathological diagnosis and results of CTC, patients were divided into FN and TP groups and clinicopathological characteristics were compared between two groups.

RESULTS
In our cohort, 2206 patients confirmed as TP group, 839 patients were FN group. . FN patients having smaller tumor, low T stage, early pathological stage and without lymph node metastasis compared with TP group (all $P<0.05$). Epidermal growth factor receptor (EGFR) mutation status was different between FN and TP group ($P=0.006$). And this result was also demonstrated in lung adenocarcinoma subgroup while it was not been observed in lung squamous cell carcinoma subgroup.

CONCLUSIONS
Tumor size, T stage, pathological stage, lymph node metastasis and EGFR mutation status might influence on the diagnostic accuracy of FR based CTC in lung cancer. However, further prospective studies are needed to confirm the findings.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Folate Receptor Based Circulating Tumor Cell Detection, True Positive, False Negative, Clinicopathological Characteristics.

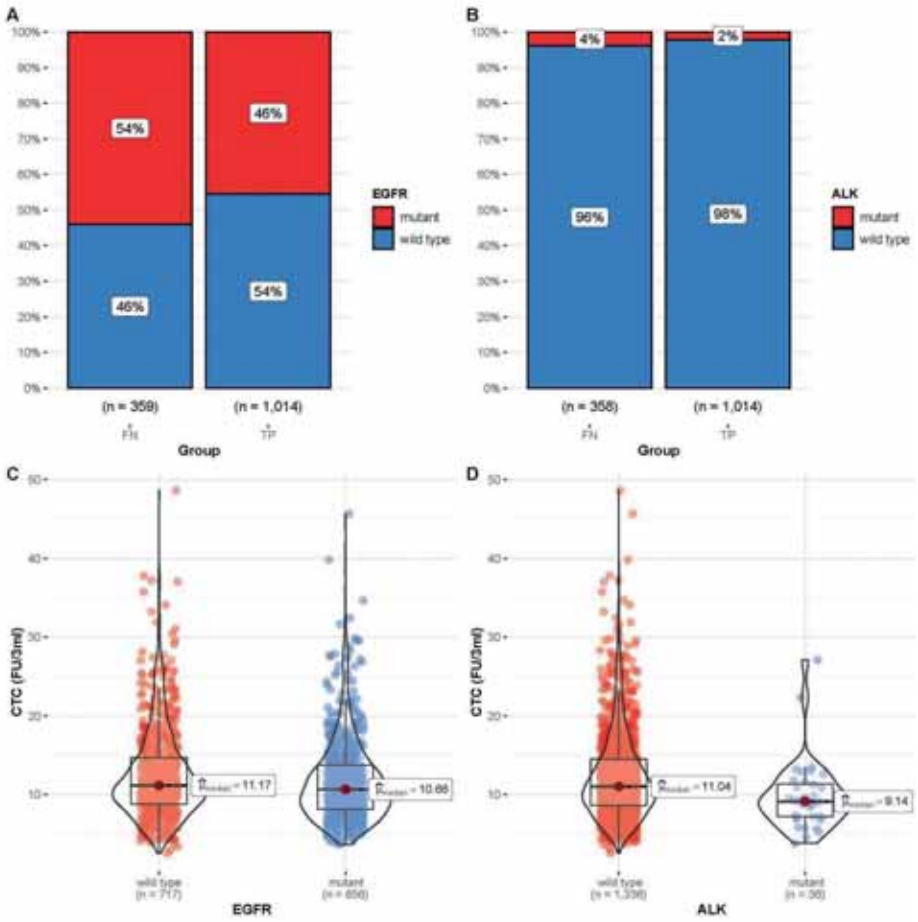

Figure 2 The correlation between EGFR /ALK mutation and CTC. A. EGFR mutation status in FN and TP group; B. ALK mutation status in FN and TP group; C. CTC level in EGFR mutant and wild type patients; D. CTC level in ALK mutant and wild type patients.

P-145

PREDICTIVE FACTORS OF POSTOPERATIVE LONG-TERM SURVIVAL IN PATIENTS WITH MALIGNANT PLEURAL MESOTHELIOMA

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OBJECTIVES
To investigate the predictive factors of long-term survival (more than 5 years) in patients with malignant pleural mesothelioma (MPM) undergoing curative-intent surgery.

METHODS
A total of 182 patients who underwent curative-intent surgery for MPM between January 2006 and December 2017 in two high-volume centers were enrolled in this retrospective cohort study. Long-term survivor was defined as a patient surviving more than 5 years from the date of diagnosis. We analyzed the predictive factor of long-term survival using regression analyses. The data cut-off date was December 31st, 2022.

RESULTS
Of 182 patients, 63 (34.6%) survived more than 5 years from the date of diagnosis: median age 63 years, 54 (85.7%) males, 62 (98.4%) epithelioid subtypes, the median sum of pleural thickness at three levels 9.2 mm, 40 (63.5%) undergoing pleurectomy/decortication, 22 (34.9%) pathological T1, 15 (23.8%) pathological node negative, and 3 (4.8%) experienced severe postoperative complication (Clavien-Dindo classification grade > 3).
Univariate analysis revealed that age less than 70 years, pleurectomy/decortication, blood loss less than 1452g, the sum of plural thickness at three levels less than 13 mm, pathological T1 stage, pathological node negative, and Clavien-Dindo classification adverse effect grade < 3 were significantly associated with long-term survival. Multivariate analysis with regression analyses revealed that age < 70 years ($p < .05$, 95% CI 1.74-16.00, OR 5.28), Clavien-Dindo classification adverse effect grade < 3 ($p < .001$, 95% CI 2.81–35.75, OR 10.03), and the sum of plural thickness at three levels < 13 mm ($p < .05$, 95% CI 1.01-4.71, OR 4.90) were significant predictive factors of long-term survival.

CONCLUSIONS
Younger age, no postoperative severe complication, and thinner pleural thickness were independent predictive factors of long-term survival in MPM patient undergoing curative-intent surgery.

Disclosure: No significant relationships.
Keywords: Malignant Pleural Mesothelioma, Long-Term Survival, Predictive Factor.

		univariate analyses			multivariate analyses		
		OS?5Y	OS<5Y	p-value	OR	95%CI	p-value
age	60>	23	29	0.0885			
	60=<	40	90				
	65>	34	51	0.1632			
	65=<	29	68				
	70>	58	88	0.0032	5.28	1.74-16.00	**0.0032**
	70=<	5	31				
sex	male	54	102	1			
	female	9	17				
PS	0	61	111	0.4977			
	1	2	8				
side	right	32	64	0.7599			
	left	31	55				
histological type	epithelioid	62	109	0.1003			
	non-epithelioid	1	10				
surgical procedure	P/D	43	62	0.0411	1.64	0.76-3.54	0.2048
	EPP	20	57				
MCR	completed	61	109	0.2222			
	uncompleted	2	10				
c-T factor	T1	33	48	0.158			
	T2-4	30	71				
p-T factor	T1	22	17	0.0021			
	T2-4	41	102				
p-N factor	N0	48	68	0.0147	1.78	0.81-3.92	0.1522
	N1	15	51				
sum of pleural thickness of 3 levels	**13mm>**	42	51	0.0031	2.18	1.01-4.71	**0.0462**
	13mm=<	21	67				
postoperative complication	**none**	31	49	0.3471			
	present	32	70				
severe postoperative complication	none	60	74	<0.0001	10.03	2.81-35.75	**0.0004**
	present	3	45				
operation time	475min>	30	61	0.7555			
	475min=<	33	58				
blood loss	1472g>	41	50	0.0048	1.99	0.95-4.18	0.0693
	1472g=<	22	69				

P-146

TUMOR DIMENSION IN THYMIC EPITHELIAL TUMORS: CORRELATION WITH CLINICO-PATHOLOGICAL FACTORS AND PROGNOSIS

Marco Chiappetta, Carolina Sassorossi, Filippo Lococo, Gloria Santoro, Elisa Meacci, Dania Nachira, Adriana Nocera, Venanzio Porziella, Maria Teresa Congedo, Stefano Margaritora
Università Cattolica del Sacro Cuore - Fondazione Policlinico Universitario A. Gemelli - IRCCS, Roma, Italy

OBJECTIVES
The prognostic role of the tumor dimension in thymic epithelial tumors(TET) is one of the unresolved issues identified by the IASLC Staging and Prognostic Factors Committee-Thymic which is being addressed and discussed for upcoming TNM classification. Aim of this study is to describe the clinic-pathological characteristics associated with dimension and to investigate the TET dimension prognostic role.

METHODS
Data on patients who underwent surgery for TET among our institution from 2000to 2020 were collected and retrospectively analyzed. All pathological reports were reviewed collecting information on tumor histology, dimension and infiltration.A Linear Model was considered to evaluate the variables associations with dimension.Clinical and pathological characteristics were associated with disease free survival(DFS) using Kaplan-Meier curves and multivariate Cox Model.

RESULTS
The final analysis was conducted on 218 patients.Clinical and pathological characteristics were reported in table. The tumors were mainly at early Masaoka-Koga and TNM stage, while surrounding organs infiltration was detected in 37(17%)patients. Patients with other structures infiltrations presented tumors with increased dimension($p=0.03$), while Myasthenia Gravis(MG) patients presented smaller tumors compared to non-MG ones($p<0.001$).Similarly, age was inversely related to tumor dimension, with bigger tumors in younger patients($p<0.01$). Multivariable model confirmed the associations,also showing that in case of 3 infiltrated organs, the tumor dimension increases 4 times.
A recurrence occurred in 19(8.7%)patients. No significant difference in terms of DFS were present according to tumor dimensions with cut-off at 5.3cm(mean dimension,$p=0.46$),while considering a cut-off of 3cm the differences raises the statistical significance:5-YearsDFS 97.2%in TET≤ 3cm vs 86.4% in TET>3cm($p=0.067$,figure1a).Considering dimension as continuous variable,DFS decreases when tumor dimension increases, and the association was statistically significant($p=0.026$)(figure1b).

CONCLUSIONS
Tumor dimension in TET is directly associated to young age and number of infiltrated structures, inversely associated to Myasthenia Gravis presence. Its prognostic role remains

to be clarified, even if a sort of worse prognosis seems to be correlated to tumor dimension increase.

Disclosure: No significant relationships.
Keywords: Thymoma, Surgery, Dimension, Mediastinum.

Population characteristics.

VARIABLE	STATISTICAL DESCRIPTION
Sex	
Male	92 (42.2%)
Female	126 (57.8%)
Age - years	
Mean; SD	54.7; 15.3
Median	56.0
Q1-Q3	44.0 – 67.0
NA	1
Myasthenia Gravis	
YES	135 (61.9%)
NO	82 (37.6%)
missing	1 (0.5%)
Tumor Dimension (cm)	
Mean; SD	5.1; 2.8
Median	5.0
Q1-Q3	3.0 – 6.5
TNM	
T1	189 (86.7%)
T2	7 (3.2%)
T3-4	21 (9.6%)
missing	1 (0.5%)
Completeness of resection	
R0	212 (97.2%)
R+	5 (2.3%)
NA	1 (0.5%)
Number of Infiltrated Organs	
0	181 (83.0%)
1	17 (7.8%)
2	16 (7.4%)
3	4 (1.8%)

Population characteristics (continuation).

VARIABLE	STATISTICAL DESCRIPTION
Masaoka- Koga Classification	
Stage 1	83 (38.1%)
Stage 2	106 (48.6%)
Stage 3	24 (11.0%)
Stage 4a	4 (1.8%)
missing	1 (0.5%)
Thymoma/Carcinoma	
Thymoma	210 (96.3%)
Carcinoma	8 (3.7%)
WHO histology	
A-B1-B2	168 (77.1%)
B3	38 (17.5%)
C	8 (3.6)
missing	4 (1.8%)
Adjuvant Treatment	
Yes	108 (49.5%)
NO	104 (47.8%)
missing	6 (2.7%)

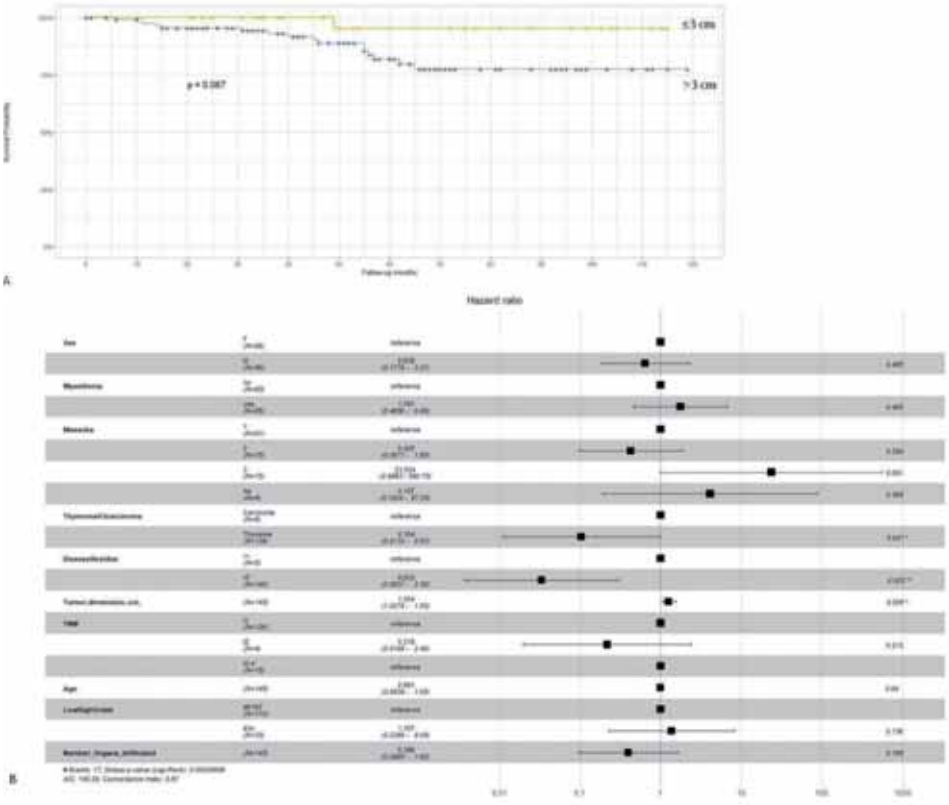

Figure 1: A: disease free survival comparing tumors=3cm vs > 3cm. B. Forrest plot considering tumor dimension as continuous variable in a multivariable model.

P-147

SEX STEROID HORMONE RECEPTORS IN EPITHELIAL TYPE OF MALIGNANT PLEURAL MESOTHELIOMA - CLINICOPATHOLOGICAL ANALYSIS AND EFFECTS ON TUMOUR CELL GROWTH

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OBJECTIVES
Female sex has been identified as a positive prognostic factor for malignant pleural mesothelioma, but the role of sex steroid hormones has been unknown. Our goal was to investigate the expression of sex steroid hormones in epithelial type of malignant pleural mesothelioma and their correlations with clinicopathological parameters, and tumour cell growth induced by sex steroid hormones.

METHODS
A retrospective study of 40 patients underwent surgery at Tokyo Medical and Dental University Hospital between 2010 and 2020 was performed. We examined the immunohistochemical localization of sex steroid receptors for oestrogen (ER-α) and ER-β, progesterone (PR), and androgen (AR), and correlated these findings with various clinicopathological parameters. Tumour cell growth tests with sex steroid hormones were performed by established cell cultures and primary culture cells.

RESULTS
The percentage of immuno-positive cases and labelling index (LI) values for each receptor (mean ± SE) were as follows: ER-α, 12.5% and 2.6 ± 1.1; ER-β, 78.5% and 56.7 ± 6.6; PR, 20% and 3.6 ± 1.5; and AR, 17.8% and 1.8 ± 0.6, respectively. ER-β was significantly positive in males ($p = 0.021$). ER-β immunoreactivities were inversely correlated with clinical T factor ($p = 0.0381$) and Ki-67 LI ($p < 0.0001$). ER-β positive patients were significantly better prognosis ($p=0.0001$) and ER-arpha positive and AR positive patients had tendency of better prognosis than those negative patients ($p=0.0639$ and $p=0.1548$, respectively). Oestrogen inhibit ed cell proliferation in proportion to the concentration of estradiol in primary culture cells ($p < 0.001$), but did not inhibit in established three cell lines.

CONCLUSIONS
ER-α, ER-β, PR, and AR are expressed in malignant pleural mesothelioma and may be related to sex, clinical stage, and pathological cell type. Oestrogen and inhibit malignant pleural mesothelioma cells, which suggests that oestrogen and progesterone may be effective in the treatment of malignant pleural mesothelioma.

Disclosure: No significant relationships.
Keywords: Sex Steroid, Malignant Pleural Mesothelioma.

P-148

SUCCESSFUL EXTRACORPONEAL MEMBRANE OXYGENATION IN A PATIENT WITH TRACHEAL OBSTRUCTION DUE TO AN ENDOTRACHEAL MASS AFTER TRACHEAL TRANSECTION

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OBJECTIVES
We experienced a case of thyroid gland obstruction from a tracheal transection site.

CASE DESCRIPTION
A 50-year-old man experienced a convulsive seizure with loss of consciousness at home and hit his anterior neck on a table. The patient complained of severe breathing difficulties and was transported to our hospital. The patient had respiratory failure with an SpO2 of 95% with a 10 L reservoir mask, subcutaneous emphysema of the neck and stridor in the upper airway. Chest computed tomography revealed severe subcutaneous and mediastinal emphysema and tracheal injury with a 13 mm endotracheal mass, suggestive of an endotracheal tumour. Flexible bronchoscopy revealed a mass blocking and occupying most of the tracheal lumen. After arrival at the intensive care unit (ICU), the patient developed a marked increase in respiratory distress. Because endotracheal intubation was difficult due to tracheal obstruction, we applied VV-ECMO. Immediately after extracorporeal circulation was established, his general condition stabilised, and surgery was performed the day after admission. After transverse neck incision, the peritracheal area was dissected to confirm the site of tracheal injury. The inferior thyroid gland had strayed into the trachea at the site of tracheal injury. Intraoperative pathological examination of the endotracheal tumour revealed a normal thyroid gland, without malignancy. Tracheal anastomosis was performed after trimming the blunt tracheal injury. The trachea was sutured with interrupted sutures. After tracheal anastomosis, the patient was endotracheally intubated and managed postoperatively with VV-ECMO and a ventilator in the ICU. VV-ECMO was withdrawn on postoperative day (POD) 1, and the endotracheal tube was extubated on POD 3. The patient was discharged on POD 10 without any complications.

CONCLUSIONS
We experienced a rare case of tracheal obstruction due to the thyroid gland straying into the trachea as a result of blunt tracheal injury and successful rescue by rapid introduction of VV-ECMO.

Disclosure: No significant relationships.
Keywords: Tracheal Transection, Tracheal Obstruction, ECMO.

P-149

INDICATION OF INTENTIONALLY SUBLOBAR SURGERY FOR VULNERABLE LUNG CANCER PATIENTS

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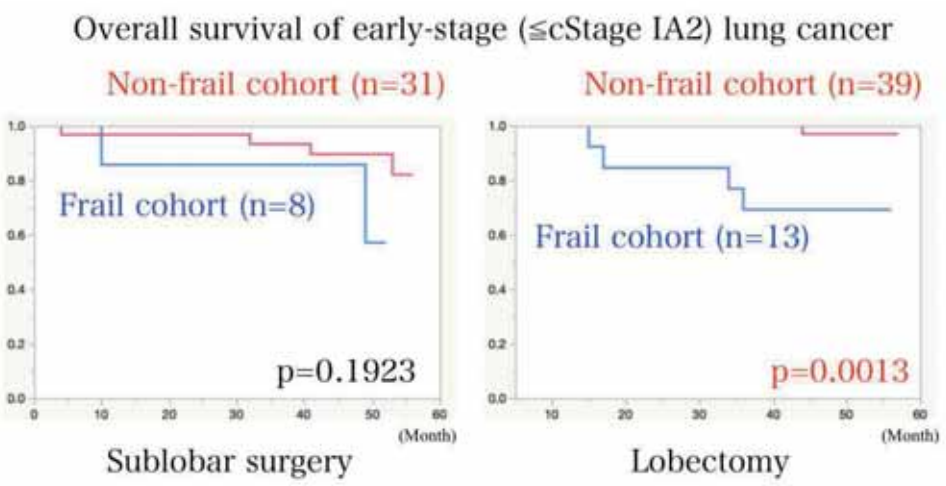
OBJECTIVES
The modified frailty index (mFI) has been proposed to measure vulnerability. It has been reported to correlate with postoperative complications of thoracic surgery, but the impact of prognosis is still unclear.

METHODS
We calculated mFI for 199 first-time primary lung cancer surgery cases operated on in our hospital in 2017. Five years-overall survival (OS) and recurrence-free survival (DFS) were analyzed retrospectively to examine the association between mFI and surgical procedure.

RESULTS
The non-frail group with mFI ≤1 was identified in 131 patients (65%), and the frail group with mFI ≥2 in 68 patients (35%). C-stage 0-I/II/III/IV were 150/24/24/1, respectively, and lobectomy or more/segmentectomy/partial resection was performed in 144/35/20 patients. The frail group was significantly more likely to have the advanced-stage as c-stage≥IA3 (69% vs. 47%, p=0.0022), and the sublobar surgery was selected significantly frequently (partial resection or segmental resection: 23% vs. 8%, p=0.027). The 5-year OS and DFS were significantly worse in the frail group (72% vs. 86%, p=0.0099, 60% vs. 74%, p=0.0144). Especially, lobectomy for the early-stage as c-stage≤IA2 frail group showed significantly worse 5-year OS (69% vs. 97%, p=0.0013); in contrast, no difference in the advanced-stage (c-stage≥IA3) frail group (80% vs. 85%, p=0.4188). Multivariate analysis showed all the male, advanced-stage, and sublobar surgery significantly became a high risk for OS (p=0.0075, 0.0278, and 0.0009) in the non-frail group. Still, none of them were significant in the frail group.

CONCLUSIONS
Frail patients showed worse prognoses than non-frail patients. Sublobar surgery could be justified for early-stage lung cancer patients, especially with the frail cohort. This would be a reason for the sublobar surgery cohort showing superior survival in recent worldwide phase III trials.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Sublobar Resection, Vulnerable, Frail.


Overall survival of early-stage (≦cStage IA2) lung cancer
Non-frail cohort (n=31)
Frail cohort (n=8)
p=0.1923
(Month)
Sublobar surgery
Non-frail cohort (n=39)
Frail cohort (n=13)
p=0.0013
(Month)
Lobectomy

P-150

INTRAOPERATIVE USE OF A BIODEGRADABLE POLYMERIC AIR LEAK SEALANT CAN REDUCE THE LENGHT OF CHEST DRAINAGE AND HOSPITAL STAY FOLLOWING A PULMONARY SEGMENTECTOMY

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OBJECTIVES
to evaluate the safety and effectiveness of a biodegradable polymeric sealant for intraoperative closure of air leaks after pulmonary segmentectomy.

METHODS
retrospective comparative cohort study of consecutive patients who underwent anatomical segmentectomy at two high-volume centers between January 2018 and September 2022. Patients were divided in two groups according to whether a biodegradable polymeric air leak sealant was used or not. The sealant was applied intraoperatively to the remaining lung. Clinicopathologic features, operative variables, and perioperative outcomes were compared between the groups. Prolonged air leak was defined as air leak lasting more than 5 days.

RESULTS
181 patients with a median age of 69 years (interquartile range, 63-75 years) were included in the study: 90 patients in the sealant group and 91 in the control group. There were no significant differences between the groups in patients' characteristics [Table 1]. Prolonged air leak was observed in 5.5% (n =5) of patients in the sealant group compared to 12.1% (n =11) of patients in the control group (P =0.189). The mean duration of chest tubes was significantly shorter in the sealant group: 2.5 ± 3.6 days compared to 3.8 ± 4.8 days in the control group (P =0.022). The mean length of hospital stay was 4.0 ± 2.8 days in the sealant group versus 7.0 ± 5.0 days in the control group (P <0.001). In the sealant group, 2.2% (n =2) of patients developed pneumonia compared to 10.9% (n =10) of patients in the control group (P =0.032). There were no significant differences in readmissions between the groups and no 30-day mortality in either group.

CONCLUSIONS
The biodegradable polymeric sealant was safe and effective for intraoperative closure of air leaks following segmentectomy. Use of the sealant decreased the rate of prolonged air leaks and the length of chest tube duration and hospitalization.

Disclosure: No significant relationships.
Keywords: Air Leak Sealant, Segmentectomy.

Characteristics	Sealant group	Control group
Age	65	70
Comorbidities		
COPD	31% (n=28)	34% (n=31)
Ischemic heart disease	11% (n=10)	14% (n= 13)
AF	6% (n=5)	6% (n= 5)
Renal Failure	2% (n= 2)	4% (n=4)
Diabetes	8% (n=7)	14% (n=13)
Previous chemotherapy	19% (n = 17)	11% (n=10)
Surgical Approach		
Open	1% (n=1)	1% (n=1)
VATS	30% (n=27)	28% (n=25)
RATS	69% (n=62)	71% (n=65)
Laterality		
Left	49% (n= 44)	65% (n=59)
Right	51% (n=46)	35% (n=32)
Operating time	107 min	110 min
Segmentectomy type		
Single segment	37% (n=33)	40% (n=36)
Multiple segments	63% (n= 57)	60% (n=55)
2 segments	36% (n=32)	37% (n=34)
3 segments	14% (n=13)	3% (n=3)
4 segments	13% (n=12)	20% (n=18)
Complications		
Chest infections	2.2% (n =2)	10.9% (n =10)
atelectasis	2% (n=2)	4% (n=4)
AF	0% (n=0)	10% (n=9)
AKI	1% (n=1)	3% (n=3)
ARDS	0% (n=0)	1% (n=1)
Pneumothorax	0% (n=0)	1% (n=1)
Prolonged AL	5.5% (n =5)	12.1% (n =11)

P-151

COMPARING VIDEO-ASSISTED THORACIC SURGERY (VATS) SEGMENTECTOMY VERSUS VATS LOBECTOMY FOR STAGE I NON-SMALL CELL LUNG CANCER: A PROPENSITY SCORE MATCH ANALYSIS

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OBJECTIVES
Purpose of the retrospective study was to compare video-assisted (VATS) anatomical segmentectomy versus VATS lobectomy each plus radical lymphadenectomy in patients with stage I (cT1a-c N0 M0) operable non-small cell lung cancer (NSCLC).

METHODS
Between 2015 and 2022, 102 patients (age: 50-87; median: 68 years) underwent either VATS segmentectomy or VATS lobectomy for stage I NSCLC. All 27 patients treated by VATS segmentectomy were compared with a matched group of patients undergoing VATS lobectomy, selected by the propensity score matching method (according to age, ECOG, tumour diameter, and c-stage). End points were mortality, morbidity, radicality of surgery, and long-term survival.

RESULTS
There were no significant differences in terms of age (P=.345), ECOG (P=.204), tumour diameter (P=.231), and clinical T classification (P=.127) between the two matched groups. Length of hospital stay was significantly shorter after VATS segmentectomy (P=.034). Mortality was nil in each group, and morbidity rates showed no differences (mild: 7% vs. 22%; severe: 15% vs 15%; P=.298). Complete tumour resection was achieved in 100% of patients in both groups, but a significant difference was found in the number of dissected lymph nodes (median: 10 vs 15.5, P=.027). An unexpected nodal involvement was detected on pathologic specimen in 4% of VATS segmentectomy patients vs 15% of VATS lobectomy patients (P=.364). One- and 3-year survival rates were similar in both groups: 100% vs 90,6%, and 86,6% vs 85,6%, respectively (log rank test: P=.504).

CONCLUSIONS
Video-assisted segmentectomy is a safe procedure for treating NSCLC in early stage and can be performed with low mortality and morbidity rates. When compared with VATS lobectomy, VATS segmentectomy affords a similar risk profile (mortality, morbidity) as well as long-term outcome, but allows the preservation of a major amount of pulmonary parenchyma, and therefore can be performed in patients with limited pulmonary reserve.

Disclosure: No significant relationships.
Keywords: Segmentectomy, Lobectomy, Stage I NSCLC.

P-152

CLINICAL IIIA(N2) NON SMALL CELL LUNG CANCER (NSCLC): NEOADJUVANT+SURGERY VS UPFRONT SURGERY. RESULTS OF A MULTICENTRIC SERIES

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[4]*Azienda Ospedaliera Universitaria Città della Salute e della Scienza di Torino, Turin, Italy*
[5]*University of Perugia Medical School, Perugia, Italy*
[6]*Fondazione Policlinico Universitario, Rome, Italy*
[7]*Pisa University, Pisa, Italy*
[8]*IRCCS Azienda Ospedaliero-Universitaria of Bologna, Bologna, Italy*
[9]*IRCCS, Sacro Cuore-Don Calabria Hospital, Verona, Italy*

OBJECTIVES
Clinical IIIA(N2) NSCLC ideal treatment is still debated, with supporters of neoadjuvant approach and others of upfront surgery. This study aims to compare intraoperative, early and long-term outcomes of these two approaches to shed some light on such a controversial issue.

METHODS
We retrospectively collected data of 313 consecutive patients undergoing surgery for cIIIA(N2) NSCLC in 9 Centers between 2010-2020. Twenty-seven patients with no data about neoadjuvant/adjuvant therapy were excluded from the study, leaving 286 patients for the statistical analysis. Patients were divided in 2 groups according to the treatment: neoadjuvant+surgery (Group A: n=183) and upfront surgery+/-adjuvant chemotherapy (Group B: n=103). Intraoperative complications, morbidity, mortality, recurrence, lung cancer-specific and overall survival (Kaplan Meier method) were compared between the two groups. Sixty-six patients paired for gender, Charlson comorbidity index, cT, cN, lung resection and lymphadenectomy were selected from each group by propensity score match analysis. The same outcomes were evaluated in the matched cohorts.

RESULTS
The two groups present similar demographical-clinical characteristics (Table). 5-year disease free, lung cancer-specific and overall survival were similar between Group A and B: 31.7% versus 41.7% (p-value=0.19); 55.8% versus 68.4% (p-value=0.12); 50.6% versus 62.8% (p-value=0.20), respectively. The same results were observed considering cN2a and cN2b separately. Intraoperative complication, postoperative morbidity and mortality were equivalent

between Group A and B, with a comparable distribution of complications in terms of severity and kind (Table). These results were confirmed comparing the matched cohorts, in detail 5-year disease free, lung cancer-specific and overall survival were: 29.7% versus 42.7% (p-value=0.15); 58.7% versus 65.2% (p-value=0.51); 58.7% versus 65.2% (p-value=0.51), respectively (Table).

CONCLUSIONS

In the real-life setting, neoadjuvant approach and upfront surgery present similar perioperative and long-term outcomes in cIIIA(N2) NSCLC treatment. Therefore, surgeons could proceed with one or the other approach, depending on multidisciplinary team choice.

Disclosure: No significant relationships.
Keywords: IIIA(N2), NSCLC, Neoadjuvant, Upfront Surgery.

Patients' characteristics	All patients (n=286)	Neoadjuvant (n=183)	Upfront surgery (n=103)	*p*-value
Age, median (IQR) years	67 (61-73)	66 (60-73)	68 (62-74)	0.23
Male, n (%)	160 (56)	102 (56)	58 (56)	0.92
Current/former smoker, n (%)[a]	216 (76)	142 (78)	74 (72)	0.20
ECOG PS, median (IQR)	0 (0-1)	0 (0-1)	0 (0-1)	0.21
CCI, median (IQR)	5 (4-6)	5 (4-6)	5 (4-6)	0.47
Previous cancer, n (%)[b]	56 (20)	36 (20)	20 (19)	0.96
FEV1, median (IQR) %	91(77-106)	89 (78-104)	96 (77-107)	0.35
Tumor characteristics				
Adenocarcinoma, n (%)[c]	206 (72)	137 (75)	69 (67)	0.06
Tumor size at CT, median (IQR) mm	30 (22-40)	30 (21-40)	30 (23-40)	0.13
Central tumor, n (%)[d]	70 (24)	43 (23)	27 (26)	0.12
cT, n (%)				0.88
cT1a-c	135 (47)	87 (48)	48 (47)	
cT2a-b	151 (53)	96 (52)	47 (53)	
cN, n (%)				0.15
cN2a	196 (69)	120 (66)	76 (74)	
cN2b	90 (31)	63 (34)	27 (26)	
Surgical procedure				
Thoracotomy, n (%)	250 (87)	159 (87)	91 (88)	0.70
Right surgical site, n (%)	193 (67)	136 (74)	57 (55)	
Pneumonectomy, n (%)	23 (8)	15 (8)	8 (8)	0.90
Sampling, n (%)[e]	61 (21)	37 (20)	24 (23)	0.79
Surgery duration, median (IQR) min	180 (120-240)	195 (124-258)	173 (120-230)	**0.03**
Intraoperative complications, n (%)	3 (1.0)	2 (1.1)	1 (1.0)	1.00

Patients' characteristics	All patients (n=286)	Neoadjuvant (n=183)	Upfront surgery (n=103)	*p*-value
Postoperative course				
30-day postoperative mortality, n (%)	3 (1)	1 (0.5)	2 (3)	0.30
90-day postoperative mortality, n (%)	3 (1)	1 (0.5)	2 (3)	0.30
Postoperative morbidity, n (%)[f]	97 (34)	55 (30)	42 (41)	0.11
More than one complication per pts, n (%)	46 (48)	25 (46)	21 (50)	0.72
Complication grading, n (%)[g],				0.71
Tot complications	150	84	66	
I-II	93 (63)	51 (62)	42 (64)	
IIIa	15 (10)	6 (7)	9 (14)	
IIIb	18 (12)	11 (13)	7 (11)	
IV	4 (3)	4 (5)	0 (0)	
V	3 (2)	1 (0.5)	2 (3)	
Grading non specified	17 (11)	11 (13)	6 (9)	
Kind of complication, n (%)				
Pulmonary	28 (19)	14 (17)	14 (21)	0.50
Cardiological	30 (20)	16 (19)	14 (21)	0.77
Surgical site infection	8 (5)	3 (4)	5 (8)	0.47
Chyothorax	3 (2)	3 (4)	0 (0)	0.26
Haemothorax	3 (2)	3 (4)	0 (0)	0.26
Effusion	5 (3)	4 (5)	1 (2)	0.39
Prolonged air leaks	40 (27)	21 (26)	19 (29)	0.63
Bronchopleural fistula	5 (3)	2 (2)	3 (4)	0.66
Urinary tract infection	16 (11)	11 (13)	5 (8)	0.27
Recurrent nerve paralysis	4 (3)	2 (2)	2 (3)	1.00
Others	7 (5)	4 (4)	3 (4)	1.00
POLS, median (IQR) days	8 (6-11)	8 (6-11)	8 (6-11)	0.58

Matched cohort early-terms outcomes	All patients (n=132)	Neoadjuvant (n=66)	Upfront surgery (n=66)	*p*-value
Surgery duration, median (IQR) min	175 (120-230)	195 (128-240)	159 (103-208)	0.03
Intraoperative complications, n (%)	2 (2)	1 (2)	1 (2)	1.00
30-day postoperative mortality, n (%)	0 (0)	0 (0)	0 (0)	1.00
90-day postoperative mortality, n (%)	0 (0)	0 (0)	0 (0)	1.00
Postoperative morbidity, n (%)[h]	49 (37)	19 (29)	30 (45)	0.10
More than one complication per pts, n (%)[h]	24 (49)	8 (42)	16 (53)	0.44
POLS, median (IQR) days	8 (6-11)	8 (6-11)	7 (6-12)	0.83

CCI=Charlson Comorbidity Index; CHT=chemotherapy; IQR=interquartile range; LN=lymph nodes; POLS=postoperative length of stay; PS=performance status; PTS=patients. [a]=data not available in 15 pts; [b]=data not available in 3 pts; [c]=data not available in 6 pts [d]=data not available in 86 pts; [e]=data not available in 7 pts; [f]=data not available in 11 pts; [g]=Clavien-Dindo Classification; [h]=data not available in 5 pts.

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ELECTROMAGNETIC NAVIGATIONAL BRONCHOSCOPY(ENB) FINDINGS, THE UNCOMMON ONES

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OBJECTIVES

We are presenting 3 rare case of bronchoscopic findings aided by ENB.
ENB is commonly used in diagnosis and assisted resection. We analysed our electronic database to identify few very uncommon findings.

CASE DESCRIPTION

A 74 year old gentleman, with background of short memory loss underwent an ENB of a Right sided lung lesion. The histopathology department received a representative sample, that did not show evidence of malignancy. This sample tested positive for corpora amylacea, MT stain positive. Such findings are abundant in patients with neurodegenerative disease, commonly encountered in the brain. This specific finding confirmed the patient's early stages of dementia.

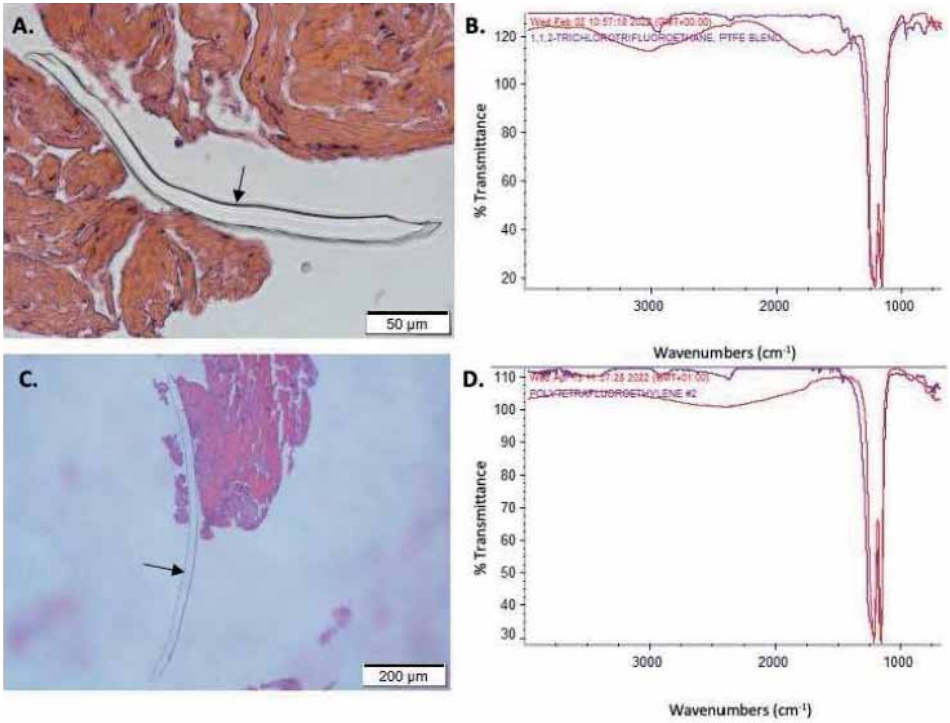
A 41 year old gentleman with progressive shortness of breath and bilateral peripheral lung changes underwent ENB. The was no malignancy identified, instead heavy contamination with filaments of polytetrafluoroethylene (PTFE). The compressed PTFE fibres were analysed with μFTIR spectroscopy using the liquid nitrogen cooled transmission mode and a spectral range of 4000–600 cm−1. A retrospective review of his working history revealed previous exposure. (figure 1.)

A 60 year old gentleman was referred for surgical resection of e RLL lesion, a smaller satellite nodule of 4mm was also present. We targeted both lesions with ENB dye localisation (methylene blue), prior to resection. The larger lesion was a hamartoma, while the 4mm an epitheliod hemangioendothelioma; these are intermedius grade malignant tumours, 60 % of them present as multiple bilateral perivascular nodules and do have a metastatic potential.

CONCLUSIONS

All above patients have been diagnosed because of the utilisation of ENB. It is our opinion that we are still exploring the true potential of this tool.

Disclosure: No significant relationships.


A.
50 µm
B.
% Transmittance
Wavenumbers (cm-1)
C.
200 µm
D.
% Transmittance
Wavenumbers (cm-1)

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FAST TRACK DIAGNOSTIC PATHWAY FOR LUNG CANCER DETECTION: SINGLE CENTER EXPERIENCE

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OBJECTIVES

Despite continuous advances in diagnosis such as the "Two week wait" policy for hospital specialist referral and fast track diagnostic pathways, lung cancers are detected mostly at ad¬vanced stages. Aim was to evaluate the fast track diagnostic pathway in a tertiary hospital.

METHODS

Between March and September 2022, 114 consecutive patients with respiratory symptoms or radiology suspicious for lung cancer, were referred to our "Pulmonary Point" Outpatient Clinic. Time intervals to take in charge, biopsy and PET-CT were prospectively collected. Furthermore, patients experience was evaluated by means of a 6 items questionnaire investigating the Outpatient Clinic environment and accessibility, kindness and professional approach of healthcare professionals, psychological support provided, patient expectancy satisfaction and overall evaluation. Data were compared to those of 80 patients observed in the Thoracic Surgery ambulatory in the pre-Covid19 pandemic period March-September 2019 before the fast track diagnostic pathway for lung cancer was established.

RESULTS

Patients were referred to the Pulmonary Point Outpatient Clinic by the General Practitioner in 44 cases (38.5%), by other Specialists in 56 (49.1%) and by the Emergency Department in 14 (12.2%). Among the 114 patients, 104 (91.2%) were visited within 3 working days. Biopsy (FNAB, EBUS, bronchoscopy or surgical) was performed at a median period of 18 days (IQR 9-26) and PET-CT was carried out at a median period of 16 days (IQR 7-25). Patients referred to the Thoracic Surgery ambulatory in the period March-September 2019 were characterized by longer time to biopsy [26 days (IQR 12-54), $p=0.016$] and to PET-CT [25 days (IQR 15-38), $p=0.048$. Patients referred in 2022 reported higher scores in the clinic environment ($p<0.001$), psychological support provided ($p<0.001$) and overall evaluation ($p=0.02$) domains of the questionnaire.

CONCLUSIONS

The establishment of a dedicated diagnostic pathway improves time to diagnosis and patients satisfaction.

Disclosure: No significant relationships.

P-155

LEARNING CURVE, SURGICAL AND ONCOLOGICAL RESULTS OF MCKEOWN ESOPHAGECTOMY WITH UNIPORTAL- VIDEO ASSISTED THORACIC SURGERY (VATS) APPROACH COMPARED TO THORACOTOMY

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OBJECTIVES
The aim of the study is to evaluate learning curve, surgical and long-term oncological outcomes of McKeown esophagectomy with Uniportal-VATS approach compared to thoracotomy, in the largest reported series with longest follow-up.

METHODS
From January 2012 to December 2022, the prospectively collected data of 80 patients, undergone McKeown esophagectomy at our Thoracic Department, were analyzed. Sixty-one patients underwent Uniportal-VATS esophagectomy and reconstruction according to McKeown technique, while 19 open esophagectomy. Gastric tubulization was performed by laparoscopy or mini-laparatomy and cervical anastomosis according to Orringer's technique.

RESULTS
The mean time for esophageal dissection and mediastinal lymphadenectomy in Uniportal-VATS was similar to thoracotomy (101.20 ± 13.12 min vs 115.56 ± 23.12 min, p: 0.534), with a comparable number of mediastinal nodes retrieved (14.50 ± 8.09 vs 15.00 ± 6.86,p:0.182). No conversion was reported. Completion of learning curve for Uniportal-VATS was reached after 34 esophagectomies, all performed by the same team during the study time; Mastery was reached after 40 cases.
Uniportal-VATS was also comparable to open approach in terms of minor complications, anastomotic leaks, surgical radicality and recurrence, but with fewer re-operations for major complications (bleeding/mediastinitis) or chylothorax (3.3% vs 21%,p:0.04) and lower 30-day mortality(p:0.002). Chest tube duration after thoracotomy (25.82 ± 24.37vs10.94 ± 8.41days, p:0.002) and in-hospital stay (p:0.01) were longer than in Uniportal-VATS.
Five- and 8-year survival of the whole series was 50% and 33%, respectively. Five-year overall survival after Uniportal-VATS (49% vs 62%,p:0.293) and disease-free survival (87% vs 72%,p:3.12) were similar as after thoracotomy. Pathological stage was the only factor independently affecting survival(p:0.02) at multivariable analysis, not surgical approach(p:0.292).

CONCLUSIONS
McKeown esophagectomy performed by Uniportal-VATS approach seems to be safe, feasible and effective, with a quite short learning curve, comparable surgical and long-term oncological

outcomes to open approach, but with a shorter post-operative recovery burdened with fewer major complications.

Disclosure: No significant relationships.
Keywords: McKeown Esophagectomy, Uniportal-VATS, Oncological Outcomes, Learning Curve.

P-156

LUNG VOLUME REDUCTION IN PATIENTS WITH SEVERE EMPHYSEMA: BRONCHOSCOPIC LOBAR VERSUS SURGICAL TAILORED TREATMENT

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OBJECTIVES
Bronchoscopic lung volume reduction (BLVR) with valves excludes one whole lobe while lung volume reduction surgery (LVRS) allows tailored treatment by resection of only heterogeneous, hardly perfused target areas. We hypothesize that by (bilateral) LVRS, more areas of low attenuation (LAA, ≤ - 950 houndsfield units) can be resected more precisely, thus generating more functional improvement than BLVR with valves.

METHODS
Empysema patients treated with BLVR with valves and LVRS at our institution between August 2019 and October 2020 were collected prospectively and analyzed retrospectively. LVRS responders were defined as patients with a postoperative improvement of at least 10% in FEV1 in combination with 10% delta in 6-minute-walking-distance (6MWD) or residual volume (RV) or diffusion capacity (DLCO), within the BLVR group additionally with a chest CT scan proven target lobe atelectasis. We performed LAA measurement in preoperative CT scan and 3 months (LVRS) or 1 month (BLVR) postoperatively. Functional improvement as well as LAA reduction was measured in each group and the groups compared with each other.

RESULTS
29 patients underwent LVRS, 19 were responders (5 bilateral LVRS, 14 unilateral), 3 were lost for follow up. Within the BLVR group (n=29), 18 were responders. In bilateral LVRS, improvement of 6MWD and FEV1 was significantly higher than in BLVR (table 1), accompanied by a significantly higher LAA-reduction (22.18 vs 9.54, p=0.009). In unilateral LVRS, LAA-reduction was not significantly higher (12.06 vs 9.54, p=0.267), while 6MWD and FEV1 still showed a higher postoperative improvement. RV reduction and DLCO improvement did not differ significantly between the groups (table 1).

CONCLUSIONS
LVRS might lead to significantly more functional improvement than BLVR with valves, maybe due to more and preciser LAA-reduction compared to lobar atelectasis, especially in bilateral surgery. This concept may justify favoring primary bilateral LVRS over BLVR with valves in bilateral heterogeneous emphysema.

Disclosure: No significant relationships.
Keywords: LVRS, BLVR, Valves, Emphysema.

	LVRS n=19	**BLVR** n=18	**All patients** n=37	**p-value**
ΔLAA (bi-/unilateral)	22.18 / 12.06	9.54	12.20	**0.026**
Δ6MWD (m)	120	59	90	**0.049**
Δ6MWD (%)	90.34	32.34	62.12	**0.020**
ΔFEV1 (l)	0.29	0.18	0.24	**0.057**
ΔFEV1 (%)	47.38	23.28	35.65	**0.017**
ΔRV (%)	-13.27	-16.78	-14.98	0.343
ΔDLCO (%)	47.52	11.03	29.77	0.066

P-157

MEDIASTINAL TRACHEOSTOMY COMPLICATED WITH TRACHEO-INNOMINATE ARTERY FISTULA : ENDOVASCULAR MANAGEMENT

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OBJECTIVES

Tracheo-innominate artery fistula is a dreadful complication after tracheostomy. Its occurrence after mediastinal tracheostomy is very less described. We felt worth sharing of our experience with successful management of this fatal complication after mediastinal tracheostomy.

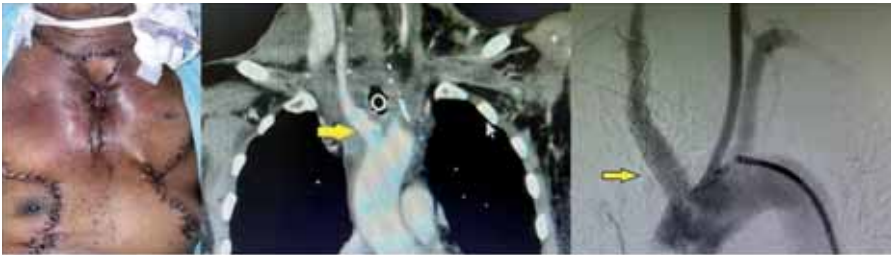
CASE DESCRIPTION

A 66-year-old gentleman with prior history of recurrent carcinoma of right pyriform fossa, twice treated with radical radiation visited with compliant of dysphagia for solids. CT and PET showed metabolically active mass in right lateral wall of sub-glottic trachea infiltrating right lobe of thyroid involving ~5cm of upper trachea with no distant disease. Bronchoscopic biopsy revealed squamous malignancy. Case was put in front of Multidisciplinary team meet and salvage resection was offered. Total laryngectomy with partial pharyngectomy with the creation of a mediastinal tracheostomy was performed. Pectoralis major muscle flap was insinuated between trachea and great vessels. He developed surgical site infection with MRSA which was managed appropriately. On day 18 he had torrential bleeding from the tracheostomy for which he was intubated through the stoma with endotracheal tube and bleeding was controlled temporarily and he was resuscitated from an cardiac arrest. CT chest showed suspected pseudo-aneurysm from brachiocephalic artery. He was taken up for emergency placement of an endovascular stent graft to innominate artery which secured the bleeding source. He was sent home after 30 days and is followed up at 3 months with no bleeding.

CONCLUSIONS

Tracheo-innominate artey fistula can complicate mediastinal tracheostomy and interposition muscle flaps are not immune from it. Endovascular stenting can provide relief in this distressing complication in select cases.

Disclosure: No significant relationships.
Keywords: Mediastinal Tracheostomy, Tracheo-Innominate Fistula, Endovascular Stenting.



P-158

IMPORTANCE OF TUMOUR INVASIVE COMPONENT RATIO AS A DETERMINING FACTOR OF MID-TERM SURVIVAL AFTER SURGERY FOR PULMONARY ADENOCARCINOMA

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OBJECTIVES

Adenocarcinoma histology in lung cancer is associated with better clinical outcome when compared to squamous cell carcinoma. It is often seen in adenocarcinoma that only part of the tumour has invasive features. The aim of the study was to establish if invasive component ratio calculated as diameter ratio does affect the mid-term survival after lung resection, especially in comparison to squamous cell carcinoma.

METHODS

Medical records of patients undergoing anatomical lung resection for adenocarcinoma or squamous cell carcinoma between January 2020 and August 2021 were reviewed retrospectively. The cohort consisted of 147 adenocarcinoma patients and 34 patients with squamous histology. Survival analysis was performed in a routine manner with Cox regression and Kaplan-Meier curves. Serial comparison of survival between adenocarcinoma and squamous cell carcinoma was done with increasing invasive component ratio in adenocarcinoma patients.

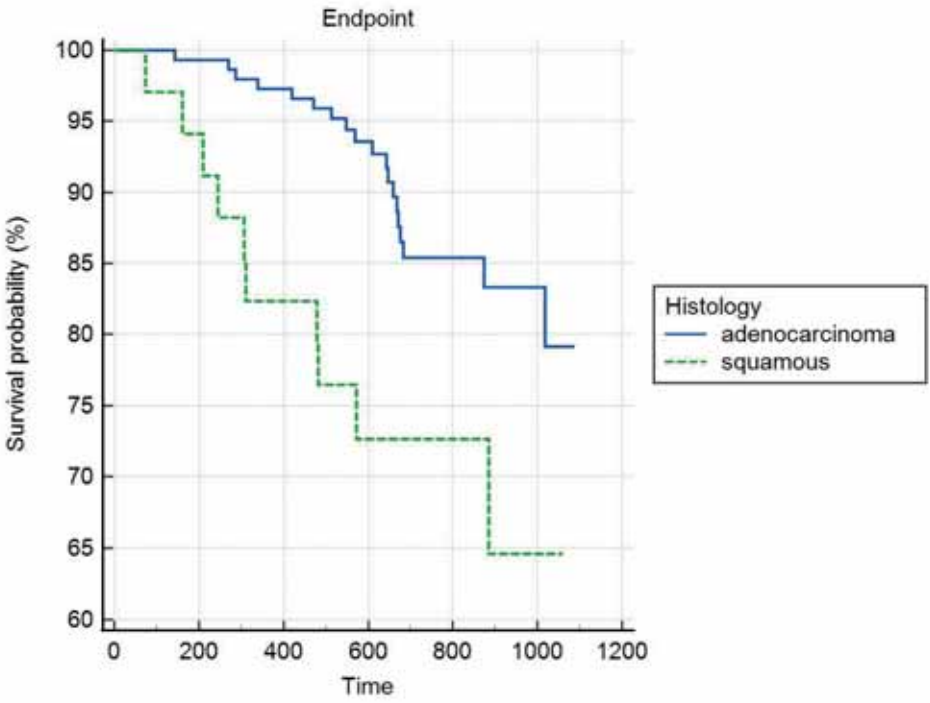
RESULTS

In Cox regression squamous histology, American Society of Anaesthesiologists (ASA) classification grade and invasive component size were identified as significant risk factors. The hazard ratios (HR) were 2.48 (CI: 1.07-5.77), 3.94 (CI: 1.39-11.19) and 1.03 (CI: 1.01-1.04) respectively. Left sided surgery was in favour of survival [HR: 0.30 (CI:0.12 -0.76)]. In Kaplan-Meier analysis mean survival time was significantly longer for adenocarcinoma (1000.7 days vs 844.5 days, p=0.01). After gradual removal of records with lowest invasive size ratio the mean survival time in adenocarcinoma group was becoming systematically shorter. Eventually, with invasive size ratio higher than 0.90 there was no significant difference between survival times (975.8 days vs 844.5 days, NS).

CONCLUSIONS

Adenocarcinoma and squamous cell carcinoma are well recognized as very different entities. Apart from obvious histological differences, they may also have a different architecture of the tumour. Adenocarcinoma tumours may present with lower invasive size ratio, which can favour mid-term survival. With ratio higher than 0.90 the beneficial effect is lost.

Disclosure: No significant relationships.
Keywords: Lung Cancer, Survival Analysis.



P-159

MEDIASTINAL LYMPH NODE DISSECTION AFFECTS THE EFFICACY OF IMMUNE CHECKPOINT INHIBITORS IN NON-SMALL CELL LUNG CANCER

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OBJECTIVES
The aim of this study is to determine if lymph node dissection decreases the efficiency of immune checkpoint inhibitors (ICI). We investigated the effectiveness of ICI in patients with non-small cell lung cancer who experienced a recurrence after surgery.

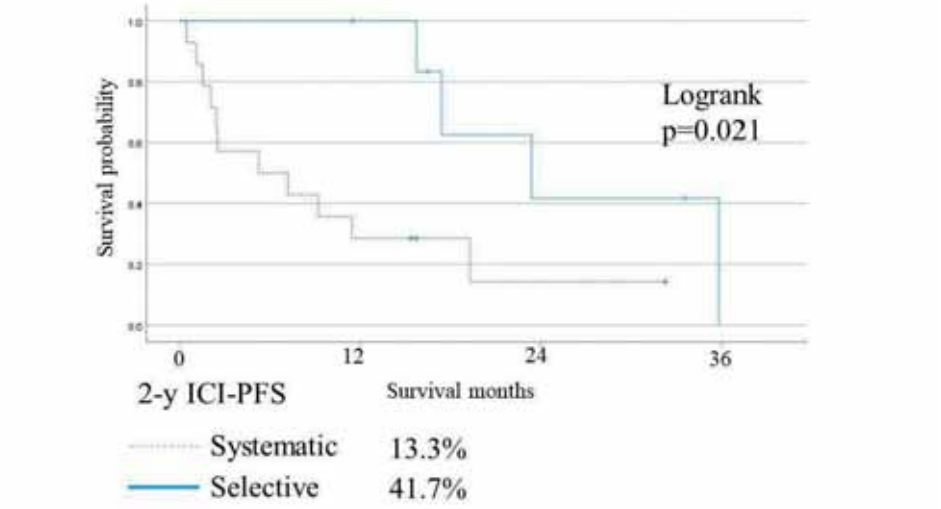
METHODS
This retrospective study analyzed 97 patients who received ICIs between 2016 and 2022, including 21 with postoperative recurrence and 76 with unresectable advanced lung cancer. The primary outcome measure was ICI progression-free survival (ICI-PFS) and secondary outcome measures were disease control rate (DCR) and overall response rate (ORR). The study employed propensity score matching and Inverse Probability of Treatment Weighting (IPTW) to control for patient characteristics.

RESULTS
A total of 38 patients were successfully matched. The 2-year ICI-PFS rates for the recurrence and advanced groups were 26.3% and 27.3%, respectively (p=0.451). The ORR (47% vs. 58%; p=0.516) and DCR (74% vs. 68%; p=0.721) were not significantly different between the two groups. However, among the recurrence group, patients who underwent systematic lymph node dissection had a significantly lower ICI-PFS rate at 2 years (13.3%) compared to those who underwent selective lymph node dissection (41.7%, p=0.021). The selective group also had a better ORR (86% vs. 36%, p=0.031). In a logistic regression analysis for ORR adjusted for IPTW, systematic lymph node dissection was found to be a significant risk factor for poor ORR (p<0.001).

CONCLUSIONS
Our findings suggest that lymph node dissection may negatively impact the efficacy of ICIs in patients with non-small cell lung cancer who have experienced a recurrence after surgery.

Disclosure: No significant relationships.
Keywords: Immune Check Point Inhibitor, Mediastinal Lymph Node Dissection.

ICI-PFS according to the extent of lymph node dissection



P-160

INTERCOSTAL MUSCLE FLAP FOR PNEUMONECTOMY IN INFLAMMATORY LUNG DISEASES

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OBJECTIVES
The development of a postoperative Bronchopleural fistula (BPF) is a serious complication with significant morbidity and mortality. There are various risk factors for post-operative BPF including diabetes, peri-operative steroid therapy, preoperative chemotherapy and radiotherapy. The risk of BPF increases with resections for inflammatory lung diseases especially in cases of tuberculosis. The study evaluated the use of an intercostal muscle flap to reinforce the bronchial stump after pneumonectomy as a prophylactic measure from post pneumonectomy BPF.

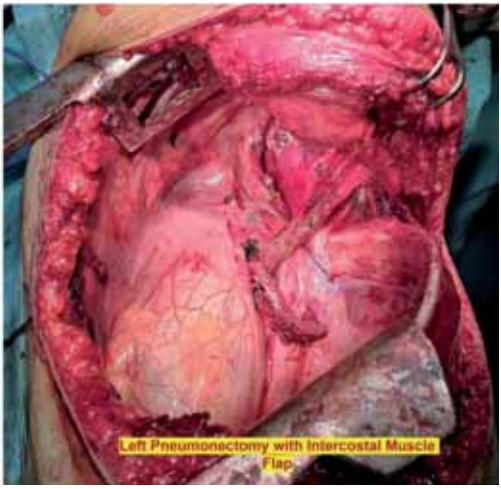
METHODS
Between August 2017 and October 2018, 40 consecutive patients who underwent pneumonectomy for Inflammatory Lung diseases in the Department of Thoracic Surgery, National Institute of Tuberculosis and Respiratory Diseases were divided into two groups by simple randomization. Group A: 20 patients who underwent pneumonectomy without bronchial stump coverage. Group B: 20 Patients in whom an intercostal muscle flap was used to buttress the bronchial stump (Image1). The mean age of patients in group A was 36.6 years (range 21 – 60 years) and in group B, it was 28.9 years (Range 19 to 65).

RESULTS
Bronchopleural Fistula developed in two patients in Group A (10%) and in one patient in Group B (5%). All the BPF occurred in left pneumonectomy patients. The patients who developed bronchopleural fistula had a primary diagnosis of post tubercular cavitary disease with complex aspergilloma. Peri-operative empyema developed in one patient in Group A (5%); Wound Infection occurred in two patients in Group B (10%). Two patients in Group A (10%) Poor Forced Expiratory volume in first second developed BPF (Table1). Patients were followed up for a period of six months. An elective bronchoscopy was performed three months after surgery to look for BPF, if any.

CONCLUSIONS
The addition of an intercostal muscle flap to buttress the bronchial stump possibly reduces the occurrence of bronchopleural fistula following pneumonectomy for inflammatory lung diseases.

Disclosure: No significant relationships.
Keywords: Bronchopleural Fistula, Pneumonectomy, Intercostal Muscle Flap, Inflammatory Lung Disease.

Range	FVC (%)				FEV1 (%)			
	Group A	BPF +	Group B	BPF +	Group A	BPF +	Group B	BPF+
50 or less	0	0	0	0	2	1	1	0
51-60	3	1	3	0	6	0	2	0
61-70	8	1	4	0	5	1	6	0
71-80	4	0	8	1	2	0	9	0
81-90	5	0	5	0	2	0	1	0
91-100	0	0	0	0	2	0	1	1
101 or more	0	0	0	0	1	0	0	0
Total	20	2	20	1	20	2	20	1
p-value	0.0733		0.0432		0.0094		0.0825	



P-161

MANAGEMENT OF ESOPHAGO-PLEURAL FISTULA - A LATE COMPLICATION OF LEFT PNEUMONECTOMY

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OBJECTIVES

Esophago-pleural fistula is rare complication of pneumonectomy and difficult to manage. Our patient presented after 14 years of surgery with generalized weakness and vague chest symptoms.

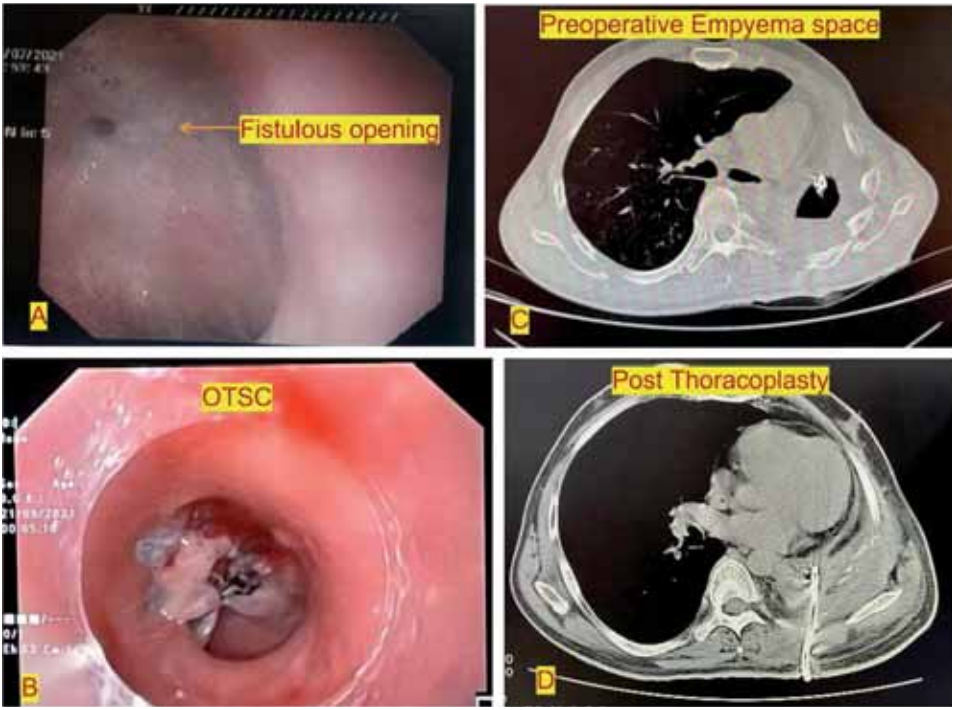
CASE DESCRIPTION

A 45-year-old Male, underwent a left pneumonectomy for a Left main bronchus carcinoid in 2007. In July 2021, he presented with generalized weakness, burning sensation of the abdomen. Bronchoscopy was normal, upper gastrointestinal endoscopy (UGI) found a small esophago-pleural fistula at 25 cm from the incisors. Computed Tomography chest with oral and intravenous showed a distal esophago-pleural fistula. He had an over the scope clipping (OTSC) in July 2021, He was symptomatically better but continued to have air bubbles while yawning and minimal purulent drain in the pigtail. Repeat endoscopy showed intact clip with fistulous opening adjacent to it so 2nd OTSC to occlude the fistulous tract was done as major surgical procedure with omental plugging of the fistula would be morbid and technically challenging in a previously operated space. On follow up he continued to have 50 ml/day purulent drain with air leak. He suffered a major depressive disorder and had suicidal attempts. He was rehabilitated and optimized and taken up for a space reduction Left Thoracoplasty with Apicolysis to obliterate the empyema space in February 2022, since then he has purulent drain of less than 5 ml with no air leak, no contrast leak from the esophagus, no concerning symptoms related to abdomen or chest.

CONCLUSIONS

Treatment of postpneumonectomy esophago-pleural fistula is not standardized and are only single case reports in the literature. The goal of treatment is to repair the fistula and drain and obliterate the empyema space. In our patient we were able to obliterate the empyema space and close the fistula, we were unable to remove the pigtail as the patient continued to have purulent drain.

Disclosure: No significant relationships.


Fistulous opening
A
Preoperative Empyema space
C
OTSC
B
Post Thoracoplasty
D

P-162

INTERDISCIPLINARY ACUTE CARE OF A TRACHEAL RUPTURE IN A CHILD WITH WHIPLASH INJURY

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OBJECTIVES

Central airway ruptures are extremely rare but acutely life-threatening injuries that occur with high-velocity deceleration trauma. Injuries are typically associated with injuries to the cervical spine. Diagnosis therefore requires a high degree of clinical vigilance and treatment requires a coordinated approach of different surgical disciplines.

CASE DESCRIPTION

Case report from a maximum care trauma center. A 10-year-old girl was involved in an accident as a passenger in the back seat of a car on the Autobahn and suffered severe whiplash. On admission to the trauma center, there was a tension pneumothorax on the left side, multiple fractures of the cervical vertebrae (CV 2, 6 and 7) and a rupture of the trachea at the cervico-thoracic junction with complete dehiscence of the airways.
The tension pneumothorax on the left side was relieved immediately by needle puncture and treated with a chest drain. The tracheal rupture was bridged by bronchoscopically guided intubation and the airways were secured. The cervical spine fractures were rated as stable and were treated conservatively. After ruling out intracranial injuries by means of cranial MRI, the airways were surgically reconstructed on the day of the accident using end-to-end anastomosis. An oesophageal injury was excluded intraoperatively. The patient was extubated on the 2nd postoperative day and the chest tube was removed the following day. The further course was uncomplicated. Postoperatively, vocal cord function was intact on both sides.

CONCLUSIONS

Airway ruptures are rare and life-threatening injuries. Early surgical primary reconstruction secures the airways and prevents mediastinitis. By bundling the clinical competencies of various specialist areas at centers with maximum care, the care of children is ensured.

Disclosure: No significant relationships.
Keywords: Tracheal Rupture, Tracheal Reconstruction, Poly Trauma, Child.

P-163

THE ROLE OF TITER ANTYBODIES TEST IN DIAGNOSIS OF HYDATID CYSTS OF THE LUNG

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OBJECTIVES
Echinococcosis is a biological, medical, economic and social problem of great importance. Diagnosis of hydatidosis is based on immunodiagnostic methods together with radiological and ultrasound examinations. False negative results in human hydatid disease can be 3-5% of hydatid patients and even up to 35-40% in hyperendemic areas. This study was undertaken to evaluate the role of serum antibody titre in the diagnosis of pulmonary echinococcal cysts in our country.

METHODS
The medical records of 362 patients with pulmonary hydatidosis treated in our clinic in twenty years were investigated retrospectively, of which 290 (80.1%) were treated surgically and the others conservatively. Of the patients, 51.4% were male and 48.6% were females, with a mean age of 40 years (range 12-80 years). In 112 (31%) cases, the cysts were intact and in 250 (69%) complicated cases. The test of serum antibodies titer was performed already to all the cases. The data were analyzed statistically using the Anova and Chi- square tests.

RESULTS
The serum antibody titre was positive in 181 patients (50% of cases) but the presence of sensitivity was 70% (175) in complicated cases while the sensitivity of this test was 18.8% (21) of uncomplicated cases.
Only a few of the surgically treated cases had complications (34.8%), but there were no deaths. The mean number of days of postoperative hospitalization for all surgical cases was 12.8±3.73.

CONCLUSIONS
We concluded that serum antibody titer testing is not of great value in the diagnosis of pulmonary echinococcus as its sensitivity is 50%. Especially in uncomplicated cysts, its value is very low, equal to 18.8%. However the value of this test may help in the diagnosis of complicated hydatid cysts but with a sensitivity of 70%. These results are mainly due to the endemic nature of this disease in our region.

Disclosure: No significant relationships.
Keywords: Hydatid Cyst, Lung, Titer Of Antybody Test.

P-164

A NOVEL HYBRID TRANSCERVICAL MEDIASTINOSCOPIC AND LEFT-SIDED APPROACH FOR RADICAL RESECTION OF A MEDIASTINAL PARAGANGLIOMA

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[2]*Department of Cardiothoracic Surgery, Clinic Floridsdorf, Vienna, Austria*

OBJECTIVES
Mediastinal paragangliomas are extremely rare tumors and only a limited number of cases have been reported so far. The tumors are typically highly vascularized, adjacent to mediastinal structures and the great vessels, thus making surgical resection challenging.

CASE DESCRIPTION
We present the case of a 46-year-old woman. CT scan showed a 4.2cm hypervascularized lesion located between the aortic arch, trachea, superior vena cava (SVC) and esophagus. Additional MRI was suggestive for a paraganglioma. Tumor-associated catecholamine secretion was excluded by blood and urine tests. Surgical resection was performed with stand-by of a heart-lung machine to go on bypass if required (CPB). Therefore, initially two guidewires were placed into the right femoral artery and vein in order to have immediate CPB access if needed. Transcervical mediastinoscopic mobilization of the tumor that was strongly adherent to the SVC and the trachea was performed, followed by a left-sided video-thoracoscopy (VATS). After intrapericardial separation from the main pulmonary artery, we found that the extrapericardial part of the tumor was fully adherent to the aortic arch and thus we converted to an anterolateral thoracotomy. The tumor was then finally resected en-bloc together with the periadventitial tissue of the aortic arch. Diffuse aortic bleeding was controlled by using hemostatic agents. Blood-loss was 300ml, CPB was not required. The surgical procedure was well tolerated, and the patient was discharged on the 5 th postoperative day. Final histology confirmed the suspected diagnosis of mediastinal paraganglioma. Six months after surgery the patient is without symptoms and without any evidence for recurrence of the disease.

CONCLUSIONS
Mediastinal paragangliomas are very rare tumors and primary surgical resection can be challenging especially when the great vessels are affected. To the best of our knowledge this is the first described case using a hybrid transcervical mediastinoscopic and left-sided approach for radical resection.

Disclosure: No significant relationships.
Keywords: Mediastinal Paraganglioma, Novel Hybrid Approach, Radical Resection.

P-165

ANALYSIS OF THE ECONOMIC IMPACT OF MINIMALLY INVASIVE LUNG RESECTIONS USING AN "ACTIVITY-BASED COSTING SYSTEM"

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OBJECTIVES
Minimally invasive VATS lung resections (VR) have become the standard of care for malignant and benign disease of the lung. Accountability of surgical procedures is pivotal in modern health care systems. The activity-based costing system (ABCs) is an algorithm that allows identification of every single item of expense during the cycle of care of patients. We retrospectively investigated if the cost/benefit profile of patients undergoing MI pulmonary resections could be optimized using this tool.

METHODS
A retrospective analysis of the costs of 112 MI lung resections (lobectomies and anatomic segmental resections) over a 2-year period at a single institution was performed using a ABCs approach. The details of surgical technique, indications for surgery, type of devices, analgesia approach, seniority of the surgeon, and short-term outcomes of surgery (using the Clavien-Dindo score) were included. The final impact on the cost of hospitalization was compared using univariate (t-test) and multivariate (logistic regression) analysis.

RESULTS
Higher overall costs were recorded in patients operated with a multi-portal, completely endoscopic MI technique and who did not receive local analgesia treatment (average cost increment 987 Euros/pt admission, p=0.02). Indication for surgery and seniority of the surgeon did not impact of the final costs of admission (p=0.08). The outcomes of surgery were not significantly different across the study period; patients developing Clavien-Dindo grade 3 or higher postoperative complications had a significant impact on the cost of individual patient admissions (p=0.02).

CONCLUSIONS
In our analysis, the choice of the surgical and analgesia technique could significantly impact on the costs of MI lung resections, although without significant impact on short-term outcomes. Postoperative complications significantly affect the costs of hospitalization. ABCs models can help in guiding clinicians to the most accountable approach in specific healthcare settings.

Disclosure: No significant relationships.
Keywords: Economics, VATS, Lung Resection.

P-166

ACUTE AND LATE COMPLICATIONS AFTER TALC POUDRAGE IN PRIMARY SPONTANEOUS PNEUMOTHORAX, MYTH OR TRUE PROBLEM?

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[2]*University Sapienza of Rome, Roma, Italy*
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OBJECTIVES
Talc is an extremely effective pleurodesis agent utilised in the treatment of both pneumothorax and pleural effusion.Several complications of talc pleurodesis have been reported including acute and chronic pain,fever and respiratory distress syndrome.As primary spontaneous pneumothorax(PSP) is a common condition generally affecting young adults, the use of talc in those patients is debated. The aim of this study is to analysed early and late postoperative outcomes of a large cohort of PSPpatients treated by talc pleurodesis to define the safety of talc poudrage in PSP.

METHODS
Observational cohort study on PSPpatients surgically treated in a single centre(2009-2014). All patients were surgically treated by VATS and underwent talc poudrage.Patients>40 years old/with secondary pneumothorax/with chest wall deformities/comorbidities leading chronic chest pain or with drug/painkiller abuse were excluded.All patients were followed up for at least 5 years.Early and late complications were analysed.Chest pain was analysed according to Numerical Rating Scale(NRS)at postoperative day1, after chest tube removal, then in outpatient/by phone call at 1,3 months and after 1, 5 year.Chronic chest pain was defined as pain ≥NRS 3 persisting>2months after surgery.

RESULTS
300 consecutive patients were surgically treated for PSP,240 male(80%)with a mean age of 24 years(IQR 14-40).Patients' characteristics were showed in table 1. Median lenght of stay was 5 days(IQR 4-20),the median chest tube duration was 4 days(IQR 3-18). Short term outcomes(during hospital stay): fever(>37.5°C) in 8 patients(2.7%),no ARDS occurred,paresthesia in 20 patients(6.7%). Pain: median NRS at day 1 was 3.5(IQR 3-8),after tube removal was 3(IQR 2-6). Long term outcomes(outpatient follow-up):chronic paresthesia in 11 patients(3.6%),no Chronic Pain.Use of painkillers after 1 months: sporadical in all patients.Pneumothorax recurrence: 14(4.6%).

CONCLUSIONS
Talc poudrage is confirmed as an extremely effective pleurodesis agent with low recurrence rate (4.6%) and few postoperative complications. In this large retrospective series, the use of talc poudrage in PSP patients not increases neither postoperative nor chronic pain onset.

Disclosure: No significant relationships.
Keywords: Primary Spontaneous Pneumothorax, Surgical Treatment, Pleurodesis, Complication.

Characteristics	Frequency
Smoking habit	
Never	186 (62%)
Current	96 (32%)
Former	18 (6%)
Cannabis	34(11.3%)
Indication for surgery	
Second ipsilateral episode	195 (65%)
Persistent air leaking	48 (16%)
First controlateral episode	38 (12.7%)
Other	19 (6.3%)
Lung resection	
No	261 (87%)
Apex resection	39 (13%)
Number of ports	
2	220 (73.3%)
3	80 (26.7%)
Number of chest tube	
1	298 (99.3%)
2	2 (0.7%)
Chest tube size	
24 Fr	279 (93%)
28 Fr	21 (7%)

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REPAIR OF BRONCHIAL STENOSIS IN LUNG TRANSPLANT RECIPIENTS WITH BIODEGRADABLE STENTS

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OBJECTIVES

Airway complications after lung transplantation occur in 2% to 33% and may deteriorate the quality of life and graft. The aim of this study was to review the safety, effectiveness and tolerance of biodegradable (BD) stents in bronchial anastomotic stenosis after lung transplantation.

METHODS

In our retrospective study we evaluated all bronchial stenosis from all endoscopic findings during surveillence and additional diagnostic transbronchial biopsies in patients after lung transplantation between 2010 and 2019. All bronchial anastomosis were performed with a single running suture, using absorble polydioxanone suture (PDS) 4/0. All stents were custom-made from bio-absorbable polydioxanone and were self-expandable.

RESULTS

In 309 lung transplanted patients a total of 1021 transbronchial biopsies (448 forceps biopsies and 573 cryobiopsies) were performed. The bronchial stenosis was diagnosed in 5,23 % of all biopsies, in median of 5,6 months from lung transplantation. Eight patients with bronchial stenosis were treated with bronchial dilatation and four patients were observed endoscopically. In ten patients (median age 47 years (range 27-66 years)), a total of 29 biodegradable stents were implanted. In four patients BD stent was inserted to the left bronchial anastomotic stenosis and in six patients to right bronchial stenosis (4 right main bronchus, 1 intermemediate bronchus and 1 in middle bronchus). Six patients required multiple stenting for anastomotic re-stenosis. The median stent diameter was 13,7 mm ± 2,84 (8-20 mm) and median length was 19,4 mm ± 4,3 (13-30 mm). Two BD stents were redislocated during procedure and removed. There was no bleeding and no perforation recorded. Median time to any re-stenting was 98 days with good tolerance.

CONCLUSIONS

Our study demonstrates that single running suture of bronchial anastomosis is safe technique with low rate of bronchial anastomotic complications. Biodegradable stents seem to be effective and well tolerated in patients after lung transplantation.

Disclosure: No significant relationships.
Keywords: Lung Transplantation, Airway Complications, Biodegradable Stent.

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ARE PLEURAL THICKNESS MEASUREMENTS THE NEW STANDARD FOR T STAGING IN PLEURAL MESOTHELIOMA (PM)?

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OBJECTIVES
The current AJCC/UICC PM staging system is criticized for difficulties in applying T criteria to clinical (c) staging leading to discrepancies between c and pathologic (p) staging. A previous analysis (Nowak JTO 2016;11:2089-99) suggested that maximum pleural thickness (PTmax, > or < 5.1mm) or the sum of PT (PTsum) measurements at 3 defined levels (upper, middle, lower) on CT scans predicted OS (cutpoints of 13, 13-60 and >60mm). We tested these hypotheses.

METHODS
Retrospective analysis of prospectively maintained single institution database. Radiology review of pre-treatment CT scans, blinded to clinical data, with 3 level measurements per "Nowak" criteria. Overall survival (OS) calculated from date of diagnosis. OS estimated by Kaplan Meier, effect of PT variables (5 measurements = PT at each level, PTmax, PTsum) and clinical variables analyzed by univariable and multivariable (MVA) Cox regression. Correlation of PT to TN stages assessed by Kruskal-Wallis.

RESULTS
From 2008-20, 233/333 patients had CT scans reviewed for this analysis (115 had surgery, 91 EPP or EPD), 184 male (79%), median age 70 years (range 64-75), 142 (60.9%) known/likely asbestos exposure, 176 (76%) presenting with symptoms. 178 (76%) epithelioid tumors. AJCC/UICC cstages T1-4: 72 (31%), 63(27%), 50(21%), 48(21%): cN0 121(52%); pT1-4 stages: 13(11%), 28 (24%), 29(25%), 43(37%); pN0 34(30%). Each of 5 PT measurements correlated with cT, cN and pT but only upper PT correlated with pN. In univariable analyses and MVA controlling for sex, histology, asbestos exposure and symptoms at diagnosis, upper and middle PT and PTsum were significantly associated with OS but "Nowak" cutpoints were not valid in this analysis.

CONCLUSIONS
1) discrepancies between AJCC/UICC c and p staging confirmed 2) PT correlates with TN stages 3) upper, middle PT and PTsum are associated with OS 4) further exploration of optimal cutpoints appropriate.

Disclosure: No significant relationships.
Keywords: Mesothelioma, Pleural Thickness, Staging.

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WITHDRAWN

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CURRENT PREDICTORS OF OUTCOME IN SURGICALLY MANAGED PATIENTS WITH PARAPNEUMONIC PLEURAL EMPYEMA

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OBJECTIVES
Parapneumonic pleural empyema is a critical condition with substantial morbidity and mortality. Surgical intervention is often complicated by multimorbidity, old age, frailty and advanced septic disease. Aim of this study was to investigate the possibilities to improve results by identifying predictors of outcome from a current study population.

METHODS
In a retrospective study from a prospective database the outcome of surgically managed patients with parapneumonic pleural empyema at four German tertiary referral hospitals was analyzed. Study period was 2006 – 2021.

RESULTS
There were 571 patients (female 176, male 395). Mean age was 60.57 years. Multimorbidity (mean Charlson Score 2.48) with predominately cardiac conditions (222/571), diabetes mellitus (131/571), neurological disorders (100/571) and COPD (100/571) was common. VATS, open decortication and
window thoracostomy were carried out in 437, 120 and 14 cases, respectively. ICU admission (325/571), mean ICU days (11.6), mean LOS (25.3 days) and in-hospital-mortality (47/571) underline the severity of the condition. Sepsis (OR 9.92; 95% CI: 4.99-19.72; $p<0.01$), respiratory failure requiring mechanical ventilation (OR 21.47; 95% CI: 10.26-44,98; $p<0.01$), acute renal failure (OR 9.54; 95% CI: 4.79-18.99; $p<0.01$), ICU stay > 1 day (OR 13.17; 95% CI: 5.49-31.61; $p<0.01$) and Charlson Score ≥ 3 (OR 5.34; 95% CI: 2.71-10.55; $p<0.01$) had higher odds for fatal outcome. Multimorbidity (Charlson Score ≥ 3) was also associated with significantly higher odds for sepsis and ICU admission. In contrast, advanced age (≥ 80 years) was not associated with higher mortality (11/83 vs. 36/488; $p=0.08$).

CONCLUSIONS
Delayed referral for surgery with already advanced septic disease as well as pre-existing multimorbidity are the main reasons for fatal outcome. The most promising option for improving results is to avoid the occurrence of pulmonary sepsis by means of timely surgical intervention.

Disclosure: No significant relationships.
Keywords: Pleural Empyema, Pneumonia, Sepsis, Infection, VATS.

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