P3.16-017
The Role of Skip Metastases and the Number of Metastatic Lymph Nodes in the Survival of Operated Patients

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Background: The IASLC staging committee has raised the question of the role of skip metastases and single and multiple metastases in a single station in the hillar and mediastinal regions in survival of lung cancer **Method:** Based on a database with 1068 operated patients we will try to establish an answer to these questions. We have just this week received the dataset so we did not have time for making the necessary calculations before abstract deadline **Result:** The results will be added before the next deadline **Conclusion:** Will be added before the next deadline **Keywords:** Surgery, Skip metastases, Staging

P3.16-018
Null 30-Days Mortality After 72 Consecutive Left Open Pneumonectomies for Lung Cancer

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Background: The authors evaluate the 30-days mortality after open pneumonectomy for lung cancer and compare the results obtained for left-right pneumonectomy. **Method:** Between 2008 and 2011 there were radically resected 326 consecutive cases of lung cancer. There were 117 pneumonectomies — 72 on left and 45 on right, all performed through thoracotomy. **Result:** Overall 30-days mortality rate was 3,41% after pneumonectomy for lung cancer. After left pneumonectomy there was 0% mortality and after right pneumonectomy - 8,88% mortality. In 37 cases the patients received induction therapy — on those cases the mortality was 2,7% at 30 days, meaning 5% for right and 0% for left pneumonectomies. Without induction therapy the 80 patients operated per primam presented 3,75% 30-days mortality (12% for right and 0% for left pneumonectomies). These values are excellent for left pneumonectomies and similar to the literature for the right ones. The case selection is not the "cause of success" since 40,17% of cases were pathological stage III (TNM 6th edition - valid at that time) and 29,05% were pathological stage II. Neither the limitation of the resection affected the mortality since the authors have performed 64,1% of pneumonectomies (75 cases) with intrapericardial approach, of which 21 pericardiectomies, 17 pericardioplasties and 3 atrial resections. All resection included mediastinal lymph node dissection. From best of our knowledge mediastinal lymph node dissection doesn't affect 30-days mortality after pneumonectomy for lung cancer. **Conclusion:** A null mortality rate at 30-days after left pneumonectomy for lung cancer is possible, without case selection. **Keywords:** pneumonectomy, 30-days mortality, lung cancer

P3.16-019
Prognostic Factors for Resected Non-Small Cell Lung Cancer in Patients with Type 2 Diabetes Mellitus

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Background: For diabetic patients with lung cancer, blood glucose levels and medications such as metformin and statins may impact survival. This retrospective study defined prognostic survival factors for diabetic patients with resected non-small cell lung cancer. **Method:** Between January 2005 and December 2013, 301 patients with type 2 diabetes mellitus who underwent curative resection for non-small cell lung cancer were identified and reviewed retrospectively. Prognostic factors for lung cancer—specific and overall survival were evaluated using the Cox proportional hazards regression model. **Result:** The median follow-up period was 48 months (interquartile range, 30—72). In a multivariate analysis for lung cancer—specific survival, older age, forced expiratory volume in 1 second (FEV1) <80% predicted, and advanced pathologic stage were significant negative prognostic factors; statin use was a positive prognostic factor [hazard ratio, 0.468; 95% confidential interval, 0.258—0.849]. In a multivariate analysis for overall survival, male sex, older age, FEV1 <80% predicted, and advanced pathologic stage were significant negative prognostic factors; proper glycemic control (hazard ratio, 0.645; 95% confidence interval, 0.436—0.952) and statin use (hazard ratio, 0.602; 95% confidence interval, 0.390—0.931) were positive prognostic factors. **Conclusion:** Proper glycemic control (HbA1C <7.0) is recommended for diabetic patients undergoing lung cancer surgery. Statin use was associated with improved overall survival and lung cancer—specific survival. Further studies are required to elucidate associations between type 2 diabetes mellitus and anti-neoplastic effects of statins and to evaluate statins as a novel adjuvant treatment for lung cancer. **Keywords:** Non-small cell lung cancer, type 2 diabetes mellitus, prognostic factor

Prognostic factors related to overall survival

Variable	Univariate HR (95% CI)	Multivariate HR (95% CI)
Male	2.682 (1.603—4.486)	2.628 (1.287—5.366)
Age	1.041 (1.016—1.066)	1.070 (1.042—1.099)
Smoking	1.927 (1.247—2.979)	0.988 (0.527—1.850)
FEV1% predicted <80	1.843 (1.254—2.708)	1.647 (1.073—2.530)
Obesity (BMI ≥25)	0.573 (0.387—0.848)	0.752 (0.496—1.138)
Proper glucose control	0.700 (0.487—1.006)	0.645 (0.436—0.952)
Cardiovascular comorbidity	1.315 (0.896—1.929)	
Neoplastic comorbidity	1.259 (0.815—1.946)	
Renal insufficiency	1.338 (0.871—2.055)	
Metformin	1.131 (0.781—1.638)	
Insulin	1.465 (0.886—2.422)	
Statin	0.602 (0.398—0.911)	0.602 (0.390—0.931)
Non-adenocarcinoma	1.724 (1.203—2.470)	0.905 (0.571—1.435)
Pneumonectomy	2.386 (1.364—4.175)	1.520 (0.806—2.864)
R1 (vs R0)	1.841 (0.452—7.492)	
Stage		
I	Reference	
II	2.594 (1.694—3.973)	3.315 (1.837—5.983)
III/IV	3.818 (2.445—5.961)	6.515 (3.471—12.226)
Adjuvant treatment	1.545 (1.076—2.217)	0.606 (0.361—1.018)

P3.16-020
Long Term Changes of Pulmonary Function After Lobectomy

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Background: Postoperative pulmonary function changes after lung resection and that decline is determined by the extent of lung resection. It has been known that pulmonary function after surgery recovers gradually within 3 months to 1 year and finally reaches a steady state. However, the long-term respiratory function is unknown. We investigated the changes in respiratory function after thoracic surgery in patients who performed more than segmentectomy to evaluate the long-term effect of lung resection. **Method:** A total of 99 patients who underwent lobectomy followed up serial pulmonary function at postoperative 1 month, 6 months, 1,2,3 and 5 years. We investigated the serial changes of forced

expiratory volume per 1 seconds (FEV_1%), diffusion capacity of carbon monoxide (DL_{CO}%) by groups of minimal invasive surgery and adjuvant chemotherapy. **Result:** The reduced postoperative FEV_1% recovered to preoperative value until postoperative 6 to 1 year and declined yearly. The value of DL_{CO}% increased to preoperative value until postoperative 2 years and remained steady state. There was no significant change in at more than 2 years follow-up (Fig 1). The value of DL_{CO}% was decreased significantly during adjuvant therapy (p=0.031) (Fig 2) and the patients performed VATS lobectomy showed faster recovery in FEV_1% and DL_{CO}% compared to thoracotomy group (p=0.001) (Fig 3 and 4). **Conclusion:** The respiratory function after lung lobectomy recovered gradually over postoperative 2 years. Adjuvant chemotherapy or thoracotomy showed negative impact on the postoperative pulmonary function. **Keywords:** Pulmonary Function, Thoracic Surgery, lung cancer

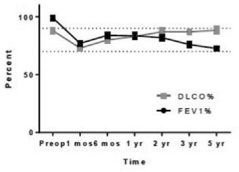

Fig.1 Postoperaive changes of FEV_1% and DL_{CO}% for 5 years after lobectomy

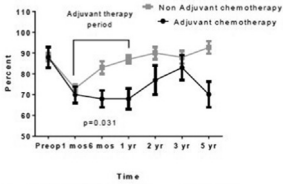

Fig.2 Postoperaive changes of DL_{CO}% for 5 years after lobectomy by adjuvant chemotherapy

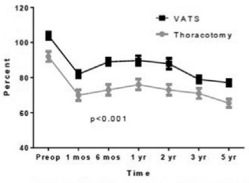

Fig.3 Postoperaive changes of FEV_1% for 5 years after lobectomy by operative method

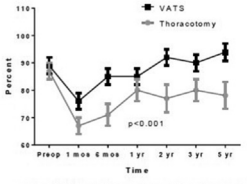

Fig.4 Postoperaive changes of DL_{CO}% for 5 years after lobectomy by operative method

P3.16-021
Thoracic Morbidity and Mortality System in Analysis of Postoperative Complications After Pneumonectomy in NSCLC Patients

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Background: Postoperative complications after pneumonectomy for NSCLC depend on the extension of surgery, comorbidities and accurate registration of any adverse event. The aim of the study was to evaluate the short-term results after standard and extended pneumonectomy in NSCLC patients according to the TMM (Thoracic Morbidity and Mortality) grading system. **Method:** We included 216 NSCLC patients consecutively submitted to pneumonectomy at our institution from January 2011 to December 2015 in the retrospective study performed on data prospectively collected in an electronic clinical database. All patients were divided into two different groups: standard (n=142) and extended (n=74) pneumonectomy, where resection of adjacent organs was indicated. The patients undergone extended pneumonectomy were subdivided into single (n=49) and multi-organ resection (n=25) groups. Systemic mediastinal lymph node dissection was carried out in all cases. Morbidity and mortality rate was analyzed according to the definitions proposed by the ESTS and TMM classification system. **Result:** Postoperative morbidity and mortality rate after standard pneumonectomy (23,9% and 3,5%) was significantly lower than extended procedure (43,2% and 10,8%) (p=0.02). Multi-organ resection was an independent prognostic factor of unfavorable outcome: morbidity and mortality was significantly higher in the multi-organ group (48,0% and 16,0%), while in the single-organ group it was 40,8% and 8,2% respectively (p=0.01). The incidence of the BPF was the only one variable in the ESTS complications definition which differs significantly between the groups of standard, single- and multi-organ resection: 3,5%, 6,1% and 16,0% respectively (p=0.02). Major complications rate (grade IIIA and higher according to the TMM) was significantly higher in the multi-organ group (40,0%) than in the single-organ (28,6%) and standard (14,8%) group (p=0.01). **Conclusion:** TMM classification system is more accurate in grading and further analysis of postoperative complications after pneumonectomy in NSCLC patients in compare with ESTS criteria. Multi-organ resection should be carried out with caution due to unacceptable high morbidity and mortality rate. **Keywords:** pneumonectomy, complications, morbidity and mortality

P3.16-022
Segmentectomy for Lung Adenocarcinoma: The Impact of EGFR Mutation Status on Recurrence

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Background: In this study we sought to identify long-term predictors for recurrence in patients who underwent thoracoscopic segmentectomy for lung adenocarcinoma with a curative intent. We especially focused on the association of surgical outcome with the presence of molecular driver gene mutation. **Method:** We retrospectively reviewed the medical records of 194 patients who underwent thoracoscopic segmentectomy for NSCLC from July 2009 to August 2015. Mutation status was tested in treatment-naive patients who had complete resection of NSCLC using direct sequencing or multiplex polymerase chain reaction-based assay. **Result:** 134 cases were available for molecular data and 48.5% were EGFR mutation-positive. These 134 cases included 52 compromised segmentectomies (39%) for patients with poor pulmonary reserve or other limiting factors. The median follow-up period was 38.8 months. Of the 134 patients, 9 developed distant site recurrence and 4 local recurrence. The 3- and 5-year recurrence free survival were 91% and 87%, respectively. Multivariate Cox regression analysis showed recurrence was affected by female sex (hazard ration (HR), 0.12; 95% CI, 0.01-0.56; p=0.02), intentional segmentectomy (HR, 0.08; 95% CI, 0.01-0.70; p=0.02), and surgical margin of 2 cm or more (HR 0.05; 95% CI, 0.01-0.58; p=0.02). Vascular invasion and p-factors such as size and visceral pleural invasion failed to gain significance after adjusting pathologic nodal status. Also, driver gene mutations were not found to be an independent predictor of recurrence (EGFR mutation; HR, 0.840; 95% CI, 0.28-2.51). **Conclusion:** Apart from lobectomy, driver gene mutation profile does not provide any additional information both in recurrence prediction after segmentectomy and in deciding whether to proceed segmentectomy for mutation-positive patients. This study again emphasizes surgical principle of resection margin of 2 cm should be kept for oncologic clearance when performing segmentectomy. **Keywords:** segmentectomy, EGFR, Adenocarcinoma

Table. Predictors for Recurrence in Segmentectomy Patients

	Univariate analysis		Multivariate analysis	
Predictor Variable	HR (95% CI)	*p* Value	HR (95% CI)	*p* Value
Female	0.14 (0.03-0.65)	0.012	0.12 (0.01-0.56)	0.022
Age (years)	1.06 (1.00-1.14)	0.062	1.06 (0.95-1.20)	0.305
Smoking stasus	2.02 (1.01-4.06)	0.048	1.16 (0.20-6.60)	0.869
EGFR mutation	0.84 (0.28-2.51)	0.760		
KRAS mutation	1.21 (0.16-9.31)	0.857		
Visceral pleural invasion	6.31 (2.06-18.3)	0.001	0.17 (0.01-2.05)	0.164
Lymphatic invasion	1.34 (0.41-4.36)	0.629		
Vascular invasion	7.83 (1.69-36.3)	0.009	0.00 (0.00-infin)	0.999
Number of dissected lymph nodes	1.02 (0.96-1.07)	0.578		
Pleural margin (cm, 0 vs. >0)	2.48 (0.76-8.07)	0.132	6.22 (0.36-108)	0.209
Surgical margin (cm, >2)	0.13 (0.02-1.07)	0.058	0.05 (0.01-0.58)	0.017
Size (cm)	1.97 (1.27-3.06)	0.002	1.73 (0.57-5.27)	0.337
Pathologic nodal status (N+ vs. N0)	7.58 (1.67-34.5)	0.009	0.00 (0.00-infin)	0.999
Type of segmentectomy (Intentional vs. Compromised)	0.15 (0.04-0.56)	0.005	0.19 (0.05-0.84)	0.028