and disease specific death in early stage lung cancer treated with SBRT.
Keywords: Early Stage Lung Cancer, Predictive factors, Radiomic

P2.17-21
A Post-Hoc Analysis of TROG 09.02 (CHISEL) Phase III Trial Investigating Pulmonary Function Changes After SABR and Conformal Radiation Therapy

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Background: The TROG 09.02 (CHISEL) trial compared conventional radiotherapy (CRT) administered over a period of four to six weeks with stereotactic ablative body radiotherapy (SABR).(1) Patients randomised to the SABR arm had superior freedom from local failure and longer overall survival.(1) The aim of this analysis was to assess differences in lung function and spirometry tests between SABR and CRT and describe longitudinal changes in respiratory function. **Method:** We conducted a post-hoc analysis of all patients recruited to the CHISEL trial. During this trial patients underwent serial Respiratory Function Tests (RFT) including Forced Expiratory Volume in one second (FEV1), Diffusing capacity of the lungs for carbon monoxide (DLCO), Distance Walked in 6 minutes (SMWT) and Forced Vital Capacity (FVC). These were performed at baseline then 3-6 monthly post-treatment. Patients were assessed per treatment received. Linear regression models were used to compare FEV1, FVC and DLCO between SABR and CRT. Separate models at 3 and 12 months post-treatment were created to assess the two different processes impacting lung function post radiation therapy (acute pneumonitis and chronic fibrosis). Linear regression models were used to assess the association of baseline PFT Measures with decline in respiratory function at 3 and 12 months. **Result:** Between December 2009 and June 2015, 101 patients were treated in 11 centres in Australia and New Zealand. 34 patients were treated with CRT and 63 with SABR. On regression analysis at 3 months there was no evidence of a difference between arms in the change from baseline in absolute values of FEV1 (beta 0.037, 95% CI [-0.063, 0.14], p=0.47), DLCO (beta -0.5, 95% CI [-1.4, 0.37], p=0.26) nor forced VC (beta 0.024, 95% CI [-0.17, 0.22], p=0.81). At 12 months there were no differences observed in change from baseline of FEV1 (beta0.031, 95% CI [-0.12, 0.18], p=0.69), DLCO (beta -0.43, 95% CI [-1.7, 0.84], p=0.51) nor forced VC (beta 0.047, 95% CI [-0.28, 0.18], p=0.69) between arms.- There was no evidence of a difference in the change from baseline in SMWT (m) between two arms at 3 months (beta 35.9, 95% CI [-10, 82.3], p=0.13).Patients in both arms demonstrated similar deterioration in all RFT parameters with time. **Conclusion:** Despite the considerably higher biologically effective doses delivered to the tumour in SABR there was no difference in decline in respiratory function observed between the two groups. This is likely due to the higher integral dose, steep dose gradients and reduced margins possible with SABR relative to CRT. **Keywords:** pulmonary function, Stereotactic ablative body radiotherapy, Early Stage Lung Cancer

P2.17-22
Retrospective Analysis of Spread Through Air Spaces and Other Features in Patients with Stage IA Adenocarcinoma by the 8th TNM Classification

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Background: We have recently demonstrated that the presence of the Spread Through Air Spaces (STAS) increased the risk of recurrence after resection for small lung adenocarcinoma (ADC). Currently, the TNM classification of lung cancer was revised and T-factor was changed to be basically determined by its invasive size. The purpose of this study is to examine the impact of presence of STAS in stage IA ADC according to the 8th TNM classification. **Method:** Patients with pleural invasion, lymph node metastasis, distant metastasis, and neoadjuvant therapy were excluded. All available tumor slides from patients with surgically resected solitary lung ADC (2000-2015) were reviewed. Patients with stage IA ADC according to the 8th TNM classification were collected. Overall survival (OS) and recurrence-free probability (RFP) were estimated using the Kaplan-Meier method. Propensity score was generated from age, operation year, gender, lymphatic invasion, vascular invasion, the presence of solid component $\geq$5%, the presence of micropapillary component $\geq$5%, limited resection, and invasive size. One-by-one nearest neighbor matching by the presence of STAS was adapted to reduce the bias. **Result:** In all, 295 patients met study criteria with median age of 68. Male gender comprised 48.8% (n=144), lymphatic invasion positive 4.7% (n=14), and vascular invasion positive 14.9% (n=44). By T-factor (7th edition), 216 (73.2%) were T1a, 53 (18.0%) T1b, 23 (7.8%) T2a, 2 (0.7%) T2b, and 1 (0.3%) T3. By T-factor (8th edition), 100 (33.9%) were T1mi, 111 (37.6%) T1a, 70 (23.7%) T1b, and 14 (4.7%) T1c. By operation method, 241 (81.7%) underwent lobectomy, 15 (5.1%) segmentectomy, and 39 (13.2%) partial resection. Adjuvant chemotherapy was given in 2.7% (n=8) of patients. STAS was seen in 22.7% (n=67) of patients. Five-year OS was 95.3% for STAS-negative and 91.1% for STAS-positive (p=0.0262), and the 5-year RFS was 96.8% and 83.9%, respectively (p=0.0003). In matched cohorts, each cohort included 48 patients and the 5-year OS was 95.0% for STAS-negative and 90.6% for STAS-positive (p=0.3201). The 5-year RFS was 93.3% and 91.3%, respectively (p=0.9363). **Conclusion:** Patients with pathologic stage IA ADC with STAS, according to the 8th TNM classification, had a worse prognosis in unmatched cohorts even though adenocarcinoma in situ was excluded. Because of various confounding factors, the propensity score matching revealed the presence of STAS as a non-significant prognostic factor in our matched cohorts. This study was a retrospective analysis, and a prospective study is needed regarding the indication of limited resection. **Keywords:** Early lung cancer, adenocarcinoma, STAS

P2.17-23
The Role Adjuvant Chemotherapy in Resected Stage 1 NSCLC with High Risk Factors: A Turkish Oncology Group Study

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Background: Adjuvant chemotherapy is accepted as a standard treatment for suitable patients who have undergone surgery for T2N0 non-small cell lung cancer with tumors larger than 4 cm. Despite similar relapse rates, the benefit of adjuvant chemotherapy for smaller tumors with high risk features is not clear. In this retrospective analysis our aim was to evaluate the prognostic impact of adjuvant platin-based chemotherapy in high-risk stage 1 NSCLC patients. **Method:** This cooperative group study included 250 NSCLC patients who underwent curative surgery for stage 1 NSCLC with tumor size 2-4 cm and adverse prognostic factors consisting of visceral pleural invasion (VPI), lympho-vascular invasion (LVI), high grade, presence of solid-micropapillary(SMP) components or STAS. Records of patients were analyzed to investigate the prognostic impact of adjuvant chemotherapy in this cohort. DFS was defined as the time from surgery to the last follow-up, until relapse or death, CSS; time from surgery to death related to cancer or last known contact, OS; time from diagnosis to death or last known contact. Statistical analysis was performed using SPSS 20.0 software (SPSS Inc, Chicago, USA). **Result:** Median age at presentation was 63 years (range 18-90). The mean tumor size was 29.4 ± 7.4 mm. The frequency of patients with specified risk factors were: VPI: n: 92 (36.8%); LVI: n: 91 (36.4%); Grade 3:n: 49 (19,6%); SMP:n: 76 (30.4%); STAS:n: 15 (6%). A total of 51 patients had received adjuvant platin-based chemotherapy. There were significantly more patients who received chemotherapy in the younger age group (<65 years old, ≥65 years old) and those with larger tumors (2 − 3 cm, 3 − 4 cm). During a median follow-up period of 91.8 months; 79 patients (31.6%) experienced recurrence, 62 patients (24.8%) have died, 144 patients (57.6%) were alive without disease and 24 patients (9.6%) were alive with disease. 5-year and 10-year OS rates were 72.7% (± 3,5) and 46.8%(± 8), respectively. There was a significant improvement in DFS with adjuvant chemotherapy, especially in groups with VPI (93.3% vs 53.6%, p:0.016) and SMP (92.3% vs 57.3%, p:0.03). There was also a non-significant trend for improved CSS and OS among patients who received CT.

Table 1. Effects of chemothrapy on survival

	Chemotherapy Group Events/N Median 5-years DFS	Non - treatment Group Events/N Median 5-years DFS	P Value
DFS	12/51 NE % 74.9 ± 6.3	81/190 71.1 months % 54 ± 4.2	0,032*
CSS	4/49 NE % 89 ± 5	41/179 91.8 months % 76.9 ± 3.8	0,078
OS	10/49 NE %77.4 ± 6.4	51/179 88.9 months % 72.1 ± 4	0,541

*All values are stratified, respecting to significant confounding factors such as age, gender and tumor size.

Conclusion: Adjuvant platin-based chemotherapy should be considered for this subset of patients having high grade tumors, or those with VPI, LVI or solid-micropapillary components. Prospective, randomized trials incorporating clinical and molecular risk factors are required to clarify the role of adjuvant chemotherapy for stage 1 NSCLC patients. **Keywords:** NSCLC, Adjuvant Chemotherapy, Early Stage

P2.17-24
Minimally Invasive Surgery for Lung Cancer Improves Short Term Outcomes in Patients with History of Head and Neck Carcinoma

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Background: Lung cancer resections are at high risk for major complications in patients with history of head and neck carcinoma (HNC). We initiated a minimally invasive video assisted thoracic surgery (VATS) program since 2014. Our objective was to determine whether VATS lobectomy had better short term outcome than open lobectomy in this subset of patients. **Method:** We performed a retrospective monocentric analysis of consecutive standard lobectomies performed for lung cancer in patients with history of HNC at our institution between January 2010 and December 2017. Patients with more complex procedures were excluded. Patients' characteristics and short term outcome were compared between VATS and open lobectomy (OL) groups. Quantitative data were compared using parametric test when normally distributed and using non-parametric test when not normally distributed. Qualitative data were compared using Chi^2 or exact Fischer's test when appropriate. $P<0.05$ was considered significant. **Result:** Among 85 patients, 52 underwent an OL and 33 VATS lobectomy. There was no significant difference between the two groups regarding age, sex ratio, HNC location, history of HNC treatment, pathology and stage of lung cancer, history of coronary artery disease, respiratory function or neutrophil to lymphocyte ratio. Postoperative death occurred in 2 patients only in the OL group. In the VATS group, there was a significant decrease in proportion of postoperative life-threatening complications requiring hospitalization in intensive care unit (12/52 vs. 1/33, P=0.01). The main results are reported in the Table.

	All (n=85)	Open lobectomy (n=52)	VATS lobectomy (n=33)	P
Age (median [IQR], y)	63 [59; 70]	64 [59; 71]	63 [59; 69]	NS
Sex (male/female)	68/17	44/8	24/9	NS
BMI (median [IQR], kg/m²)	22.5 [20.0; 24.9]	23.4 [20.3; 31.3]	23.0 [20.0; 24.6]	NS
HNC location				
Oral cavity	25 (29.4%)	18 (34.6%)	7 (21.2%)	NS
Oropharynx / nasopharynx	13 (15.3%)	5 (9.6%)	8 (24.2%)	
Hypopharynx	18 (21.2%)	13 (25.0%)	5 (15.2%)	
Larynx	21 (24.7%)	13 (25%)	8 (24.2%)	
Other	8 (9.4%)	3 (5.8%)	5 (15.2%)	
Metachronous lung cancer (≥6months delay)	57 (61.2%)	39 (75.0%)	18 (54.5%)	NS
HNC treatments				
Preop HNC surgery +- other	44 (51.8%)	28 (53.8%)	16 (48.5%)	NS
Preop radio chemo +- HNC surgery	38 (44.7%)	20 (38.5%)	18 54.5%)	
Preop radio +- HNC surgery	15 (17.6%)	9 (17.3%)	6 18.2%)	
Preop chemo +- HNC surgery	6 (7.0%)	5 (9.6%)	1 (3.0%)	
HN treatment pending	13 (15.3%)	7 (13.5%)	6 18.2%)	
Comorbidities				
Coronary artery disease	10 (11.8%)	4 (6.1%)	6 (18.2%)	NS
%PreopFEV₁ (mean, SD)	86 ± 17	87 ± 15	84 ± 21	NS
Preop N/L ratio (median [IQR]	42 [2.4; 6.3]	3.9 [2.3; 6.2]	4.8 [3.0; 6.9]	NS
Preop swallowing disorder	9 (10.6%)	7 (13.5%)	2 (6.1%)	NS
Peroperative tracheotomy	6 (7.1%)	4 (7.7%)	2 (6.1%)	NS
Lung cancer staging				
stage I	61 (71.8%)	36 (69.2%)	25 (75.8%)	NS
stage II	16 (18.8%)	9 (13.3%)	7 (21.2%)	
stage III	8 (9.4%)	7 (13.5%)	1 (3.0%)	
stage IV	0 (0%)	0 (0%)	0 (0%)	
Lung cancer pathology				
adenocarcinoma	43 (50.6%)	23 (44.2%)	20 (60.6%)	NS
SCC	36 (42.4%)	25 (48.7%)	11 (33.3%)	
other	6 (7.1%)	4 (7.7%)	2 (6.1%)	
Postoperative outcomes				
In-hospital mortality	2 (2.4%)	2 (3.8%)	0 (0%)	-
Postoperative ICU	13 (15.3%)	12 (23%)	1 (0.03%)	**0.01**
Postoperative hospital stay duration	9.0 [7.0; 17.0]	9.5 [7.0; 21.0]	8.0 [4.0; 15.5]	NS
Pneumonia	27 (31.8%)	21 (40.4%)	6 (18.2%)	NS
90 days re-hospitalization	7 (8.2%)	6 (11.5%)	1 (0.03%)	NS
Without postoperative morbidity	31 (36.5%)	16 (30.8%)	15 (45.5%)	NS
Complication classification (Clavien-Dindo)				
Grade I	7 (8.2%)	3 (5.8%)	4 (12.1%)	NS
Grade II	10 (11.8%)	5 (9.6%)	5 (15.2%)	
Grade III	24 (28.2%)	16 (30.8%)	8 (24.2%)	**0.03**
Grade IV	11 (12.9%)	10 (19.2%)	1 (3.0%)	
Grade V	2 (2.4%)	2 (3.8%)	0 (0%)	

Table: Patients characteristics and short term outcomes after video-assisted (VATS) or open lobectomy among patients with history of head and neck carcinoma (HNC). IQR: interquartile range; BMI: body mass index; preop: preoperative; N/L ratio: neutrophil to lymphocyte ratio; SCC: squamous cell carcinoma; ICU: intensive care unit. P<0.05 was considered significant.

Conclusion: We found that minimally invasive thoracic surgery was associated with better short term outcomes compared to open surgery for lung cancer resection in patients with history of HNC. Therefore, we suggest that standard lobectomy in patients with history of HNC should be performed by VATS procedure. Further studies are required to