MONDAY, 10 JUNE 2019
08:30 - 10:30
BROMPTON SESSION

B-013

ANALYSIS OF PNEUMOTHORAX RECURRENCE RISK FACTORS IN 843 PATIENTS UNDERWENT VIDEO-ASSISTED THORACOSCOPIC SURGERY (VATS) TREATMENT FOR PRIMARY SPONTANEOUS PNEUMOTHORAX: RESULTS OF A MULTICENTRIC STUDY

Maria Cattoni[1], N. Rotolo[1], M.G. Mastromarino[2], G. Cardillo[2], M. Nosotti[3], P. Mendogni[3], A. Rizzi[4], F. Raveglia[4], A. Siciliani[5], E.A. Rendina[5], L. Cagini[6], A. Matricardi[6], P.L. Filosso[7], E. Passone[7], S. Margaritora[8], M.L. Vita[8], P. Bertoglio[9], A. Viti[9], A. Imperatori[1]

[1]*Center for Thoracic Surgery, University of Insubria, Varese, Italy*

[2]*Thoracic Surgery, San Camillo Forlanini Hospital, Rome, Italy*

[3]*Thoracic Surgery and Lung Transplantation Unit, Foundation IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy*

[4]*Thoracic Surgery, ASST Santi Paolo e Carlo, Milan, Italy*

[5]*Department of Thoracic Surgery, Sant'Andrea Hospital, University of Rome La Sapienza, Rome, Italy*

[6]*Division of Thoracic Surgery, S. Maria della Misericordia Hospital, University of Perugia Medical School, Perugia, Italy*

[7]*Surgical Sciences Unit of Thoracic Surgery, University of Torino, Torino, Italy*

[8]*Thoracic Surgery, Università Cattolica del Sacro Cuore- IRCCS Fondazione Policlinico Universitario A.Gemelli, Rome, Italy*

[9]*Division of Thoracic Surgery, IRCCS Ospedale Sacro Cuore Don Calabria, Negrar, Italy*

Objectives:

VATS is the standard treatment for primary spontaneous pneumothorax. However, postoperative pneumothorax recurs in 1.7-11.1% patients and many risk factors have been reported. This study aims to assess pleurodesis technique and other variables as possible risk factors of postoperative ipsilateral recurrence.

Methods:

We retrospectively collected data of 1,178 consecutive <40-year-old patients underwent VATS for primary spontaneous pneumothorax in nine centers between 2007 and 2017. We excluded patients with hybrid pleurodesis and/or incomplete follow-up, leaving 843 cases [80% male; median age (IQR): 22(18-28) years] for analysis. Univariable and multivariable analyses were performed by logistic regression to test factors related to ipsilateral pneumothorax recurrence among age, gender, body mass index, smoking habit, cannabis smoking, respiratory comorbidity, pneumothorax side, dystrophic severity score, surgical indication, VATS port number, lung resection, pleurodesis technique and prolonged postoperative air-leak (>5 days).

Results:
Blebs/bullae resection was performed in 664 (79%) patients. Pleurodesis was achieved by partial pleurectomy in 228 (27%) cases, pleural electrocauterization in 176 (21%), pleural abrasion in 121 (14%), talc poudrage in 318 (38%). Postoperative mortality was nil; 0.6% patients underwent reoperation for major bleeding and 7.1% patients developed prolonged postoperative air-leak. During a median follow-up of 60 (95%CI: 55.5-64.4) months pneumothorax recurred overall in 79 cases (9.4%); among these, 29 patients underwent redo-surgery, 34 chest drain/talc slurry and 16 conservative treatment. As shown in table, the only independent risk factor of recurrence was prolonged postoperative air-leak (*p*-value<0.001), that was significantly related to blebs/bullae resection (*p*-value=0.03).

Table Risk factors of pneumothorax recurrence: univariable and multivariable analyses by logistic regression.

	Univariable analysis		**Multivariable analysis**	
	HR (95%CI)	***p*-value**	**HR (95%CI)**	***p*-value**
Age (continuous) years	1.00 (0.96-1.03)	0.83	-	-
Gender (male vs female)	1.19 (0.68-2.07)	0.54	-	-
BMI (≥18 kg/cm² vs <18 kg/cm²)	2.37 (1.06-5.27)	**0.04**	1.70 (0.70-4.12)	0.24
Smoking habit (never vs former/current)	1.36 (0.83-2.23)	0.22	-	-
Cannabis smoking (none vs yes)	2.21 (1.03-4.75)	**0.04**	2.02 (0.62-6.61)	0.25
Respiratory comorbidity (none vs yes)	0.78 (0.31-2.02)	0.61	-	-
Indications (ipsilateral pneumothorax II episode)		0.39	-	-
Contralateral pneumothorax I episode	0.52 (0.24-1.12)	0.10		
Bilateral pneumothorax	1.31 (0.69-2.49)	0.41		
Persistent air-leak (>5 days)	1.29 (0.29-5.84)	0.74		
Others	1.00 (0.00-0.00)	1.00		
Dystrophy score (0-3 vs 4-6)	0.62 (0.32-1.21)	0.16	-	-
Side (right vs left)	1.30 (0.81-2.07)	0.28	-	-
Blebs/bullae resection (stapler)		0.52	-	-
Loop/electrocauterization	1.18 (0.45-3.09)	0.74		
No lung resection	0.72 (0.39-1.34)	0.30		
Port number (uniportal)		0.10	-	-
2	0.40 (0.17-0.95)	0.04		
3	0.42 (0.18-0.97)	0.04		
Pleurodesis technique (partial pleurectomy)		**0.00**		0.23
Pleura electrocauterization	0.23 (0.10-0.53)	0.00	0.40 (0.14-1.12)	0.08
Pleura abrasion	0.90 (0.48-1.69)	0.75	1.28 (0.57-2.85)	0.55
Talc poudrage	0.37 (0.21-0.66)	0.00	1.00 (0.00-0.00)	1.00
Postoperative air-leak >5 days (none vs yes)	**5.53 (2.94-10.4)**	**0.00**	**4.87 (2.19-10.9)**	**0.00**

HR=hazard ratio; CI=confidence interval; BMI=body mass index.

Conclusions:
In our multicentric series postoperative ipsilateral pneumothorax recurrence was remarkable and independently related to prolonged postoperative air-leak; besides the retrospective setting of this study, pleurodesis method did not impact on recurrence. To prevent prolonged air-leak, blebs/bullae treatment should be accurate and performed only if strictly indicated.

Disclosure: No significant relationships.
Keywords: primary spontaneous pneumothorax, binary logistic regression, VATS treatment, pleurodesis technique, pneumothorax recurrence, recurrence risk factors