

Editorial comment on ‘Fissureless fissure-last video-assisted thoracoscopic lobectomy for all lung lobes: a better alternative to decrease the incidence of prolonged air leak?’

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Prolonged air leak (PAL) after major lung resection represents one of the most frequent and challenging complications for general thoracic surgeons in their daily practice (1), that leads to longer hospital stay (2), higher costs (3).

Because we cannot change patient's characteristics and modify their preoperative risk factors for PAL, attention must be paid for the intraoperative techniques and surgeons must be so thorough in order to avoid potential causes of postoperative PAL.

In the presence of incomplete or fused fissure, dissection thru the fissure may create raw surfaces and increase the risk of air leak (4), and one option to reduce lung injury maybe the fissureless lobectomy, where the bronchovascular structures are divided first and the parenchyma is stapled at the last step as it was first described by Temes *et al.* (5) via thoracotomy.

Few studies in literature applied this technique in VATS lobectomy, the remarkable paper of Stamenovic and colleagues ‘Fissureless fissure-last video-assisted thoracoscopic lobectomy for all lung lobes: a better alternative to decrease the incidence of prolonged air leak?’ (4), showed that for VATS lobectomy reducing air leak was obtained after fissureless technique with respect to conventional VATS and showed a significant shorter chest tube duration and hospital stay. The authors reviewed retrospectively the results of 30 patients submitted to

fissureless VATS lobectomies (group 1) versus 24 patients undergoing conventional VATS lobectomies (group 2). PAL was defined as air leak lasting for more than 5 days. The incidence of PAL was 3.3% in group 1 and 33.3% in group 2 ($P=0.004$), reducing chest tube duration and length of hospital stay (LOS). There was no statistically significant difference in operation time between the two groups. The study presents some limits as a non-randomized character with bias in patient selection. Moreover, the median chest tube duration was 4 days in group 1 and 4.5 days in group 2 while the LOS was 7 days in group 1 and 10 days in group 2. Unexplained big difference between chest tube duration and the length of hospital stay.

Another interesting research conducted by Li *et al.* (6) on the role of fissureless lobectomy and air leak, identified five best evidence papers in literature: first paper, the only prospective randomized study (via thoracotomy) performed by Gómez-Caro *et al.* (7) including lobar and bilobar resections, showed lower incidence and duration of air leak was in the fissureless group. Second study, Ng and colleagues (8) in an observational study including only RUL found that the fissureless technique was associated with shorter chest tube duration and shorter hospital stay. Third, our study (9), we performed a case matched analysis including only open right upper lobectomy RUL showing reduced duration of air leak and hospital costs in the fissureless group. Fourth, Qui *et al.* (10) conducted the largest retrospective

study including 274 patients with fused fissures and were able to show a statistically significant shorter air leak duration in the fissureless group. The fifth paper conducted by Stamenovic and colleagues (4). Li *et al.* (6) concluded their paper with the evidence of the efficacy of fissureless technique in reducing PAL.

Another interesting different technique presented by Decaluwe and colleagues (11), fissure first (FF), hilum last. Unlike the fissureless fissure-last technique the authors create first a tunnel between the parenchyma and bronchovascular structures then they divide the parenchyma with staples and later they approach the bronchovascular structures. Showing a shorter chest tube duration in the group FF. The main principle of this technique is similar to the fissureless–fissure last technique, avoid parenchyma dissection and divide the fissure with staples but may offer a better vision of the anatomical variation of the pulmonary artery (PA).

In our centre, after starting Uniportal vats program for major lung resections (12), we perform fissureless fissure-last technique for upper lobectomies and for lower lobectomies when the artery is not visible in the fissure or in case of incomplete fissure.

We agree with Igai *et al.* (13), for lower lobectomies when the bronchus is resected before the PA, careful attention is necessary to the PA in order to avoid catastrophic injury.

In conclusion, the fissureless-last lobectomy technique is a valid technique to reduce air leak with respect to conventional VATS, yet we still need large randomized trials to confirm these data.

Till then, this technique may be considered as an approach that may help in reducing air leak after VATS for major lung resections.

Every surgeon must include in his surgical armamentarium all procedures that help in reducing postoperative air leak and be able to implement at the right moment.

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Footnote

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