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Lung Sealing with the Sandwich-Technique: a new Surgical Method to Deal with the Emphysematous Lung

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Abstract

The persistent air leak is a common and sometimes difficult to manage complication after major pulmonary resections. Especially in cases with lung emphysema spontaneous sealing of the lung surface under conservative therapy can be prolonged or even fail and a reoperation to close the damaged visceral pleura might be necessary. An ideal surgical solution to deal with this problem is not known, all of the techniques have advantages but also limitations and additional operations should be avoided in this group of frail patients. In this paper a new surgical method to seal the lung surface is presented based on two exemplary cases and our clinical experience. Basically, two stripes of fleece bounded fibrin based sealant are put on the visceral pleura parallel to the wound, which will be then closed by multiple stitches of absorbable suture line inserted through the stripes. Afterwards, a second layer of the same sealant will be placed over it to cover the suture with a narrow overlapping in all directions to the adjacent visceral pleura ("Sandwich-Technique"). In our experience, this technique can be used to successfully prevent or treat persistent air leaks especially in patients with lung emphysema in whom otherwise treatment options are limited.

Abbreviations: VATS = video-assisted thoracoscopic surgery POD = postoperative day LVRS = lung volume reduction surgery FEV1 = forced expiratory volume in the first second DLCO = diffusing capacity of the lung for carbon monoxide

Key words: lung emphysema, persistent air leak, fleece bounded sealant