



Video-assisted thoracic surgery double sleeve bilobectomy for lung cancer: The Sky is the Limit

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Video-assisted thoracic surgery (VATS) is an established technique that purports less post-operative pain, early recovery and better cosmetic results compared to open thoracotomy. The capabilities of VATS are evolving, and it was just a matter of time before it could be shown that VATS could deal with the most complex of thoracic operations (1). In the April 2018 issue of this journal, Diego González-Rivas and his colleagues reported complex tracheal resection and reconstruction, carinal resection, bronchoplastic procedures, lobectomies with en bloc chest wall excision, and vascular reconstruction using uniportal VATS surgery (2). Koryllos and Stoelben (Berlin 2018) completed 38 uniportal bronchoplastic sleeve resections and converted only 2 in their series, a living proof of the logical evolution of VATS allowing patients with locally advanced malignancies to have a quicker recovery and reduced perioperative pain (3).

Traditionally bronchial sleeve operations are indicated when removing central carcinoid tumours. Recently the same principles have been extended to advanced stage non-small cell lung cancer (NSCLC). Surgical complexity is aimed at preserving as much as necessary of the lung parenchyma without compromise to the outcome of long-term prognosis. There has been a shift in paradigm from performing this parenchyma-saving operation only in “compromised patients” who otherwise might not tolerate pneumonectomy, to performing sleeve resections for “non-compromised patients” who would tolerate the pneumonectomy. Published data have shown better overall survival and quality of life in the sleeve resection

cohort compared to pneumonectomy (4-6). Induction chemotherapy seems to be a positive predictive factor (7,8). In a meta-analysis published by Ma *et al.*, they concluded that sleeve lobectomy even with pulmonary artery repair (double sleeve) offers better long-term survival than pneumonectomy (9). All these studies confirm that sleeve resection is not a “compromise” operation. This “intentional” strategy will be increasingly desirable with the advent of new adjuvant chemotherapeutic and immunotherapy agents. The physiological benefit from avoiding pneumonectomy is a mitigating factor in fast recovery and early adjuvant therapy, possibly with better long-term prognosis. “Less” could very well be “more”.

In this issue of *Surgery of Chest Disease*, Professor Luxiu Liu demonstrates very elegantly how to perform double sleeve right upper lobectomy (10). Even as an open procedure this is a complex procedure requiring a high degree of expertise. Professor Liu has demonstrated that one does not require a Robot or fancy and expensive rotating needle holder to perform such delicate anastomosis of the bronchus or the pulmonary artery. His utility port was under 3 cm in length, and conventional and endoscopic needle holders were used. The striking feature was the steady hand movements and the carefully calculated angle of needle approach, no doubt the result of extensive practice. Such finesse and skill takes a lot of time to acquire. The anastomosis of the bronchus and pulmonary artery might take between two to three hours, which highlights that it's got to be done right first time. These patients have advanced central tumours and might have limited

lung capacities; therefore, there is a very narrow margin of error. Double sleeve operations should be done by highly experienced surgeons to guarantee a favourable outcome, without compromise to oncological principles.

In summary, sleeve resections with parenchyma-sparing should be attempted whenever possible when operating a central lung tumour, rather than performing a pneumonectomy. Professor Liu and his team have demonstrated that the gap between what can be done by thoracotomy and VATS is narrowing. Complex procedures for advanced NSCLC which were the domain of thoracotomy only, are now easily within the realm of VATS. A new era in minimally invasive thoracic surgery has started.

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Footnote

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