



A plea for conservatism: minimally invasive sleeve resections

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In the first episode of the Netflix series ‘The Crown’ Sir Clement Price Thomas [1893–1973] is shown, successfully performing a pneumonectomy on King George VI. What is less known is that he is also accredited to be the first surgeon performing a ‘conservative resection of the bronchial tree’—avoiding a pneumonectomy—in 1947 (1). Bronchial sleeve resections are now frequently used in case of tumours at the origin of the main bronchi, impeding a lobectomy, but without extra-bronchial spread demanding a pneumonectomy (2). A positive N1 node, fixed to a central lobar bronchovascular structure, is the second most common indication. It took decades before the technique became widespread and discussions on safety and oncological suitability went on for years. More than fifty years after the first sleeve resection, Ferguson and Lehman demonstrated in a meta-analysis that sleeve resections were superior to pneumonectomies when looking at 5-year-survival, quality-adjusted life-years, and cost-effectiveness (3).

Caso and co-workers reviewed (4) their experience with minimally invasive sleeve resections in fifteen patients, of whom 13 VATS and 2 robotic, including one double sleeve resection and two carinal resections. One of the latter was performed under ECMO.

The outcome was excellent with a median length of stay of 5 days, no operative mortalities, no or minor complications in 13 patients. One patient was readmitted for a pericardial effusion and drain placement; one patient underwent a negative VATS exploration for persistent air leak.

Studies like this reveal the will of surgeons to apply minimally invasive techniques in more complex anatomical resections than the routine peripheral Stage-I lung cancer, for whom there is now consensus that the golden standard is a minimally invasive resection (5). It took thoracic surgeons

more than 20 years to adopt to these minimally invasive techniques and produce an adequately powered randomised controlled trial (RCT) showing less postoperative pain and more quality of life (6). It is doubtful that a RCT with long-term patient survival as primary endpoint will ever be performed. This is unlikely for peripheral early stage cancer, even more for patients with lesions that are candidates for a pneumonectomy-preventing sleeve resection. Not only is this indication much less frequent, they form a heterogeneous group that are difficult to stratify or randomize, as they include bronchial and/or arterial sleeves, upper or lower resections or even carinal resections, all with different levels of technical difficulty.

Caso *et al.* demonstrate its feasibility in selected cases by experienced surgeons and in high volume centres. Selection on the basis of feasibility expresses profound knowledge of their own surgical abilities to deliver an oncologically correct resection (R0) and safe procedure. A retrospective study focusing on major Perioperative complications during minimally invasive lung resections identified, contra-intuitively, high experience as a risk factor for major haemorrhage, hinting that very experienced surgeons were taking on more difficult cases with higher intrinsic risk of Perioperative haemorrhage, unable to be identified in the confounding parameters (7). In surgical feasibility reports the intention-to-treat principle is often completely absent. In this case, there is no mentioning of the centre’s pneumonectomy rate in central tumours, how many open sleeve procedures were performed in the same time period and how many of them were started minimally invasive?

What message is there today for the general thoracic surgeon? It is up to her or his discretion whether a technically and oncologically correct procedure can be

performed in her or his hands and/or centre and in a minimally invasive way. However, we should embrace further evolution towards minimally invasive and lung parenchyma saving techniques. Or how Clement Price Thomas phrased it 60 years ago: 'I would also like to put in a plea for conservatism, where this is rationally indicated, for, by doing so, we in effect extend the range of application of surgical relief' (8).

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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