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Commentary: Comparing sleeve lobectomy with pneumonectomy for central lung cancer: A randomized study will never be conducted

Michael Lanuti, MD

Central tumors in the lung challenge our specialty on a daily basis, and strategies to avoid pneumonectomy are far more common now compared with 20 years ago, when retrospective series introduced the concept that sleeve lobectomy could yield equivalent long-term survival with reduced morbidity and mortality. In contrast to some studies and perhaps counterintuitive, locoregional failures were worse with pneumonectomy (35%) compared with sleeve lobectomy (22%) in an unmatched analysis by Deslauriers and colleagues.¹ Overall, any retrospective comparison of outcomes in patients selected for pneumonectomy or sleeve lobectomy is rather difficult to analyze by virtue of a strong selection bias (which takes into account pulmonary reserve, tumor burden, and the desire to achieve R0 resection) and the technical prowess of the surgeon. Sleeve lobectomy is far more technically challenging than pneumonectomy and frequently performed only in high-volume centers. An attempt to propensity match patients (n = 794 per group) from a French nationwide database² demonstrated no difference in the postoperative mortality comparing pneumonectomy with sleeve lobectomy; however, early overall and disease-free survival favored sleeve lobectomy. In a propensity-matched study derived from the US National Cancer Database (n~1500 patients per group), sleeve resections were associated with an overall survival

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CENTRAL MESSAGE

Since a randomized trial comparing disease-specific survival of sleeve lobectomy with pneumonectomy will never be conducted, an approximation of benefit can only be achieved with large matched cohorts.

advantage compared with pneumonectomy; however, the benefit was only evident in the first 12 months after the operation.³ As systemic therapies for locally advanced resectable non-small cell lung cancer improve, parenchymal-sparing techniques for central tumors have become even more attractive, particularly with the addition and implementation of induction check point inhibitors.⁴

In this edition of the *Journal*,⁵ the authors perform a retrospective review of a large number of patients (n = 1981) undergoing sleeve lobectomy or pneumonectomy over a 15-year period derived from a single very high-volume institution. The primary end points were 30- and 90-day mortality, postoperative complications, and survival. Sleeve lobectomy was performed in about one half the patients, with double sleeve (arterioplasty) in 10%. All resections were R0. As would be expected, the pneumonectomy group had larger tumors, more advanced stage, and were younger. The groups were propensity matched (n = 665 each group) where 90-day mortality appeared better in the sleeve resection group with fewer complications. Acute respiratory distress syndrome and bronchopleural fistula were greater in the pneumonectomy group despite matching. Sleeve had improved 5-year overall 61% versus 44% compared with pneumonectomy in the matched analysis. Interestingly, the incidence of recurrence was greater for pneumonectomy in all stages and was most significant

for stage IIIA disease. Furthermore, locoregional recurrence was not different between groups, but distant recurrence was significantly greater for the pneumonectomy patients invoking the more advanced stage in this group. It is not entirely clear if neoadjuvant or adjuvant therapy was employed in these patients and if there was any impact on survival.

This study represents the largest single-center study comparing outcomes for sleeve lobectomy and pneumonectomy. One should take note that recurrence was greater for pneumonectomy in all stages and was most significant for stage III disease. The distinction of worse overall and disease-free survival of pneumonectomy (n = 250) versus sleeve lobectomy (n = 256) for N2 disease is a novel finding and is rather striking on the Kaplan–Meier curves in the supplementary data. This observation may be a metric that surgeons can use when considering pneumonectomy

for resectable N2 disease where clearance of all original central lymphatic disease may become less important with improving systemic therapies.

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Commentary: To sleeve or not to sleeve: Still a question?

Kenneth P. Seastedt, MD,^a and
Chuong D. Hoang, MD^b

Despite sleeve resections being performed since the 1940s as an alternative to pneumonectomy for lung cancers, the benefits of this technique continued to be debated.¹ Chen and colleagues,² in this issue of the *Journal*, retrospectively summarize their experience of patients who underwent pneumonectomy versus bronchial sleeve resection (with or without vascular sleeve or arterioplasty) for centrally

Kenneth P. Seastedt, MD (left), and Chuong D. Hoang, MD (right)

CENTRAL MESSAGE

Analysis of a large, single-institution series of sleeve resection versus pneumonectomy for central lung cancer supports the preference of a lung-sparing technique whenever the anatomy is permissible.

located tumors. It represents among the largest series and attempts to improve the ongoing discussion regarding the benefits of sleeve resection.³ Certainly, their results will serve as a benchmark for future clinical comparisons.

In total, 1981 patients met inclusion criteria and were propensity score-matched to groups of 665 patients in each

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