



Bronchopleural fistula after lobectomy: who is at risk in the modern era?

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The recently published article “Risk factors for bronchopleural fistula after lobectomy for lung cancer” sheds light on the incidence and risk factors associated with bronchopleural fistula (BPF) following lobectomy for lung cancer in the modern era (1). The study aimed to identify factors that could help predict the risk of BPF in patients undergoing lobectomy without any preoperative treatment, an important but understudied patient group. While the incidence of BPF has decreased due to advancements in surgical techniques and instruments, it remains a concern for the thoracic surgeon that warrants attention due to the high associated morbidity (2). The literature has previously documented right sided resection as a risk factor BPF after lung surgery (3,4). This may be attributed to the anatomy and bronchial structure in that area, making it more susceptible to complications (4). Further, patients who undergo neoadjuvant radiation therapy or chemotherapy are also at an increased risk of developing BPF, as these treatments can weaken tissues and impair healing, leading to an elevated risk of fistula formation (4). Patients with pre-existing lung infections, diabetes, obesity, and immunosuppression as well as those with compromised lung function including chronic obstructive pulmonary disease (COPD), are also at higher risk (4-6). These previously published review articles provided important insights but also included a heterogenous surgical patient population.

The present study was conducted over a span of 16 years and included 3,180 patients who underwent lobectomy for

lung cancer, excluding cases with preoperative treatment or any type of resection other than lobar resection. The primary outcome was the development of BPF within 1 year after surgery. The researchers explored various factors, including patient demographics, comorbidities, blood test results, surgical approaches, lymphadenectomy extent, and histology to determine their association with BPF (1).

The findings of the study revealed several important insights. The occurrence of BPF was limited to men who underwent right lower lobectomy (though 47% of the total cohort were women), with an overall incidence rate of 0.44%. Multivariable analysis in the subgroup of men undergoing right lower lobectomy identified high serum C-reactive protein levels and a history of gastric cancer surgery as significant risk factors for BPF. In contrast, bronchial stump coverage was found to be inversely associated with the development of BPF, suggesting its potential as a preventive measure in high-risk patients.

These findings contribute valuable knowledge to the field of lung cancer surgery by identifying specific patient characteristics and risk factors associated with BPF after lobectomy. By recognizing high-risk patients, surgeons can make informed decisions regarding preventive measures such as bronchial stump coverage, potentially reducing the incidence of BPF and its associated complications.

However, it is important to note that the study has some limitations. Being a retrospective, single-institution study, the findings may not be universally applicable to all surgical

settings. Specifically, gastric cancer may not be as common in other settings. In addition, the relatively small number of BPF cases recorded in the study could limit the predictive accuracy of the statistical analyses.

In conclusion, the article highlights the importance of understanding the risk factors for BPF after standard lobectomy for lung cancer. The study emphasizes the need for personalized risk assessment and preventive measures in patients undergoing lobectomy, especially in high-risk individuals such as men undergoing right lower lobectomy with high serum C-reactive protein levels or a history of gastric cancer surgery. By implementing strategies such as bronchial stump coverage, surgeons can potentially reduce the incidence of BPF and improve patient outcomes in lung cancer surgery. Future research including multisite studies should aim to validate these findings and explore additional strategies to further mitigate the risk of BPF.

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References

1. Ichinose J, Hashimoto K, Matsuura Y, et al. Risk factors for bronchopleural fistula after lobectomy for lung cancer. *J Thorac Dis* 2023;15:3330-8.
2. Bashour SI, Ost DE. An update on bronchopleural fistulae following cancer-related surgery. *Curr Opin Pulm Med* 2023;29:223-31.
3. Tokunaga Y, Kita Y, Okamoto T. Analysis of Risk Factors for Bronchopleural Fistula after Surgical Treatment of Lung Cancer. *Ann Thorac Cardiovasc Surg* 2020;26:311-9.
4. Okuda M, Go T, Yokomise H. Risk factor of bronchopleural fistula after general thoracic surgery: review article. *Gen Thorac Cardiovasc Surg* 2017;65:679-85.
5. Li SJ, Zhou XD, Huang J, et al. A systematic review and meta-analysis-does chronic obstructive pulmonary disease predispose to bronchopleural fistula formation in patients undergoing lung cancer surgery? *J Thorac Dis* 2016;8:1625-38.
6. Li SJ, Fan J, Zhou J, et al. Diabetes mellitus and risk of bronchopleural fistula after pulmonary resections: a meta-analysis. *Ann Thorac Surg* 2016;102:328-39.

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