We have read with great interest the article by Uçvet et al. [1] reporting on the methods and risk factors related to bronchopleural fistula (BPF) in pulmonary resections.

In recent years, despite the advances in surgical technology, BPFs still occur and have a difficult management and outcome. Right pneumonectomy and postoperative barotrauma due to mechanical ventilation are the main factors related to BPF [2]. Furthermore, Sonobe et al. showed the high incidence of BPF in patients who had undergone re-thoracotomy or induction therapy [3].

The factors listed above are in agreement with those described by Uçvet et al. and, to our knowledge, should be analyzed before performing any bronchial closure technique or the operative side that really matters?

The relative merits of sutured vs. stapled BC remains a contentious issue as thoracic surgeons seek to prevent the much dreaded postresection BPF. Numerous clinical studies suggest superiority of a stapled BC over a hand-sown manual BC [2]. Advantages include a more rapid closure with less soiling of the operative field although this is less important for non-infective pathology like lung cancer. Several randomized laboratory animal studies with histological analysis (of the bronchial stump) have demonstrated equivalence of either BC technique in terms of avoidance of BPF and resistance to pressure of the stump [3]. The authors observed that additional applications including glue, muscle flaps and suturing to support the stapled BC stump in high-risk patients including those with neoadjuvant chemoradiotherapy, a BPF may be inevitable even with prophylactic interventions with viable biological tissues should be considered in high-risk patients. If performed competently, the actual BC technique is less important, provided general surgical principles are adhered to. This includes achieving clear oncological resection margins, not leaving too long a stump, especially on the right side, and avoiding excessive diathermy or sharp dissection that may denude the epithelium predisposing to stump devascularization. Hence, a stapled BC should remain part of the thoracic surgeon’s armamentarium for the higher risk right-sided pneumonectomy. Despite meticulous surgical techniques, however, in a subset of high-risk patients including those with neoadjuvant chemoradiotherapy, a BPF may be inevitable even with prophylactic measures in place regardless whether a stapled or manual BC is performed.

References


eComment: Post pneumonectomy bronchopleural fistula: Is it the closure technique or the operative side that really matters?

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We read with interest Uçvet et al.’s report regarding bronchial closure (BC) to minimise postlung resection bronchopleural fistula (BPF) [1]. The authors conclude that a manual BC is preferable to mechanical stapling in risky patients (such as right pneumonectomy resections). This recommendation is presumably based on their overall BPF incidence of 5% (21/421) in the stapled group vs. 1.5% (3/204) in the manual group (P<0.04). However, in the pneumonectomy subgroup (n=206 patients) performed primarily for malignancy, the BPF incidence was 10.2% (17.4% for a right pneumonectomy vs. 5% for the left side). The percentage of stapled BC was similar irrespective of the side (right pneumonectomy (n=86 patients): 67 stapled BC (78%) vs. 19 manual BC and similarly left pneumonectomy (n=120 patients): 94 stapled BC (78%) vs. 26 manual BC). Hence, it is difficult to conclude that a manual BC offers any significant advantage in this patient subgroup.

It has long been recognized that a right pneumonectomy carries a higher BPF risk and may have confounded this study’s findings. It would be useful to know how many of the 15 right pneumonectomy patients (15/86) who developed a BPF had a manual BC and, similarly, which of the six left pneumonectomy patients (6/120) who developed a BPF had a manual BC. Indeed from their multivariate logistic regression analysis, technique of BC was not an independent risk predictor for development of a BPF.

The relative merits of sutured vs. stapled BC remains a contentious issue as thoracic surgeons seek to prevent the much dreaded postresection BPF. Numerous clinical studies suggest superiority of a stapled BC over a hand-sown manual BC [2]. Advantages include a more rapid closure with less soiling of the operative field although this is less important for non-infective pathology like lung cancer. Several randomized laboratory animal studies with histological analysis (of the bronchial stump) have demonstrated equivalence of either BC technique in terms of avoidance of BPF and resistance to pressure of the stump [3]. The authors observed that additional applications including glue, muscle flaps and suturing to support the stapled BC stump in high-risk patients did not confer any significant benefit. However, use of vascularized tissue such as a pedicled latissimus dorsi muscle flap or pericardial flap is highly effective in preventing postpneumonectomy BPF [4, 5]. In our opinion prophylactic interventions with viable biological tissues should be considered in high-risk patients.

If performed competently, the actual BC technique is less important, provided general surgical principles are adhered to. This includes achieving clear oncological resection margins, not leaving too long a stump, especially on the right side, and avoiding excessive diathermy or sharp dissection that may denude the epithelium predisposing to stump devascularization. Hence, a stapled BC should remain part of the thoracic surgeon’s armamentarium for the higher risk right-sided pneumonectomy. Despite meticulous surgical techniques, however, in a subset of high-risk patients including those with neoadjuvant chemoradiotherapy, a BPF may be inevitable even with prophylactic measures in place regardless whether a stapled or manual BC is performed.

References


