We read with interest the article by Andreotti et al. regarding the treatment of post-
pneumonectomy bronchopleural fistula (PPBPF) by self-expandable stent and we agree that this modality can be in the armamentarium of cardiothoracic surgeons [1].

PPBPF is one of the most serious and lethal complications in thoracic surgery. There are well-known predisposing factors related to this devastating postoperative complication such as extensive bronchial devascularization, right-sided pneumonectomy, long residual bronchial stump, neoadjuvant or adjuvant chemotherapy, regional radiotherapy, diabetes mellitus, steroid therapy, prolonged mechanical ventilation, history of smoking, pre-existing empyema, incomplete resection of cancer at the bronchial margins, decreased albumin levels (less than 3.5 mg/dL), male gender, and technique of bronchial stump closure [2, 3].

From the beginning of thoracic surgery, many different methods have been used to prevent the development of PPBPF [2, 3]. Pedicled pericardial flap or pericardial fat pad, pleura, intercostal muscle, diaphragm, and aygos vein (for right pneumonectomy) have been used as an additional coverage of bronchial stump wound with very good results [2, 3].

Brewer et al. in 1953 were the first ones who reported on their experimental and clinical work on the use of pedicled pericardial fat graft for reinforcement of bronchial closure in patients with pulmonary resection [4].

Taghavi et al. in 2005, in their retrospective study of 96 patients who underwent pneumonectomy (89.2% for primary lung cancer) and had covered bronchial stump with a pedicled pericardial flap, did not notice any evidence of PPBPF during the perioperative and postoperative period (mean follow up 15 ± 21.2 months) [2].

Sfyridis et al. in 2007, in their prospective randomised trial of 70 patients with diabetes mellitus who underwent pneumonectomy and were randomised to have their bronchial stump covered with an intercostal muscle flap or not; found that the group with the covered bronchial stump had a lower incidence of PPBPF (0% versus 8.8%; p = 0.02) and of empyema (0% versus 7.4%; p = 0.05) compared with the group not covered, at a mean follow-up of 18 ± 9.2 months [3].

Endobronchial valves have also been used to good effect in patients with persistent pulmonary air leaks (refractory to other therapy) secondary to alveolopleural fistula and to bronchopleural fistula as well [5].

In conclusion, in high risk patients the consideration of an effective method for covered bronchial stump for the prevention of the development of PPBFL is very important. Therefore, the multidisciplinary approach for the ideal treatment of patients with PPBPF should be on an individual basis and is of paramount importance.

Conflict of Interest: None declared

References

eComment. Post-pneumonectomy empyema with bronchopleural fistula

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In this article by Andreotti and colleagues [1], the authors described a modification in the implantation of a tracheobronchial stent to exclude a bronchopleural fistula (BP) by anchoring it to the tracheal mucosal surface using titanium helical fasteners. The conical-shaped, fully-covered and self-expandable stent (Tracheobronxane Silmet, Novatech SA, France) was successfully used in six patients with post-pneumonectomy BP. Early identification of the BP and urgent (within few hours of fistula occurrence) endoscopic implantation and anchoring of the Silmet stent ensured excellent results in all patients without distal migration of the stent.

What is remarkable in their report is that none of their patients presented with empyema. We would like to ask the authors if they are disposed to implanting the Silmet stent in patients with post-pneumonectomy empyema?

Traditionally in the case of post-pneumonectomy empyema, the BP must be debried and the bronchial stump closed and reinforced by an intrathoracic transposition of omentum or muscle flaps [2]. However, isolation of the hilar element and identification of the fistula could be difficult due to mediastinal edema and fibrosis. In the latter case, surgical management consists of an open window thoracotomy and involves daily changes of the intracavitary wound dressings over a long period of time.

Negative pressure wound therapy (NPWT) such as the vacuum assisted closure (VAC) therapy device (KCI Inc, San Antonio, TX) has been adopted as an alternative method to classic wound dressings, owing to the accelerated wound healing process [3]. VAC promotes healing through the enhancement of granulation tissue formation, the removal of exudates and oedema, increased tissue perfusion and oxygenation, and wound volume reduction [4]. One major drawback in the application of VAC therapy in the thoracic cavity is the presence of air leaks. To ensure adequate functioning of the VAC system placed inside the chest, the deployment of the Silmet stent in case of a large fistula is an appropriate technique to stop air leaks.

Passera et al. [5] recently published a case report concerning a patient with a large bronchopleural fistula and empyema. The surgical strategy consisted of an open window thoracotomy, surgical debriement of the bronchial stump and the deployment of an Amplatzer septal occluder device (AGA Medical Corp, Plymouth, MN) to close the BP. Thereafter, the thoracotomy rapidly and spontaneously closed with VAC therapy.

The combination of endoscopic occlusion of the PBF in the setting of post-pneumonectomy empyema (by using the Silmet stent plus anchoring system or Amplatzer septal occluder device) and application of VAC therapy through the open window thoracotomy seems not only to be safe and effective but also appears to accelerate the healing process and reduce the hospital stay. Future studies with larger numbers of patients will be required to validate the efficacy of the procedure and to draw definitive conclusions.

Conflict of Interest: None declared

References

Replay. Re: Post-pneumonectomy bronchopleural fistula: covered metallic stent or Amplatzer occluder

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I read with interest the eComment by Nosotti et al. [1] on our article [2]. I do not know the Amplatzer occluder directly, but I am absolutely convinced about the use of minimally-invasive approaches to treat bronchopleural fistulas (BPFs), where possible. I use silver-human albumin complex to treat small BPFs (5 mm in diameter), but the result is not immediate because local granulation begins after 48 h. Instead, I get an immediate stop of the air leak with a fully-covered, self-expandable stent. The time saved makes a difference.

Conflict of Interest: None declared

References


