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 pneumo-
ectomy, long residual bronchial stump, neoaortquist or adjacent chemotherapy, re-
gional 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]. Pedi.ced pericardial flap or pericardial 
fat pad, pleura, intercostal muscle, diaphragm, and azygos vein (for right pneumo-
ectomy) 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 bron-
chial 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 persist-
ent pulmonary air leaks (refractory to other therapy) secondary to alveolectomy 
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 PBPF should be on an individual basis and is of paramount 
importance.

Conflict of Interest: None declared

References
Venuta F, Rendina EA. Effective treatment of post-pneumonectomy broncho-
pleural fistula by conical fully covered self-expandable stent. Interact CardioVasc 
Bronchial stump coverage with a pedicled pericardial flap: an effective method 
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tion: a clinical and experimental study using a pedicled pericardial fat graft 
[5] Jenkins M, Vaughan P, Place D, Kornaszewska M. Endobronchial valve migra-

eReply. 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 diam-
eter), 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-expand-
able stent. The time saved makes a difference.

Conflict of Interest: None declared

References
bronchopleural fistula: covered metallic stent or Amplatzer occluder? Interact 
Venuta F, Rendina ER. Effective treatment of post-pneumonectomy broncho-
pleural fistula by conical fully covered self-expandable stent. Interact CardioVasc 

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 
(PBF) 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-pneu-
omonectomy PBF. Early identification of the BPF 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 BPF must be deb-
ried and the bronchial stump closed and reinforced by an intrathoracic transposition 
of omentum or muscle flaps [2]. However, isolation of the hilar element and identifica-
tion 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 intra cavity 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 func-
tioning 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 debridement of the bronchial stump and the 
deployment of an Amplatz septal occluder device (AGA Medical Corp, Plymouth, 
MN) to close the BPF. Thereafter, the thoracotomy rapidly and spontaneously 
closed with VAC therapy.

The combination of endoscopic occlusion of the PBF in the setting of post-pneu-
omonectomy empyema (by using the Silmet stent plus anchoring system or 
Amplatz 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
Venuta F, Rendina EA. Effective treatment of post-pneumonectomy


