

=Abstract=

## Interventional Management of Malignant Esophagorespiratory Fistula and Bronchopleural Fistula

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Malignant esophagorespiratory fistula is a devastating and life-threatening complication of esophageal and bronchogenic carcinomas. As a non-surgical treatment, peroral stent placement into the esophagus or airway can close-off the fistula and prevent progression of the pneumonia. Although reopening of the fistula is not uncommon despite stent placement, interventional treatment is effective for sealing off reopened ERFs. Bronchopleural fistula is a well-recognized complication of pneumonectomy. There have been several reports to occlude the fistula with use of stents and much more experience is required.

ERF) (esophagorespiratory fistula, ERF . Operative mortality가 13~45% . excluded esophagus disruption . 5~15% , anasto- motic leakage가 . 1% ERF가 Seto gastric tube . ERF esophagotra- esophageal bypass cardiostomy 4 cheal fistula esophagobronchial fistula 가 esophagopulmonary fistula .) .) . ( ) . ERF . 1990 rigid plastic pro- . 가 stheses 가 , , fistula , tube dislodgment / migration . 1993 covered expand- . 가 able metallic stent 가 .) .) . ERF가 가

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CT 가 fistula . 3 CT (carina) ERF esophagotracheal or esophagobronchial fistula, esophagopulmonary fistula, esophagopleural fistula, Esophagotracheobronchial fistula ERF 85 - 95% 3-11%가 esophagopulmonary fistula, 1-2%가 esophagopleural fistula esophagotracheobronchial fistula esophagopulmonary fistula ERF bronchopleural fistula

18mm (fistula가 16mm ).

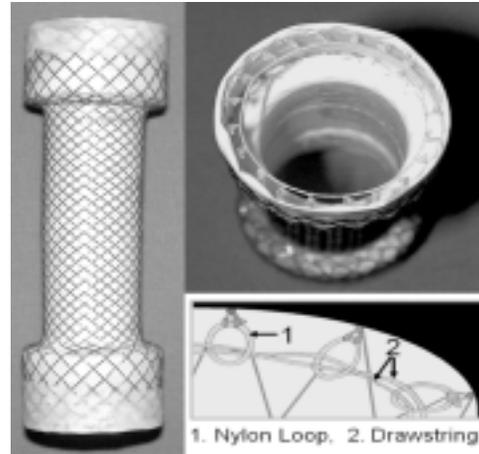


Fig. 1. Covered retrievable expandable metallic esophageal stent. 18-mm diameter stent is used for the esophagorespiratory fistula (ERF) closure. To make the stent removable, a nylon loop is hooked inside each bend of the proximal end of the stent and then two nylon drawstrings are passed through each of the loops

### . Esophagotracheobronchial Fistula

Conventional unexpandable plastic plastic prostheses , , , tube dislodgment / migration, tube 15 - 40% 가 3) 1990 covered expandable metallic stent가 ERF 67 - 100% ERF . 2), 4-8) 61 가 , fistula , fistula , 2) poly-urethane or PTFE (polytetrafluoroethylene) 가 (Fig. 1), . Fistula가

61 49 (80%) fistula (initial clinical success) (Fig. 2). 12 (20%) ERF (initial clinical failure). fistula initial clinical success 49 17 (35%) (Fig. 3). 17 (food impaction 8 fistula (Fig. 3). 61 13.4 fistula가 initial clinical success 가 initial clinical failure



Fig. 2. Esophageal cancer with development of esophagobronchial fistula. Covered expandable metallic stent (18mm in diameter) was inserted to dilate the stricture and occlude the fistula.

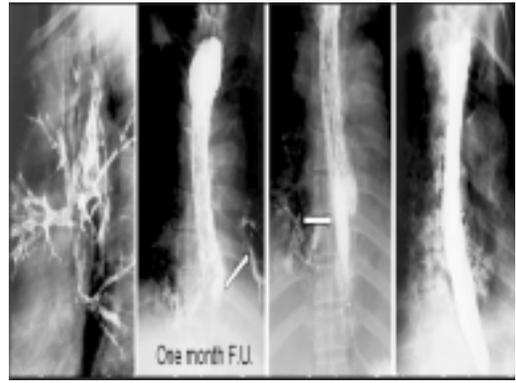


Fig. 3. Reopening of the esophagotracheal fistula. Esophageal stent was inserted for the fistula. However, reopening due to food impaction occurred one month later. To-and-fro movement of the inflated balloon was done to cleanse the stent.

(15.1 vs. 6.2 weeks) fistula

가 가

가 food impaction, granulation tissue formation

ERF가

(Fig. 4).

,<sup>2)</sup>

,<sup>3)</sup>

,<sup>4)</sup>

(Fig. 5).

ERF 가

Fistula가

가

fistula 가

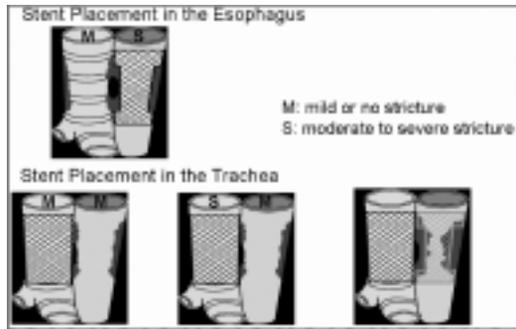
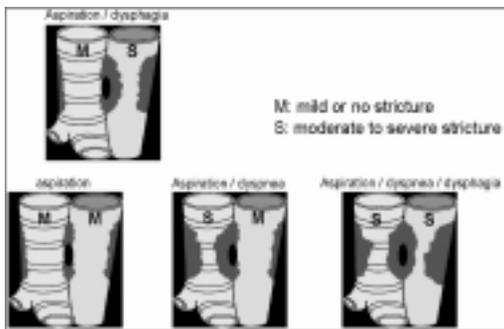


Fig. 4. Determination of stenting area in cases of ERF. Left one is before stenting. Right one is after stenting.

2~3  
가  
esophagotracheobronchial fistula  
covered metallic stent initial clinical  
success rate가 80%  
가  
ERF



Fig. 5. Simultaneous tracheal and esophageal stenting in a patient with hypopharynx cancer. Both trachea and esophagus were narrowed. Tracheal stent was inserted first, followed by esophagealstent. If esophageal stent had been inserted first, the patient would have suffered from tracheal compression before tracheal stent placement.

### . Esophagopulmonary Fistula

ERF 가 3 - 11%  
esophagopulmonary fistula  
. 9-11) Esophagopulmonary fistula  
가 esophagotracheobronchial fistula  
가 1), 2)  
20 14 esophagopul-  
monary fistula (su-  
bmitted data). 가 9 5  
12 가 fistula  
14

11  
12 fistula  
(86% clinical success) (Fig. 6), 2  
가 Clinical success 12  
2 fistula  
8cm 5.4cm

가 fistula  
가 가  
esophagopulmonary fistula  
가 가

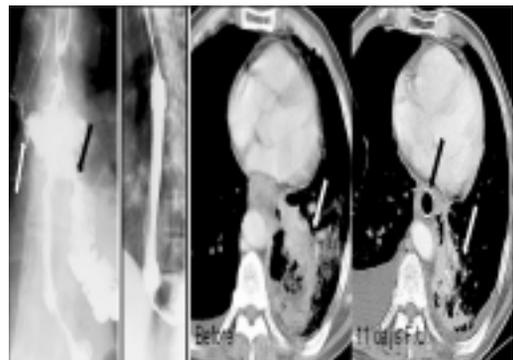


Fig. 6. Placement of a covered stent in a patient with esophago-bronchial (white arrow) and esophago-pulmonary (black arrow) fistulae. Stent placement was performed successfully with sealing of both fistulae. Follow-up CT scans shows much resolution of the abscess cavity in left lower lobe.

## Bronchopleural Fistula (BPF)

Bronchopleural fistula (BPF) esophagorespiratory fistula

가  
 BPF pleural space bronchial tree pulmonary resection  
 tion 1.5 - 28%  
 1), 3) 가  
 bronchial stump fistula ,  
 fistula 1), 3)

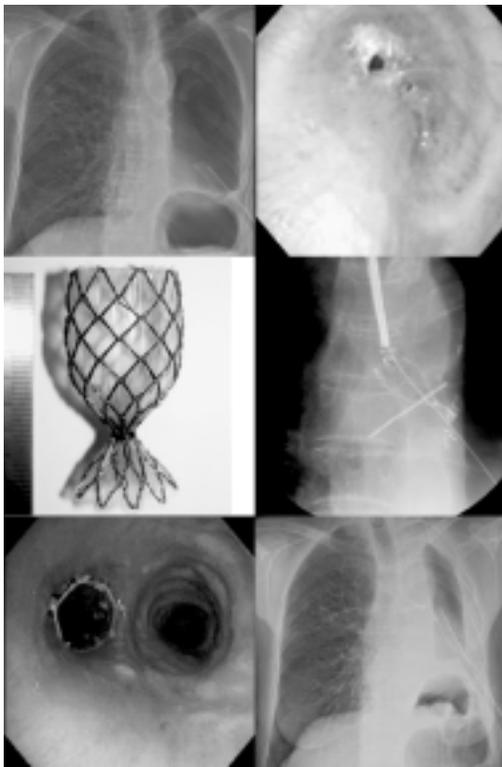


Fig. 7. Occluder stent was inserted to seal-off bronchopleural fistula (BPF) after left pneumonectomy. Two fistula orifices are seen on bronchoscopy. Occluder stent was deployed through the oral approach under fluoroscopic guidance. After stenting, bronchoscopy shows well-positioned stent. Four-month follow-up radiograph shows progressive obliteration of the left pleural space.

fibrin glue tissue adhesive,  
 coil  
 Expandable metallic stents<sup>14), 15)</sup> non-metallic stents  
<sup>16), 17)</sup> 가 bronchial stump가  
 bronchial stent-graft occluder plugged,  
 bullet-shaped, angled stent occluding stent  
 가<sup>18), 19)</sup>  
 Bronchial stent-graft occluder  
 Dacron graft  
<sup>18)</sup> Plugged, bullet-shaped, angled stent  
 hinge tracheal part bronchial part  
 가 bronchial part  
 polyethylene  
 bronchial stump fistula 가 6  
 5 (83%)<sup>19)</sup> bronchial  
 stump가 BPF  
 occluder stent (Fig. 7).

가  
 ERF BPF  
 가 가  
 가 가  
 가

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