

Fixing a Rare Complication: Broncho-Esophageal Fistula from Squamous Cell Carcinoma

by Scott Harrison, Neil R. Sharma

INTRODUCTION

The development of an airway-esophageal fistula (AEF) in advanced esophageal or lung cancers, though rare, is a dangerously debilitating condition. Patients undergoing radiation or chemotherapy treatment may also secondarily develop AEF. These fistula may lead to poor nutrition, deterioration of the airway and pulmonary sepsis, threatening patient survival and inevitably diminishing quality of life.¹ The mean survival in patients with supportive management alone has been reported to be one to six weeks, demonstrating the need for a viable treatment.²

Repair of the AEF is difficult, however, stent placement in the airway via bronchoscopy, esophageal stent placement using endoscopy guided by fluoroscopy, or both have been effective in restoring the patency of the upper GI tract. The use of self-expanding metallic stents (SEMS) has improved patient outcomes and self-reported quality of life when compared to the formerly used plastic and silicone stents.³ It is unclear whether

combined stent placement provides better outcomes than the single esophageal or airway stent; however, current limited data suggests no advantage for one approach over the other. This report will discuss the case of a patient who had developed an AEF after tumor dehiscence, and the following treatment with combined SEMS placement.

Case Report

A 57-year-old male patient presented with a six-month history of esophagitis and dysphagia, which initially was only to solids. The patient had recently developed coughing and unintentional weight loss of approximately 25 pounds. The medical history of the patient included hypertension and a long history of tobacco and alcohol abuse.

Initial chest computed tomography (CT) performed in October revealed a mass in the subcarinal region protruding to the left, occluding the bronchus and extending two cm into the left lower lobe. Subsequent bronchoscopy showed near complete occlusion of the left lower lobe bronchus and biopsy was consistent with non-keratinizing squamous cell carcinoma. Upper gastrointestinal (GI) fluoroscopy study

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exhibited dilation of the proximal esophagus with an apple-core lesion identified at the level of the carina. Esophagogastroduodenoscopy (EGD) with biopsy of the esophageal lesion was consistent with squamous cell carcinoma – upper GI primary. Endoscopic ultrasound was performed for staging and helped to define the anatomy. Subsequent self-expanding metal stents were placed in the esophagus and left bronchi, permitting closure of the esophago-pulmonary fistula. The patient went on to receive chemotherapy and radiation. He is alive more than a year-and-a-half since the diagnosis.

Discussion

The first effective treatment for AEF was surgical bypass using either the stomach or colon to substitute for the esophagus.⁴ Despite relative success, few patients were eligible to undergo such a major surgery and the procedure often incurred severe complications. Hence, esophageal intubation developed as a less invasive option. Prior to the advent of endoscopy, intubation involved manual insertion of the prosthesis, however, serious complications such as perforation of the esophagus and hemorrhaging limited its use.⁵

Modern advanced interventional endoscopy has enabled the precise placement of esophageal and bronchial stents, while reducing complications in the treatment of AEF.² After stent insertion, there is immediate relief of dysphagia and odynophagia and termination of airway-ablating aspiration. Although plastic or silicone stents have been used in years past, self-expanding metallic stents (SEMS) have become the gold standard as they provide a better seal for large defects, experience a lower rate of migration and demonstrate a greater increase in post-operative quality of life.⁶

Depending on the individual case, stent placement may be in the esophagus, airway or both. The location of stenosis is an important consideration when placing a stent, such that the stent will not only seal the AEF, but also relieve stricture-associated symptoms.⁶ Deployment of an esophageal stent may be at a location that compromises the adjacent trachea, obstructing ventilation. Thus, an initial stent should be placed in the trachea so as to resist compression from the esophageal stent.⁷ Combined stenting is invariably indicated when fistula closure with the single stent proves unsuccessful, however, recent evidence has suggested the potential for combined stenting as the gold standard in all AEF cases.³

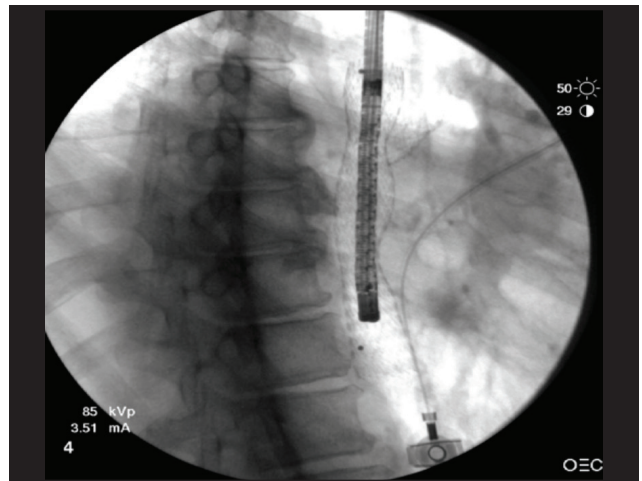


Figure 1. Fluoroscopy of esophageal stent relieving stricture

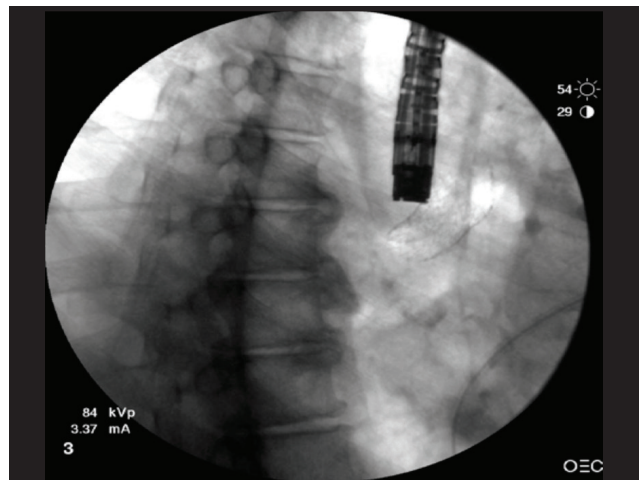


Figure 2. Fluoroscopy of left bronchial stent

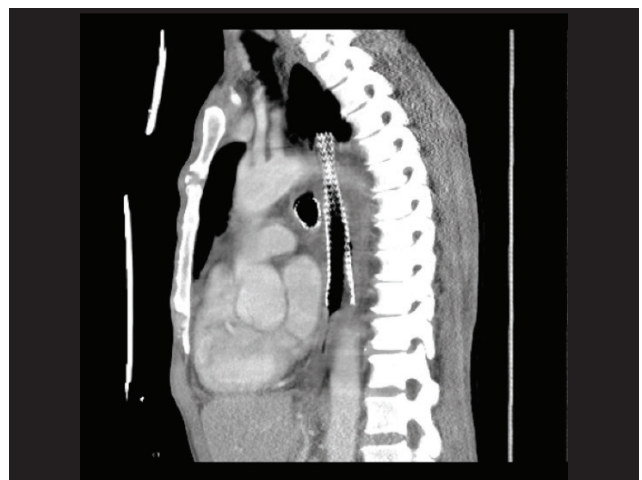


Figure 3. Dual Stent insertion

A CASE REPORT

Whether the placement of the SEMS in the airway, esophagus or both is advantageous is currently unresolved. Several studies have found the placement of a single stent to encounter higher incidences of initial failure to seal the defect, as well as more frequent reopening of the fistula.⁴ The drawbacks of the single stent have led to the implementation of combined airway-esophageal stenting. Although combined stenting has curbed the rates of initial failure and subsequent reopening, more stent-related complications have been reported, such as vascular erosion.⁸

In conclusion, we report a case of esophageal carcinoma with subsequent development of an airway-esophageal fistula. Self-expanding metal stents were placed in the esophagus and left bronchus, relieving the patient of his dysphagia and effectively sealing the fistulization. ■

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