Metal stenting for caustic esophageal injury with bronchoesophageal fistula



A 68-year-old woman presented after intentional ingestion of a pH 11 caustic solution (sodium hypochlorite and sodium hydroxide). Urgent gastroscopy showed severe distal esophageal stricturing with Zargar IIA injury [1] that could not be traversed with a standard gastroscope (**Fig.1**). A computed tomography (CT) scan did not show evidence of esophageal perforation.

She required a long period in intensive care complicated by deconditioning and pneumonia. Repeat gastroscopy showed fibrotic stricturing with a 4-mm lumen. Sequential dilatation was performed to 6-8 mm with a dilating balloon over guidewire under fluoroscopic control. A small locule of extraluminal gas was noted on a CT to investigate post-procedure pain. This was managed nonoperatively. The clinical course was complicated by difficulty managing oral secretions. A progress gastroscopy 2 months later showed persistent stricturing with pus seen in the lumen (> Video 1). Acute hypercapnia was noted on capnography. Intraprocedural contrast injection demonstrated a bronchoesophageal fistula into the left main bronchus (> Fig. 2).

A multidisciplinary team meeting decision was made for delayed esophagectomy once sepsis and nutritional status were optimized. To attempt to seal the fistula as a bridge to surgery and given the severity of the stricture, a decision was made to place a 10-mm×80-mm partially covered biliary stent (WallFlex, Boston Scientific, Massachusetts, USA) as the narrow lumen would reduce the risk of perforation or airway compression on stent expansion and the partially covered ends would reduce the risk of migration and leakage around the stent flanges. This was deployed under endoscopic and fluoroscopic guidance. Contrast injection confirmed no further contrast leakage into the bronchus. Following stent placement there was improvement in respiratory sepsis. Owing



Fig. 1 a, b Initial endoscopic images after caustic injury in keeping with Zargar IIA injury.



Video 1 Metal stenting for caustic esophageal injury with bronchoesophageal fistula.

to the ongoing inability to swallow secretions, a second partially covered biliary stent (10 mm × 60 mm) was placed distally to cross the gastroesophageal junction (► Fig. 3). After insertion of the second self-expanding metal stent (SEMS), there was clinical improvement to the point where the surgical risk was deemed acceptable. However, the patient declined esophagectomy. At the 6-month follow-up, the patient's clinical condition was stable. Intentional caustic injuries are increasing in adults [2]. Bronchoesophageal fistulae are a recognized but rare complication [3, 4]. Fully and partially covered SEMSs have been utilized for post-operative leaks and fistulae in the upper gastrointestinal tract [5], but the use of a partially covered biliary SEMS to manage a bronchoesophageal fistula after caustic injury has not been previously described. Esophagectomy, especially in the setting of a bronchoesophageal fistula, is a highrisk surgical intervention. Optimization



Fig.2 Progress endoscopy. **a** Pus evident in narrowed esophageal lumen. **b** Fluoroscopic image showing contrast drainage into the left main bronchus.



► Fig. 3 Fluoroscopic image of metal stent and contrast passage into gastric lumen after stent insertion.

of patient factors such as sepsis and malnutrition are critical to achieve a good outcome. In this case of a high grade esophageal stricture and bronchoesophageal fistula, the use of two partially covered biliary SEMSs to improve esophageal patency and seal the fistula proved effective in allowing the patient's condition to improve sufficiently to allow definitive surgery. A narrow-caliber stent was used due to concerns of potential esophageal perforation or airway compression on stent expansion owing to severe esophageal stenosis and airway involvement. A narrow-caliber SEMS may be useful to manage esophageal strictures with fistulae, at least as a bridge to operative management in the setting of complex esophageal caustic injuries, and their use should be considered in these difficult clinical situations.

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Competing Interest

The authors declare that they have no conflict of interest.

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