A tale of three stents: aortic stenting prior to oesophagectomy after oesophageal stents

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ABSTRACT

The use of endoluminal stents to treat anastomotic leaks post oesophagogastric resection remains controversial. While some advocate stents to expedite recovery, others advise caution due to the risk of major morbidity and mortality. We describe a case of anastomotic leak following total gastrectomy for adenocarcinoma treated with a self-expanding metallic stent. Complications with the initial stent were treated with a further stent, which compromised the function of the oesophagus and eroded into the aorta, necessitating a colonic reconstruction and endovascular aortic stenting.

KEYWORDS

Oesophagectomy – Gastrectomy – Anastomotic leak – Self-expanding metallic stents – Aortic stents

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Case history

A 71-year-old woman who had been treated with a total gastrectomy and roux-en-Y reconstruction for a proximal gastric adenocarcinoma at another institution developed a postoperative anastomotic leak at the oesphagojejunal anastomosis. This was treated by stent placement across the anastomosis to expedite control of the leak. A check oesophagogastrroduodenoscopy was carried out six weeks post-stent placement and significant tissue in-growth and hyperplasia were noted.

Subsequently, the patient developed dysphagia and required several dilatations but definitive luminal patency could not be achieved. This compromised her nutritional status and the patient sought advice from a further institution, where a second stent was placed to try to maintain the oesophageal lumen. This led to development of a subsequent stricture, which required further dilatations to allow oral intake. She was referred to our institution at this point. After further dilatations, the patient was counselled as to treatment options and a nasoenteric feeding tube placed to try to optimise her nutritional status.

During the period of optimization, the patient was admitted at her original treatment institution with an upper gastrointestinal bleed. After being stabilised, she was transferred back to our care. Computed tomography (CT), now eight months after the placement of the second stent, indicated that the stent had eroded into the adventitia of the aortic wall (Fig 1) and a diagnosis of an aorto-oesophageal fistula was made. An endoscopy was performed, which revealed a cavitating necrotic lesion.

After discussion with vascular surgeons, an endovascular stent was placed in the thoracic aorta and the patient was consented for a thoraco-abdominal exploration of her abdomen and chest with a view to excising the oesophageal stents and to attempt reconstruction.

A left thoracoabdominal procedure was carried out. Intraoperative findings were of a hostile abdomen with dense adhesions and both oesophageal stents lying outwith the lumen of the gastrointestinal tract (Fig 2). Further, there was a section of the descending thoracic aorta that had no wall, with the endovascular stent being clearly visible once the anastomotic area and the oesophagus had been mobilised. A bovine pericardial patch was placed over the endovascular stent and the oesophagus was divided high in the chest (Fig 3). A retrosternal colonic interposition was fashioned with an oesophagocolonic anastomosis just distal to cricopharyngeus in the chest and a distal colojejunal anastomosis in the abdomen as part of a roux-en-Y reconstruction.

The patient was fed jejunally in the postoperative course and slowly increased oral intake. She was discharged three weeks postoperatively.

Discussion

This case demonstrates a series of interventions which led to a requirement for major reconstructive surgery. The use of stents for treatment of anastomotic leaks remains controversial. While some have shown their use for perforations or leaks to be effective and safe,¹ others have demonstrated that both morbidity and a risk of mortality exists with their use.

Figure 1 Computed tomography with contrast: axial section showing oesophagus eroded into wall of aorta

Figure 2 Oesophageal stent and inflammatory mass resection

Management of anastomotic leaks effectively relies on early detection and prompt commencement of treatment. CT, contrast swallows and endoscopy are all important components for evaluating the nature of the leak. Timely diagnosis reduces the risk of localised contamination, which may necessitate surgical intervention.² Management involves the use of antibiotics and antifungals, appropriate drainage and ensuring nutritional support – which should ideally be enteral.

While the endoscopic management of oesophageal anastomotic leaks and perforations with the use of oesophageal stents is technically feasible, it is not without risk and stenting post-anastomotic leak using partially covered self-expanding metal stents (SEMS) does not represent a

Figure 3 Photographs showing aorto-oesophageal fistula with underlying Dacron endovascular aneurysm repair graft and subsequent bovine graft

licensed use. SEMS are used in this scenario as they anchor better to the oesophageal wall and reduce the incidence of migration but, if used incorrectly, they can cause significant morbidity and mortality, which is why timely removal of a partially covered SEMS is imperative. It has been suggested in the literature that removal of SEMs used for post-anastomotic leaks should not exceed two weeks, given the propensity for ingrowth of hyperplastic oesophageal tissues.¹

The patient's second stent was used for dysphagia secondary to stricture formation. The use of stenting for oesophageal strictures is a well-established practice. It has been over 20 years since Knyrim *et al.* demonstrated the efficacy of SEMS in malignant strictures.³ However, there are few data on the uses of SEMS in patients with benign disease. The European Society of Gastrointestinal Endoscopy (ESGE) recommends against the use of SEMs as first-line therapy for the management of benign oesophageal strictures because of the potential for adverse events.⁴ In this case, the second stent was responsible for causing more proximal tissue overgrowth, which compromised the oesophageal lumen and eroded in the aorta, placing the patient at risk of a massive haemorrhage due to an aortoenteric fistula.

The ESGE suggests that fully covered SEMS be preferred over partially covered SEMS for the treatment of refractory benign oesophageal strictures, because of their lack of embedment and ease of removal.⁴ Aorto-oesophageal fistula is a very rare complication and has thus far only been anecdotally reported in the context of stenting for anastomotic leak.⁵ In a retrospective study of endoscopic stent implantation, which investigated whether stent implantation increases the incidence of aorto-oesophageal fistula by erosion, there was a surprisingly high rate of aorto-oesophageal fistulae formed.⁵ This suggests that thus far it is underreported in the literature and is an area requiring further research. In this study of 25 patients who had post-surgical anastomotic leak, 17 were managed by SEMS insertion. Of this group, three developed aorto-oesophageal fistulae and all died.

This case illustrates the very real risks that exist with oesophageal stenting and the high level of morbidity and potential risk of mortality that exists with their indiscriminate use. We would not advocate the use of stents routinely for management of anastomotic leaks and would urge

caution in their benign use and, when used in this setting, timely removal of stents if they are of paramount importance.

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