Intragastric laparoscopy for oesophageal eroded mesh removal: An approach to avoid resection

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Abstract

The augmentation of hiatal repair for large hiatus hernia with mesh is controversial. There is some evidence that recurrence rates are less with mesh repair; however, there is a risk of mesh erosion. Complicated erosion may require complex revisional surgery and oesophago gastric resection. We present a novel approach to the treatment of oesophageal mesh erosion, by utilising a combined approach of endoscopy and intragastric laparoscopy. The symptomatic relief from this procedure may obviate the need for foregut resection in some patients.

Keywords: Hiatal hernia repair, mesh erosion, minimally invasive surgery, transgastric laparoscopy

INTRODUCTION

The use of prosthetic mesh to augment the repair of large hiatal defects is widespread, despite the risk of complications such as erosion and stricture. Erosion may lead to foregut obstruction or pain. If erosion is complete, mesh may be retrieved endoscopically. However, symptomatic erosion often requires partial or complete mesh explantation and in cases where a portion of mesh remains fixed to the hiatal muscle resulting in partial erosion, foregut resection may be necessary. Reoperative transabdominal surgery either laparoscopic or open may be complex, particularly in the presence of dense adhesions or partial erosion.

We describe a case of symptomatic partial mesh erosion in which difficult hiatal dissection and potential resection was avoided by combining endoscopy with intragastric laparoscopy to remove intraluminal mesh.

CASE REPORT

A 72-year-old female patient was referred to our unit having undergone complicated laparoscopic mesh repair of a large hiatal defect. A polyester composite mesh was fixed to the diaphragm using polyester sutures. Postoperatively, the patient developed an oesophageal leak with mediastinitis and pleural empyema. This required referral to another institution for oesophageal stenting, pleural lavage and decortication.

At follow-up, the patient complained of significant dysphagia and progressive post-prandial vomiting. A gastroscopy, performed 9 months postoperatively, revealed a distal oesophageal stricture with significant inflammatory change, associated with intraluminal foreign material suggestive of mesh. A computed tomography...
was performed and confirmed no recurrence of hiatus hernia but showed some mild thickening of the gastro-oesophageal junction.

Ten months following the patient’s original surgery, she was referred to our institution for ongoing care. We were able to ameliorate the patient’s symptoms temporarily with bougie dilatation and partial endoscopic mesh retrieval; but, following symptom relapse, the decision was made to attempt removal via intragastric laparoscopy.

At operation, a laparoscopy was performed, and a 12-mm camera port and two 5-mm balloon ports were introduced transperitoneally into the gastric lumen [Figure 1]. An endoscopy was performed, and an endoscopic snare was used to grasp the mesh. It was then delivered from the oesophageal lumen into the gastric lumen, where laparoscopic forceps could grasp it [Figure 2]. The mesh was trimmed using laparoscopic scissors, back to the oesophageal mucosa. The mesh was retrieved endoscopically.

Post-operative barium swallow was normal and the patient was resumed on oral intake. Symptomatic relief was immediate, and the patient was tolerating all foods including bread and meat. The post-operative course was complicated by minor port site wound infection.

At most recent follow-up, 3 years postoperatively, imaging has revealed a recurrent hiatal defect. The patient does experience some mild epigastric discomfort but is able to tolerate small meals, and no further intervention has been required to date.

**DISCUSSION**

Two recent meta-analyses and systematic reviews\(^1\,\text{to}\,2\) have shown a very low complication rate of 1.9% for mesh hial repair. Even with this low rate, serious adverse events are known to occur. A pooled institutional 28-case series published by Stadlhuber et al.\(^3\) in 2009 makes for sobering reading with nine patients requiring foregut resection.

The technique we employed has been described for eroded mesh in the case of a 12-year-old child.\(^4\) In this case report, the mesh was trimmed using a laparoscopic energy device. The combined transgastric endoluminal approach is also well described for the resection of benign foregut tumours, in particular gastrointestinal stromal tumours as well as resection of duodenal polyps. It was first described by Ohashi\(^5\) in 1995 and since then has been used in over 100 reported cases.\(^6\)

Previous reports have suggested that the mesh must be completely eroded and lying free in the lumen, before endoscopic removal. With the addition of intragastric laparoscopy, the advantage is that partially eroded mesh can be resected flush with the mucosa. Thus, the patient does not have to suffer a prolonged duration of symptoms or face the possibility of oesophagogastric resection. In our case, a successful symptomatic outcome was achieved without the need for open or resectional surgery.

This approach may be suitable for patients in whom partially eroded hiatal prosthesis is causing symptoms. In the event that further mesh erodes, the approach described above may be repeated.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.
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Conflicts of interest
There are no conflicts of interest.

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