Case report - Esophagus

Stricture caused by a plastic vascular clip used during an operation of minimally invasive esophagectomy

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Abstract

This article describes the case of a 62-year-old female who had had minimally invasive esophagectomy (Ivor–Lewis) for squamous cell carcinoma of the distal third of the esophagus. The anastomotic stenosis was accompanied by solid food dysphagia and the presence of a foreign body in the esophagus. The foreign body was fixed to the esophageal wall and could not be removed endoscopically. The patient was reoperated on through a 8 cm right thoracotomy. The anastomosis was reached via a gastrotomy, and the large-size plastic vascular clip was removed. The clip was primarily used to close the transected azygos vein, it was then incorporated into the esophageal anastomotic region and subsequently partially protruded into the lumen of the gastrointestinal tract. After removal of the clip, backward dilatation of the anastomosis was performed by Savary–Gilliard dilators, with restoration of its proper diameter.

Keywords: Anastomotic stenosis; Foreign body; Surgical repair; Vascular clip

1. Introduction

The risk of stricture after esophageal resection is estimated to be 10–56%. The incidence of stenosis may depend on the conduit chosen, the type of stapler (smaller and circular staplers show a worse result), the number of layers if hand-sewn, healing with scars, fistulas and inflammation around the anastomosis, and postoperative anastomotic leak [1].

To decrease the risk of stricture, it has been suggested that two linear staplers should be used for the anastomosis. However, this technique requires a longer proximal segment of the esophagus, which may not be feasible if the tumor is located in the cervical esophagus [2]. Recently, there has been an increased adoption of minimally invasive esophagectomy (MIE). The Ivor–Lewis MIE excludes hand-sewn anastomoses and utilizes either linear or circular staplers for gastroesophageal anastomosis, and clips or energy devices for vessel occlusion [3, 4]. The application of these instruments may, however, result in unusual complications.

2. Case report

A 62-year-old female with a 9 mm plaque of squamous cell carcinoma (SCC) in the distal third of the esophagus underwent Ivor–Lewis MIE (laparoscopy followed by thoracoscopy) on 27 May 2009. Using the stomach as the conduit, the gastroesophageal anastomosis was performed using a circular stapler (25 mm) at the level of the azygos vein. The azygos vein was ligated and divided with plastic locking clips (large size). The procedure included celiac trunk and posterior mediastinal lymphadenectomies. The postoperative course was uneventful, and pathological analysis demonstrated a SCC G2 pT2NoMo, stage Ila tumor.

Three months after surgery, the patient complained of dysphagia for solid foods. A barium esophagogram and esophagoscopy revealed a 5 mm anastomotic stenosis, which was treated twice with balloon dilatation. Two months later, the patient was found to have progressive dysphagia, now with a 4 mm anastomotic stricture. During esophagoscopy, a foreign body within the stricture was observed, which had not been present at the time of the first stricture episode. Due to strong fixation to the anastomotic wall, this could not be removed endoscopically (Fig. 1).

On 23 November 2009, six months after the esophagectomy, the patient underwent right thoracotomy for anastomotic revision. The massive scar surrounding the anastomosis was resected, and the plastic locking clip was removed from the lumen of the anastomosis through a small gastrotomy (Fig. 2). The pathological findings showed no signs of cancer recurrence, only inflammation and scarification around the vascular clip. The anastomosis was then dilated with the Savary–Gilliard dilators to a diameter of 16 mm. A reanastomosis was not performed, and the patient's postoperative course was uneventful.

3. Discussion

Dysphagia due to anastomotic stenosis after an esophageal resection usually appears a few months after surgery. The
majority of patients may be treated by dilatation, but some cases require operative revision [1].

In a group of 138 patients who underwent esophagectomy at our institution, only seven (5%) developed an anastomotic stenosis, two of whom required operative treatment. Stenosis was most frequent in the patients operated on with 25 mm circular staplers used for gastroesophageal anastomosis (four out of six patients). We have not used smaller stapler sizes.

In this case, the type and size of the stapler was adapted to the operative conditions and the esophageal diameter. Esophagoscopy and radiological contrast study performed after the first dilation did not reveal a fistula or features of a foreign body. The rapid recurrence of the stenosis was probably the result of the inflammatory process occurring around the anastomosis, which is most severe when ischemia of the conduit leads to necrosis [5].

In the current case, the inflammatory and scarring process resulted in the incorporation of the plastic clip used on the azygos vein into the wall of the anastomosis, with penetration into the lumen of the anastomosis. The degree of incorporation into the luminal wall prevented safe endoscopic removal of the clip, and effective correction of the stenosis was possible only after surgical resection of the constrictive scar and the vessel clip. With increasing use of MIE, in which staplers and vascular clips are routinely used, recognition of the possibility of the complication is important, and this treatment strategy may be effectively employed.

References