



Case report

Re-thoracoscopy for the management of gastric conduit dehiscence after minimally invasive McKeown esophagectomy

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ABSTRACT

Introduction and importance: Gastric conduit dehiscence after esophagectomy represents a severe complication associated with high mortality. Surgical management is achieved through thoracotomy, but often ends up in conduit sacrifice and diversion.

Case presentation: A 59-years-old man underwent minimally invasive McKeown esophagectomy for esophageal adenocarcinoma. After a worsening of the postoperative course and evidence at the CT scan and endoscopy of highly suspect gastric conduit failure, the patient underwent an exploratory thoracoscopy, which revealed a partial dehiscence of the gastric conduit treated with resection of the dehiscent gastric wall by a linear stapler on the guide of a 36-french orogastric tube. Patient had a regular postoperative course without any complications and was discharged on the 6th postoperative day.

Clinical discussion: The management of conduit necrosis is extremely challenging. There are several interventional options and it is difficult to decide the most appropriate treatment for each individual patient. In our case we decided to perform a reintervention with a thoracoscopic approach, resecting the dehiscent area of the gastric conduit.

Conclusions: Minimally invasive surgery is a valid option for the management of post-operative complications, including those in emergency setting. Re-suturing a partial dehiscence of gastric conduit may be feasible if tissue conditions allow.

1. Introduction

Esophageal cancer resections carry a high risk of major morbidity that ranges from 35 % to 60 % [1]. A severe complication is represented by gastric conduit failure, a condition where a variable length of the “neoesophagus” becomes critically ischemic, leading to local or global necrosis [2]. While simple anastomotic leaks can be managed conservatively, patients with conduit tip necrosis or complete conduit ischemia are managed by repeat thoracotomy and either refashioning of the conduit or take-down and cervical esophagostomy [3]. In this case report we present the management of this fearsome complication, describing some technical details and emphasizing the validity of minimally invasive surgery even in emergency situations.

This work has been reported in line with the SCARE criteria [4].

2. Presentation of case

A 59-years-old man underwent a minimally invasive McKeown esophagectomy for esophageal adenocarcinoma following neoadjuvant chemotherapy. The patient developed fever and high CRP levels on the fourth postoperative day, with highly suspect fluid for enteric material in the chest drain. The CT scan showed fluid collection and hydroaeric levels surrounding the gastric conduit 8 cm below the esophago-gastric anastomosis, which appear healed and in good conditions [Fig. 1]. Endoscopy showed an injury of the gastric wall below the anastomosis. Therefore, it was decided to perform an exploratory thoracoscopy (video), which revealed a disaster with extensive inflammatory tissue that made difficult to identify the structures involved. After the injection of methylene blue through a 36-french orogastric tube, a careful removal of the inflammatory material was carried out to isolate the gastric conduit; proceeding with this blunt detachment, there was the

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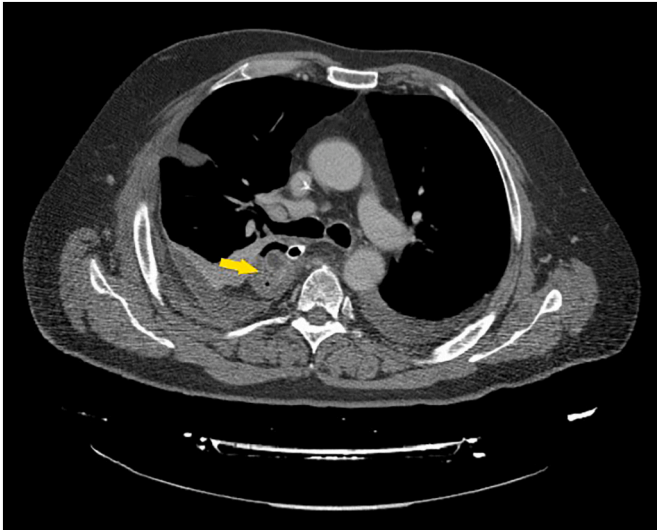


Fig. 1. Preoperative CT scan: fluid collection and hydroaeric levels surrounding the gastric conduit (yellow arrow) 8 cm below the esophago-gastric anastomosis. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

identification of a partial dehiscence of the gastric conduit, which through the orogastric tube was visible [Fig. 2]. The dehiscent area was approximately the length of a 60 mm, most likely related to the gastrotomy performed during the creation of the esophago-gastric anastomosis. The closure of the defect began performing a running barbed suture, evaluating the possibility of resecting the dehiscent gastric wall with a linear stapler, considering the healthy and vascularized tissue surrounding the dehiscent area, confirmed by the preoperative esophagoscopy and indocyanine green test. For this purpose, the suture was pulled upwards by the assistant to allow the operator to insert the stapler and perform the section, on the guide of the orogastric tube to avoid stenosis [Fig. 3]. The integrity of the staple line was checked with a new blue test, which was negative [Fig. 4]. Surgery lasted 90 min. Patient had a regular postoperative course without any complications and was discharged on the 6th postoperative day in good conditions and tolerance to oral feeding.

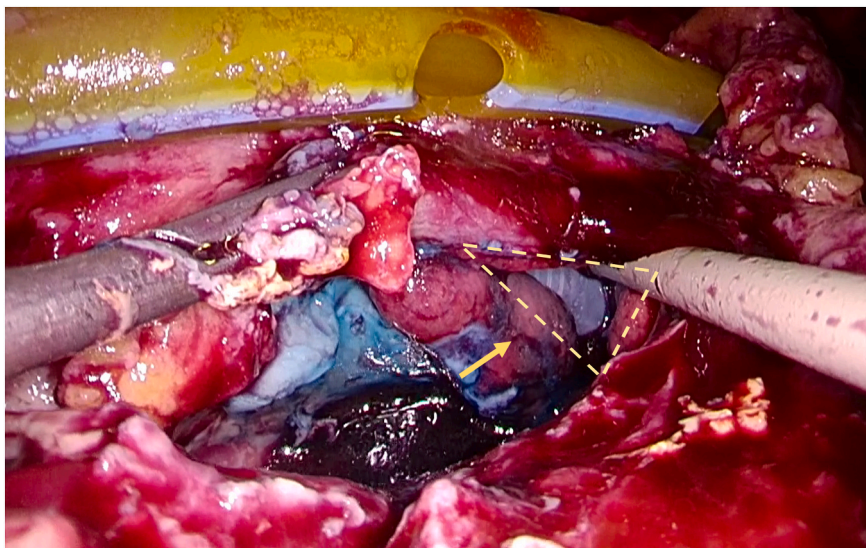


Fig. 2. Partial dehiscence of the gastric conduit, which through the orogastric tube is visible. The yellow arrow indicates the dehiscent area, delimited by the dotted line. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

3. Discussion

Despite improvements in esophageal cancer surgery, the management of conduit necrosis is extremely challenging. Mortality of gastric conduit necrosis has been reported to be as high as 90 % [5]. There are several interventional options and it is difficult to decide the most appropriate treatment for each individual patient [6].

Veeramootoo et al. [3] in 2009 classified gastric conduit necrosis after esophagectomy into three types: Type I is considered to be simple “anastomotic leak” without significant intramucosal necrosis. Type II is focal necrosis at the conduit tip which requires thoracotomy with resection and refashioning of the conduit. Type III is more extensive necrosis of the conduit requiring resection and delayed reconstruction.

Gastric conduit failure, as well as anastomotic leak, leads to lethal consequences for the patient, such as mediastinal abscesses and pleural empyema up to complex complications such as bronchial-pulmonary fistula or macrovascular fistula; treatments include traditional surgical drainage, drainage trans-fistula, stent plugging, endoscopic clamping, biological protein glue injection plugging, endoluminal vacuum therapy and reoperation [7].

Liang et al. [8] reported two patients with type II necrosis who were salvaged using a temporary removable self-expandable metal stent but this management is recommended only if there is minor gastric conduit necrosis.

Regarding the staple line dehiscence, the incidence rate is unclear [9]. Silberhumer et al. reported a 2.7 % incidence of staple line dehiscence in a cohort of 151 patients; all four patients were managed surgically, but details of surgical interventions are not available [10].

In our case we decided to perform the reintervention with a thoracoscopic approach, identifying and resecting the dehiscent area of the gastric conduit, exploiting all the benefits of minimally invasive surgery in terms of postoperative recovery.

4. Conclusions

Based on our experience, minimally invasive surgery is a valid option for the management of post-operative complications, including those in emergency setting; furthermore, suturing the defect and pulling it is an effective trick that allows optimal exposure of the tissue to resect. Finally, re-suturing a partial dehiscence of gastric conduit may be feasible if tissue conditions allow.

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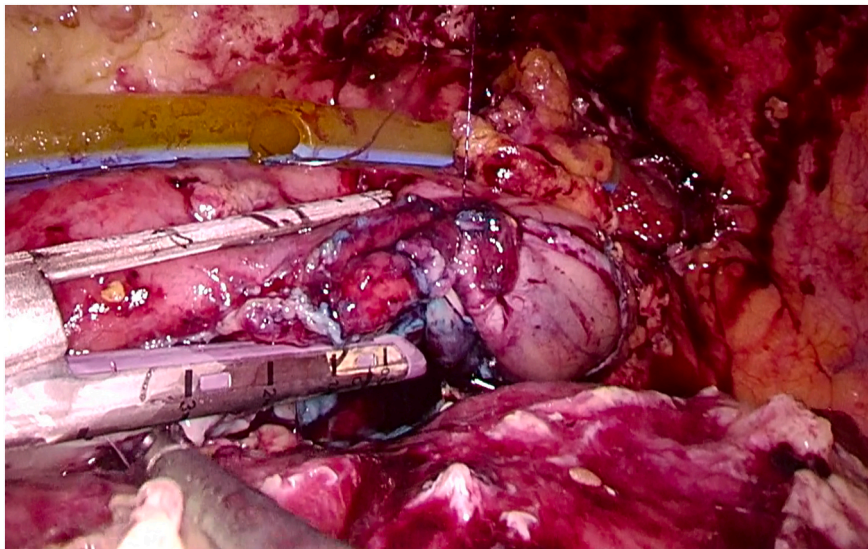


Fig. 3. Resection of the dehiscence gastric wall with a linear stapler; the assistant pulls the previously affixed suture upwards to allow the operator to insert the stapler.

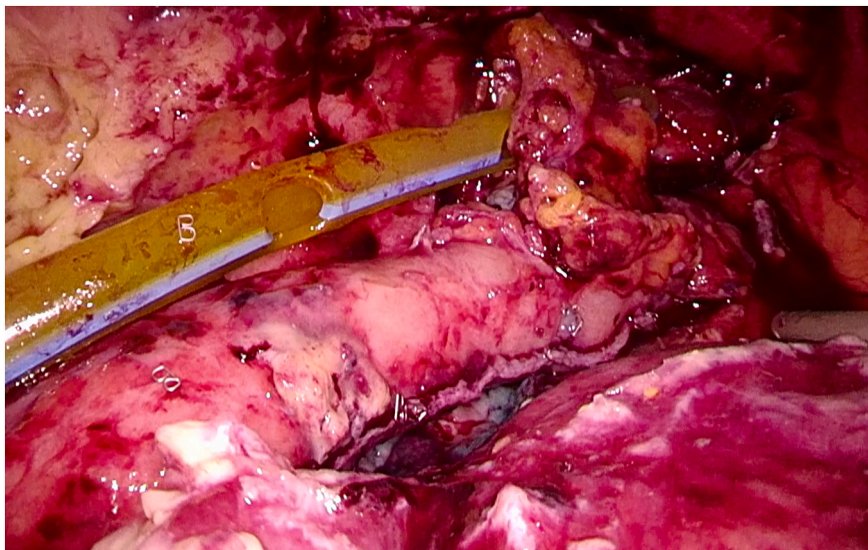


Fig. 4. Gastric conduit after the resection of dehiscence area.

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Ethical approval

I certify that this kind of manuscript does not require ethical approval by the Ethical Committee of authors institution.

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Author contribution

Anoldo Pietro and Milone Marco: conception, design, acquisition of the data and drafting of the article;
Anoldo Pietro and Vertaldi Sara: acquisition of the data and writing of the manuscript;
Manigrasso Michele and D'Amore Anna: interpretation of the data

and critical revisions;

De Palma Giovanni Domenico and Milone Marco: critical revisions and final approval.

Guarantor

Pietro Anoldo.

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N/A

Consent

Written informed consent for publication of his clinical details and clinical images was obtained from the patient. A copy of the consent form is available for review by the Editor of this journal on request.

Declaration of competing interest

All the authors have nothing to declare.

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