

Cervical partial oesophagectomy and trans-oral direct end-to-end anastomosis

Luca Tavecchio, Andrea Billè* and Ugo Pastorino

Department of Thoracic Surgery, Fondazione Istituto Nazionale dei Tumori, Milan, Italy

* Corresponding author. Department of Thoracic Surgery, Fondazione Istituto Nazionale dei Tumori, Via Venezian 1, 20133 Milan, Italy. Tel: +39-02-23902601; fax: +39-02-23902907; e-mail: andrea_bille@hotmail.it (A. Billè).

Received 29 July 2013; received in revised form 4 September 2013; accepted 20 September 2013

Abstract

Many surgical procedures are used to restore the defect of the alimentary tract after cervical oesophagectomy. We present a case of a 69-year old woman, affected by a G2 squamous cell carcinoma of retro-cricodeal hypopharynx extend to the cervical oesophagus. She underwent a direct reconstruction with a direct trans-oral anastomosis by a mechanical device and without any interposition. No postoperative complication was observed and there was a good functional result at 24 months after surgery. In a few selected cases, this technique can be usefully performed, avoiding gastric or intestinal resection and improving the quality of life.

Keywords: Oesophageal cancer • Oesophageal surgery • Cervical oesophagus

INTRODUCTION

The optimal reconstruction of alimentary tract defects after hypopharyngeal and cervical oesophageal carcinoma resection is still an open problem. The goal of hypopharynx–oesophageal surgery should be a single-stage curative resection involving reconstruction with low morbidity and mortality, a short hospital stay and an early recovery of swallowing.

The choice of the reconstructive technique usually depends on the degree of tumour extension. There are several options for reconstruction of the hypopharynx and cervical oesophagus. Traditionally, the standard reconstructive procedure is a gastric pull-up, especially when the resection extends below the thoracic inlet [1]. However, disadvantages of this procedure include its invasiveness as well as a high rate of cardiopulmonary complications [2]. Late complications due to the gastroplastic technique are also frequent.

In our institution, we usually adopt the surgical reconstructive techniques described above, particularly the gastric pull-up and free jejunal graft. Here, we present a case report, showing a reconstructive technique after total cervical oesophagectomy, with a direct anastomosis of the oesophagus using a trans-oral direct suture, with a good oncological and functional result.

SURGICAL TECHNIQUE

A 69-year old woman, with a history of chronic atrophic gastritis, was affected by a G2 squamous cell carcinoma of retro-cricodeal hypopharynx extended to the cervical oesophagus (Fig. 1A), and underwent surgery.

The procedure included total pharyngolaryngectomy with circular resection of the whole cervical oesophagus including bilateral cervical lymphadenectomy and thyroidectomy with preservation of monolateral parathyroid glands.

A tracheostomy was prepared between the third and fourth tracheal rings; the laryngectomy was conducted from the proximal to the distal end, with a pharyngeal cranial margin at the base of the tongue, 2 cm over the macroscopic limit of the disease. The distal resection of the cervical oesophagus was carried out at the mediastinal inlet. A careful dissection of the thoracic oesophagus from a cervicotomy as far as the aortic arch and the main bronchial carina was performed using blunt dissection: this manoeuvre produced a gain of about 4–5 cm in length on the released oesophagus. The length of the resected oesophagus was 7 cm. The two ends had different calibres: an accurate hand-made purse string at the base of the tongue and an oesophageal stump were prepared using Prolene 2/0 (Fig. 1B). After introducing the anvil into the oesophagus (Fig. 1C), a surgical tie was applied for further safety.

A trans-oral termino-terminal anastomosis by curved EEA 25 mm (Autosuture™) was performed (Fig. 1D). The maximal opening of this stapler with the inserted anvil is 56 mm: after the connection, we carefully closed the device to reach the point of the suture.

To reduce the tension of the suture, the head of the patient was flexed during the anastomosis procedure. To decrease the risk of micro-leaks, a large collagen patch coated with a dry layer of the coagulation factors, human fibrinogen and human thrombin (TachoSil®), was placed around the anastomosis (Fig. 2A). The final histopathology showed a Grade 2 squamous cell carcinoma of the cervical oesophagus of 1.5 cm, with involvement of two cervical

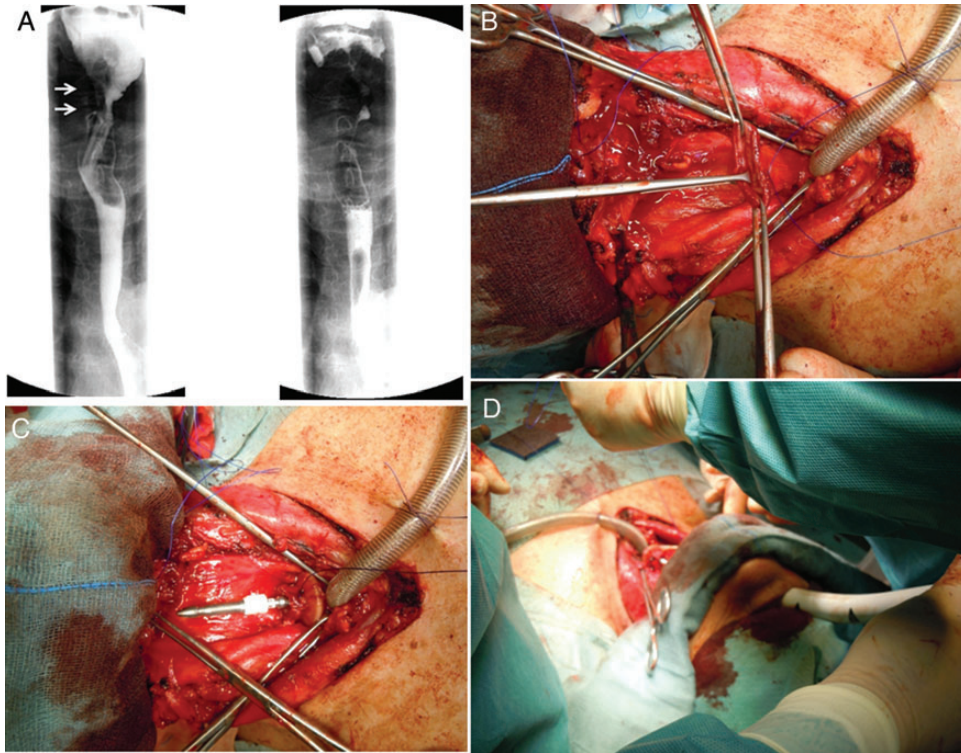


Figure 1: (A) The swallow test showed carcinoma of the retro-cricoid hypopharynx extended to the cervical oesophagus. The arrows show the tumour and the narrow oesophageal lumen. (B) Hand-made purse strings are prepared. (C) The anvil is introduced into the oesophageal stump. (D) The stapler is introduced trans-orally.

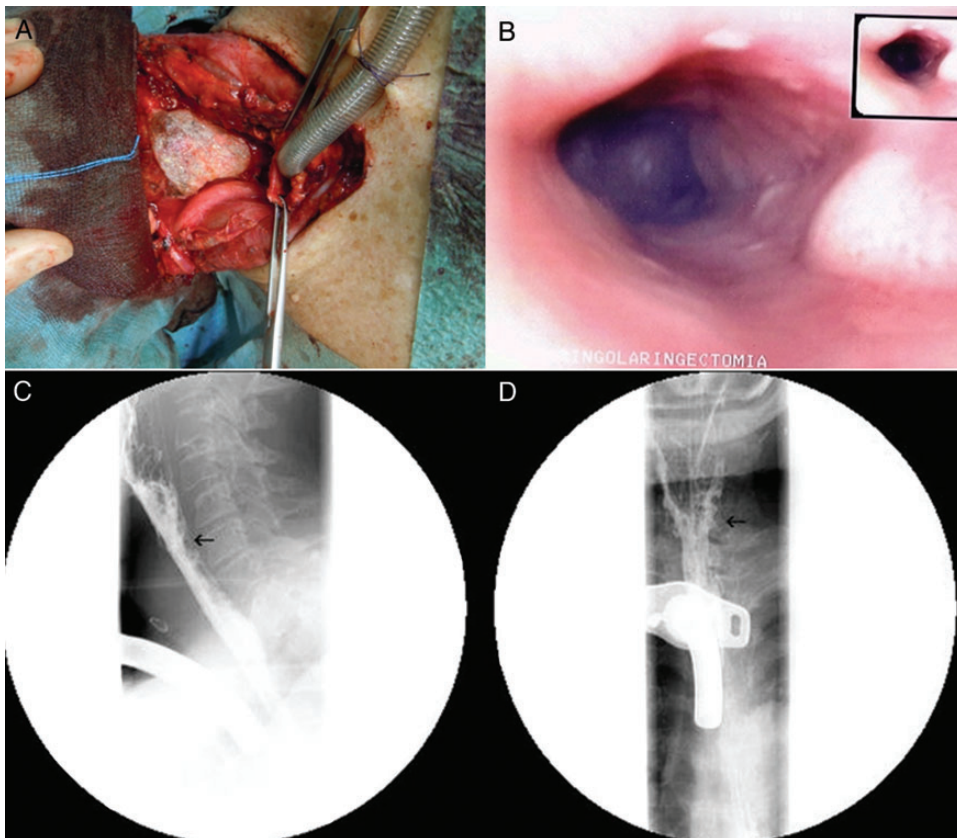


Figure 2: (A) A large medicated surgical patch was placed around the anastomosis. (B) Oesophagoscopy showed no sign of recurrence or stenosis. (C and D) Postoperatively, the swallow test showed no leaks or stenosis.

lymph nodes, pT3N1. The margins of resection were clear (R0) and the distance from the tumour was 2 cm.

In the postoperative period, the head was maintained in flexion by an adhesive medication for 12 days. Oesophageal vitality was monitored by daily measurement of the creatine phosphokinase. Enteral nutrition was given via a jejunal tube.

A radiological examination of the anastomosis by hydrosoluble contrast medium was obtained 15 days post-surgical operation: no leak was seen and the transit through the anastomosis was easy with no stenosis or narrowing (Fig. 2C and D). Day 1 post-swallow test, a water diet was allowed. This was followed by increasing solid foods and allowing a free diet over the next 4 days.

The patient underwent chemo- (cisplatin and 5-fluorouracil) and radiation therapy (54 Gy) due to cervical lymph node involvement. After 3 months from the end of radiotherapy, the patient presented with increasing dysphagia, due to the presence of scar tissue at the level of the suture. Radiological pneumatic dilatation was successfully performed with a good recovery of swallowing. Oesophagoscopy did not show any sign of recurrence or stenosis (Fig. 2B).

At the 24-month follow-up after adjuvant chemo-radiotherapy, the patient showed a good nutritional status, with no problem in regards to oral alimentation and no sign of recurrence.

DISCUSSION

A gastric pull-up with a free jejunal graft has been used widely for reconstruction of the pharynx, the hypopharynx and the cervical oesophagus, especially for proximal lesions. Free tissue transfer, including from the radial forearm, anterolateral thigh and rectus abdominis flaps, is an option for hypopharyngeal and cervical oesophageal reconstructions [3]. Pedicled cutaneous, musculocutaneous or fasciocutaneous flaps can be used, but have less satisfactory functional and aesthetic results. Disadvantages of these methods have been reported, including long operation time,

possibility of flap necrosis, anastomotic leak and fistula, and abdominal complications in case of intra-abdominal dissection [1, 4].

In selected patients with gastric disease or previous gastrectomy, who cannot undergo a gastric pull-up, and who are fit according to age and general conditions (without peripheral vascular disease), the 'sleeve' resection of the cervical oesophagus with a direct anastomosis may be an interesting option. The risk of leak is probably higher than that for usual techniques of reconstruction; however, a careful dissection of the thoracic oesophagus and a high level of postoperative care can ensure good results with low postoperative complications, as previously demonstrated by Nickbakhsh *et al.* [5], even if they showed a higher but not significant risk of anastomotic leak. This technique should also improve the recovery and the quality of life after surgery, reducing feeding problems. This is one of the first cases reported with this technique, and further large studies need to be performed to analyse the postoperative results and the risk of recurrence.

Conflict of interest: none declared.

REFERENCES

- [1] Zhao D, Gao X, Guan L, Su W, Gao J, Liu C *et al.* Free jejunal graft for reconstruction of defects of hypopharynx and cervical esophagus following the cancer resections. *J Gastrointest Surg* 2009;13:1368–72.
- [2] Daiko H, Hayashi R, Saikawa M, Sakuraba M, Yamazaki M, Miyazaki M *et al.* Surgical management of carcinoma of the cervical esophagus. *J Surg Oncol* 2007;96:166–72.
- [3] Dodd AR, Goodnight JE, Pu LL. Successful management of cervicoesophageal anastomosis leak after microsurgical esophageal reconstruction: a case report and review of the literature. *Ann Plastic Surg* 2010;65:110–4.
- [4] Matsuda T, Kaneda K, Takamatsu M, Takahashi M, Aishin K, Awazu M *et al.* Reliable preparation of the gastric tube for cervical esophagogastrostomy after esophagectomy for esophageal cancer. *Am J Surg* 2010;199:e61–4.
- [5] Nickbakhsh N, Saidi F, Fahimi H. A new technical approach to cancers of the cervical esophagus. *Arch Iranian Med* 2012;15:298–302.