How-to-do-it

Multi-segmental reverse loops for long-segment, supercharged pedicled ileum graft for total oesophageal reconstruction: an alternative for anisoperistaltic ileum graft

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Abstract

In this article, a new technique for turn-over jejunal graft without kinking of its mesenteric vessels is described. Graft necrosis occurred on a left colon oesophageal reconstruction performed for a 56-year-old-woman. A salvage oesophageal reconstruction was performed by a long-segment, supercharged, pedicled anisoperistaltic ileum. Regurgitations were permanent in spite of medical treatment. Segmental reverse of ileum loops was used to turn over the direction of peristaltism without mesenteric twisting. The technique has never been described previously.

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Oesophageal reconstruction remains a challenge in which gastroplasty is widely considered the reconstructive conduit of choice. Pedicled colon graft is the second graft used and sometimes the first conduit for some authors.

Jejunal graft is less frequently used and mainly as a salvage procedure when the pedicled colon graft has failed. We present an original technique applied to use a pedicled anisoperistaltic ascending ileum graft as a salvage reconstruction after failed coloplasty. A reverse plasty was used to win against peristalsis.

1. Case report

A 56-year-old woman admitted into the Emergency Department was treated in our department for chemical burn of the upper intestinal tract following accidental ingestion of a strongly alkaline household cleaning product. Her past medical history showed that she smoked 40 packs per year. Emergency oesogastrectomy with cervical oesophagostomy and feeding jejunostomy was performed, as upper endoscopy showed stage III caustic burn of Zargar and co-workers [1] classification.

Five months later, intestinal reconstruction was undertaken by retrosternal left colon bypass with pharyngeal side-to-end anastomosis. Unfortunately, removal of the graft was mandatory on the 10th postoperative day as necrosis of the graft occurred.

Three months later, assessment to choose a new conduit was performed. This consists of a computed tomography (CT) scan, colonoscopy and mesenteric arteriography. Arteriography showed that vascularisation of the gut was assumed by one large mesenteric artery. The right colic transplant was not appropriate because of insufficient length to reach the pharynx. Therefore, it was concluded that a free jejunal graft and an anisoperistaltic small-bowel supercharged graft [2] were the two possible options. We were of the opinion that free jejunal graft was to be avoided as the patient was smoking and was suspected of arteritis.

In addition, it was planned to process a two-stage procedure: first, to realise a cervical jejunostomy and second, to later restore the continuity by a side-to-end anastomosis of the jejunum on the pharynx.

The first step was conducted through a median sternal-laparotomy approach. The planned graft’s usability was confirmed after trans-illumination of the mesentery and clamping test. An anisoperistaltic, supercharged, pedicled ileum graft was brought up through the chest in a retrosternal position.

Arterial supply of the graft was satisfactory but a venous outflow insufficiency appeared during the procedure, which
was treated by a microvascular anastomosis with the right internal thoracic vein.

The upper segment of the graft was joined to the skin in the neck, creating a cervical ileum stoma. In the abdomen, the lower segment of the graft was anastomosed end to side to the proximal jejunum and the ileum continuity was restored by end-to-end anastomosis.

As viability of the ileum segment was confirmed by visualisation on the cervical ileum stoma, continuity was restored 15 days later by performing the cervical pharyngeal side-to-end anastomosis.

The postoperative course was uneventful. A water-soluble contrast swallow showed anastomosis healing without leakage on the 10th postoperative day.

The patient was able to swallow but unable to eat enough to discontinue enteral feeding through a jejunostomy tube. Regurgitations appeared between 50 and 60 min after swallowing, associated with chest borborygmus and painful neck spasms. In two cases of aspirations, pneumonia occurred, which needed hospitalisation. Video-fluorography swallow study showed the peristaltic reflux of the graft.

One year later, regurgitation was always present. Uncontrollable regurgitation was persistent over time and was not reversible by the pharmacological drug assessed. We concluded that restoration of isoperistaltism function of the graft was essential.

Segmental reverse diversion of the graft was performed through redo median sternotomy.

At first, the graft was freed from pleural adhesions. Then, four short segments of ileum were resected with conservation of their mesenteric vessels (Fig. 1). Then, the three remaining loops disconnected from their two poles were gently turned on 180° with rotation of the corresponding mesentery but without mesenteric twisting. In order to do that, the main mesenteric roots were folded in a zigzag pattern on the portion where the ileum was resected. Then, end-to-end anastomosis of the loops was performed. Finally, myotomy of the proximal segment (15 cm of length) was added (Figs. 1 and 2) as its rotation was not possible. A nasogastric tube was put through the entire graft.

The postoperative course was uneventful. Oral eating was begun on the seventh postoperative day. The patient is now able to swallow without regurgitation and is recovering, with a normal diet and with a follow-up of 5 months.

2. Discussion

From January 1997 to April 2009, 65 patients were referred for caustic burn ingestion.

Salvage surgery was necessary for 17 patients in which 14 were stripping oesogastrectomy. Oesophageal substitution by coloplasty was performed recently for 22 patients. Necrosis of two grafts occurred in which one was the case reported. A left colon graft was used for all of them and it is our most-used reconstruction graft with those indications [3,4].

A free intestinal graft used in one case in our previous experience failed. It was for a patient initially treated by salvage stripping and colon graft, which failed in another centre. This patient suffering from melancholia is still feeding by a jejunostomy tube. The technique described by Ascioti and co-workers [2] is the technique of choice but was not applied in our case due to vascular anomaly. In our case, as assessments clearly showed that regurgitations was due to peristaltism rather than redundancy of the graft, simple resection would not have solve the problem.

The technique herein described has never been published. It combines some techniques already described [5] and adds a small effort to the challenging problem of oesophageal reconstruction.
References


