

Post-operative Complications of the Esophagus and Esophagus Bridge Graft

D. C. BROERING, J. R. IZBICKI, Y. VASHIST, A. F. CHERNOUSOV,
P. M. BOGOPOLSKI, E. F. YEKEBAS

Due to the grave risk of insufficiency of the esophageal anastomosis and considering the severe operative trauma that is involved, surgery of the esophagus is one of the most dreaded operations in visceral surgery even today.

The post-operative complications could occur in the early or in the late post-operative period.

The residual stomach is left behind for as long as possible in order to ensure a good length of the residual stomach for secondary reconstruction. The proximal esophageal stump is not shortened for the same reason.

Early post-operative complications

■ Necrosis of the gastric tube

The first manifestation of gastric tube necrosis is the insufficiency of collar anastomosis, which presents clinically either as salivary fistula with fever as reddening of the skin, or results in a rise in amylase content of the drainage secretions.

In some cases, the first and only manifestation of gastric tube necrosis is the development of cardiac arrhythmias with subsequent mediastinitis.

Therefore, as soon as the symptoms occur, an endoscopy may be performed to assess the blood circulation.

If a necrosis of the gastric tube is demonstrated by endoscopy, the collar anastomosis is promptly released, and the necrotic segment of the bridging graft is resected.

The operation is concluded by providing mediastinal drainage, collar esophagostomy, and gastrostomy with the residual stomach.

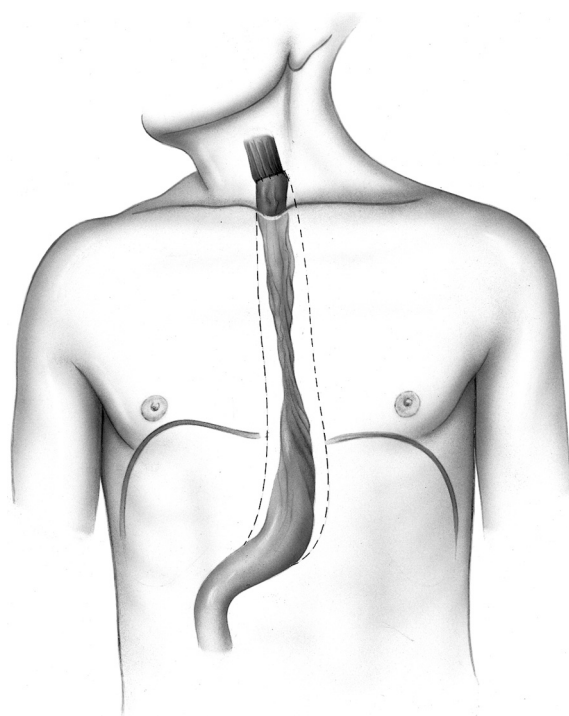


Fig. 31.1. Necrosis of the gastric tube after esophageal resection and transposition of the stomach in the former esophageal bed of the collar anastomosis.

■ Necrosis of the colonic bridging graft

After interposition of the colon, the bridging graft can likewise undergo necrosis. A necrosis of the colonic graft is clinically not different from a necrosis of the stomach graft.

An immediate discontinuity resection with intensive drainage of the mediastinum is the preferred treatment in this case as well. Besides collar esophagostomy, a catheter jejunostomy is also necessary.

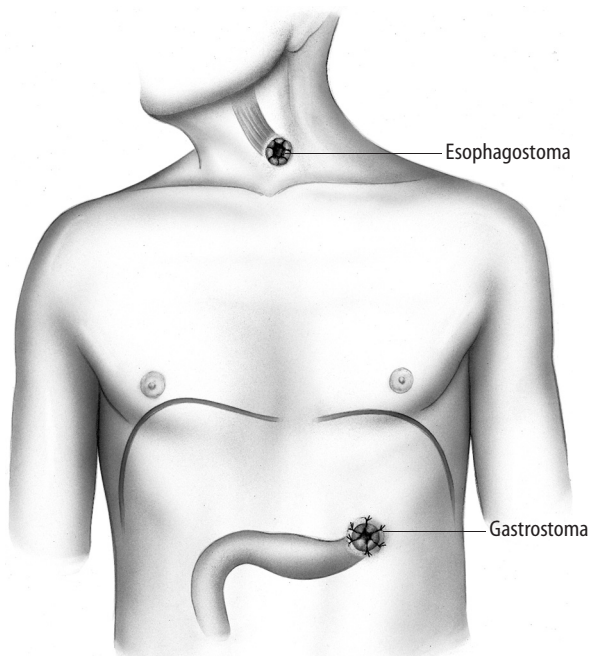


Fig. 31.2. Situation after discontinuity resection of the gastric tube.

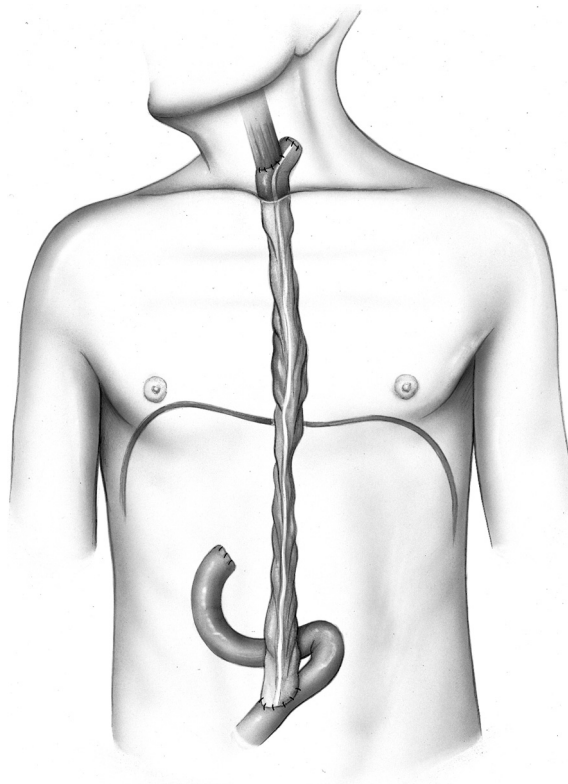


Fig. 31.3. Site after esophago-gastrectomy and necrosis of the colonic bridging graft.

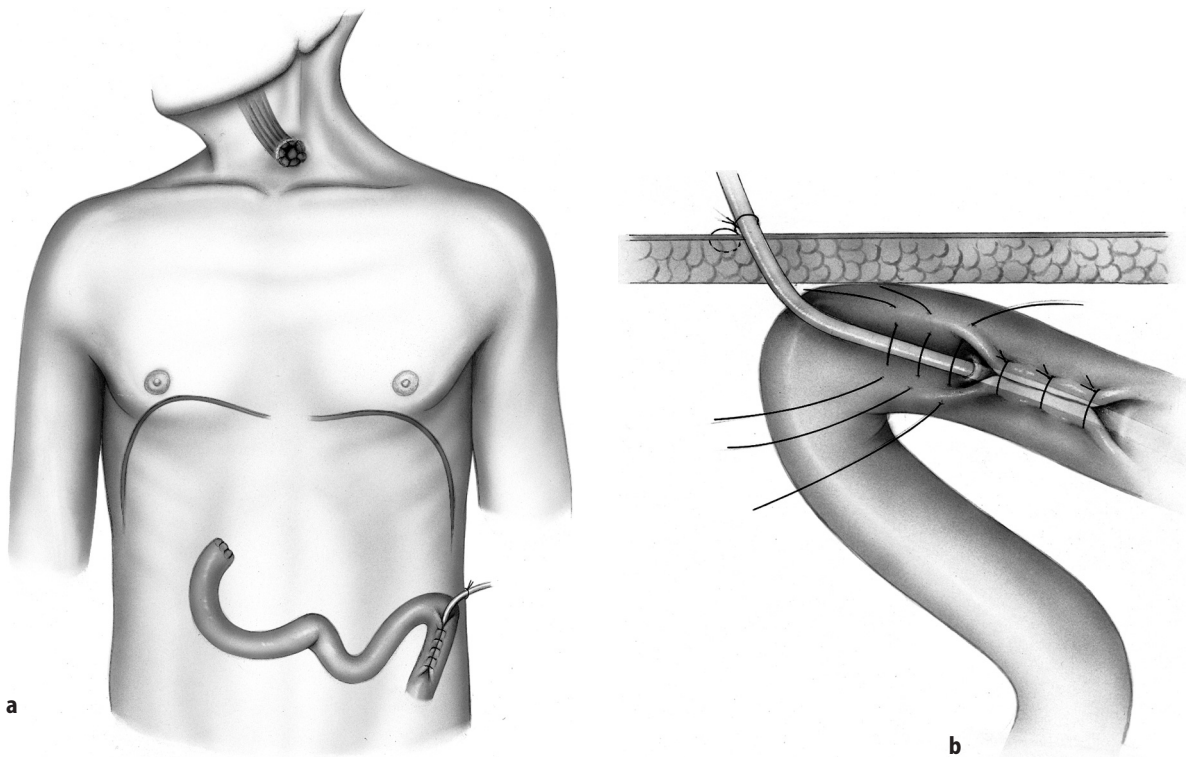


Fig. 31.4a,b. Situation after discontinuity resection of the colonic bridging graft, collar esophagostomy, and catheter jejunostomy. For catheter jejunostomy, the jejunum is punctured, and a nutrient catheter pushed deep into the proxi-

mal jejunum. The site of insertion of the catheter into the small intestine is closed with a purse-string suture and additionally reinforced by invaginating sero-muscular sutures.

■ Fistula between the bridging graft (colon, stomach) and the trachea

The development of a fistula between the bridging graft and the trachea is one of the most dreaded complications. The fistula can be located in any part of the trachea, the most commonly affected region being the portion of the trachea above the tracheal bifurcation. The development of a fistula is an indication for surgery.

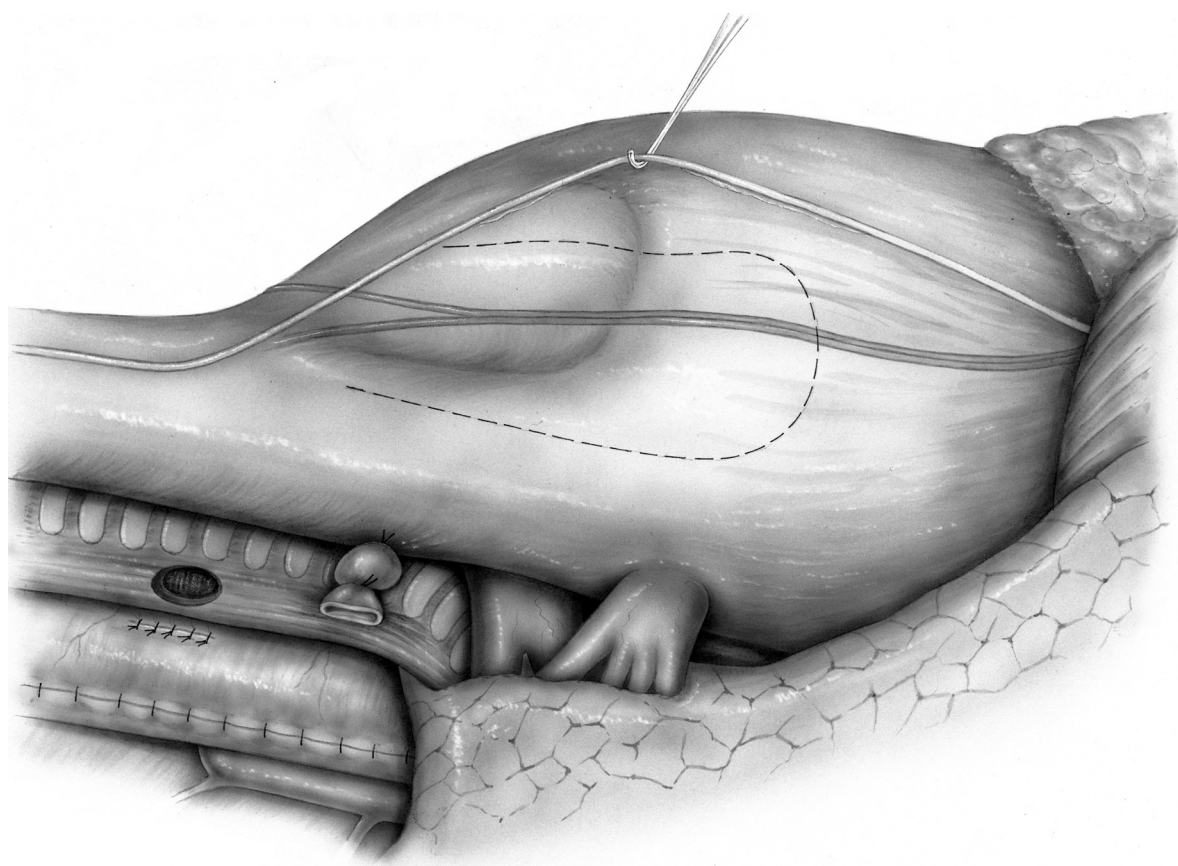


Fig. 31.5. Pedicle pericardial flaps for closing a fistula between the esophageal bridge graft and the trachea. The approach is via thoracotomy in the right 5th intercostal space. The latissimus dorsi muscle should never be incised. The fistula between the esophageal bridge graft (e.g. gastric tube) and the supra-bifurcational trachea is excised and the defect in the gastric tube is closed with button-hole sutures. The excision of the fistula leaves a defect in the region of

the pars membranacea of the trachea which can be sealed air-tight by a pedicle flap of the pericardium. The phrenic nerve is separated from the pericardium and held ventrally by using a nerve hook. The pericardiac-phrenic artery and vein form the vascular pedicle of the pericardial flap. To prevent necrosis of the flap, it is necessary that the length of the pericardial flap does not exceed three times the flap base.

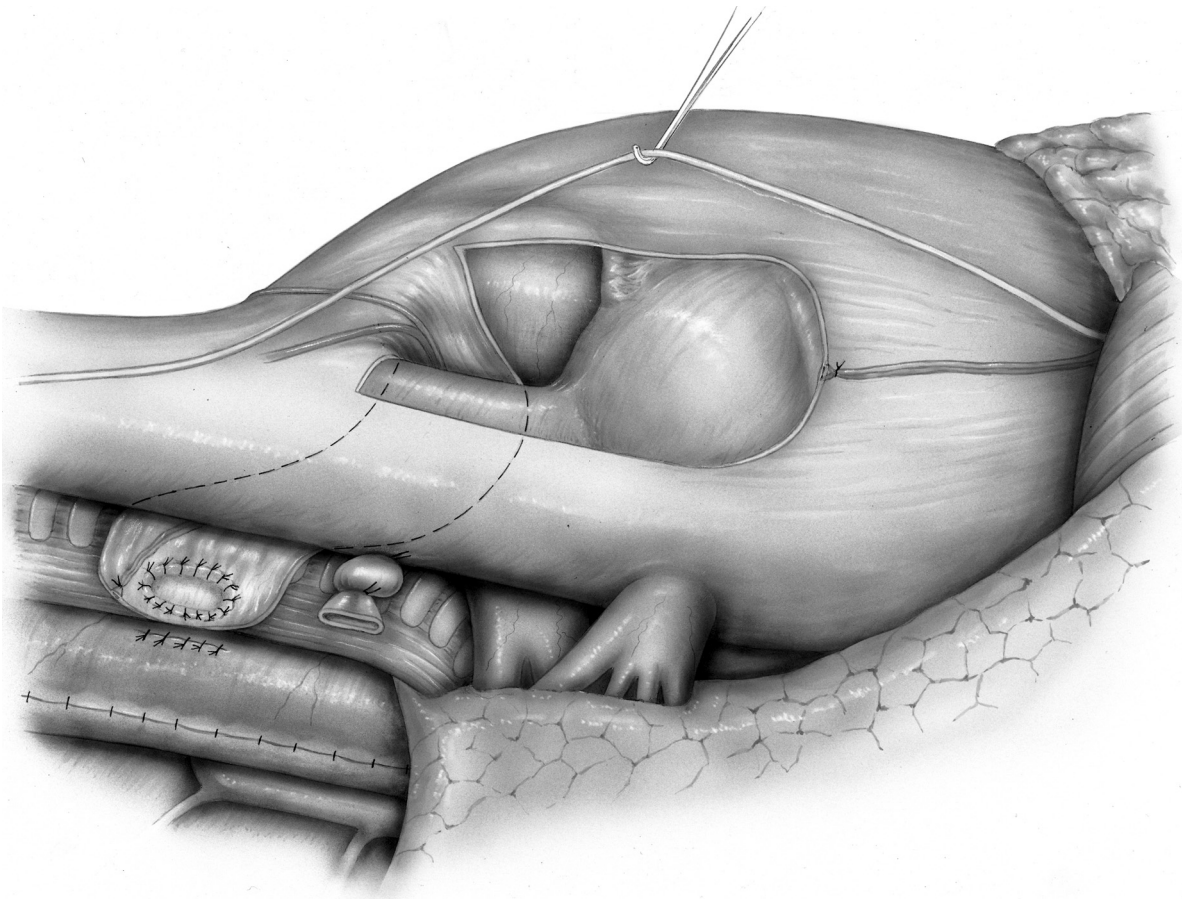


Fig. 31.6. Pedicle flap of the pericardium for closing a fistula between the esophageal bridge graft and the trachea. The pericardial flap is transposed below the pulmonary artery between the pulmonary vein and the pulmonary artery to the

pars membranacea of the supra-bifurcational trachea and sutured circularly with button-hole sutures (Vicryl 4/0) into the defect in the pars membranacea. The suture should be as air-tight as possible.

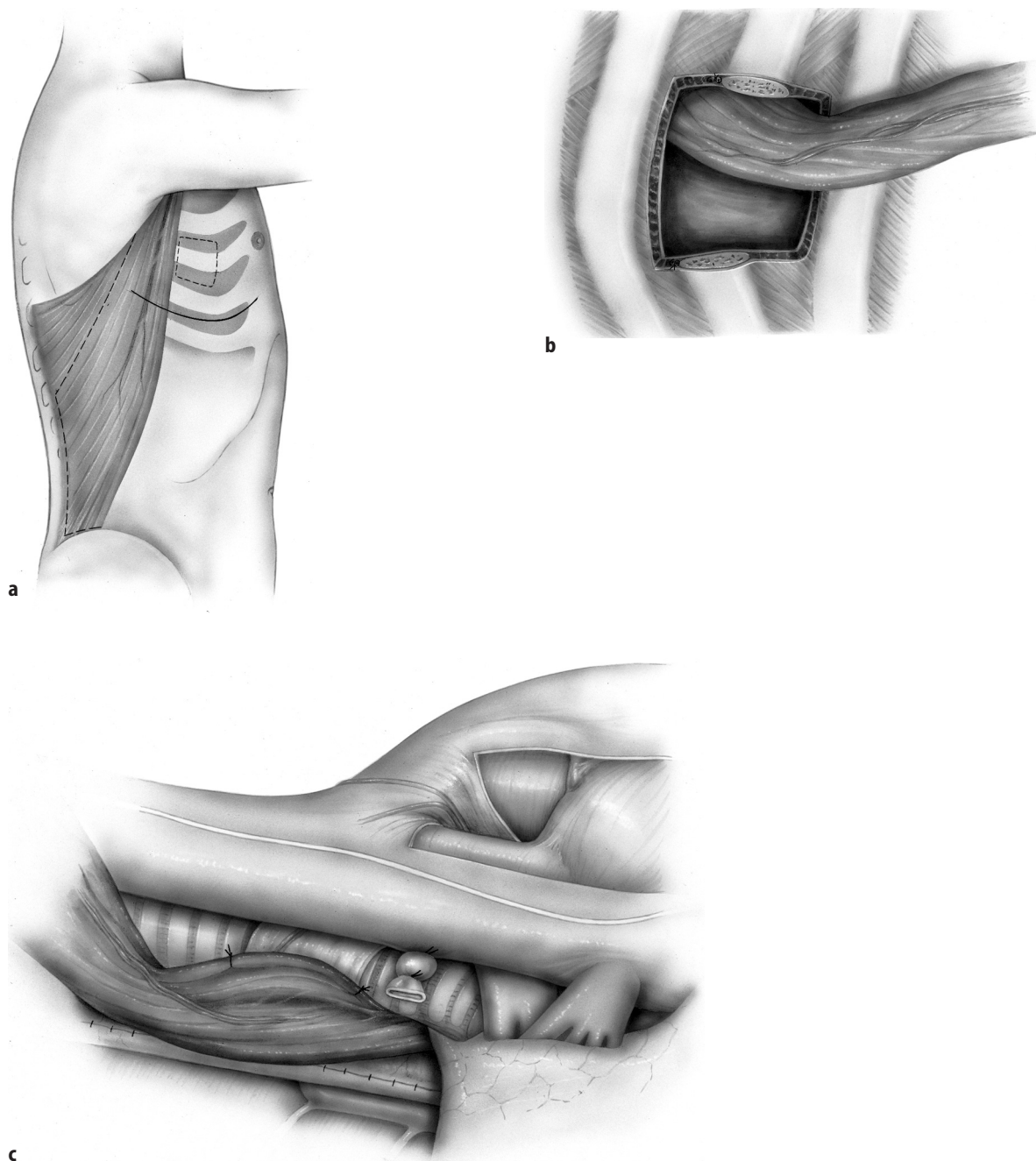


Fig. 31.7a–c. Flap of the latissimus dorsi muscle for muscular covering of a tracheal fistula. Keeping the muscle fascia intact, the latissimus dorsi muscle is mobilized subcutaneously up to the iliac crest. Similarly, keeping the vascular bundle intact, the lower surface of the latissimus dorsi muscle is also mobilized. The muscle is lifted from the iliac crest (a). After resection of the 4th rib from behind the anterior

axillary line, the muscle is transposed into the thoracic cavity through the window thus formed in the thoracic wall (b). The muscle is elevated and placed loosely between the trachea and the esophageal bridge graft. The muscle is fixed to the cartilaginous part of the trachea with a few sutures (c). The muscle should not be fixed to the pars membranacea.

Late post-operative complications

■ **Esophageal cul-de-sac** is a typical change observed after shunting operations of the esophagus.

The following are the indications for corrective surgical intervention in cul-de-sac syndrome:

- Retention of food in the cul-de-sac
- Regurgitation of food
- Severe esophagitis.

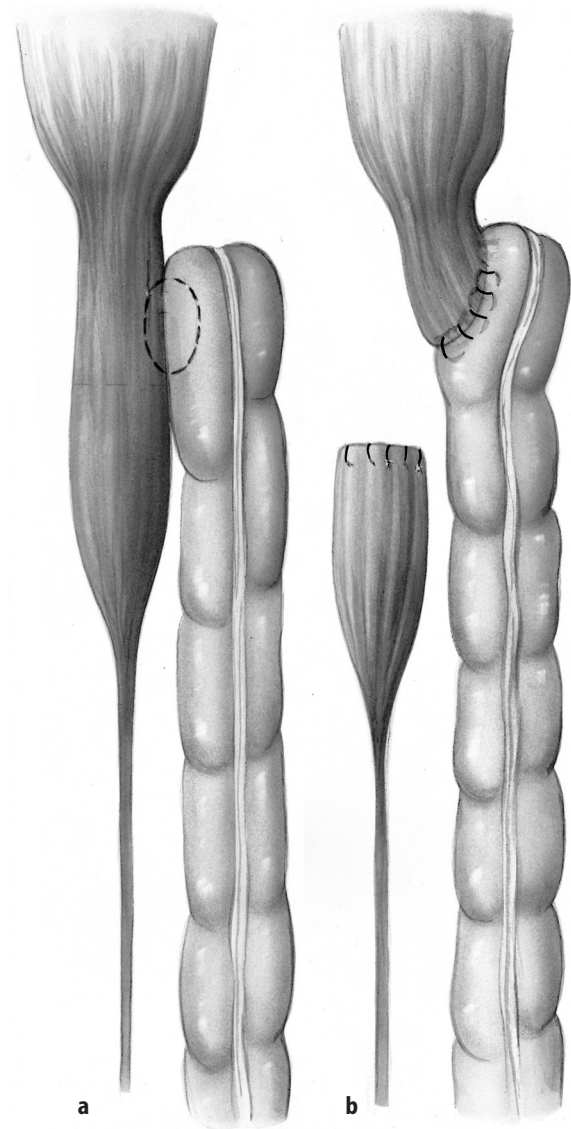


Fig. 31.8 a, b. Dissection of the esophagus below the cervical anastomosis and blind closure of the aboral end of the esophagus. This corrective surgery can be performed only if a minimum length of the stricture is still patent; otherwise, there could be a risk of retention of the secretions, leading to bacterial growth. If there is no minimum passage in the stricture, an esophagectomy must be performed right after thoracotomy.

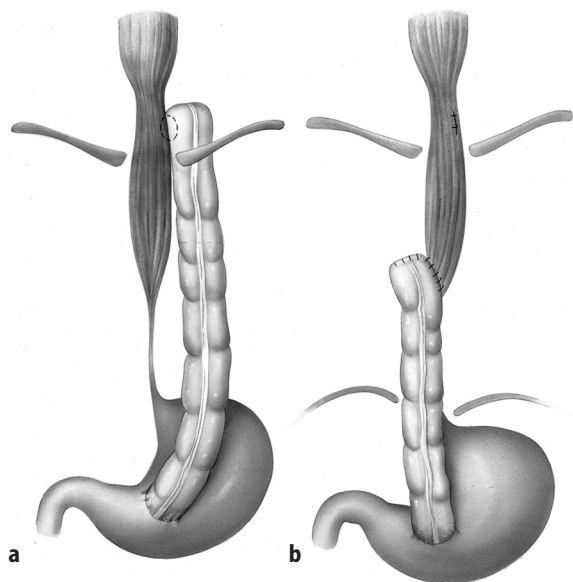


Fig. 31.9 a,b. A second alternative is to separate the colonic bridge graft from the cervical esophagus and to transpose it into the right thoracic cavity. Intrathoracic anastomosis of the esophagus with the colonic bridge graft directly above the stricture. The access is gained via a cervical incision extending below up to the abdomen. Intrathoracic transposition and anastomosis via a right thoracotomy.

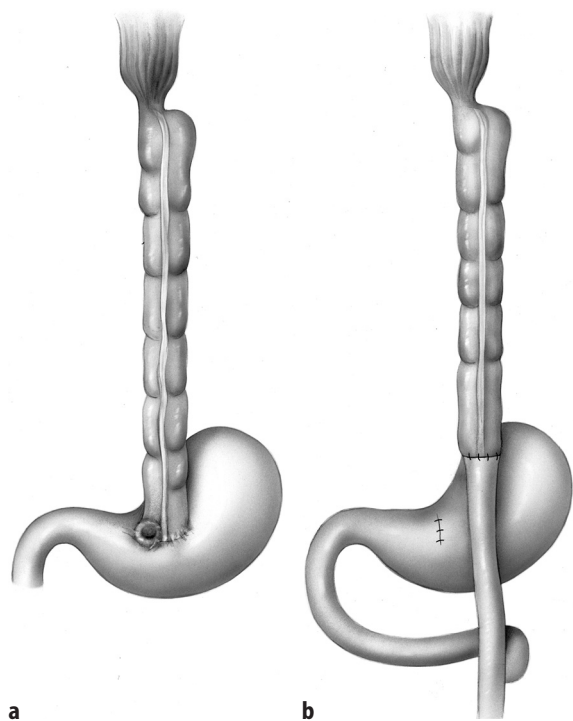


Fig. 31.10 a,b. The simplest corrective surgery is a closure of the colon-gastrostomy and anastomosis of the distal end of the colonic bridge graft with a Roux-y loop of the jejunum.

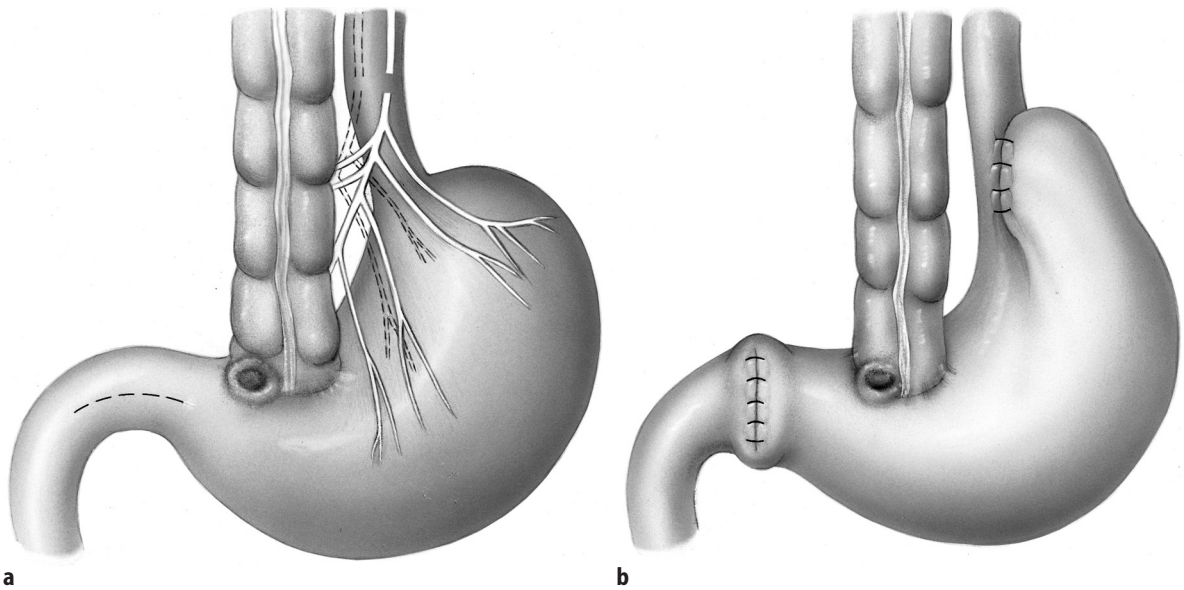


Fig. 31.11 a,b. A trunk vagotomy with pyloroplasty may be performed as an alternative.

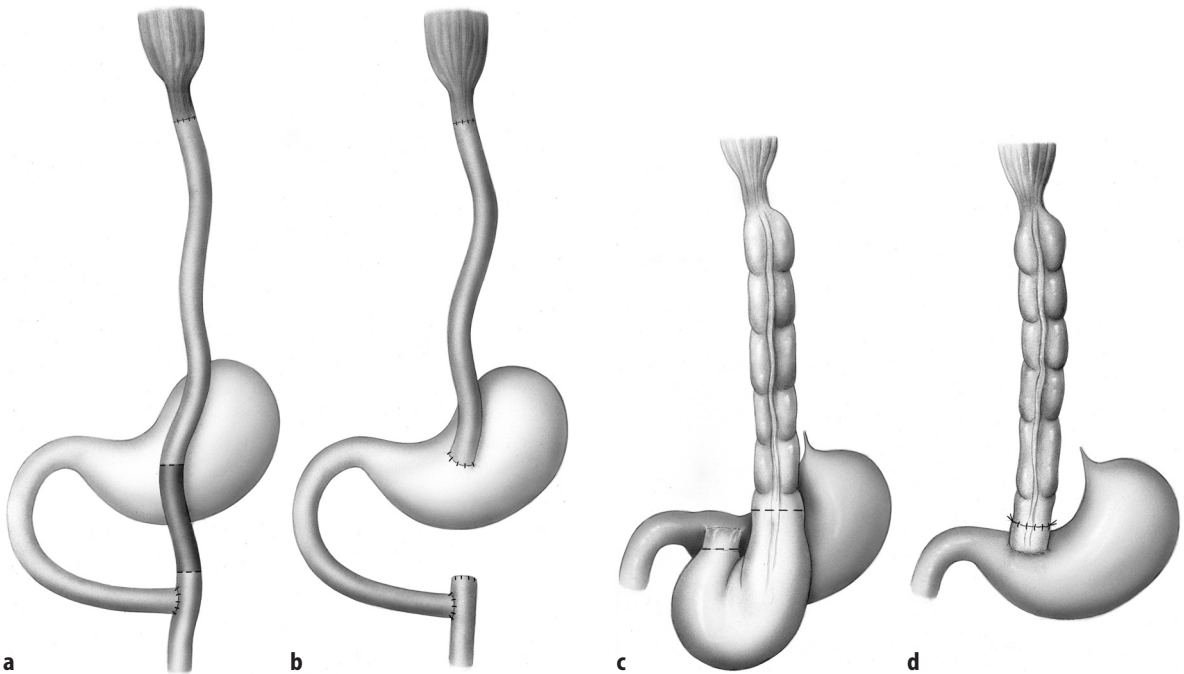
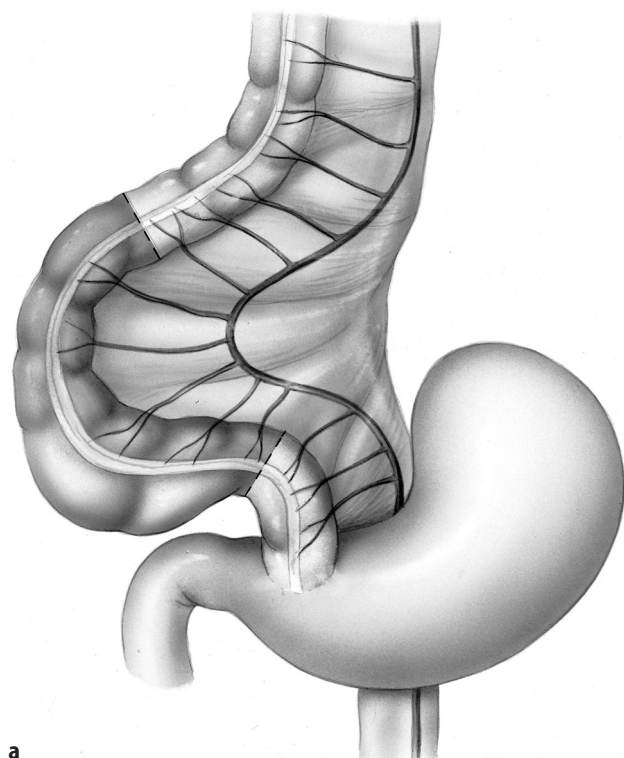
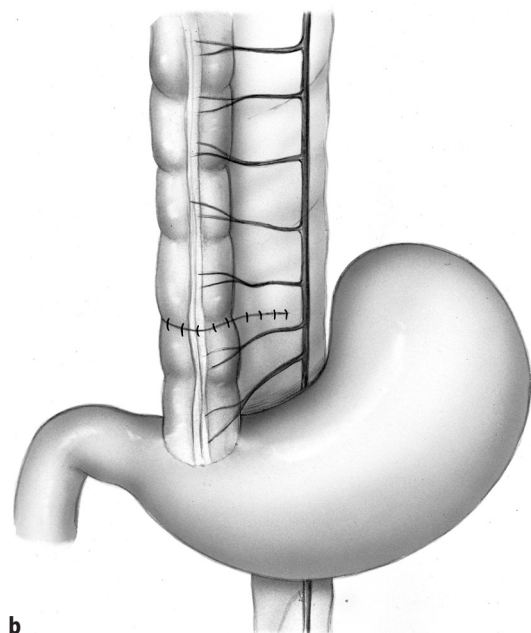


Fig. 31.12 a–d. A classical esophageal bridge graft of the jejunum (Roux-Hertzen – Yudin) can lead to severe intestinal disturbances. A majority of the symptoms can be eliminated by resection of a jejunum segment directly above the jejuno-jejunosomy, taking care to avoid trauma to the jejunal vascular arcade and to the anastomosis of the jejunum with the stomach.

The late post-operative complications of a colonic bridge graft include an undesirable lengthening of the colon with difficulty in passage. The preferred corrective surgery in this case is a resection of the excessively long colonic segment and end-to-end anastomosis of the ends of the colon. A trauma to the colonic vessels can be avoided by skeletonizing the intestine very close to the intestinal wall.



a



b

Fig. 31.13 a, b. Resection of an excessively long colonic bridge graft. In principle, the vessels draining the colonic bridge graft should not be traumatized during resection of a colonic segment.

■ Cicatrized stenosis of an esophago-gastrostomy or esophago-colostomy (pharyngeogastrostomy or pharyngeocolostomy)

Surgery is indicated only if conservative therapy fails.

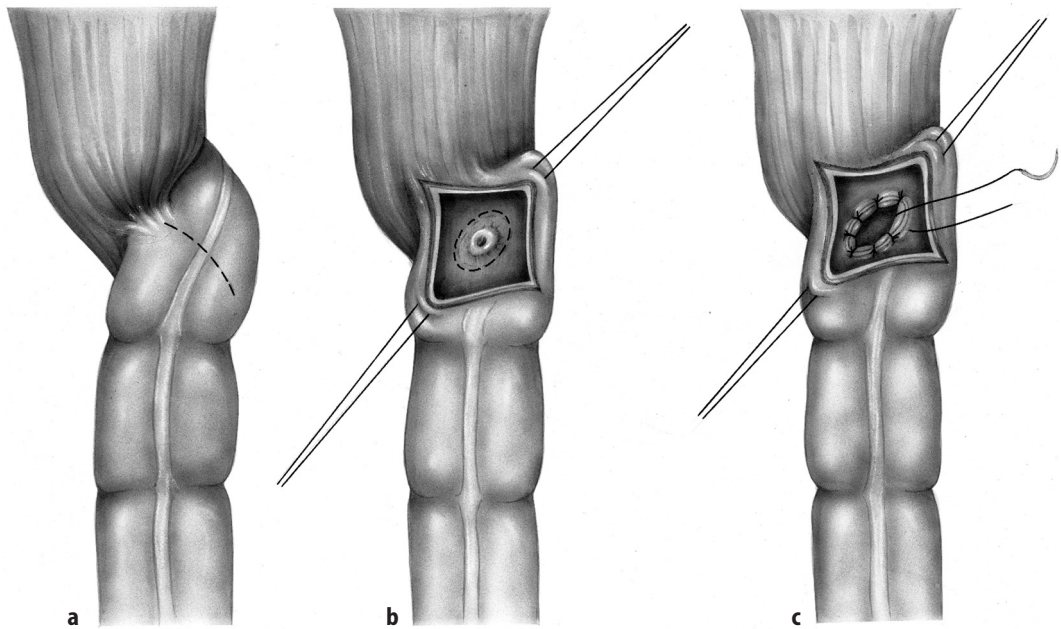


Fig. 31.14 a–c. Transverse incision of the colon above the strictured anastomosis. Circular excision of the stricture and adaptation of the mucosal border with interrupted sutures 5 mm apart (Vicryl 4/0). The intrathoracic and intraabdominal strictures can be managed similarly.

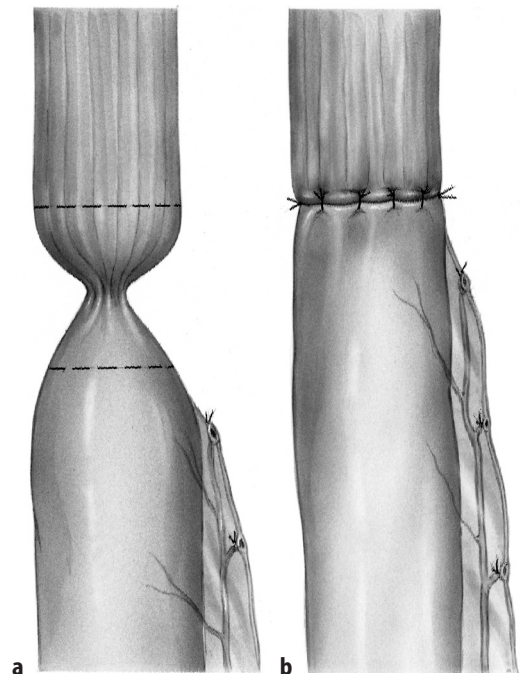
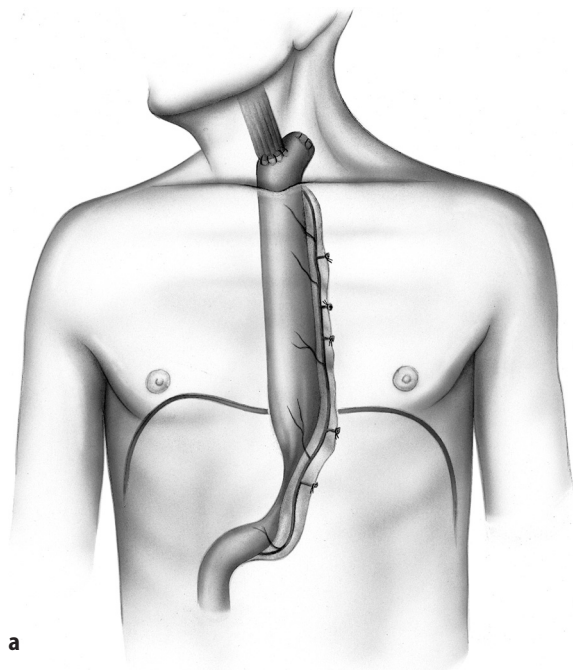


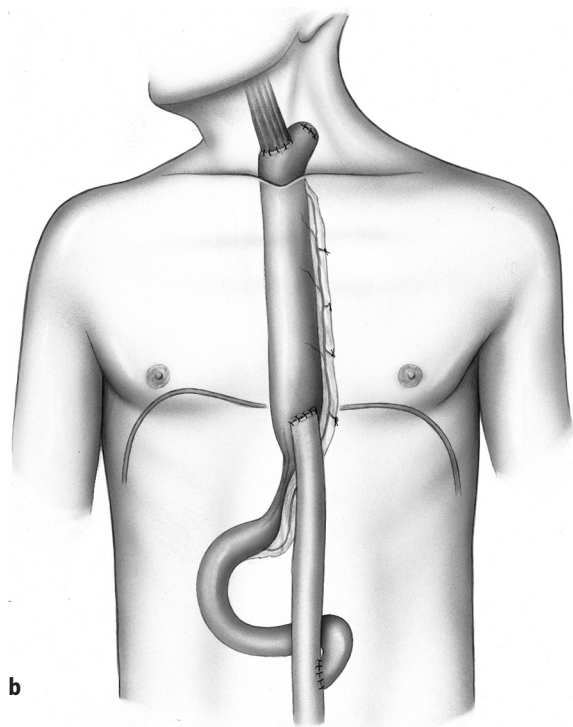
Fig. 31.15 a,b. In some cases, a complete excision of the strictured segment with end-to-end anastomosis is necessary. Surgery must always be followed by intraluminal decompression and external drainage of the operative area.



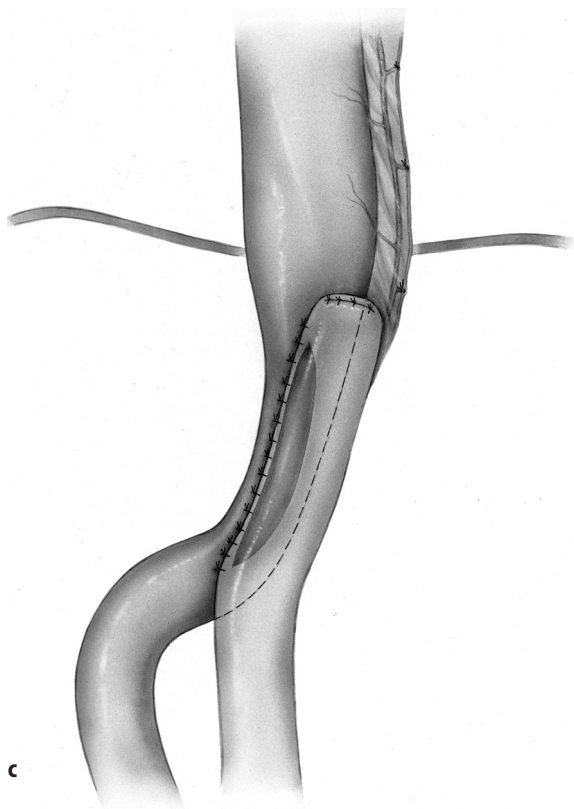
a

■ Cicatrization and deformation of the pyloric region

The pyloric region can undergo deformation and stenosis many months and even years after esophageal resection with interposition of the stomach, causing severe dysphagia.



b



c

Fig. 31.16. Cicatrization and deformation of the pylorus after interposition of the stomach (a). The cicatrized stenosis can be by-passed by gastro-jejunostomy with a Roux-Y loop (b). Alternatively, the stenosis can be subjected to stricturoplasty by a side-to-side jejunostomy with a Roux-Y jejunal loop (c).

Surgery of the Esophagus

Textbook and Atlas of Surgical Practice

Izbicki, J.R.; Chernousov, A.F.; Broering, D.; Gallinger,
Y.I.; Yekebas, E.F.; Bogopolski, P.M.; Kutup, A.;
Söhendra, N. (Eds.)

2009, XIX, 386 p., Hardcover

ISBN: 978-3-7985-1309-9