Transthoracic Gastroplasty (Collis) and Nissen Fundoplication

Indications

As discussed in the previous chapters (see esp. Chap. 66), this operation is indicated in patients with reflux esophagitis that has caused a significant degree of fibrosis, constriction, and shortening of the esophagus. In some patients without much esophageal shortening, advanced fibrosis itself will interfere with the antireflux efficiency of a fundoplication because the rigid esophageal walls will not be compressed by the fundoplication. For this reason, Pearson and Henderson; Urschel, Razzuk, Wood, Galbraith et al.; and Orringer and colleagues (see Chap. 66) believe that almost every esophageal stricture caused by reflux should be treated by a Collis gastroplasty and an antireflux procedure. A previous high subtotal gastrectomy generally contraindicates a Collis gastroplasty. Most patients with recurrent reflux esophagitis after a previous operation will require a thoracoabdominal Collis-Nissen operation. This operation is indicated whenever the esophagogastric junction cannot be brought down to the level of the median arcuate ligament.

Preoperative Care

- Esophagram and upper gastrointestinal X-ray series
- Esophagoscopy with biopsy of stricture

Attempt to dilate the esophageal stricture up to size 40F. This can generally be done with Maloney dilators.

Insert a nasogastric tube down to the stricture on the morning of the operation.

If the patient has severe fibrosis and an advanced stricture, he may be one of the rare cases whose stricture cannot be dilated and thus requires resection and possible colon interposition. In such a case, perform a preoperative barium colon enema and routine bowel preparation. Among those patients who should receive preoperative bowel preparation are those whose strictures could not be dilated to the size of a 40F bougie. An angio-gram of the colonic blood supply may also be helpful.

When esophagoscopy reveals severe acute ulcerative esophagitis with inflammation and bleeding, a 2–3 week period of preoperative treatment with cimetidine and/or a continuous intraesophageal antacid drip will reduce the inflammation and lessen the risk of intraoperative perforation of the esophagus.
Pitfalls and Danger Points

Esophageal perforation
Hemorrhage resulting from traumatizing or avulsing the accessory left hepatic artery, the inferior phrenic artery, the ascending branch of the left gastric artery, a short gastric vessel, or the inferior pulmonary vein
Laceration of spleen
Inadvertent vagotomy
Inadequate suturing, permitting the fundoplication to slip postoperatively

Operative Strategy

Performing an Adequate Gastroplasty

The object of performing a gastroplasty is to lengthen a shortened esophagus for an extent sufficient to prevent any tension whatever from being exerted on the antireflux operation and hernia repair. This newly constructed esophagus (“neoesophagus”) consists of a tube made from the lesser curvature of the stomach. The anesthesiologist passes a 50F Maloney dilator into the stomach and the tube is constructed by applying a GIA stapling device precisely at the esophagogastric junction parallel to and snug up alongside the Maloney dilator. When the GIA device is fired, the esophageal tube will be lengthened by approximately 5 cm. If the GIA has been placed snug against the esophagogastric junction, there will be no irregularities or outpouching at this point. In patients with advanced strictures, it is often necessary to apply the GIA a second time to construct a neoesophagus about 7 cm in length if tension is to be avoided.

If the gastric walls being approximated in the stapling device are of average thickness or less, it is probably not necessary to oversew the staple line, assuming that the surgeon is experienced in using staples for gastrointestinal anastomoses. He will check to see that the staples have been shaped into the form of a proper “B.”

Also, he must be certain to check that the point, where the second application of the GIA meets the first row of staples, is securely closed. In the absence of all these conditions, we agree with Orringer that the precaution of oversewing the GIA staple line on the stomach is indicated. This is especially true if the gastric walls are somewhat thick or if the surgeon is inexperienced in using stapling techniques.

Mobilizing Esophagus and Stomach

Not only is it important to completely mobilize the distal esophagus, at least as far up as the inferior pulmonary vein, but the proximal stomach must be entirely free of attachments, just as is the case when a Nissen fundoplication is being performed through an abdominal approach. Only with full mobilization can this operation be accomplished without tension. This requires dividing the phrenoesophageal and the gastrophrenic ligaments, freeing the hiatus throughout its complete circumference from any attachments to the stomach or lower esophagus, as well as dividing an accessory left hepatic artery, which courses from the left gastric artery across the proximal gastrohepatic ligament to help supply the left lobe of the liver. After mobilization has been accomplished, the remaining maneuvers in the Collis–Nissen operation are not difficult.

If the esophagus is inadvertently perforated during the dissection, it will require careful judgment by the surgeon in deciding whether it is safe to suture the esophageal laceration or whether a resection and colon or jejunum interposition is necessary. If it is elected to suture the laceration, try to cover the suture line with a flap of parietal pleura (see Figs. 74–1 to 74–3).