# Antesternal colonic interposition

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## DESCRIPTION

An elderly man in early 70s presented with recent onset retrosternal discomfort. He had a history of corrosive oesophageal injury with surgery done to the oesophagus 30 years ago, details were unknown. On examination, he had a palpable bowel loop on the anterior chest wall (figure 1). A barium swallow study showed a proximally dilated oesophagus with narrowing of the distal oesophagus and gastro-oesophageal junction, likely due to a stricture. An oesophageal bypass reconstruction is also seen in the anterior midline with bowel connecting the cervical oesophagus and stomach showing free flow of barium (figures 2 and 3). A CT scan with oral contrast confirmed a distal stricture in the native oesophagus with a patent oesophageal bypass reconstruction/conduit showing no abnormal wall thickening or enhancement (figure 4). Endoscopy showed a side-to-side anastomosis just below the upper oesophageal sphincter. The native lumen (figure 5) had narrowing at the distal end while the reconstructed lumen (figure 5) showed a colonic loop opening into the distal stomach with normal appearing gastric mucosa. The patient was treated with oral proton pump inhibitors (PPI) and had symptomatic improvement. True incidence of corrosive gastrointestinal injuries is unknown worldwide. Prevalence is higher in children due to accidental ingestion and in developing countries.[1] Ingestion of alkalis causes rapid and extensive oesophageal injury due to liquefactive necrosis compared with acids where upper respiratory tract and distal stomach injuries are common.[2] The transmural nature of injury in alkalis predisposes to stricture formation, usually in 3–8 weeks duration. Endoscopic dilation using Savary–Gilliard (SG) dilators or 'through-the-scope' (TTS) balloon dilator is the mainstay of these oesophageal strictures.[3] Risk of complications like perforation is slightly higher

**Figure 1** Large antesternal mass with a bowel loop as contents.

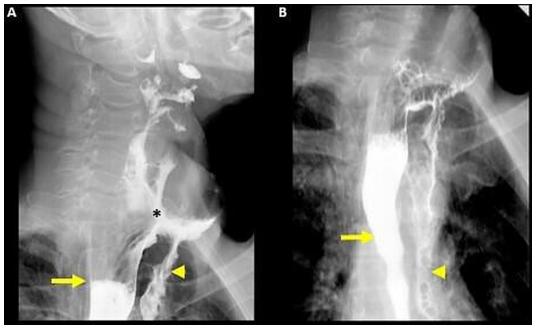


**Figure 2** Barium swallow study showing native oesophageal lumen (arrow-head) and reconstructed lumen with side-to-side anastomosis (asterisk) parallel to each other at (A) proximal and (B) mid-oesophageal levels with free flow of barium suspension.


**Figure 3** Barium swallow study demonstrating oesophageal bypass reconstruction with large bowel showing haustral folds (arrow) connecting the distal stomach (asterisk).



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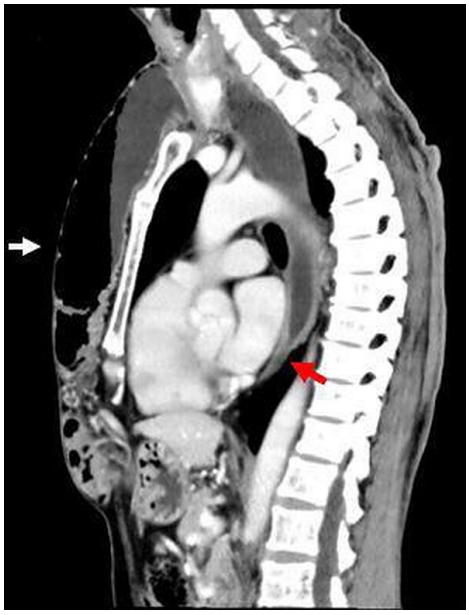

**Figure 4** Ct sagittal view showing antesternal colonic loop (white arrow) with haustral folds and narrowed native oesophagus (red arrow).

in dilatation of caustic strictures (0.4%—32%) compared with other benign causes (0.1%—0.4%).[4] Surgery is generally limited to patients who have failed endo-therapy. Routinely performed surgery includes gastric pull-up (GPU) and colonic interposition (CI). GPU is the most widely performed with least complications and failure rates, but avoided in cases where stomach is injured due to the corrosive agent. Colon is next preferred organ due to its vascular anatomy, long length and resistance to acid injury.[5] CI surgery involves using a colonic segment as the conduit and is performed through posterior mediastinal, retrosternal or antesternal approaches. The preferred is grafting the colon in the posterior mediastinum after excising the diseased oesophagus, this is advantageous as it is the shortest route; however, this space is not available in conditions with scarred mediastinum. The retrosternal approach is preferred when the oesophageal bed is not available and it is easy for dissection. Disadvantages include long route, angulations at thoracic inlet and xiphoid level and cannot be performed with prior cardiac surgery. The antesternal approach (subcutaneous route) without oesophagectomy is not technically very demanding, quicker and does not require a thoracotomy.[6] Although antesternal approach is easy to perform, the function of the colon is poor in the subcutaneous position and patients often have to massage food down to improve colonic conduit emptying. Also, it is less popular as it leaves behind diseased oesophagus with a very small risk of malignancy,[7] available case reports in literature mention squamous cell carcinoma after approximately 40–50 years postcorrosive ingestion and is less cosmetic. This case was unique as antesternal CI surgeries are rarely encountered in modern clinical practice. Performing endoscopy was technically challenging because of the difficulties encountered in negotiating the endoscope into the native and reconstructed lumens. Both lumens were carefully intubated under vision through the side-to-side anastomosis just distal to the upper oesophageal sphincter.

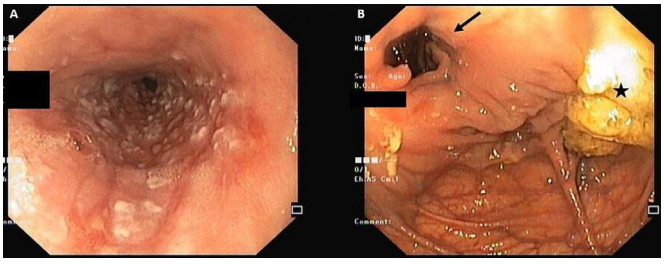


**Figure 5** Endoscopic images of native oesophageal lumen showing (A) distal narrowing secondary to stricture and (B) creconstructed colonic conduit containing few solid food residues (STAR) entering into the distal stomach (arrow).

## Learning points

- Endoscopic management is the current standard of care in treatment of postcorrosive oesophageal strictures.
- In spite of advancements in the management of corrosive oesophageal injury, a few sections of patients need oesophageal replacement surgery.
- The three routes of the colic interposition include the following:
  - Oesophageal bed approach after oesophagostomy.
  - Retrosternal tunnel.
  - Antesternal approach.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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## REFERENCES

1 Gumaste VV, Dave PB. Ingestion of corrosive substances by adults. *Am J Gastroenterol* 1992;87:1–5.
2 Cheng H-T, Cheng C-L, Lin C-H, *et al*. Caustic ingestion in adults: the role of endoscopic classification in predicting outcome. *BMC Gastroenterol* 2008;8:31.
3 Sharma B, Birk J. Endoscopic dilation of corrosive strictures: is it safe? *Dig Dis Sci* 2022;67:2706–7.
4 Rammohan A. Corrosive injury of the upper gastrointestinal tract: a review. *Arch Clin Gastroenterol* 2016;2:056–62.
5 Deschamps C. History of esophageal surgery for benign disease. *Chest Surg Clin N Am* 2000;10:135–44,
6 Gvalani AK, Deolekar S, Gandhi J, *et al*. Antesternal colonic interposition for corrosive esophageal stricture. *Indian J Surg* 2014;76:56–60.
7 Kim YT, Sung SW, Kim JH. Is it necessary to resect the diseased esophagus in performing reconstruction for corrosive esophageal stricture? *Eur J Cardiothorac Surg* 2001;20:1–6.