

Case Report

Perforation of colonic interposition graft in a patient with prior esophagectomy: a case report

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ABSTRACT

Colonic interposition is an established technique for esophageal replacement when gastric pull-up is not feasible. While it provides functional long-term results in selected patients, complications such as ischemia, redundancy, and perforation may occur. We report the case of a 47-year-old male with a history of esophageal perforation and colonic transposition who presented nine years later with acute abdomen. Imaging revealed a complicated diaphragmatic hernia, and exploratory laparotomy showed ischemic and perforated neoesophagus. The patient required urgent resection of the colonic graft, esophagostomy, and negative pressure wound therapy for surgical site infection. Complications of colonic transposition may be early (ischemia, leakage) or late (stenosis, reflux, redundancy, and perforation). Graft ischemia remains a major contributor to postoperative morbidity. Adequate vascularization, careful anastomotic technique, and long-term monitoring are crucial for favorable outcomes. This case highlights a rare but severe late complication of colonic interposition, emphasizing the need for vigilance in long-term follow-up and timely surgical intervention.

Keywords: Colonic transposition, Esophageal replacement, Graft ischemia, Neoesophageal perforation, Diaphragmatic hernia

INTRODUCTION

In the context of esophageal replacement, colonic interposition is a related concept where the colon is used as a substitute for the esophagus, typically when the stomach cannot be used. This procedure requires careful assessment of the colon's vascularization and involves multiple anastomoses, but it can provide good long-term functional outcomes in selected cases.^{1,2} However, colonic transposition surgery, particularly for esophageal reconstruction, is associated with several potential complications. These complications can be broadly categorized into early and late postoperative issues. We present an interesting case report for perforation in a colonic interposition.

CASE REPORT

A 47-year-old male with a medical history of systemic arterial hypertension of unknown duration, treated with losartan 50 mg orally every 24 hours, presented to the emergency department on November 17, 2024, with severe abdominal pain. He described a sudden onset, lacerating, transfixing epigastric pain radiating to both hypochondria, associated with diaphoresis and general malaise. The pain was unrelieved by rest and had no clear aggravating or relieving factors. The patient was initially evaluated at a general hospital where imaging revealed a complicated diaphragmatic hernia, prompting referral to our tertiary care center for surgical management.

His past surgical history included an esophageal perforation for which a jejunostomy and gastrostomy were placed on November 13, 2014, followed by primary gastric closure and esophagostomy on November 18, 2014. He later underwent exploratory laparotomy, right lateral thoracotomy, and esophagectomy, followed by colonic transposition on July 10, 2015.

On November 18, 2024, the patient underwent exploratory laparotomy, resection of the colonic transposition graft, esophagostomy, gastrostomy, and emergency surgical lavage. Intraoperative findings included Zuhlke grade I-II adhesions between intestinal loops, the neoesophagus, and the stomach. The neoesophagus was dilated (6-8 cm) and showed signs of ischemia and necrosis, with a perforation extending from the distal to the middle third. Non-complicated diverticula were noted in the distal third of the neoesophagus. Undigested food debris was present in the anterior mediastinum and within the neoesophagus. A new esophagostomy was matured, and the previous cologastroanastomosis was found to be intact with no evidence of leakage. There was approximately 100 mL of free fluid in the abdominal cavity, and intraoperative blood loss was estimated at 200 mL.

Postoperatively, the patient was admitted to the intensive care unit, where he required ventilatory and vasopressor support along with empirical antimicrobial therapy. He remained in the ICU from November 19 to 21, 2024, and was transferred to the general ward after showing clinical improvement—he was hemodynamically stable, off ventilatory and vasopressor support, and tolerating enteral nutrition via gastrostomy. However, on November 26, 2024, he developed signs of surgical site infection, and was taken back to the operating room for exploratory laparotomy and abdominal lavage. Intraoperative findings included a dehiscence midline surgical wound, poor-quality fascia not amenable to closure, and a frozen abdomen (Björk grade IIIb) with approximately 20 cc of purulent fluid in the left paracolic gutter. Due to ongoing purulent drainage through the wound, negative pressure wound therapy (NPWT) was initiated on December 2, 2024. The wound was successfully closed on December 6, 2024, and the patient continued to improve clinically. He was discharged from the hospital on December 9, 2024.

Laboratory and imaging findings

Initial laboratory results on November 18, 2024, showed leukocytes $8.7 \times 10^9/L$, neutrophils 89%, hemoglobin 18.9 g/dL, hematocrit 56.1%, platelets $257 \times 10^9/L$, PT 10.8 sec, INR 0.9, aPTT 29.3 sec, fibrinogen 334 mg/dL, and D-dimer 1105 ng/mL. On December 5, 2024, laboratory values were leukocytes 8.7, neutrophils 72.4%, lymphocytes 13.9%, hemoglobin 12.2 g/dL, hematocrit 36.4%, platelets $927 \times 10^9/L$, PT 12.1 sec, INR 1.1, aPTT 30 sec, glucose 87 mg/dL, urea 17.1 mg/dL, BUN 8 mg/dL, creatinine 0.8 mg/dL, calcium 9.2 mg/dL, potassium 4.6 mEq/L, sodium 137 mEq/L, albumin 3.1 g/dL. On

December 6, 2024, glucose was 178 mg/dL, urea 24 mg/dL, BUN 11 mg/dL, creatinine 1.05 mg/dL, and total bilirubin 0.54 mg/dL.

A non-contrast abdominal and pelvic CT scan performed on November 18, 2024, revealed intrathoracic herniation of small and large bowel loops, as well as mesenteric fat with increased density and the presence of free air suggestive of perforation. Additionally, bilateral pleural and pericardial effusions were observed, along with free fluid in both paracolic gutters, more pronounced on the left side.



Figure 1: Non-contrast thoracoabdominal CT scan, coronal slice.

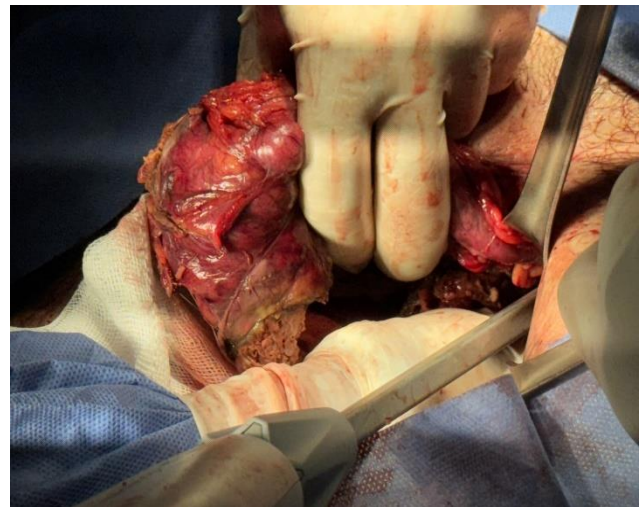


Figure 2: Intraoperative findings: Colon in its cervical and thoracic segments with ischemic changes and liquefied tissue, without abscess formation.

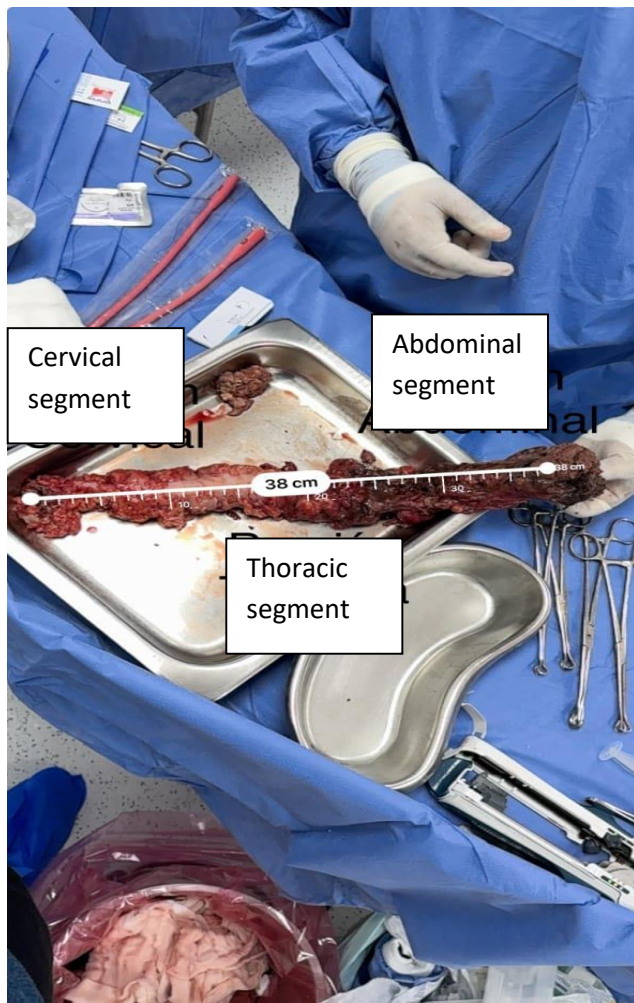


Figure 3: Surgical specimen: Colon observed in its cervical, thoracic, and abdominal segments.



Figure 4: Surgical specimen: Colon showing signs of ischemia and perforation in the middle and distal thirds.

DISCUSSION

Early complications include graft necrosis, anastomotic leakage, and cervical fistulae. Graft necrosis is a critical complication that can result from inadequate blood supply to the transposed colon segment, leading to ischemia and subsequent tissue death. This is highlighted as a significant concern in the literature, with graft infarction being a major factor for poor functional outcomes.³⁻⁶ Anastomotic leakage, another early complication, occurs when the surgical connection between the colon and esophagus fails, leading to leakage of contents and potential infection.^{1,4}

Late complications often involve functional issues such as stenosis, reflux, and redundancy of the colonic graft. Stenosis, or narrowing of the anastomotic site, can lead to dysphagia and requires careful management to prevent long-term morbidity.⁵ Reflux neo-esophagitis is another concern, where the patient experiences reflux symptoms due to the altered anatomy.³ Redundancy of the colonic graft can lead to functional failure and may require revision surgery.⁵

The case study by Shiozaki et al specifically highlights perforation due to mechanical stress or ischemia as a potential complication. This underscores the importance of ensuring adequate vascularization during the procedure to prevent ischemic damage to the graft.¹ Careful dissection of the marginal artery and supercharging with neck vessels are techniques suggested to improve blood supply and reduce complications.⁶

CONCLUSION

Overall, colonic transposition for esophageal reconstruction is a complex procedure with a high risk of complications, necessitating meticulous surgical technique and postoperative management to optimize outcomes.

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Ethical approval: Not required

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