



Complicated Diverticulitis: A Rare Long-Term Complication After Esophagectomy With Colon Interposition

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ABSTRACT

Colon interposition, a rare esophageal reconstructive procedure, can lead to late complications such as diverticulitis in the transplanted colon segment. This case involves a 65-year-old man who presented with a neck swelling 60 years after a colon interposition following caustic ingestion. A diagnosis of diverticulitis with an abscess was confirmed on a computed tomography scan after an initial diagnosis of diverticulitis, and subsequent abscess drainage was performed. Despite the development of a colocutaneous fistula, it closed spontaneously after eight weeks. The pathophysiology involves altered colonic conditions postsurgery. Management includes antibiotics and drainage, but treatment for such fistulas remains uncertain, requiring a tailored approach.

KEYWORDS: colon interposition; complicated diverticulitis; diverticular abscess; colocutaneous fistula

INTRODUCTION

Colon interposition is a relatively uncommon reconstructive procedure for esophageal disorders and was first described by Lundblad in 1921.¹ The indication for colon interposition, particularly in childhood, includes anatomical anomalies such as atresia, as well as caustic ingestion.^{2–4} In later stages of life, colon interposition is used for corrosive and peptic strictures, cancer surgery, and recurrent hiatal herniation. Late complications associated with colon interposition may manifest in adulthood, including but not limited to diaphragmatic hernia, anastomotic strictures, the development of colobronchial or colocutaneous fistulas, and colonic cancer.^{5–7} In addition, patients who undergo colon interposition during childhood may be at risk of diverticular disease in the interposed segment, potentially leading to diverticulitis or other gastrointestinal issues later in life.^{8–10} Given the rarely performed procedure and the even rarer late complication, there is very little literature available for the treatment of colocutaneous fistulas in diverticulitis in a colonic interponate.

CASE REPORT

A 65-year-old man presented at the outpatient clinic of Medisch Spectrum Twente, Enschede, in the Netherlands, with a neck swelling. His medical history indicated colon interposition in 1963, following ingestion of a corrosive substance. Over the past 20 years, he had experienced reflux symptoms, which were well controlled with omeprazole. In January 2024, he presented with a left supraclavicular swelling and retrosternal pain accompanied by mechanical difficulties in swallowing. The week before presentation, he had initiated a course of amoxicillin/clavulanic acid because of cellulitis of the neck, without improvement of symptoms. Physical examination revealed a firm, warm, nonfluctuant, nonpainful, subcutaneous swelling measuring 3–4 cm in the left supraclavicular region, with erythema. An operation scar traversed the swelling. No other lymph nodes were palpable in the neck, submental, or supraclavicular areas. Laboratory results showed normal leukocytes ($7.64 \times 10^9/L$) and elevated C-reactive protein (38 mg/L). A computed tomography scan revealed findings consistent with diverticulitis with possible local perforation. The patient was discharged from the hospital, with a continued course of oral amoxicillin/clavulanic acid. Three days later, a gastroscopy showed diverticulitis in the proximal part of the interposition, with normal anastomoses proximally and distally (Figure 1). The patient

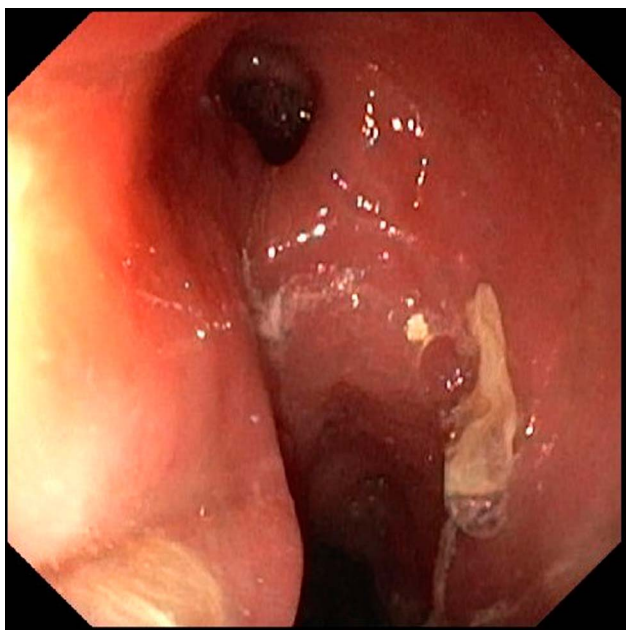


Figure 1. Gastroscopy: diverticular disease is shown.

returned to the emergency department a week later due to progressive symptoms. A repeated computed tomography scan showed an abscess associated with the previously diagnosed

diverticulitis (Figure 2). Surgical transcutaneous drainage of the abscess was performed, yielding creamy pus on incision of the old scar. The patient received intravenous ceftriaxone/metronidazole during 48 hours after the surgery. The post-operative course was uneventful, and the patient was discharged without antibiotics. Initially, there was a low suspicion of an enterocutaneous fistula. However, after 3 weeks, there was increased discharge from the area of the incision. The patient also found small food residues in the wound dressing material, indicating the presence of an enterocutaneous fistula. Because of its clear presence of the fistula, no imaging was performed. He was instructed to flush the fistula outside with water and to drink water after taking a meal. Over the course of 2 weeks, the fistula production decreased spontaneously. The patient returned to the emergency department once with complaints of shortness of breath. A recurrent abscess was not suspected based on laboratory results and physical examination. At the emergency department, a cause of his shortness of breath was not established, during follow-up at the outpatient clinic by the Ear, Nose, Throat clinic, an unspecified swelling of the tongue base was seen. No direct relation to the fistula was found (Figure 3).

A second opinion was requested at University Medical Centre of Utrecht, considering the spontaneous decrease in fistula

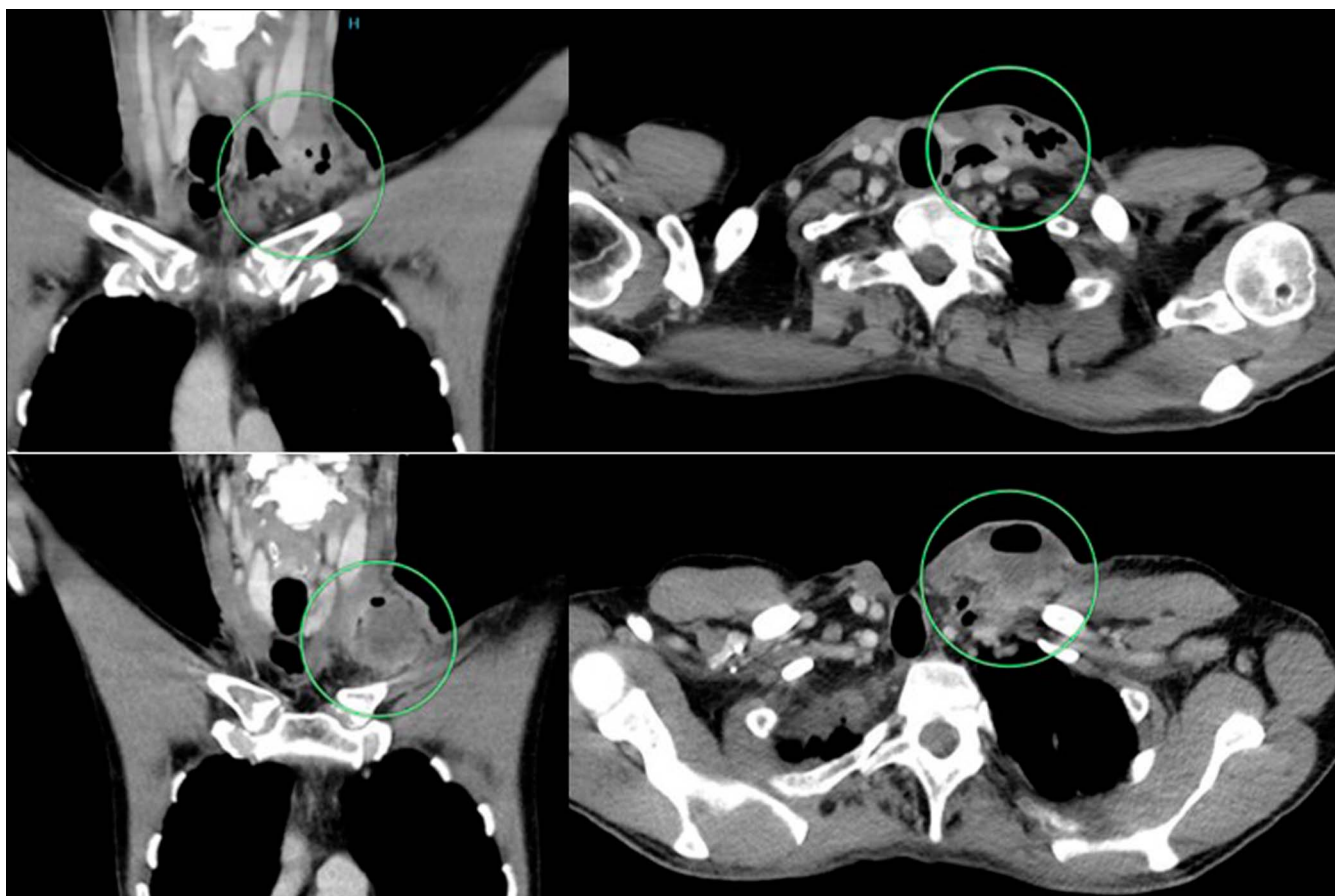


Figure 2. CT-scan results, the upper row is at first presentation, the second row after 1 week of antibiotic treatment, with abscess progression.

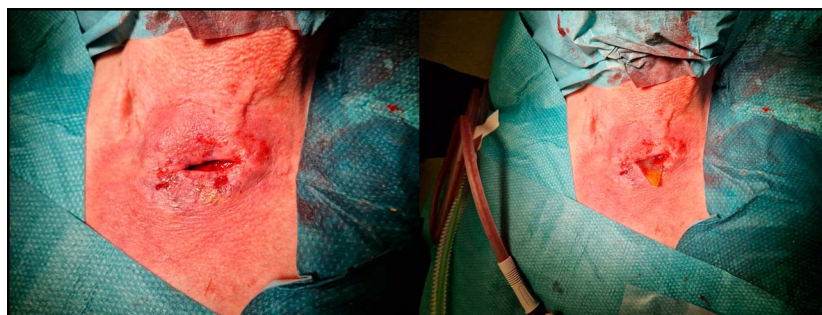


Figure 3. Surgical abscess drainage.

production and the decrease of complaints, it was advised to maintain an expectant policy. Eventually, the fistula closed spontaneously 8 weeks postoperatively. The patient returned to daily activities in 2 weeks after surgery, and no further complaints were reported, over a follow-up period of 9 months.

DISCUSSION

Colon interposition is a surgical procedure used to replace the esophagus, typically when it has been damaged by disease or injury.^{3,4} Although it can be a life-saving operation for patients with lye intoxication, esophageal cancer, severe reflux disease, or congenital defects, it is not without potential complications.⁵ One such complication is the development of diverticular disease within the interposed colon segment.⁸

In our case, a complicated diverticulitis developed 60 years after surgery, which was treated successfully by drainage of the abscess and a course of antibiotics. Enterocutaneous fistula formation occurred, but after 8 weeks, this fistula had closed spontaneously by flushing the fistula with water, and our patient resumed his normal daily activities and work.

Diverticulitis and diverticular disease is the most common benign pathology of the colon. The incidence of diverticulitis is estimated between 5% and 25% in population.¹¹ Left-sided diverticulosis coli occurs in 30%–50% of adults aged older than 60 years.¹² It can be complicated by bleeding, diverticulitis, abscess formation, perforation, strictures, or fistula formation.^{11,13} The interposed colon segment is also subject to this risk of potentially developing diverticula due to the altered physiological and anatomical conditions postsurgery. The pathophysiology of diverticular disease in the interposed colon segment is multifactorial. Mechanical stress from peristalsis, increased intraluminal pressure, and changes in colonic motility and bacterial flora all contribute.^{11,14,15} In addition, the altered vascular supply to the transplanted segment might predispose it to diverticular formation. Given that the interposed colon is now part of the digestive tract's upper segment, it experiences a different exposure to digestive enzymes, pH levels, and food consistency, which probably can further affect its integrity and function.

Clinically, the presence of diverticula in the interponate can present diagnostic challenges due to atypical symptoms and the altered anatomy. Symptoms may include dysphagia, retrosternal pain, and regurgitation, which can be mistaken for other complications such as anastomotic stricture or reflux. Endoscopic and radiological evaluations are crucial for accurate diagnosis. The management of diverticular disease in this context can be complex, often requiring a multidisciplinary approach. Treatment may include dietary modifications, antibiotics for diverticulitis, and in severe cases, surgical intervention resecting the affected segment likewise treating sigmoid diverticulitis in anatomical position.¹¹

In the literature, a few similar studies described cases of diverticulitis in a colonic interposition graft in esophagus position. Four case reports reported diverticulitis, in 2 of which complicated diverticulitis was described. In the report by Lemos et al, a case of uncomplicated diverticulitis was successfully treated with a course of antibiotics. Blencowe et al reported a patient after laryngopharyngectomy with colonic interposition who developed recurrent episodes of diverticulitis in the neck. Despite each episode being one of uncomplicated diverticulitis, the patient was treated with antibiotics because of the presenting cellulitis. He recovered without complications.¹⁶ In a third case report from Punwani et al about a patient with complicated diverticulitis with a cervical abscess, a disease management strategy was described, which was comparable with our case. After drainage of the cervical abscess, a colocutaneous fistula had developed, which was treated by antibiotics for a long period of 6 months, resulting in closure of the fistula. The fourth report from Cheng et al had a more devastating course with the formation of pulmonary abscesses resulting in a lobectomy with a wedge resection of the interposed colon and intensive drainage of the complicated diverticulitis.⁸

In regular colon, spontaneous formation of a colocutaneous fistula following diverticulitis is extremely rare. It usually occurs after either resection of the inflamed diverticulum or following percutaneous drainage of a diverticular abscess.¹⁷ In both our case and another case report about diverticular disease in a colonic interposition graft, a colocutaneous fistula occurred after open drainage of a diverticular abscess. Because of the lack of

literature, no individual factor can be identified, possible contributing factors in the development of a fistula following a diverticular abscess drainage in the neck region, is the fact that there is more passage of food and fluids over this trajectory. Besides that, the subcutis layer is generally thinner compared with the abdomen. This, combined with the altered blood supply, might cause a change in wound healing.

In most cases of regular diverticular disease, a colocutaneous fistula is an indication for surgical removal or closure of the fistula.¹⁸ However, due to anatomical differences, this might not be the best treatment modality for colocutaneous fistula in a colonic interposition graft. The literature is very scarce in this subject, the best way to solve this problem is not yet figured out.

A comparable disease entity is a benign esophagocutaneous fistula, typically resulting from esophageal surgery or trauma. This has various treatment options.¹⁹ Conservative approaches include nil per os (nothing by mouth), intravenous antibiotics, fistula irrigation, and the use of platelet-rich plasma glue.^{19–21} Endoscopic treatments, such as esophageal stent placement or esophagopexy, have shown success, with plastic stents preferred for their ease of removal and lower complication rates compared with metal stents.^{22,23} Surgical interventions, often combined with endoscopic techniques, are also used.^{23,24} Despite these options, the complexity of fistula formation necessitates a tailored treatment approach. The effectiveness of these treatments of colocutaneous fistulas remains uncertain.

Despite all possible treatment modalities, in our case, a conservative policy with antibiotic treatment was successful and resulted in the closure of the fistula. In another previously mentioned case report, a similar expectative policy, including a course of antibiotics, resulted in fistula resolution after 6 months.⁹ Although initial drainage of the diverticular abscess was indicated to prevent more complicated disease, it remains to be questioned what the best treatment modality for subsequent formation of a colocutaneous fistula in the cervical region is; with our experience, a conservative treatment should be considered.

Although rare, diverticulitis of the neck after colonic transposition may occur. As in our case, most patients present with symptoms of a red and painful swelling of the neck, with or without mechanical difficulties in swallowing. Therefore, it is important to consider this diagnosis when a patient with such symptoms and a history of colonic interposition graft surgery presents to the hospital. Complications of diverticular disease of the neck are similar to those of diverticular disease of regular colon and include perforation as well as abscess and fistula formation. Anatomical differences and the low burden of evidence can make the diagnosis and treatment of colonic diverticular disease of the neck and its possible complications challenging.

DISCLOSURES

Author contributions: F. Veenstra and B. van den Beukel, E. van Duyn and N. Venneman designed study protocol and F. Veenstra and B. van den Beukel wrote down case report, and reviewed literature. E. van Duyn and N. Venneman critically reviewed report, carried out the medical procedures. B. van den Beukel is the article guarantor.

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