

Colo-umbilical enterocutaneous fistula as a rare complication of diverticulitis of the sigmoid colon

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Abstract

The care of patients with enterocutaneous fistula constitutes a significant challenge owing to the alterations it usually brings about. For successful treatment, it is necessary to manage fluids and electrolytes adequately, provide practical nutritional support, and control sepsis until its eradication; thus, many fistulae close spontaneously. We present the case of a 36-year-old male patient with a four-month history of fecal-like umbilical secretion. When performing the fistulogram, we confirmed a fistulous tract of 9 cm, which ended at the level of the sigmoid colon, a rare location. In cases where the enterocutaneous fistula does not close, and surgical treatment is indicated, it is imperative to maximize perioperative care, decrease surgical time, choose the correct surgical technique, and prepare the patient for surgery to avoid complications with a fatal outcome.

Keywords

Gastrointestinal fistula, abdominal pain, colon, sigmoid, laparotomy.

INTRODUCTION

Enterocutaneous fistula (ECF) is a common pathology, which sometimes occurs spontaneously as a complication of an underlying disease, and in others, it occurs due to surgical procedures. ECF is the most common form of intestinal fistulas⁽¹⁾, with a great diversity of manifestations, sometimes complex and very difficult to manage, reaching significant morbidity and mortality⁽²⁾.

ECF is the abnormal communication between the interior of the gastrointestinal tract and the skin, with gastrointestinal fluids leaking through it for more than 24 hours^(1,3-5). The true incidence of ECF is not well determined, although an incidence of 1.5% to 16.9% has been reported after lapa-

rotomies. ECF represents 88.2% of all fistulas⁽⁶⁾. The world mortality due to fistulas before 1960 was 40%–65%, but the information compiled in the last decade estimates it at 3.5%–19%^(1,2,4).

We present the case of a man who required surgical treatment for an unusual ECF that connected the sigmoid colon with the navel to highlight the importance of timely intervention to prevent complications.

CASE REPORT

We treated a 36-year-old male patient, 66 kg in weight and 1.64 m in height, for an average body mass index (BMI: 24.54). The patient reported a clinical picture of four months

of evolution, characterized by pain in the mesogastric and hypogastric region, increasing in frequency and intensity. He also had brown, foul-smelling discharge at the umbilical level reminiscent of feces due to its appearance and odor; it increased over time, reaching 300 mL in 24 hours.

Upon physical examination, the secretion described above was confirmed at the umbilical level. The abdomen was painful on deep palpation near the mesogastrium and hypogastrium without peritoneal reaction. The rest of the physical examination was negative. The necessary studies were performed to confirm the diagnosis of ECF, determine the patient's condition, and assess the need for surgery. The fistulography (**Figure 1A**) confirmed the fistulous duct and its communication with the sigmoid colon. Colon by double-contrast barium enema (**Figure 1B**) showed a fusiform narrowing of the entire sigmoid colon with diverticula. The diverticula were observed in the colonoscopy without finding a tumor mass. The blood count showed leukocytosis of $10.4 \times 10^9/L$, with a predominance of neutrophils (72.42%, normal range: 36–66).

Procedure performed and surgical findings

A supra- and infra-umbilical median laparotomy was performed, excluding the umbilicus and fistulous tract com-

municating the sigmoid colon with the navel. A fistulectomy with en bloc sigmoidectomy was performed (**Figure 2**). Another finding was an abscessed plastron made up of the sigmoid colon, bladder, and greater omentum; the pus was aspirated, and the devitalized tissues were removed (**Figure 3**). After the sigmoidectomy, an end-to-end seromuscular anastomosis was performed in a single plane with Vicryl 2/0; subsequently, the abdominal wall was sutured in planes.

The patient had a good evolution. After three days, a liquid diet was administered, he progressed the following day with a soft diet, and on the fifth day, he was discharged. The pathological diagnosis confirmed the presence of diverticula in the sigmoid colon with its fistulous tract.

DISCUSSION

There are various causes and risk factors that favor the formation of an ECF. A suture in any segment of the gastrointestinal tract can be the triggering factor for ECF when anastomosis dehiscence occurs, either due to errors in the technique, poor blood flow, anastomosis with tension, distal obstructions that cause distention near the suture line, and healing failure^(1,3,5,6). Crohn's disease causes 20%–30% of ECFs by spontaneous appearance or surgery compli-

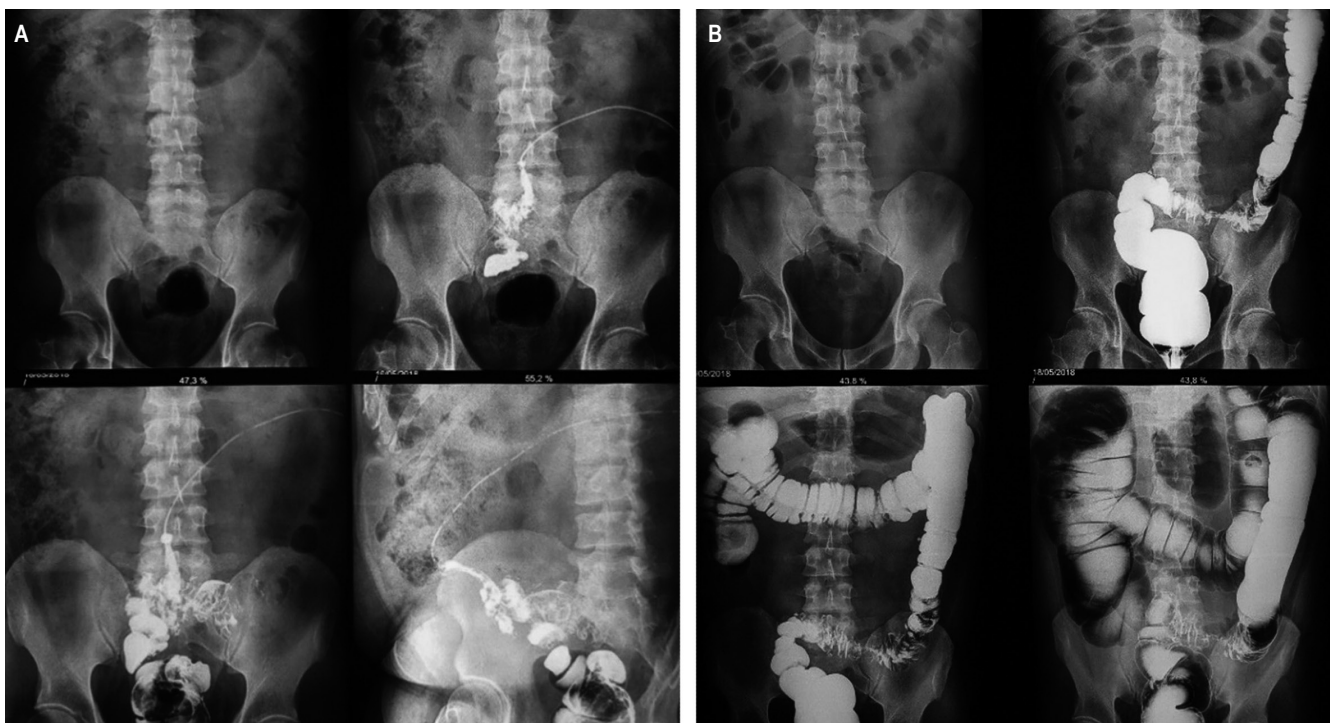


Figure 1. Fistulography. **A.** A fine probe was placed near the fistulous orifice in the umbilical region through which contrast was injected. The fistulous tract of 9 cm in length can be seen communicating with the sigmoid colon, filling it and the rectal ampulla. **B.** The colon by double-contrast barium enema showed a fusiform narrowing of the entire sigmoid colon with the presence of diverticula.

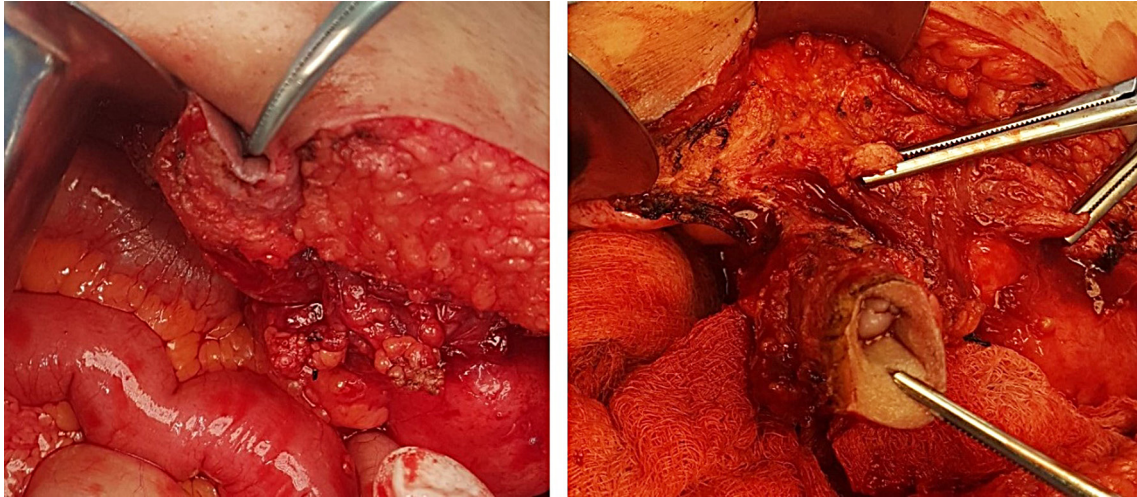


Figure 2. Moment of the surgery in which the navel is resected with the fistulous tract.

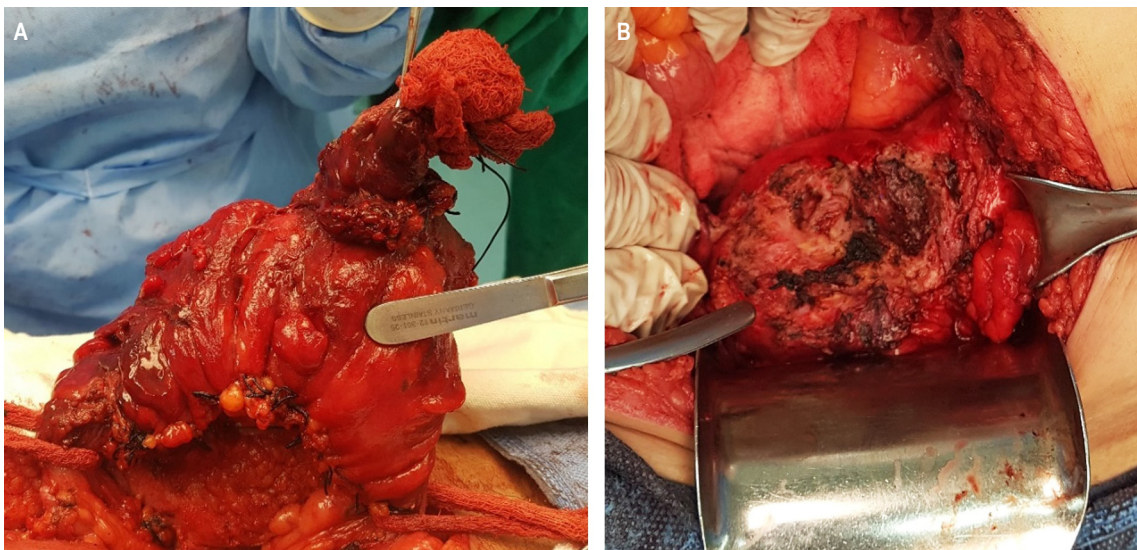


Figure 3. A. The sigmoid colon can be seen with its mesogastrium already ligated and sectioned, its two ends referred with gauze, and the fistulous tract in the medial part that communicates the sigmoid with the navel isolated with gauze. **B.** Bladder fundus where the sigmoid colon and greater omentum were adhered, forming an abscessed plastron. The bladder is shown after the plastron has been disintegrated and the devitalized tissue and pus removed.

cation^(3,6,7). Other causes are gastrointestinal resections, incisional hernia repair, intra-abdominal collection drainage, iatrogenic intestinal injury, foreign bodies, trauma, neoplasms, radiation, diverticular disease, and complicated intra-abdominal infectious pathologies such as tuberculosis, *Actinomyces*, amebiasis, typhoid fever, among others^(2,3,5,6). Our patient's ECF was spontaneous from a sigmoid colon diverticulum, as corroborated by the pathological diagnosis.

There are several described classifications of ECF, one of them is anatomical, which, due to the location of the fis-

tula, can be proximal (gastric, duodenal, jejunal, proximal ileum), or distal (distal ileum and colon)⁽²⁾. The physiological classification determined by their output in 24 hours is considered low (less than 200 mL/day), moderate (between 200 and 500 mL/day), and high (more than 500 mL/day) output^(1,3,6).

The diagnosis of ECF should be suspected by observing the exit of intestinal content through the skin. However, the definitive diagnosis is made by verifying an abnormal connection between the digestive tract and the skin. Computed axial tomography (CAT) can show the characteristics of the

fistula anatomy, detect associated collections and areas of intestinal obstruction distal to the fistula, and identify the underlying disease, among others^(3,6). A significant study that generally helps define ECF accurately is fistulography using water-soluble contrast, as in our patient, in which the connection of the navel with the sigmoid colon could be detected (**Figure 1**). A gastrointestinal study with contrast (intestinal transit or barium enema of the colon depending on suspicion of the affected intestinal section)⁽¹⁾ may also be helpful.

Initially, the approach is non-surgical. A comprehensive approach should be taken, and measures should be aimed at shortening the course of therapy, treating the disease that caused the ECF when possible, and taking care of the skin. In addition, hydromineral imbalance, malnutrition (present in 55%–90%), and sepsis must be avoided or corrected^(1,4,6). These are the most important aspects to control to achieve spontaneous fistula closure, which occurs in 20%–75% of cases without surgical treatment⁽¹⁾.

Early nutritional support is indicated to reverse catabolism. Enteral feeding is recommended as soon as possible to avoid intestinal villus atrophy and thus protect the intestinal mucosal barrier, preventing bacterial translocation. Sometimes, it is necessary to complement enteral nutrition with parenteral nutrition. Sometimes, total parenteral nutrition is indicated, mainly in patients with high-output ECF, to reduce output and facilitate healing^(4,5,8). In this case, enteral nutrition was always used, without resorting to parenteral nutrition, thus avoiding the complications it may cause.

Endoscopic therapies are more widely used through an endoluminal approach with a 3D printed patient-customized fistula stent, sealants, clips, and plugs^(4,6,9). A new treatment that has had good results is the combination of cyanoacrylate and polyglycolic acid sheets⁽¹⁰⁾.

The patient and relatives should be informed of the need for a surgical approach when the ECF does not close spontaneously in two months, there is distal obstruction, neoplasms, or radiation enteritis, or there is evidence of mucosal

eversion^(1,4,6). Antibiotic prophylaxis is essential in patients requiring surgery if the colon is compromised due to the greater risk of abdominal infections⁽¹¹⁾. Once the need for surgery is determined, perioperative care, surgical time, and surgical technique are critical to achieving excellent outcomes⁽²⁾. Surgery must follow basic principles: resecting the fistulous tract with the affected intestinal segment, restoring intestinal transit, and reconstructing the abdominal wall⁽³⁾. In our patient, the navel was resected with the fistulous tract and sigmoid colon en bloc. We consider the timing of the surgical intervention to be appropriate and not to delay surgery due to the increase in symptoms and the abscessed plastron involving the sigmoid colon, bladder, and greater omentum, with a high risk of fistulization into the bladder.

The patients with the highest mortality are those with high-output fistulas since they lead to malnutrition, which causes death in more than 60% of cases⁽¹⁾. However, the leading cause of more significant mortality in these patients is sepsis, reaching a figure of up to 85%^(1,4). In the operated patient, the fistula was not high output, and the sepsis was localized, contributing to his favorable evolution.

CONCLUSION

Once ECF has a surgical indication, surgery must be performed without delay and thus prevent other complications, with a meticulous surgical technique in the shortest surgical time. Despite progress, the persistence of sepsis and malnutrition is the leading cause of morbidity and mortality in patients with ECF.

Authors' contributions

Germán Brito-Sosa: Primary author, patient's physician, data collection, writing of the scientific article. Ana María Iraizoz-Barríos: Writing of the scientific paper, review, adaptation to the journal format.

REFERENCES

1. Rodríguez AM. Terapia nutricia en fistula enterocutánea; de la base fisiológica al tratamiento individualizado. *Nutr Hosp Madrid*. 2014;29(1):37-49. <https://doi.org/10.3305/nh.2014.29.1.6891>
2. Leang YJ, Bell SW, Carne P, Chin M, Farmer C, Skinner S, Wale R, Warriar SK. Enterocutaneous fistula: analysis of clinical outcomes from a single Victorian tertiary referral centre. *ANZ J Surg*. 2018;88(1-2):E30-E33. <https://doi.org/10.1111/ans.13686>
3. Durán VM, Tallón L, Tinoco J, Sánchez A, Tamayo MJ, Pareja F, et al. Actualización sobre el manejo de la fistula enterocutánea y fistula enteroatmosférica. *Cir Andal*. 2019;30(1):40-47.
4. Tang QQ, Hong ZW, Ren HJ, Wu L, Wang GF, Gu GS, et al. Nutritional Management of Patients With Enterocutaneous Fistulas: Practice and Progression. *Front Nutr*. 2020;7:564379. <https://doi.org/10.3389/fnut.2020.564379>

5. Badrasawi M, Shahar S, Sagap I. Nutritional Management in Enterocutaneous Fistula. What is the evidence? *Malays J Med Sci.* 2015;22(4):6-16.
6. Tuma F, Crespi Z, Wolff CJ, Daniel DT, Nassar AK. Enterocutaneous Fistula: A Simplified Clinical Approach. *Cureus.* 2020;12(4):e7789.
<https://doi.org/10.7759/cureus.7789>
7. Reyes GA, Gil FL, Carvajal GD, Sánchez CB, Aponte DM, González CA, et al. Enfermedad inflamatoria intestinal: características de fenotipo y tratamiento en un hospital universitario de Bogotá, Colombia. *Rev Colomb Gastroenterol.* 2018;33(2):117-126.
<https://doi.org/10.22516/25007440.196>
8. Rosenthal MD, Brown CJ, Loftus TJ, Vanzant EL, Croft CA, Martindale RG. Nutritional management and strategies for enterocutaneous fistula. *Curr Surg Rep.* 2020;8(6):10.
<https://doi.org/10.1007/s40137-020-00255-5>
9. Lamazza A, Fiori E, Sterpetti AV, Schillaci A, De Cesare A, Lezoche E. Endoscopic placement of self-expandable metallic stents for rectovaginal fistula after colorectal resection: a comparison with proximal diverting ileostomy alone. *Surg Endosc.* 2016;30(2):797-801.
<https://doi.org/10.1007/s00464-015-4246-2>
10. Tada N, Kobara H, Nishiyama N, Ishimura K, Uchita K, Nishiyama A, et al. Combination sandwich therapy using cyanoacrylate and polyglycolic acid sheets for refractory enterocutaneous fistula closure. *Endoscopy.* 2021;53(3):E114-E115.
<https://doi.org/10.1055/a-1208-3005>
11. Del Moral JA, Alonso M, Gil P, Fernández JM, Durán M, Rodríguez G. Incidencia de infección de localización quirúrgica en cirugía de colon y adecuación de la profilaxis antibiótica: estudio de cohortes prospectivo. *An Sist Sanit Navar.* 2017;40(3):371-7.
<https://doi.org/10.23938/ASSN.0045>