



Case Report

Management of colocutaneous fistula with laparoscopic surgery: Case report



Anung Noto Nugroho^{a,b}, Alia Adelina Dina Soraya^c, Arif Nurhidayat Prawirohardjo^a,
Sholahuddin Rhatomy^{d,*}

^a Digestive Division, Department of Surgery, Sebelas Maret University, Moewardi General Hospital, Surakarta, Indonesia

^b Ph.D. Candidate, Sebelas Maret University, Surakarta, Indonesia

^c Resident of Surgery, Faculty of Medicine, Sebelas Maret University, Moewardi General Hospital, Surakarta, Indonesia

^d Dr. Soeradji Tirtonegoro General Hospital, Klaten, Indonesia/ Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

ARTICLE INFO

Keywords:

Colocutaneous fistula

Laparoscopy

Antibiotics

Sigmoidostomy

ABSTRACT

Background: Colocutaneous fistulas can occur as the result of complications from diverticular colon surgery. Enterocutaneous fistula is a type of fistula that accounts for about 88.2% of all fistulas. In this report, we describe a case reports of the management of colocutaneous fistula with laparoscopic surgery.

Case presentation: In this case reports, both patients complained of increased amount of abdominal discharge after surgery. In Case 1, a 43-year-old female patient complained of a lump in her lower abdomen which had been there for three months. After removal of the lump, there was blood in the drainage tube. After three months, her surgeon advised to close the stoma. In Case 2, a 47-year-old male patient lived with colocutaneous fistula for a year. He had been involved in a traffic accident and underwent laparotomy sigmoidostomy. Both patients experienced pain, and there also were feces and bad odor coming out from the surgical incision. Then, both patients underwent colonoscopy, which revealed coloncutaneous fistulas. Laparoscopic surgery was conducted and there was adhesion between the sigmoid colon and ileum in the ventral abdomen wall. After the laparoscopic procedure, the patients were discharged 3 days later without any complaints.

Conclusions: Laparoscopic colectomy has recently replaced open resection as standard surgery. This procedure is safe, feasible, and effective for diverticular disease.

1. Introduction

Colocutaneous fistulas are commonly related to colon injury during laparotomy, colon anastomotic breakdown, malignancy, diverticulitis, and inflammatory bowel disease. The clinical implications of this complication are varied, with surgery often reserved for cases not amenable to conservative treatment [1]. About 90% of fistulas will close spontaneously. However, this only occurs completely in 30% of fistulas. Time for surgery is the most important factor in successful fistula surgery. If a resolution cannot be reached by conservative measures, surgical intervention is often required. Delaying definitive surgery for 6 weeks was found to reduce morbidity from 20% to 11% [1–3]. In this report, we describe a case reports of the management of colocutaneous fistula with laparoscopic surgery. The procedure was done by senior digestive surgeon. This study has been reported in line with SCARE 2020 [4].

2. Case presentation

2.1. Case 1

In this case, a 43-year-old female patient presented with the initial complaint of a lump in the abdomen for 3 months. The patient felt that the lump was getting bigger, so she went to a rural hospital. An ultrasound was performed, followed by surgery. After the procedure, the patient experienced bloody discharge and pus which exited the surgical incision as much as 100 cc/day. There was also complaints of pain.

From physical examination, the patient's general condition was good, and her vital signs were normal. In her abdominal area, there were bloody discharge, pus, and fecal material coming out from the surgical scar. However, abdominal pain was absent and the bowel sounds were normal in this case. She was subjected to colon in loop examination with the results supporting the appearance of a colon-cutaneous fistula in the suprapubic region (Fig. 1).

* Corresponding author. Surgery Department, Dr. Soeradji Tirtonegoro Hospital, Indonesia/ Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia.

E-mail addresses: doktergustomrhatomy@yahoo.com, sholahuddin.rhatomy@mail.ugm.ac.id (S. Rhatomy).

<https://doi.org/10.1016/j.amsu.2021.102883>

Received 5 September 2021; Received in revised form 19 September 2021; Accepted 21 September 2021

Available online 23 September 2021

2049-0801/© 2021 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



Fig. 1. Preoperative patient presenting with a fistula in the abdomen.

During colonoscopy, methylene blue fluid was injected through the fistula. Then, a scope was inserted 50 cm from the anal verge and a bluish color appeared in the colon. This confirmed the presence of entero-colica fistula (sigmoid colon) (Fig. 2). Magnetic resonance imaging (MRI) showed defective soft tissue in the suprapubic region with a diameter of 2.1 cm which formed a track from subcutan to sigmoid colon with length of 5.3 cm supporting the image of enterocutaneous fistula.

After physical and supporting examinations were done, a laparoscopic procedure was performed. During the procedure, adhesion was found. The connection was found in the sigmoid colon and ileum, approximately 40 cm from the ileocecal junction. An incision of 5 cm was made above the fistula. The sigmoid and ileum were pulled out of the abdomen. The adhesion was released sharply with monopolar cautery. An incision up to the peritoneum was identified. The hole from the sigmoid and ileum was repaired. The knot was stitched with 3.0 multifilament absorbable thread (Fig. 3). Then, the abdominal cavity was evaluated, and a drain was placed. Intravenous fluids, analgesic injection, and antibiotics were given to the patient after the surgery. She was treated for approximately 3 days after the surgery. On day 3, she was discharged from the hospital without any complaints.

2.2. Case 2

A 47-year-old male patient had lived with colocutaneous fistula for a year. Patient had been involved in a traffic accident and underwent laparotomy sigmoidostomy. After three months, his surgeon advised to close the stoma. Unfortunately, his wound in the abdomen never healed totally and there was purulent discharge, and fecal material coming out

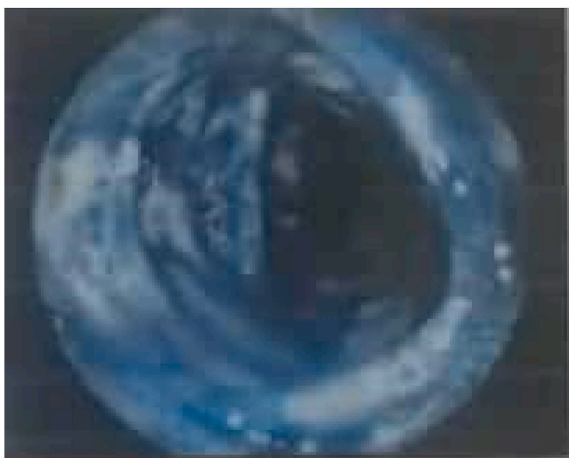


Fig. 2. Colonoscopy showing a bluish color coating the intestinal wall. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

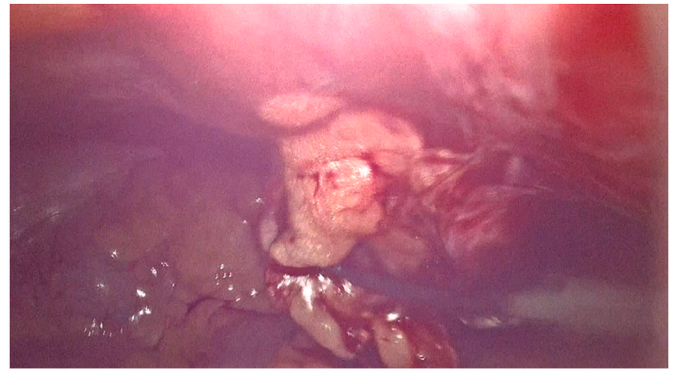


Fig. 3. Released colo-cutaneous fistula.

from the site of the stoma closing wound (Fig. 4). The patient underwent colonoscopy. Colonoscopy showed there was methylene blue inside the colon sigmoid after injecting it through the fistula. This confirmed the presence of colon fistula (sigmoid colon) (Fig. 5).

After physical and supporting examinations were done, a laparoscopic procedure was performed. There was heavy adhesion of the small intestines and sigmoid at the ventral wall of adhesion. It was released meticulously by combining sharp and blunt dissection. There was a perforation at sigmoid colon (the site of fistula). Dissection was done of the lateral peritoneum and fascia of Toldz to release the descending colon, sigmoid and proximal rectum. The sigmoid colon was pulled out from the abdomen from the site of fistula. It had been previously incised horizontally. Identification of the site of perforation and anastomosis resection of the sigmoid colon were performed by linear stapler extracorporeally (Fig. 6). He was treated for approximately 3 days after the surgery. On day 3, he was discharged from the hospital without any complaints.

3. Clinical discussion

Enterocutaneous fistula is a type of fistula that accounts for about 88.2% of all fistulas. In this case series, the patients complained of increased amount of abdominal discharge after surgery, which is the most common presentation of fistulas. Up to 80% of colonic fistulas are reported after abdominal procedures. Bowel resection, Meckel diverticulum resection, incisional hernia repair, adhesiolysis, and intra-abdominal collection drainage are frequently reported as causes of fistulas [3,5]. In the first case, the patient said after the surgery, she



Fig. 4. Preoperative patient presenting with a fistula in the abdomen after laparotomy sigmoidostomy.

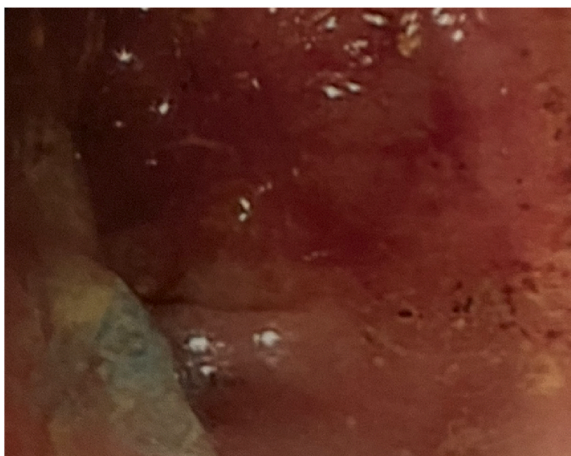


Fig. 5. Colonoscopy showing a bluish methylene blue inside the colon sigmoid. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

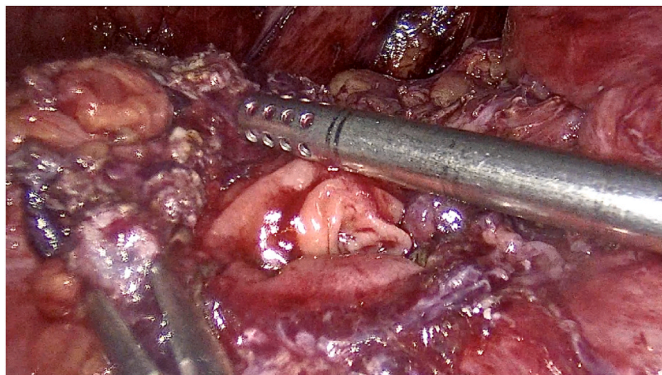


Fig. 6. Dissection of lateral peritoneum and fascia of Toldt.

experienced bloody discharge and pus which were coming out of the surgical incision and in the second case the patient had been involved in traffic accident and underwent laparotomy sigmoidostomy. After three months, his surgeon had advised to close the stoma.

Signs and symptoms can be identified in the patient records. Historically, non-specific symptoms such as weakness, fever, chills, malaise, poor appetite, and malnutrition can be found. More specific symptoms of this type of fistula are wound discharge, diarrhea, and gastrointestinal (GI) bleeding [2,5,6]. From first case, the patient said that there was a discharge in the abdominal area which was sometimes painful. She also said that her body was weak. Organ-specific symptoms are usually related to the organs involved in the fistula. Skin pain, irritation, and excoriation are also seen in the entero or colcutaneous fistulas.

Imaging studies can be done with contrast imaging of the GI tract and the fistula (fistulogram), which usually support the diagnosis of fistula. A computerized tomography (CT) scan is often considered as the first step in the imaging study, especially in acute intestinal fistulas setting. The CT scan is very specific in their depiction of the anatomy of the fistula canal and often can exclude any abscess. CT scans can also help to plan the surgical intervention [2,5,6].

MRI is required if the CT scan does not reveal a fistula even though the clinical suspicion remains high. MRI has the advantage of better soft tissue characterization [2,5,6]. This patient was subjected to an MRI examination, with the results supporting the appearance of enterocutaneous fistula. Both patients also underwent other examinations such as endoscopy and colonoscopy. During colonoscopy, the colon appeared in a bluish color suggesting entero-colic fistula (sigmoid

colon). This was accomplished by visualizing the mucosal surface of the bounded organ [7,8].

Treatment for fistulas either with complicated or uncomplicated diverticulitis is laparoscopic sigmoidectomy. Nowadays, laparoscopy for diverticular is safe, feasible, and effective. For Case 1, a laparoscopic procedure was performed and the adhesion was released. The connection was found in the sigmoid colon and ileum, approximately 40 cm from the ileocecal junction and a drain tube was placed. For Case 2, there was heavy adhesion of the small intestines and sigmoid. It was released meticulously by combining sharp and blunt dissection. There was perforation at the sigmoid colon. Dissection was done of the lateral peritoneum and fascia of Toldt to release the descending colon, sigmoid and proximal rectum. The sigmoid colon was pulled out from abdomen from the site of the fistula. Identification of the site of perforation and anastomosis resection of sigmoid colon were performed by linear stapler extracorporeally. Several studies have been conducted regarding laparoscopic surgery on colcutaneous fistulas with improved good results [9,10].

Post-operative measures included the administration of intravenous fluids, analgesics, and antibiotics. Broad-spectrum antibiotics should be started early in sepsis conditions and cultures must be taken from all sources of infection. Antibiotics should then be adjusted according to culture results and sensitivity tests. Empiric antibiotic coverage should not exceed 4–7 days. After 2 weeks, the postoperative scars in the abdomen area healed well and there were no complaints after the surgery. On day 3, both patients were discharged from the hospital without any complaints.

4. Conclusions

Colocutaneous fistulas are an abnormal connection between digestive tract, colon, and skin. Fistulas mostly occur after surgery. Surgical intervention has the main objective of resecting the involved segment, reshaping intestinal continuity, and removing any adhesions that may cause intestinal obstruction. Laparoscopic colectomy has recently replaced open resection as standard surgery. This procedure is safe, feasible, and effective for diverticular disease.

Abbreviations

Not Applicable.

Declaration competing interest

The authors declare no conflict of interest.

Acknowledgement

We thank the staff of Klinik Bahasa for their help during manuscript preparation.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2021.102883>.

Authors contributions

SR, ADDS, and ANN designed the study, reported the case, and wrote the first draft of the manuscript. SR and ANP handled the literature search and finalize the manuscript. All authors read and approved the final manuscript.

Funding

No funding was obtained for this study.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author, [SR], upon reasonable request.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Guarantor

Sholahuddin Rhatomy is the guarantor and accepts full responsibility.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval and consent to participate

The study is exempt from ethical approval in our institution. Written informed consent was obtained from the patient for publication of this study and accompanying images. A copy of written consent is available for review by Editor-in-Chief of this journal on request.

Registration of research studies

1. Name of the registry: Research Registry.

2. Unique identifying number or registration ID: researchregistry7167.

Consent for publication

Consent to publish this information was obtained from study participants. The proof of consent to publish from study participants can be requested at any time.

References

- [1] Scott M. Berry, J.E. Fischer, Classification and pathophysiology of enterocutaneous fistulas, *Surg. Clin.* 76 (5) (1996) 1009–1018.
- [2] M. Nikfarjam, B. Champagne, H.L. Reynolds, B.K. Poulouse, J.L.M.J. Ponsky, Acute management of stoma-related colocolic fistula by temporary placement of a self-expanding plastic stent, *Surg. Innovat.* 16 (3) (2009) 270–273.
- [3] E.P. Weledji, Perspectives on enterocutaneous Fistula : a review article fistula formation characterization and, *Med Clin Rev* 3 (2:5) (2017) 1–7.
- [4] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, A. Thoma, et al., The SCARE 2020 guideline: updating consensus surgical CAse REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230.
- [5] Amabra Dodiyyi-Manuel, P.N. Wichendu, Current concepts in the management of snakebite, *Mil. Med.* 126 (1961) 526–531.
- [6] F. Tuma, Z. Crespi, C.J. Wolff, D.T. Daniel, A.K. Nassar, Enterocutaneous fistula: a simplified clinical approach, *Cureus* (2020) 2020.
- [7] S.A. Antoniou, G.A. Antoniou, C. Koutras, A.I. Antoniou, Endoscopy and laparoscopy: a historical aspect of medical terminology, *Surg. Endosc.* 26 (12) (2012) 3650–3654.
- [8] G. Monisha, K.S. Manikanta, A rare case of squamous cell ca arising from drain site enterocutaneous fistula- A case report, *Asian J Res Dermatological Sci* 3 (1) (2020) 2019–2021.
- [9] R.T. Gamage, T.G.A. Priyantha, K.G.M.W. Bandara, Laparoscopic approach to surgical management of enterocutaneous fistula, *Sri Lanka J Surg* 37 (3) (2019) 10.
- [10] M.H. Lee, M.G. Kim, Laparoscopic repair for enterocutaneous fistula caused by laparoscopic right hemicolectomy for pan-peritonitis due to cecal cancer perforation, *J Minim Invasive Surg* 23 (3) (2020) 144–148.