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TRICK OF THE TRADE

Laparoscopic surgical repair of refractory chylous ascites after laparoscopic anterior resection

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Introduction

Chylous ascites, caused by surgical trauma to the major lymphatics, can occur after colorectal surgery, with incidence ranging from 1.0 to 6.6% [1, 2]. In our previous paper, we reported that chylous ascites occurred in 138 (4.7%) of 2,917 primary colorectal cancer patients who had surgical resection, and that shorter operative time and the number of harvested lymph nodes were independent risk factors for the development of chylous ascites [1]. All included patients with chylous ascites were medically managed successfully, and no patients needed surgical treatment [1]. However, in some cases refractory to conservative management, surgical intervention may be necessary [2]. Few papers have reported laparoscopic surgical repair for chylous ascites [3, 4].

We describe a patient with intractable chylous ascites refractory to medical treatment, who was successfully managed with surgical intervention. Our primary objective was to report techniques for the identification and ligation of leaking lymphatics using a laparoscopic approach.

Case summary

A 66-year-old man had a laparoscopic anterior resection for sigmoid colon cancer in August 2018. D3 lymph node dissection was performed, and operating time was 110 min. There were no complications. The estimated blood loss was 10 ml. The pathologic stage was T1N0, and there was no lymph node metastasis among the 41 lymph nodes retrieved. On postoperative day 2, the drainage fluid turned into chyle, with a daily amount of 540 ml. The peak drainage amount was 2,990 ml/day, and the patient was put on a low-fat diet and parenteral nutritional support, with the administration of octreotide. After medical treatment, the drainage fluid reverted to a serious nature and the drainage amount decreased to 300 ml/day. The patient was discharged on postoperative day 13, after removal of the drain.

After a week, the patient was hospitalized again through the emergency room, complaining of abdominal discomfort. On physical examination, he had a severely distended abdomen with dullness to percussion, but without tenderness. Vital signs were stable, and blood test results were normal (white blood cells 4300/μl, C-reactive protein 0.21 mg/dl). An abdominal computed tomography scan showed a large volume of ascites (Fig. 1). A percutaneous drain was inserted, resulting in initial drainage of 2850 ml of milky fluid. Laboratory analysis of the fluid showed a triglyceride level of 567 mg/dl and total nucleated cells of 1700/μl, consistent with chylous ascites. We performed conservative treatment again, including total parenteral nutrition and medium-chain triglyceride supplementation with addition of octreotide. However, the amount of drainage was up to 3690 ml/day, and the patient complained of severe dizziness and general weakness. Ten days after readmission and 4 weeks after initial surgery, we decided to perform surgical repair of the chyle leak.

Laparoscopic surgical repair of chyle leak

We encouraged the patient to have soft ice cream 4 h before the surgery to visualize the lymphatic leakage better. Under general anesthesia, the patient was placed in supine position. An infraumbilical port was inserted for a camera, and additional 5 mm and 12 mm ports were inserted in the right lower quadrant and the low midline, respectively (Fig. 2). Chylous ascites was seen in the peritoneal cavity (Fig. 3a); after careful inspection, we could easily find the leakage point. Milky chyle was leaking from a small hole in a

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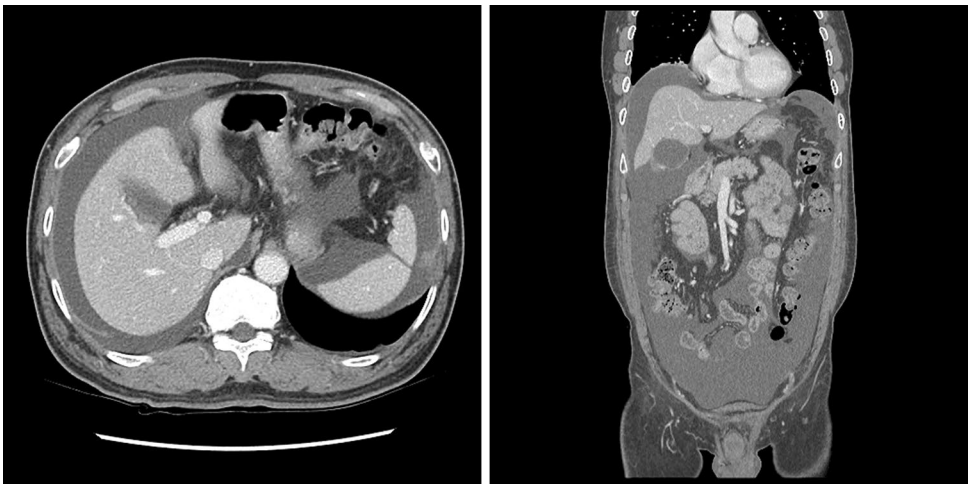


Fig. 1 Abdominal computed tomography scan showing a large amount of chylous ascites

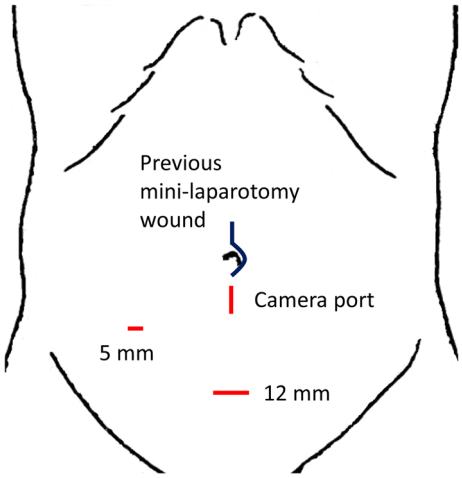


Fig. 2 Trocar insertion site for laparoscopic ligation of a leaking lymphatic

lymphatic channel on the right side of the aorta, about 2 cm cranial to the root of the inferior mesenteric artery (Fig. 3b). The hole was sutured with Vicryl 3-0, and no additional leakage was found in the abdomen (Fig. 3c). Ten days after surgery, the patient was discharged without evidence of chylous ascites (Fig. 4).

Discussion

Postoperative chylous ascites after colorectal surgery is not uncommon. Most patients recover with conservative management [2]. In the case of intractable chylous ascites requiring surgical repair that we recently experienced, we successfully treated the patient with a laparoscopic approach.

Conservative management of chylous ascites includes total parenteral nutrition, a medium-chain triglyceride diet, and subcutaneous octreotide [2]. Although these measures are successful in most cases, surgical repair may be needed in some refractory cases. However, because the surgical management may not be successful, caution is essential when deciding about surgical intervention and its timing. Previous papers have recommended that surgical management should be reserved for cases in which conservative treatment for 6–8 weeks had failed [2, 5].

An initial laparoscopic approach for the surgical treatment of chylous ascites may be considered, because it enables meticulous inspection of the leakage point [3]. After ingestion of a high-fat diet such as milk, ice cream, or peanut oil, the milky-white stream of leakage can be easily identified [3–5], with the help of a magnified view on laparoscopy [3]. Some previous studies have reported use of a peritoneovenous shunt as a surgical option [2]; however, simple ligation of a leaking lymphatic may be successful if the leakage point can be found [3–5].

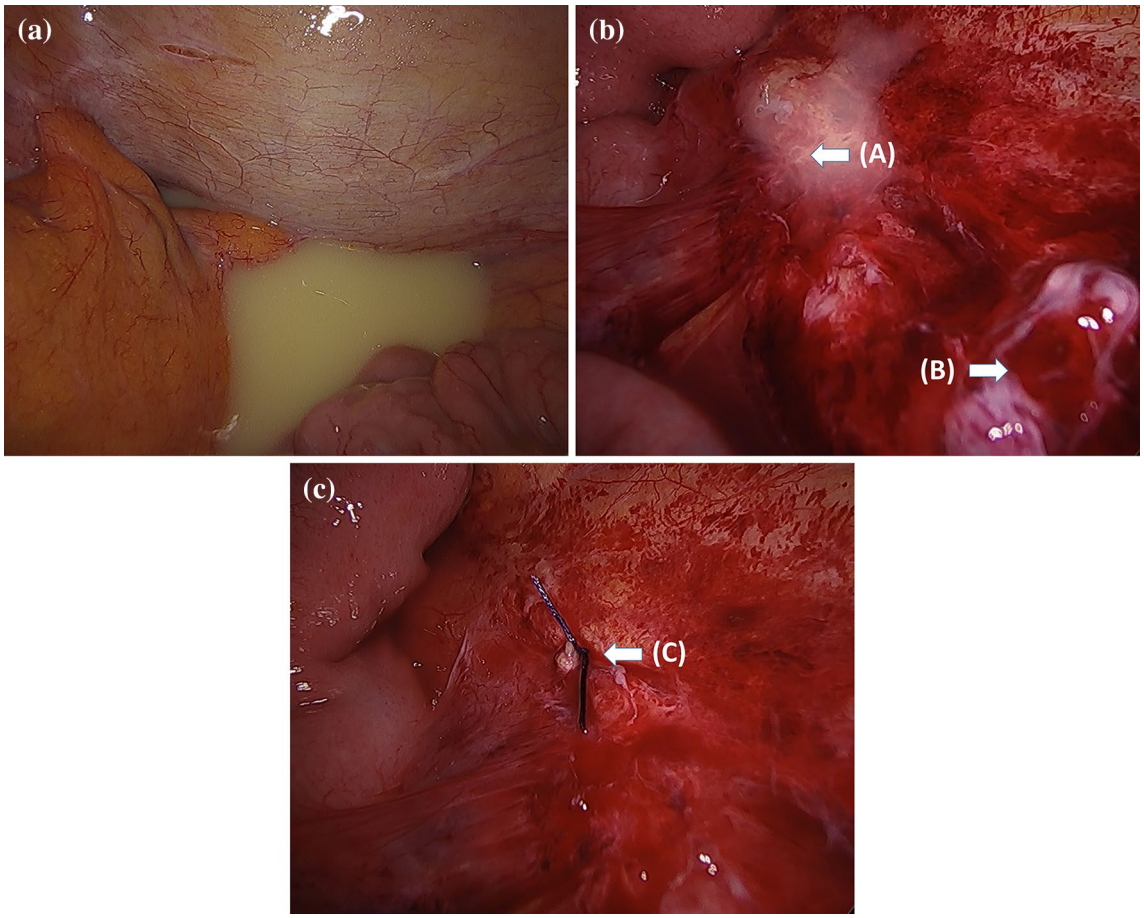
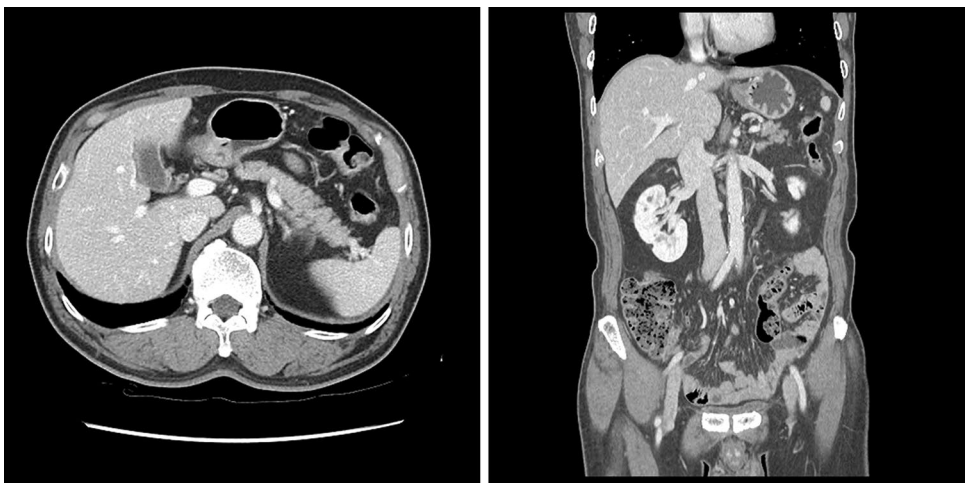


Fig. 3 Laparoscopic view of **a** chylous ascites in the peritoneal cavity; **b** milky-white chyle leakage (A) from lymphatics 2 cm cranial from the ligated inferior mesenteric artery (B) covered with granulation tissue; **(c)** sutured lymphatic fistula (C) showing no further leakage

Fig. 4 Postoperative abdominal computed tomography scan showing no evidence of chylous ascites



Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in the present study were in accordance with the ethical standards of the Trust and with the 1964 Helsinki declaration and its later amendments.

Informed consent Informed consent was waived by our Institutional Review Board.

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