



Case Report

Laparoscopic cholecystectomy following extended totally extraperitoneal repair of a ventral hernia: A case report

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ABSTRACT

Introduction and importance: Ventral hernial repair extensively requires the use of surgical meshes to cover the abdominal wall. Patients with a history of laparoscopic ventral hernial repair are predisposed to secondary mesh infections. However, strategies to avoid these mesh infections have not yet been reported. Herein, we report the safety of laparoscopic cholecystectomy in a patient with cholecystitis following extended totally extraperitoneal repair of a ventral hernia.

Case presentation: A 69-year-old man presented with a five-day history of right hypochondrial pain and severe epigastric pain since the previous day. He had undergone ventral hernial repair. With a diagnosis of acute cholecystitis, laparoscopic cholecystectomy was performed. During laparoscopic cholecystectomy, we inserted the first trocar from the right lower quadrant of the abdomen. Subsequently, we completed the surgery without penetrating the mesh by the ports and observing the other ports in the abdominal cavity. The patient recovered without any complications or short-term mesh infections.

Clinical discussion: When performing abdominal surgery in a patient after ventral hernial repair, the presence of the mesh limits the approachability of the abdominal cavity without mesh penetration. Although it remains unclear whether mesh damage during abdominal surgery causes secondary mesh infection, avoiding any damage to the mesh may be recommended, especially in patients who are highly susceptible to intra-abdominal infection. **Conclusion:** We concluded that if the surgery is completed without damaging the mesh site, mesh infection after abdominal contamination surgery may be avoided.

1. Introduction

Ventral hernias occur in 20% of laparotomies, resulting in a 5% lifetime risk of ventral hernia [1]. Incisional hernia is a well-known complication of abdominal surgery, with incidence rates of approximately 3% and 15% after laparoscopic and open surgeries, respectively [2]. Surgical meshes are widely used to cover the abdominal wall during ventral and incisional hernia repairs. For patients who underwent laparoscopic ventral hernial repair, subsequent abdominal surgeries were required in 17% of cases, with a 2.4% incidence of mesh infections after those surgeries [3]. However, strategies to avoid such secondary mesh infections remain unclear. Here, we report a case in which we safely performed laparoscopic cholecystectomy without subsequent

mesh infection in a patient with cholecystitis, following extended totally extraperitoneal repair (eTEP) of a ventral hernia. To our best knowledge, this is the first report that describes how secondary mesh infections due to subsequent abdominal surgeries can be avoided after eTEP for ventral and incisional hernias. This case report has been reported in line with the SCARE Criteria [4].

2. Case presentation

A 69-year-old man presented with a five-day history of right hypochondrial pain and severe epigastric pain since the previous day. He had undergone ventral hernial repair, cranial to umbilicus, using the eTEP-Rives-Stoppa (RS) method approximately two years ago. The hernial

; eTEP, extended totally extraperitoneal repair; RS, Rives-Stoppa.

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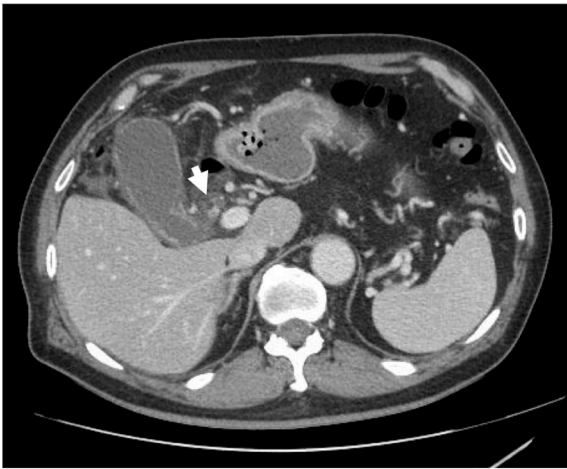


Fig. 1. Abdominal computed tomography showing enlargement of the gallbladder with wall thickening, stones in the gallbladder duct (arrow), and increased fatty tissue density around the gallbladder.

orifice was sized 5 cm × 4.5 cm, and a mesh (Ventralight ST, Bard®, Medicon, Osaka, Japan), trimmed to 15 cm × 14 cm, was used. The laboratory data showed elevated white blood cells ($24.10 \times 10^9/L$) and C-reactive protein (38.70 mg/L) without other abnormal findings. Abdominal computed tomography revealed gallbladder enlargement with wall thickening, cholelithiasis, and increased fatty tissue density around the gallbladder (Fig. 1).

With a diagnosis of acute cholecystitis, laparoscopic cholecystectomy was performed. The first trocar was inserted from the right lower quadrant of the abdomen via open technique to avoid damage to the inserted mesh during eTEP. Subsequently, after confirming the absence of mesh at the port insertion-site by observing through the abdominal cavity, two more ports were inserted from the epigastric right hypochondrium and right flank region, and laparoscopic cholecystectomy was performed without penetrating the mesh by the ports (Fig. 2a–c).

Though the gallbladder wall was highly thickened and surrounded by adhesions, the surgery was completed safely without laparotomy. The patient recovered without complications and was postoperatively discharged after eight days. At the postoperative one-month follow-up,

short-term mesh infections were not observed.

3. Discussion

Treating incisional hernia surgically improves the quality of life of patients immensely [5]. In a multicenter trial comprising 181 patients, lower recurrence rates, less abdominal pain, and relatively fewer complications were noted for surgical mesh repair than for suture repair [6]. The location and size of the hernia are considerable factors, though the abdominal wall after eTEP is generally covered with mesh. Therefore, when performing abdominal surgery in a patient after eTEP, the presence of the mesh limits the approachability of the abdominal cavity without mesh penetration. Although it remains unclear whether mesh damage during abdominal surgery causes secondary mesh infection, avoiding any damage to the mesh may be recommended, especially in patients who are highly susceptible to intra-abdominal infection. Therefore, we inserted all ports without damaging the mesh by inserting the first trocar using the open technique, after comprehensively assessing the mesh-covered area and the planned site of surgery. This was achieved by observing other port insertion sites from inside the abdominal cavity and by carefully examining port placement before surgery. There is no consensus on the treatment strategies or the need to avoid mesh damage in subsequent surgeries after mesh repair of ventral hernias. Therefore, further case accumulation and discussion are required.

In conclusion, we suggest that if the surgery can be completed without damaging the mesh site, mesh infection after abdominal contamination surgery may be avoided even after eTEP.

Patient Consent and Ethics Statement

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. Patient information has been reported by our institution's policies, which conform to the provisions of the Declaration of Helsinki. Our institution does not require ethical approval for the reporting of individual cases or case series.

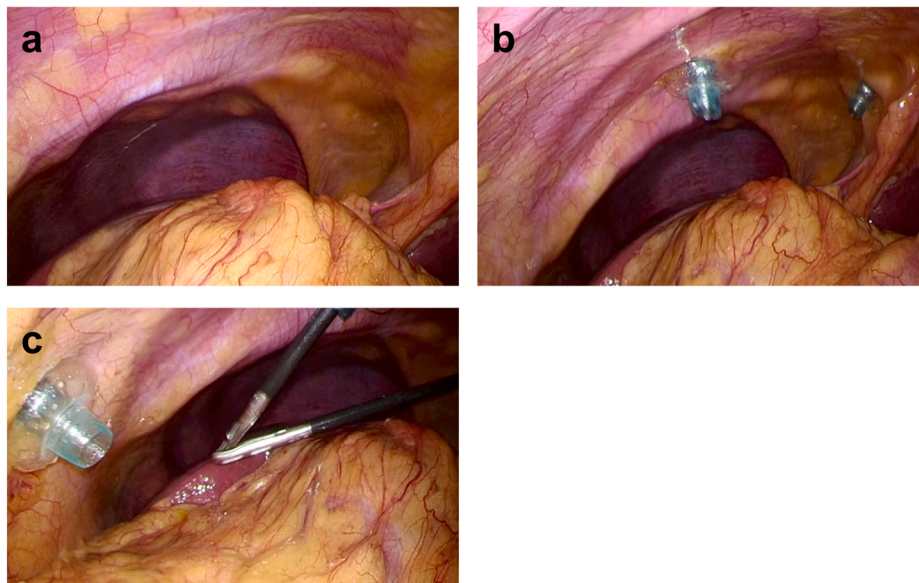


Fig. 2. (a–c) Intraoperative intra-abdominal findings. (a) No mesh at the port insertion site. Ports inserted from (b) the epigastric right hypochondrium and (c) right flank region.

Ethical approval

Our institution does not require ethical approval for the reporting of individual cases or case series.

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Author contribution

The paper was written by Takafumi Shima. The operation was performed by Toshikatsu Nitta, Masatsugu Ishii, and Yasuhiko Ueda. Ryo Iida, Sadakatsu Senpuku, and Ayumi Matsutani collaborated for the patient's perioperative care. Takafumi Shima and Yasuhiko Ueda designed and drafted the manuscript. Toshikatsu Nitta and Takashi Ishibashi reviewed and revised the manuscript.

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.

Research registration

None.

Guarantor

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Declaration of competing interest

None.

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