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Case Report

Small Intestinal Adhesion at a Parastomal Hernia of the Ileal Conduit and Hernia Repair with Laparoscopy and Tailored Mesh: A Case Report

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Parastomal hernia of the ileal conduit (PHIC) is a long-term complication of radical cystectomy (RC) for bladder cancer. A systematic review reported an estimated incidence of PHIC after RC of 17%. Several surgical techniques have been reported for treating parastomal hernias. However, few studies have investigated treatment of PHIC, and there are no guidelines for the optimal approach for PHIC repair. Here, we describe a case in which good results were achieved using the laparoscopic Sugarbaker (LS) technique with a tailored mesh for PHIC. An 80-year-old Japanese woman underwent robot-assisted radical cystectomy for bladder cancer. Ten months after surgery, she was diagnosed as having bowel obstruction due to PHIC. The LS technique was performed using a tailored mesh. Severe small-intestinal adhesions from previous surgeries were safely divided using laparoscopic surgery. No hernia recurrence was observed at 2 years postoperatively. We used the LS technique to treat PHIC, and severe small-intestinal adhesions were safely treated using laparoscopic surgery. The LS technique appears to be a viable therapeutic option for such cases.
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Keywords: parastomal hernia, urinary diversion, surgical mesh, laparoscopy

Introduction

Radical cystectomy (RC) with an ileal conduit is the standard curative treatment for muscle-invasive bladder cancer, whereas open RC is the treatment of choice for locoregional control of muscle-invasive bladder cancer[1]. A systematic review found that parastomal hernia of the ileal conduit (PHIC) is a rare but serious complication after RC, with an estimated incidence of 17%[2]. Maruo et al.[3] reported that body mass index and diameter of the passage through the rectus abdominis muscle were significant predictors of PHIC in a Japanese patient group.

PHIC causes symptoms such as pain, leakage, and skin manifestations and significantly impairs patient quality of life. Several surgical techniques for treating parastomal hernia (PH) have been reported, including direct suture repair, stoma relocation, and mesh repair. The laparoscopic Sugarbaker (LS) technique, first reported by Sugarbaker in 1985, is useful for repairing PH[4,5]. A systematic review revealed that LS resulted in significantly less recurrence than the keyhole technique[6]. Many studies have reported the use of the LS technique to manage PH; however, few such reports pertain to PHIC. Therefore, to our knowledge, there are no current guidelines regarding the optimal approach to PHIC repair. In addition, patients with PH often have adhesions from previous surgery. Hansson reported that 54 of 61 patients who underwent LS had some form of intestinal adhesions[3]. Dense adhesions increase the risk of damage to the ileal conduit

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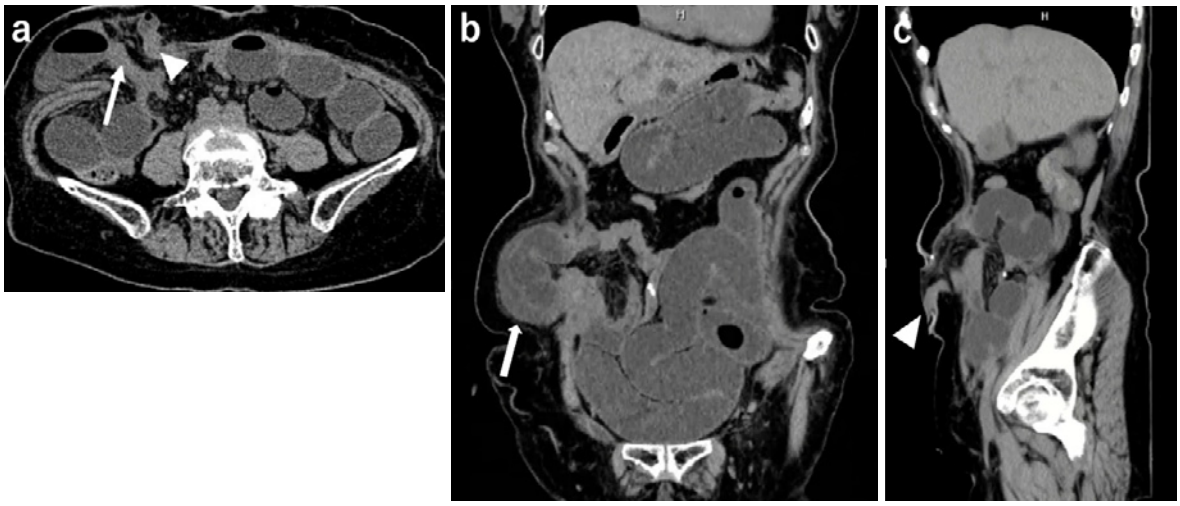

Figure 1 CT scans showing incarceration of the bowel (white arrow) and ileal conduit (white arrowhead)

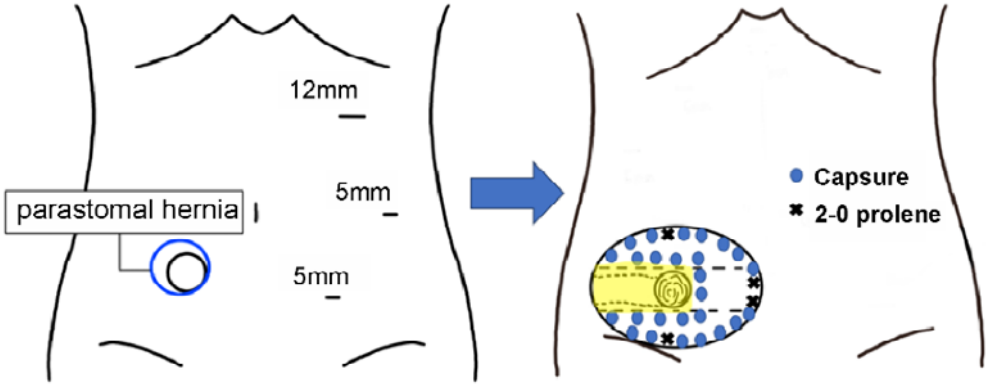

Figure 2 Illustrations showing port placement
One 12-mm port and two 5-mm ports were placed on opposite sides of the stoma. The yellow area represents the position of the ileal conduit. The 2-0 PROLENE anchoring sutures were suspended from the outside of the body with a LAPA-HER-CLOSURE, and the mesh was tacked with a Capsure by using double-crown technique.

in LS for PHIC. Here, we describe a case of severe small-intestinal adhesion for which good results were achieved with the LS technique using a tailored mesh for PHIC.

Case Presentation

An 80-year-old Japanese woman (body mass index: 20.5 kg/m^2) underwent robot-assisted radical cystectomy (RARC) with an ileal conduit for bladder cancer, prior to which she had undergone mesh repair for an incisional hernia in the right lower abdomen (the timing of the incisional hernia surgery is unknown). Ten months after the RARC, she was diagnosed with bowel obstruction. Computed tomography revealed a defect in the muscle layer around the ileal conduit and an intestinal incarceration (**Figure 1**). After conservative therapy with a small-intestinal decompression tube, we performed LS for PHIC. A 12-mm balloon trocar was placed in the left upper abdomen using open technique, before placing two additional 5-mm ports. We chose a 5-mm flexible laparoscope that allowed access to the trocar (**Figure 2**). In this case, incisional hernia repair with mesh was performed before RARC, and the mesh had caused severe adhesions of the small intestine (**Figure 3a**). The use of a laparoscope and sharp dissection with scissors enabled surgery to be performed without damaging the ileal conduit or the ureter. The intestinal surface layer of the wall was partially injured and was repaired laparoscopically with 3-0 VICRYL (Ethicon, Raritan, NJ, USA). A defect of approximately 3 cm × 3 cm was confirmed around the ileal conduit (**Figure 3b**). We used two sizes of Ventralight ST Mesh (BD-BARD, Warwick, RI, USA) (25.4 × 20.3 cm and 20.3 × 15.3 cm). The mesh consisted of absorbent and non-absorbent materials. The anterior side had a polypropylene mesh (polypropylene side), and the poste-

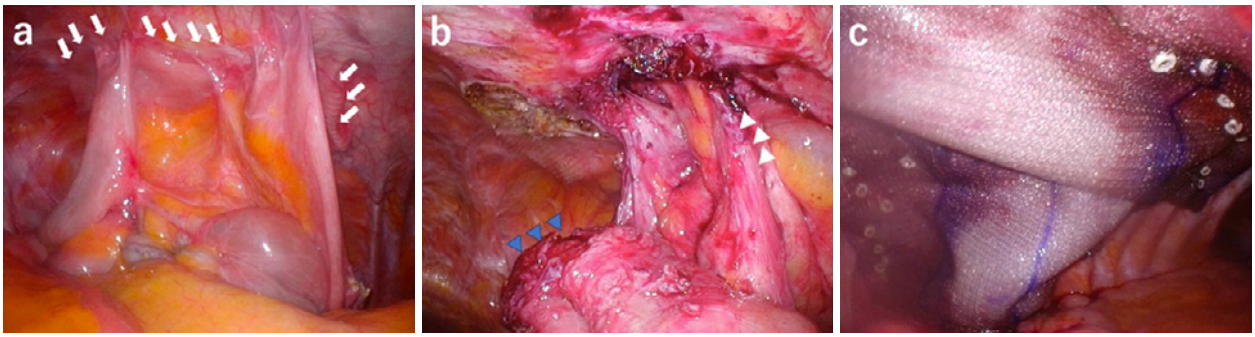

Figure 3 Intraoperative photograph taken before the division of adhesions
The white arrows indicate the previous mesh (a). Photograph captured after the division of adhesions. Severe intestinal adhesions were present around the previous mesh. The size of the hernia orifice was 3 cm × 3 cm. The white arrowheads show the ileal conduit. The blue arrowheads show damage to the surface layer of the intestinal wall, which was repaired with 3-0 VICRYL (b). A photograph showing mesh placement (c).

rior side had biodegradable coatings comprising sodium hyaluronate and carboxymethyl cellulose (sepra side). The mesh size is adjustable. The larger mesh was trimmed into a circular shape with a diameter of 20 cm, and the other mesh was trimmed into a 6-cm-wide band. The meshes were then sutured at six points with 2-0 PROLENE (Ethicon, Raritan, NJ, USA), with the polypropylene sides facing each other (**Figure 4**). Four anchoring sutures were placed using 2-0 PROLENE. First, the mesh was inserted through a 12-mm port and unrolled. Second, the anchoring sutures were suspended from outside the body with a LAPA-HER-CLOSURE (HAKKO Medical, Tokyo, Japan), and the ileal conduit was wrapped with a mesh facing the 6-cm-wide sepra-film side (**Figure 3c**). Finally, the mesh was tacked with a Capsure (BD-BARD, Warwick, RI, USA) using a double-crown technique (**Figure 2**). The total operative time was 280 min. The patient was discharged without postoperative complications. At this writing (>2 years postoperatively), the patient has had no recurrence of PH.

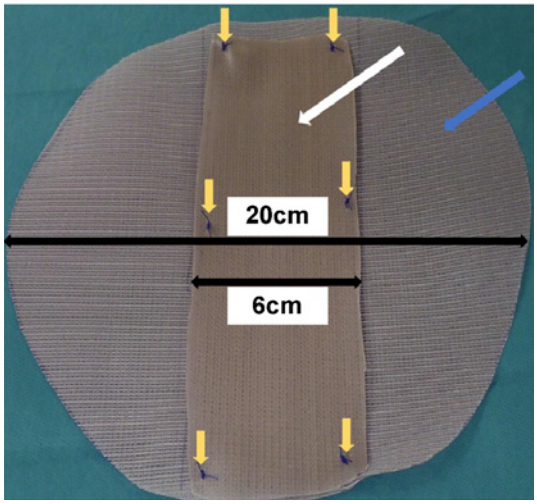

Figure 4 Tailored VENTRALIGHT ST mesh
The blue arrow shows the polypropylene side; the white arrow shows the sepra side; and the yellow arrows show 2-0 PROLENE fixation of the mesh.

Discussion

This report presents several important findings. First, the patient presented with severe intestinal adhesions. The adhesions around the ileal conduit were caused by the mesh used in the previous incisional hernia surgery. The patient underwent mesh repair of an incisional hernia in the right lower abdomen before RARC. The abdominal mesh was cut into a circular hole, and the ileal conduit was located in the right lower abdomen through the hole. In the current case, the stoma construction method may have contributed to PHIC, as the abdominal wall was vulnerable when the mesh was removed. In addition, severe adhesions around the mesh can contribute to intestinal obstruction. If possible, the ileal conduit should be constructed in a position that avoids previous abdominal mesh applications. In a previous report describing a laparoscopic extraperitoneal approach for a PH, technical difficulty and long operative times were considered problematic, but the technique was very useful in terms of intestinal adhesions and mesh costs[7]. In our case, the extraperitoneal approach was not selected because of the effect of the previous mesh. We used laparoscopic surgery to safely divide the intestinal adhesions. The use of a 5-mm flexible laparoscope allows a closer field of view and observation from multiple angles, making it possible to perform surgery without damaging the organs, including the ileal conduit and ureter. It is essential to avoid collateral damage to the ileal conduit. Preoperative balloon catheter insertion facilitates identifica-

tion of the ileal conduit.

Second, we used tailored mesh patches in the LS technique. Until 2019, the Parietex Composite Parastomal Mesh Center Band Type (PCO) (Covidien, Mansfield, MA, USA) was selected as the appropriate mesh for the LS technique; however, its use was discontinued because of reports of mesh failure. No other mesh has been developed specifically for the LS technique, so we used a tailored Ventralight ST Mesh patch. The mesh size should be planned after considering the ileal conduit thickness. The thickness can lead to bending in the mesh, thus reducing the area that can be overlapped. Therefore, a slightly larger mesh should be selected for the hernia orifice. In this case, we selected a 20-cm-diameter circle and a 6-cm-wide band mesh. The band mesh was designed to match the thickness of the ileal conduit. A 6-cm band can adequately flap the ileal conduit, but a band less than 6 cm might not be able to flap the ileal conduit. Larger sizes may not provide enough area for the polypropylene to be placed on the peritoneum, and the mesh may be less strong.

Whereas the PCO was a single component, the tailored mesh comprised two meshes. The tailored mesh exhibits structural durability problems because it is self-fabricated and must be firmly fixed to prevent misalignment. In our case, the tailored mesh required six stitches of 2-0 PROLENE, and a non-absorbable tacker was used for fixation to prevent the mesh from shifting. In addition, transparency was worse for the tailored mesh than for PCO. To avoid damaging the ileal conduit, the mesh was pre-marked and tacked to avoid the marking area.

A previous report comparing the use of PCO with tailored mesh in LS found that the rates of postoperative complications and recurrence for tailored mesh were not inferior to those for PCO. In particular, no recurrence was noted in the tailored mesh group at 23 months of follow-up[8]. Although tailored mesh requires caution in several regards (e.g. its structural durability and transparency), it is not inferior to the PCO mesh and can be considered a viable treatment option.

Conclusions

We used the LS technique for PHIC, and severe intestinal adhesions were safely treated with laparoscopic surgery. A tailored mesh patch was useful in repairing PHIC. Thus, the LS technique appears to be a viable surgical option for patients with severe adhesions.

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Ethics approval and consent to participate: All procedures were performed in accordance with the ethical standards of the appropriate version of the Declaration of Helsinki. Ethical committee approval was not required for this case report. Patient anonymity was maintained, and personal information was protected.

References

1. Gakis G, Efstathiou J, Lerner SP, et al. ICUD-EAU International Consultation on Bladder Cancer 2012: radical cystectomy and bladder preservation for muscle-invasive urothelial carcinoma of the bladder. Eur Urol [Internet]. 2013 Jan;63(1):45–57. Available from: https://www.sciencedirect.com/science/article/pii/S0302283812009347?via%3Dihub. doi: 10.1016/j.eururo.2012.08.009
2. Narang SK, Alam NN, Campain NJ, et al. Parastomal hernia following cystectomy and ileal conduit urinary diversion: a systematic review. Hernia [Internet]. 2017 Apr;21(2):163–75. Available from: https://link.springer.com/article/10.1007/s10029-016-1561-z. doi: 10.1007/s10029-016-1561-z
3. Maruo K, Tanaka T, Shindo T, et al. Incidence and risk factors of parastomal hernia after ileal conduit diversion in Japanese population. Int J Clin Oncol [Internet]. 2020 Oct;25(10):1830–4. Available from: https://link.springer.com/article/10.1007/s10147-020-01722-w. doi: 10.1007/s10147-020-01722-w
4. Hansson BM, Morales-Conde S, Mussack T, Valdes J, Muysoms FE, Bleichrodt RP. The laparoscopic modified Sugarbaker technique is safe and has a low recurrence rate: a multicenter cohort study. Surg Endosc [Internet]. 2013 Feb;27(2):494–500. Available from: https://link.springer.com/article/10.1007/s00464-012-2464-4. doi: 10.1007/s00464-012-2464-4
5. Sugarbaker PH. Peritoneal approach to prosthetic mesh repair of paraostomy hernias. Ann Surg [Internet]. 1985 Mar;201(3):344–6. Available from: https://journals.lww.com/annalsofsurgery/citation/1985/03000/peritoneal_approach_to_prosthetic_mesh_repair_of.15.aspx. doi: 10.1097/00000658-198503000-00015
6. Hansson BM, Slater NJ, van der Velden AS, et al. Surgical techniques for parastomal hernia repair: a systematic review of the literature. Ann Surg [Internet]. 2012 Apr;255(4):685–95. Available from: https://journals.lww.com/annalsofsurgery/fulltext/2012/04000/surgical_techniques_for_parastomal_hernia_repair_.12.aspx. doi: 10.1097/SLA.0b0

13e31824b44b1
7. Jiang H, Thapa DM, Cai X, Ma C, Wang M. Modified laparoscopic Sugarbaker repair of parastomal hernia with a totally extraperitoneal technique. Front Surg [Internet]. 2021 Oct 5;8:740430. Available from: https://www.frontiersin.org/journals/surgery/articles/10.3389/fsurg.2021.740430/full. doi: 10.3389/fsurg.2021.740430
8. Suwa K, Ushigome T, Enomoto H, et al. Feasibility of using a tailored mesh in laparoscopic Sugarbaker parastomal hernia repair. Asian J Endosc Surg [Internet]. 2022 Apr;15(2):344–51. Available from: https://onlinelibrary.wiley.com/doi/10.1111/ases.13023. doi: 10.1111/ases.13023