

Revisional Laparoscopic Parastomal Hernia Repair

Emmanouil Zacharakis, MD, PhD, Joseph Shalhoub, MBBS, MRCS, Nowlan Selvapatt, MBBS, BSc, Ara Darzi, KBE HonFREng FMedSci, Paul Ziprin, MD, FRCS

ABSTRACT

Background: We herein report a laparoscopically performed re-do operation on a patient who had previously undergone a laparoscopic parastomal hernia repair.

Case Report: We describe the case of a 71-year-old patient who presented within 3 months of her primary laparoscopic parastomal hernia repair with recurrence. On relaparoscopy, dense adhesions to the mesh were found, and the mesh had migrated into the hernia sac. This had allowed loops of small bowel to herniate into the sac. The initial part of the procedure involved the lysis of adhesions. A piece of Gore-Tex DualMesh with a central key-hole and a radial slit was cut so that it could provide at least 3 cm to 5 cm of overlap of the fascial defect. The tails of the mesh were wrapped around the bowel, and the mesh was secured to the margins of the hernia with circumferential metal tacking and 4 transfascial sutures. The patient remains in satisfactory condition and no recurrence or any surgery-related problem has been observed during 8 months of follow-up.

Conclusion: Revisional laparoscopic repair of parastomal hernias seems feasible and has been shown to be safe and effective in this case. The success of this approach depends on longer follow-up reports and standardization of the technical elements.

Key Words: Revisional laparoscopic parastomal hernia repair, Revisional laparoscopic surgery, Parastomal hernia, Recurrence.

INTRODUCTION

Parastomal herniation represents a common surgical complication after stoma formation.¹ So far, there is no consensus on the optimal method of surgical repair of these hernias as no randomized trials have been conducted to determine which method to use.² The 3 most common surgical approaches have traditionally been stoma relocation, primary fascial repair, and repair with prosthetic mesh.

Laparoscopic parastomal hernia repair is evolving as a technique for the treatment of this common complication, with several reports in the peer-reviewed literature.²⁻⁵ The reported advantages of the laparoscopic approach are numerous. It avoids stoma relocation and reduces post-operative pain and therefore analgesic requirement. Economic factors, such as a shorter hospital stay and reduced morbidity, and hence an earlier return to work, also make this an attractive option.¹ However, not enough evidence is presented in the literature on the actual recurrence rate after this technique, and also on how these recurrences should be managed.²⁻⁵

Herein, we report our experience of a laparoscopic revision of a recurrence after primary laparoscopic parastomal hernia repair.

CASE REPORT

We describe the case of a 71-year-old patient who presented within 2 months of her original laparoscopic parastomal hernia repair with recurrence. This patient had undergone a laparoscopic repair of a parastomal hernia situated around a loop colostomy fashioned with laparoscopic assistance for fecal incontinence 8 years previously. The patient was a nonsmoker with no comorbidities. The recurrence was detected clinically 3 months after her initial repair and was also confirmed by abdominal ultrasound scan that revealed bowel loops in the subcutaneous tissues around the stoma site. Written consent was obtained from the patient who elected to undergo revisional surgery with the laparoscopic technique.

Department of Biosurgery and Surgical Technology, Imperial College London, St Mary's Hospital, London United Kingdom (all authors).

Address reprint requests to: Emmanouil Zacharakis, MD, PhD, Locum Consultant, General Surgeon, Department of Biosurgery and Surgical Technology, Imperial College London, St Mary's Hospital, 10th Floor, QEOM Wing, Praed Street, London W2 1NY, UK. Telephone: +44 (0) 77722 77820 Fax: +44 (0) 20788 67950, E-mail: manoszacharakis@hotmail.com

© 2008 by JSLs, Journal of the Society of Laparoendoscopic Surgeons. Published by the Society of Laparoendoscopic Surgeons, Inc.

Surgical Technique

The patient was operated on while in the supine position under general anesthesia. The airway was secured with an endotracheal tube. The stoma site was covered by gauze followed by an adhesive transparent drape. A single prophylactic dose of intravenous co-amoxiclav and metronidazole was administered on induction of anesthesia.

Both the surgeon and the assistant stood on the side opposite to that of the stoma, which was located in the left lower quadrant of the abdomen. Pneumoperitoneum was established using the open Hasson technique to a pressure of 14 mm Hg. The initial entry point was at a site on the abdominal wall opposite to the stoma and remote from the midline incision. A 30° laparoscope was inserted, and 2 additional working ports (5 mm and 12 mm) were placed under direct vision, creating a triangle between them. The locations of the port sites used were the same as those used during the primary operation.

On laparoscopy, despite the use of a Proceed mesh (Ethicon, UK) with its antiadhesive properties on the visceral surface, there were dense adhesions to the entire surface of the mesh, which had itself migrated into the hernia sac (**Figure 1**). No other adhesions were found in the abdominal cavity. The hernia defect was located at the lateral aspect of the stoma and measured 3 cm to 4 cm as in the primary repair. This had allowed loops of small bowel to herniate into the sac, hence recurrence. The initial part of the procedure involved the lysis of adhesions using sharp dissection techniques. The small bowel was reduced into the peritoneal cavity. No evidence was found of sepsis,

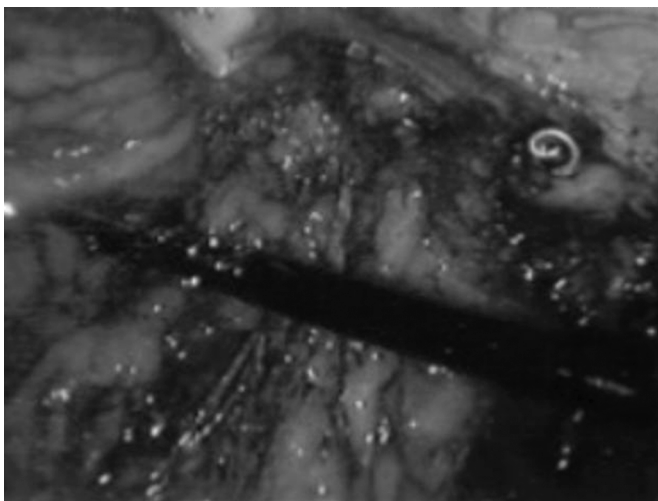


Figure 1. Laparoscopic view of the recurrent fascial defect. The metal tacks of the primary laparoscopic repair are identified.

either local or systemic, which would otherwise indicate mesh infection. As such, the original mesh was not retrieved from the hernia sac. Particular care was taken not to damage the mesentery of the colon and subsequently the blood supply to the stoma.

Then a piece of Gore-Tex DualMesh (W.L Gortex, Germany) was cut so that it could provide at least 3 cm to 5 cm of overlap of the fascial defect and was fashioned with a 2-cm central key-hole and a radial slit of 5 mm (**Figure 2**). Before insertion of the mesh into the abdominal cavity, 2 Vicryl No0 sutures were placed at the quadrants opposite to the radial slit. The mesh was then inserted into the peritoneal cavity through the 12-mm trocar site, and after orienting its smooth and rough surfaces, it was positioned so that the tails of the mesh were wrapped around the bowel at the fascial level. The mesh was orientated in a way so that the radial slit was positioned medial to the stoma and opposite to the hernia defect. Using Endoclose (Tyco Healthcare, Mansfield, MA), each free tip of the Vicryl sutures was drawn out of the abdomen through separate 2-mm incisions and tied subcutaneously, over the anterior rectus muscle sheath to secure the mesh on the anterior abdominal wall. Then, 2 additional transfascial Vicryl sutures were placed at the quadrants adjacent to the radial slit by using the Endoclose as described above. After so fixing its anterior edge, the mesh was spread on the hernia defect and secured to the margins of the hernia

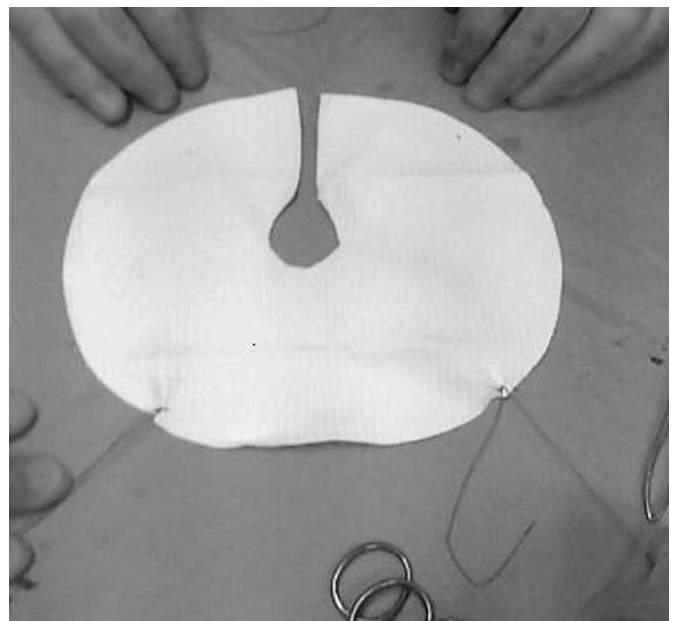


Figure 2. The mesh was fashioned with a 2 cm central key-hole and a radial incision of 5 mm.

with circumferential metal tacking using the Pro Tack device (Tyco Healthcare, Mansfield, MA), allowing for a 3cm to 5cm overlap. The tacks were placed around the cut edges of the mesh in 2 layers, at intervals of approximately 1.5 cm, and both limbs of the mesh were secured close to the bowel wall. The bowel was not sutured to the mesh so as to minimize the risk of potential septic complications. The procedure was terminated after the pneumoperitoneum was released, and the defects at 12-mm trocar sites were closed with fascial sutures. **Figure 3** demonstrates the result after revisional laparoscopic repair.

The technique used for the revision was similar in principle to the primary laparoscopic repair with the exception of the fact that in the primary operation transfascial Vicryl sutures were not used and mesh fixation was done only by circumferential metal tacking using the Pro Tack device. In the primary operation, the fascial defect was 3 cm to 4 cm, and the Proceed mesh (Ethicon, UK) was sized and orientated so that it provided a 5-cm overlap of the defect while the radial incision was positioned medial to the stoma and opposite to the hernia defect.

Postoperative Period

Unrestricted mobilization was encouraged, as was a normal diet as soon as the patient could tolerate it. The patient was discharged, following an uneventful recovery, on postoperative day 3 when fully mobile, could tolerate a normal diet, and stoma output was confirmed. On discharge, the patient was given information regarding the expected recovery pattern, pain control, and potential complications. The patient remains in satisfactory condi-

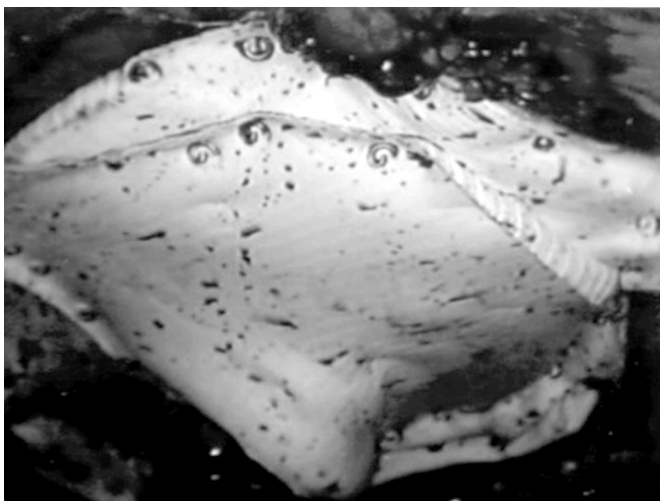


Figure 3. Laparoscopic view of position of mesh in completed revisional parastomal hernia repair.

tion, and no recurrence or any surgery-related problem has been observed during 8 months of follow-up.

DISCUSSION

The rate of recurrence following parastomal hernia repair using traditional open methods ranges between 33% and 76%.⁶ Laparoscopic parastomal hernia repair is an evolving minimally invasive technique that so far has shown promising results.^{3-5,7-9} The laparoscopic technical skills needed in the repair of parastomal hernias, such as lysis of adhesions, manipulation of bowel, and sizing, cutting, placement, and securing of the mesh, are generic, transferable, and largely used by surgeons when repairing incisional and inguinal hernias laparoscopically.⁷ However, to date, data are insufficient to accurately ascertain recurrence rates and optimal treatment of the recurrences in laparoscopic parastomal hernia repair.²⁻⁵

Safadi's² experience with laparoscopic parastomal hernia repair resulted in a 56% failure rate, indicating that improvement of the technique might have favored these results. In this study, 3 of 4 patients with recurrences underwent relaparoscopy with attempted re-repair, with the remaining asymptomatic recurrence managed conservatively. One of these redo laparoscopic repairs was with sutures, and 2 were with mesh. All 3 of these revisional laparoscopic parastomal hernia repairs failed.

LeBlanc et al⁵ reported a single recurrence following laparoscopic parastomal hernia repair after a median follow-up of 20 months (range, 3 to 39). The patient underwent laparoscopic reduction of the hernia contents with the intestine sewn to the patch laparoscopically. However, there was re-recurrence and the stoma was repositioned, recurring once again at the site of relocation. Among the other complications seen in this series was an intermittent obstruction of a colostomy following a nonslit repair. This was managed laparoscopically by incision of the mesh to correct the angulation of the large bowel responsible for the complication.

Berger et al¹⁰ published a large series of 66 repairs, with a median follow-up of 24 months (range, 3 to 72). The authors used a 2-mesh "sandwich" laparoscopic technique in 25 patients, with no recurrences at a median follow-up period of 12 months in this subgroup. A nonslit approach was used to laparoscopically repair the remaining 41 parastomal hernias, with 8 recurrences. One patient had to undergo emergency laparotomy at 9 months for inter-enteric adhesions independent of the mesh, after which the suture used for closing the mesh broke down resulting

in a giant incisional and parastomal hernia, which was repaired laparoscopically without re-recurrence at 3 years. The 7 remaining patients with recurrences developed a primarily lateral defect of the fascia with lateral recurrence. Three of these patients declined further surgery. The remaining 4 recurrences were managed with revisional laparoscopic parastomal hernia repair, one using the nonslit technique after which was re-recurrence, and 3 using the sandwich approach after which no re-recurrence was observed.

The patient presented in this case report was the first of 4 patients who underwent laparoscopic parastomal hernia repair in our unit over a 2-year period between 2006 and 2007. Her primary operation differed technically from the subsequent 3 as the mesh fixation was done only by circumferential metal tacking using a Pro Tack device. In the subsequent cases, we modified our technique by adding 4 quadrant transfascial mesh fixation with Vicryl sutures placed by way of Endo Close. The addition of this element in the repair has proven efficacious in these primary repairs undertaken at our center, with no further recurrences detected after a median follow-up of 9 months. The technique used for the revision was similar in both principle and practice to the primary laparoscopic technique as modified with the supplementary transfascial Vicryl stitches.

In our report of redo laparoscopic parastomal hernia repair, the operation, recovery, and follow-up period have been uncomplicated with, in particular, no recurrences. As such, we raise the question of whether revisional laparoscopic surgery could be applied to recurrent parastomal hernias because redo laparoscopic surgery has been used elsewhere in the peritoneal cavity.¹¹⁻¹³ The evolution of techniques in laparoscopic surgery is continuing to facilitate the implementation of primary and revisional minimally invasive surgery for a wider implementation of procedures.

CONCLUSION

Revisional laparoscopic repair of parastomal hernia seems feasible and has been shown to be safe and effective in our case. The success of this approach depends on longer

follow-up reports and standardization of the technical elements.

References:

1. Carne PW, Robertson GM, Frizelle FA. Parastomal hernia. *Br J Surg*. 2003;90:784-793.
2. Safadi B. Laparoscopic repair of parastomal hernias. *Surg Endosc*. 2004;18:676-680.
3. Hansson B, de Hingh I, Bleichrodt R. Laparoscopic parastomal hernia repair is feasible and safe: early results of a prospective clinical study including 55 consecutive patients. *Surg Endosc*. 2007;21:989-993.
4. Mancini G, McClusky D, Khaitan L, et al. Laparoscopic parastomal hernia repair using a nonslit mesh technique. *Surg Endosc*. 2007;21:487-491.
5. LeBlanc K, Bellanger D, Whitaker J, Hausmann M. Laparoscopic parastomal hernia repair. *Hernia*. 2005;9:140-144.
6. Cheung MT, Chia NH, Chiu WY. Surgical treatment of parastomal hernias complicating sigmoid colostomies. *Dis Colon Rectum*. 2001;44:266-270.
7. Doel ZK, Shayani V. Laparoscopic parastomal hernia repair. *Arch Surg*. 2003;138:203-205.
8. Gould JC, Ellison EC. Laparoscopic parastomal hernia repair. *Surg Laparosc Endosc Percutan Tech*. 2003;13:51-54.
9. Kozłowski PM, Wang PC, Winfield HN. Laparoscopic repair of incisional and parastomal hernias after major genitourinary or abdominal surgery. *J Endourol*. 2001;15:175-179.
10. Berger D, Bientzle M. Laparoscopic repair of parastomal hernias: a single surgeon's experience in 66 patients. *Dis Colon Rectum*. 2007;50:1668-1673.
11. Gorecki PJ, Hinder RA, Libbey JS, Bammer T, Floch N. Redo laparoscopic surgery for achalasia. *Surg Endosc*. 2002;16:772-776.
12. Khajanchee YS, O'Rourke R, Cassera MA, Gatta P, Hansen PD, Swanström LL. Laparoscopic reintervention for failed anti-reflux surgery: subjective and objective outcomes in 176 consecutive patients. *Arch Surg*. 2007;142:785-901.
13. Iqbal A, Tierney B, Haider M, et al. Laparoscopic reoperation for failed Heller myotomy. *Dis Esophagus*. 2006;19:193-199.