Ann Colorectal Res. 2015 March; 3(1): e25481. DOI: 10.17795/acr-25481

Published online 2015 March 23. **Case Report**

Laparoscopic Repair of Perineal Hernia Using a Double-Mesh Technique

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Received: November 10, 2014; **Revised:** January 20, 2015; **Accepted:** February 3, 2015

Introduction: Perineal herniation following pelvic surgery, including abdomino-perineal resection (APR) and pelvic exenteration is a rare condition but can present with serious complications. Multiple methods of repair are possible including either an abdominal or perineal approach. Laparoscopic abdominal repairs have been described.

Case Presentation: An 83 year-old lady, under follow-up following a laparoscopic APR two years previously for a T2N0M0 low rectal cancer, presented with a symptomatic perineal hernia which caused significant impairment in her daily living activities. She had no major comorbidities and was keen for intervention. She was electively admitted for a laparoscopic repair of perineal hernia. This was performed using a double-mesh technique, which allows strengthening of the repair as a feasible alternative to consider in repair of this difficult complication.

Conclusions: This technique is feasible as an alternative to standard laparoscopic or perineal repair of perineal herniation. Further studies are required to demonstrate its long-term efficacy.

Keywords: Hernia, Abdominal; Laparoscopy; Complications

1. Introduction

Perineal herniation following pelvic surgery including abdomino-perineal resection (APR) and pelvic exenteration is a rare, but serious complication. The incidence of perineal herniation is around 7% (1). In the last decade, there has been an increasing move towards extralevator APR (ELAPE) to avoid coning of the specimen and reduction of local recurrence rates producing a cylindrical resection and further work to determine rates will be required with this expansion (2). Radiotherapy is also associated with higher rates of perineal wound complications, which in turn increases the rate of herniation (3). Methods to repair perineal hernia have been described with both abdominal (laparoscopic or open) (4) or perineal approaches undertaken. Debate exists regarding the use of synthetic or biological mesh and autologous tissue, such as vertical rectus abdominis myocutaneous (VRAM) or Gracillus flaps (5). A laparoscopic repair becomes more favorable when the initial resection has been performed laparoscopically.

2. Case Presentation

An 83-year-old lady, under follow-up following a laparoscopic APR two years previously for a T2N0M0 low rectal cancer presented with a symptomatic perineal hernia, which caused significant impairment in her daily living activities. She had difficulty in sitting down and mobilizing fully and discomfort from the sensation of perineal fullness. She had no difficulty with urinary voiding. She had no major comorbidities and was keen for intervention. She was admitted electively for a laparoscopic repair of perineal hernia.

The patient was placed in a Lloyd-Davis position with shoulder supports and a head ring. A supraumbilical cut down through her previous optic insertion point was used and a 12-mm optic port placed. Pneuomoperitoneum was created without complication. The abdomen was assessed for adhesions. Further ports were placed under vision with 5 mm ports in the right lateral and left iliac fossa. A further 12-mm port was placed in the right iliac fossa. The patient was then positioned in a trendelenburg position to facilitate the small bowel falling out of the pelvis (Figure 1). The hernia was reduced. A 15-cm parietex (composite) mesh^{TM} was sized and placed into the abdominal cavity. It was fixed posteriorly to the coccygeal remnant using a protac^{TM} stapling device.

It was sutured to the posterior vaginal vault fascia anteriorly using a 2/0 Ethibond suture laparoscopically (Figure 2). A second composite mesh was then positioned fixing posteriorly to the sacral promontory again using a protac^{TM} fixation device. Anteriorly it was sutured to the fascia anteriorly to the uterus and laterally to the side wall taking care to avoid the iliac vessels and ureters (Figure 3). The fixation was tested by returning the patient to a supine position (Figure 4) before removing the ports and closing all 12 mm ports with a nonabsorbable suture. The wounds were infiltrated with local anesthetic. No drain was required.

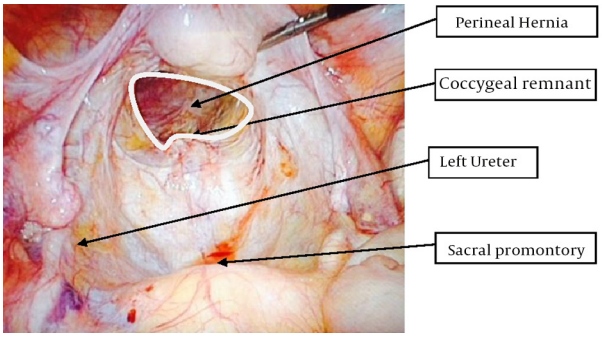

Figure 1. Perineal Hernia

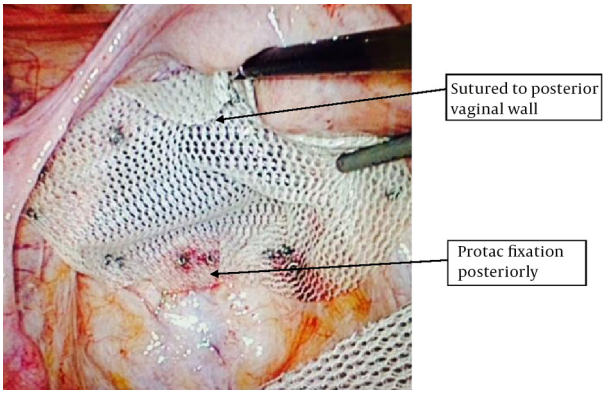

Figure 2. 1st Mesh Positioned at Level Coccygeal Remnant

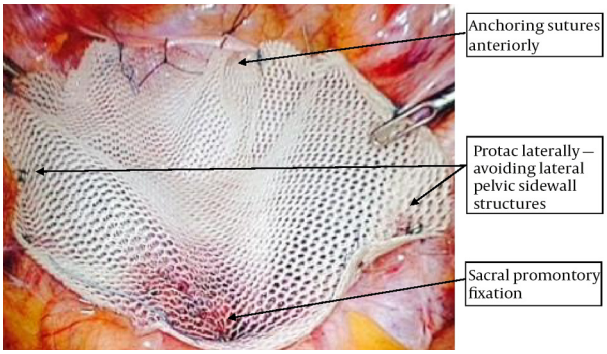

Figure 3. Second Mesh-Level of Pelvic Inlet/Sacral Promontory

Postoperatively the patient was placed on an enhanced recovery pathway and successfully discharged home at day 2 without any complication. She remains well at follow-up at 1 year with no clinical evidence of recurrence.

3. Discussion

One of the potential benefits from laparoscopic surgery is the ability for further laparoscopy following complications. Laparoscopy minimizes pain, facilitates a reduction in length of stay and return to activities. However, the increase in laparoscopic ELAPE techniques may increase perineal herniation rates possibly as high as 45% (6).

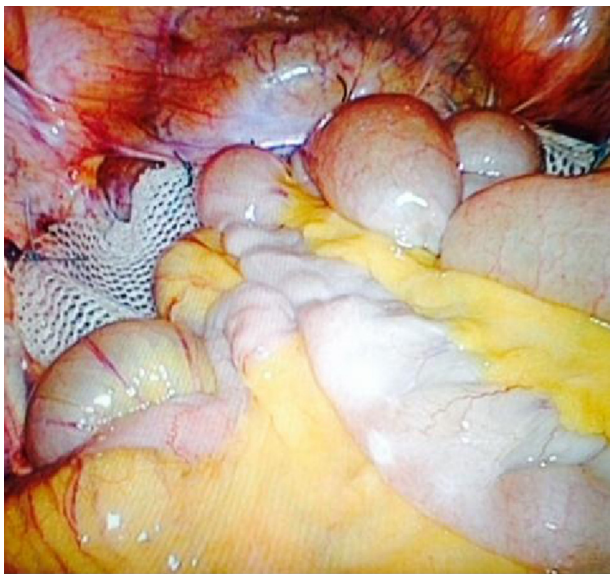

Figure 4. Completed Repair With Small Bowel Restored to Normal Position

Advocates propose either perineal, abdominal or combination approach but as yet no consensus has been proposed. One of the difficulties with an entirely laparoscopic repair is the difficulty in lateral fixation-avoiding the iliac vessels and ureter leading to potentially higher recurrent rates. The advantage of a double-mesh technique is that it can strengthen the repair at two separate levels reinforcing the repair. A previous study by Allen et al. (7) showed two meshes at the same level can reinforce the repair in 6 papers. This allows the weight of the small bowel resting on the superior mesh to be supported by the lower mesh. It has the advantage over perineal repairs of a reduction in wound complications and morbidity associated with this approach. Some authors have shown perineal repairs to improve with the use of mesh (8). Most laparoscopic repairs use either a single mesh or biological mesh, such as permacol^{TM}. The potential for recurrence should any of the fixation points give way under the weight of the small bowel is potentially high. The double-mesh technique allows further support as described above. A composite mesh, such as used in our case is more financially viable and avoids complications such as small bowel adhesions or erosions to the mesh.

This technique provides extra strength for the repair allowing the mesh to be supported when it sits with the weight of the small bowel over it. It is achievable laparoscopically without major morbidity. Fixation as with any attempted repair can be difficult and a combination of sutures and fixation devices are required. Recurrence between fixation points is possible, but the second mesh should reduce recurrence although may not stop potential obstruction should small bowel herniated through the superior mesh.

To our knowledge, this is the first report of this technique which may help make this challenging complication manageable.

Authors' Contributions

Study conception and design: Peter Coyne, Golam Farook. Acquisition of data: peter Coyne, Craig Iain Nesbitt. Analysis and interpretation of data: Peter Coyne. Writing of the manuscript: Peter Coyne, Craig Iain Nesbitt, Golam Farook.

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