



Challenging Perineal Hernia Management Following Extralevator Abdominoperineal Excision: A Compelling Case Report

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ABSTRACT

This case report describes a rare perineal hernia complication following laparoscopic extralevator abdominoperineal excision in a patient with low rectal adenocarcinoma. The patient presented with a reducible perineal swelling over the surgical scar, which was diagnosed as a pelvic floor defect containing a small bowel loop and mesentery. The hernia was repaired one year following the index surgery using a transperineal approach with synthetic mesh and suture fixation to anatomical landmarks. The patient remained free of hernia recurrence one year following the repair and had an improved quality of life. This report highlights the importance of careful planning and individualized surgical management in the repair of perineal hernias following complex pelvic surgery.

Keywords: Abdominoperineal excision, perineal hernia, mesh, flap, surgery

Introduction

Perineal herniation (PH) is a rare but potentially debilitating complication following abdominoperineal excision (APE) for rectal cancer. With the growing use of extralevator abdominoperineal excision (ELAPE) and pelvic radiation therapy in the surgical management of low rectal cancer, the incidence of PH is reportedly on the rise. Although its reported incidence following conventional APE is <1%, this rate rises to up to 10% following ELAPE.¹⁻³

The management of PH is challenging, with a high recurrence rate reported following repair. Moreover, its diagnosis and management following laparoscopic ELAPE remains poorly defined due to its rarity. In this report, a case of PH following laparoscopic ELAPE in a patient with low rectal cancer is presented. The clinical presentation, diagnosis, and management of this rare complication is also discussed, with a focus on the challenges encountered in laparoscopic ELAPE.

Case Report

A 61-year-old man with a medical history of hypertension was diagnosed with low rectal adenocarcinoma. The patient underwent neoadjuvant chemotherapy and long-course pelvic radiotherapy, followed by laparoscopic ELAPE. At the six-month follow-up date, the patient reported perineal swelling that was more prominent when standing and reduced when supine. A physical examination revealed an 8x6 cm reducible perineal swelling over the perineal surgical scar (Figure 1). Further investigation involving a computed tomography scan of the pelvis revealed a pelvic floor defect with a neck measurement of 6.2 cm, containing a small bowel loop and mesentery (Figure 2).

After a discussion with the patient and a comprehensive evaluation, it was determined that the best course of action was to perform a PH repair one year following the index surgery. The PH repair was approached transperineally, with the patient positioned in a prone jack-knife position, and the buttocks were strapped apart to ensure optimal exposure. A vertical midline incision was made below the coccyx along



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the previous perineal scar until the hernia sac was reached. The Lone Star Retractor System™ (Cooper Surgical, CT, USA) was used, and following entry into the hernia sac, the contents were inspected and reduced. The hernia sac was dissected away from the surrounding tissues, trimmed, and closed continuously using a coated polyglactin 910 2/0 suture (Vicryl®, Ethicon, USA). To provide additional support to the repaired area, a macroporous partially absorbable mesh (ULTRAPRO®, Ethicon, USA) was anchored anteriorly to the ischiopubic ramus and posteriorly to the coccygeal periosteum. It was also placed laterally to the ischial tuberosity, sacrotuberous ligament, and surrounding pelvic floor muscles with a polypropylene 2/0 suture (PROLENE®, Ethicon, USA) (Figure 3). Two low-pressure vacuum drains were placed superficially to the mesh and subcutaneously. The patient was discharged in a stable condition on the fourth day following the surgery after the drain removal. At the one-year follow-up, the patient remained free of hernia recurrence and had an improved quality of life. Informed consent was obtained from the patient for this publication.

Discussion

ELAPE is increasingly practiced due to its superior oncological outcomes compared with conventional APE. However, ELAPE has a higher incidence rate of PH of up to 26%, with a more prevalent incidence in the laparoscopic-assisted ELAPE group.³ Primary pelvic peritoneal closure



Figure 1. Perineal hernia following abdominal perineal excision prominent on the upright position

has been shown to reduce the incidence of PH and perineal wound complications following pelvic surgery.^{4,5} To minimize potential PH following ELAPE, perineal reconstruction can be performed immediately, ranging from simple layered closure to more complex myocutaneous and fasciocutaneous reconstruction.⁶ Various flap reconstruction methods have been described to minimize the incidence of post-operative PH, but this requires careful planning and consideration of the defect size, body habitus, and pelvic radiation. Ideally, reconstruction following a major surgical

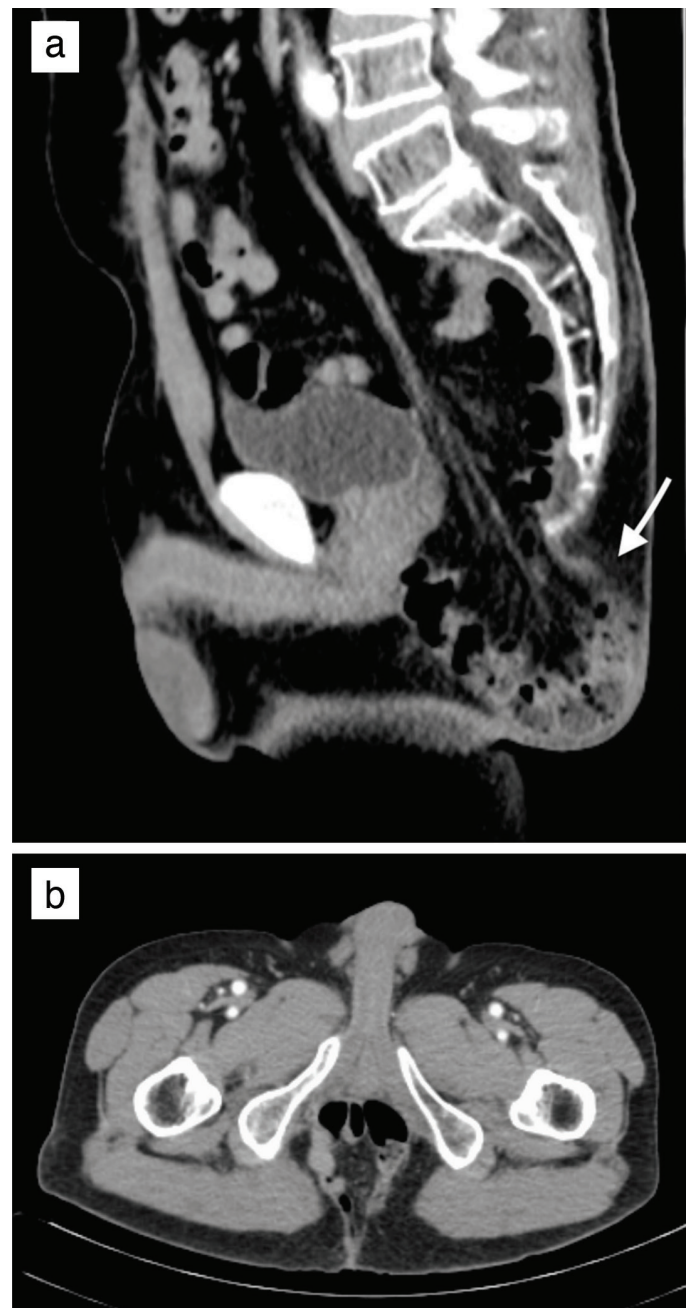


Figure 2. Contrast-enhanced computed tomography of the pelvis demonstrating herniating small bowel and mesentery through perineal floor defect: a) sagittal view and b) axial view

procedure such as ELAPE should be performed immediately if needed. However, universal application lacks consensus, as not all patients develop PH post-operatively, and flap reconstruction can be time consuming.

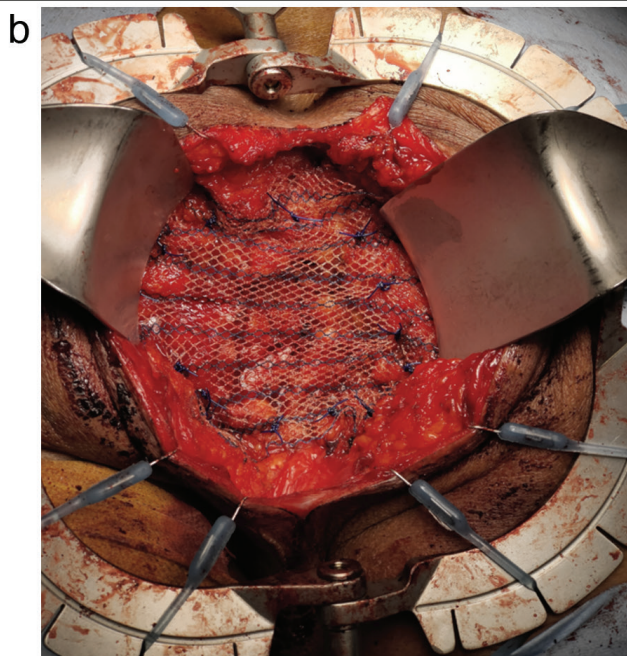
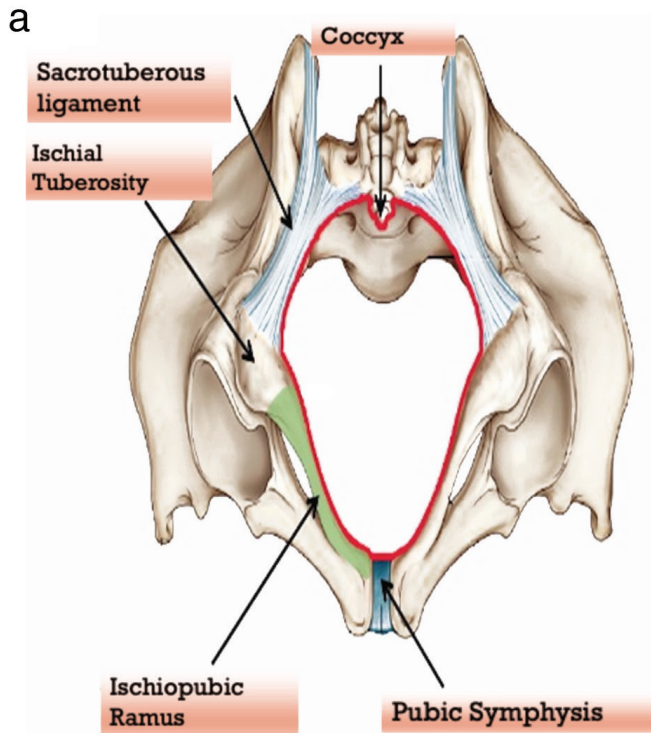


Figure 3. a) Perineum illustration in the prone jack-knife position and anatomical landmarks for mesh fixation. b) A macroscopic partially absorbable mesh (ULTRAPRO®, Ethicon, USA) anchored anteriorly to the ischiopubic ramus and posteriorly to the coccyx periosteum, as well as laterally to the ischial tuberosity, sacrotuberous ligament, and surrounding pelvic floor muscles with polypropylene 2/0 suture

There is limited literature on post-operative PH repair operative strategies. Surgical repair has been described in terms of transperineal, transabdominal, or combined abdominoperineal approaches, but there is insufficient evidence to provide recommendations on optimal operative strategies.^{7,8} Transabdominal repair is challenging due to the possibility of deep pelvic adhesions and mesh placement in the narrow, deep pelvic floor. Moreover, the use of laparoscopic tackers is potentially associated with post-operative chronic pain and morbidity.⁹ In this case, the transperineal approach was chosen as the perineal defect was directly accessible and wider dissection for mesh placement and suture fixation to anatomical landmarks was uncomplicated.

Both synthetic and bioprosthetic mesh have been used for PH repair. Synthetic mesh is associated with a lower incidence of recurrence and mesh infection, and a recent systematic review and meta-analysis showed that mesh infection is rarely reported using this type of mesh.^{2,8} Moreover, bioprosthetic mesh is equally effective, but it is costly and not widely available. In either case, it is important to augment the repair with surrounding native tissue to obliterate dead space prior to mesh placement.

Despite the lack of a consensus on the optimal management of PH, the described repair method using synthetic mesh via a transperineal approach is a promising alternative. However, individualized treatment plans must be developed for each patient while considering the size of the defect, the presence of a radiated pelvis, and the condition of local tissues.

Further research is needed to establish a standard approach to the management of PH, including the use of synthetic mesh, biological mesh, and other reconstructive techniques. Long-term studies are also needed to assess the durability and safety of these interventions, including the risk of mesh infection, chronic pain, and recurrence. In addition, cost-effectiveness analyses are needed to evaluate the economic impact of these treatments and to ensure equitable access to care.

Ethics

Informed Consent: Informed consent was obtained from the patient for this publication.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: J.M., S.J.Y., A.C.R., Concept: J.M., A.C.R., Design: J.M., Data Collection or Processing: S.J.Y., Analysis or Interpretation: A.C.R., Literature Search: J.M., Writing: J.M., S.J.Y., A.C.R.

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