Case Report

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Challenging recurrence after eTEP RS: Open onlay mesh repair as a last resort? A case report

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Abstract

Hernias present a significant surgical challenge, with the extended totally extraperitoneal (eTEP) approach, modified with the Rives–Stoppa (RS) technique, emerging as a preferred minimally invasive strategy for incisional hernia repair. This technique creates a retrorectus space without breaching the peritoneal cavity, allowing laparoscopic defect closure and extensive mesh placement. Despite its advantages, including lower recurrence rates and reduced morbidity, recurrences have been reported. We present a case of a 52-year-old female with a recurrent ventral hernia following eTEP RS repair, managed with open onlay meshplasty. Contributory factors such as obesity, surgical technique, and mesh coverage were considered. Minimally invasive procedures like eTEP RS or endoscopic mini or less open sublay or intraperitoneal onlay mesh remain the gold standard for ventral hernia repair, and recurrence management requires a measured approach. A patient-centric approach, thorough evaluation, and optimization of surgical techniques are essential to minimize recurrence. This case highlights the need for further studies to establish best practices for recurrent hernias post-eTEP RS.

Keywords:

eTEP RS, laparoscopic hernia repair, onlay repair, ventral hernia

Introduction

Hernias present a formidable challenge characterized by the protrusion of anatomical structures through a compromised fascial defect. While a diverse armamentarium of surgical techniques exists for hernia repair, the extended totally extraperitoneal (eTEP) approach, particularly when implemented with the Rives–Stoppa (RS) modification, has emerged as a compelling strategy for minimally invasive repair of incisional hernias. eTEP RS involves creation of a space just beneath the rectus muscle, without entering the peritoneal cavity, extending up to the preperitoneal spaces of Bogros and Retzius. The herniated contents are reduced laparoscopically and defects closed, followed by placement of a large mesh in the retrorectus space, encompassing the defects of the ventral hernia with extensive coverage of the anterior abdominal wall and the inguinal regions.[1,2] eTEP RS has emerged as the treatment modality of choice for complicated ventral hernias in view of its minimally invasive approach, wider mesh coverage, and minimal recurrence rates, in addition to being safer as the peritoneal cavity is not breached while remaining economical for the patients as it does not require the placement of a composite mesh.[2]

Very few cases of ventral hernia recurrence have been described in literature following eTEP RS. We describe here one such case of a recurrent ventral hernia following eTEP RS repair, managed by open onlay meshplasty.

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Case Report

A 52-year-old female, known case of hypothyroidism, with body mass index (BMI) 28.3 kg/m^2 (class I obesity) presented with the complaint of a painless swelling over the abdomen for 2 months, progressively increasing in size, and becoming more prominent on coughing and straining. Upon examination, the patient was having two distinctly palpable non-tender swellings in the anterior midline of the abdomen, doughy in consistency, irreducible in nature, along with divarication of recti. The patient had a history of a similar complaint 2 years prior and had undergone laparoscopic ventral hernia repair (eTEP RS) for the same at another institute, although no documents were available with the patient. Details of the previous surgery were requested from the institute where the patient had undergone the surgery, wherein they provided us with the name of the procedure, with no accompanying procedural notes or intraoperative findings.

She underwent computed tomography (CT) scan of the abdomen (CT abdomen), which depicted multiple defects in the anterior abdominal wall, at the supraumbilical, umbilical, and infraumbilical levels, with herniation of the omentum and small bowel loops with multiple adhesions and distortion of the anatomy of the anterior abdominal wall [Figure 1A and B].

A diagnosis of a recurrent ventral hernia was made, and the patient was posted for surgery. The patient and relatives were counseled for a minimally invasive approach for repairing the recurrent hernia, especially in view of possible adhesions, loss of domain, and overall superiority of laparoscopic repair as compared to open surgery. But owing to significant financial costs incurred during the previous procedure, they could not afford another financial burden. Hence, the patient opted to undergo open onlay meshplasty under a government-sponsored medical scheme.

Intra-operatively, the anatomy of the ventral musculature was visibly distorted, and it was extremely difficult to identify individual layers. Sublay mesh from the previous surgery was found with significant fibrosis of the surrounding tissue and atrophy of the rectus muscle. Two hernial defects were noted in the anterior midline of the abdomen, a 3 cm × 2 cm-sized defect in the supraumbilical region with herniation of the omentum [Figure 2A, green arrow] and another large defect measuring 8 cm × 6 cm [Figure 2B, green arrow], with herniation of small bowel loops [Figure 2B, black arrow]. The contents were reduced into the abdominal cavity, and margins of the defect were refreshed. Remnants of the fibrosed mesh from the previous surgery were also excised. The defects were closed primarily, and double-breasting of the remnant rectus was done using a non-absorbable polypropylene suture [Figure 3A, green arrows]. A 30 cm × 30 cm polypropylene mesh was placed over the sheath and onlay mesh repair done [Figure 3B, green arrow]. The entire procedure was completed over a period of 3 h.

Following the surgery, the patient made an uneventful recovery and exhibited no symptoms of recurrence for up to 1 year of follow-up.

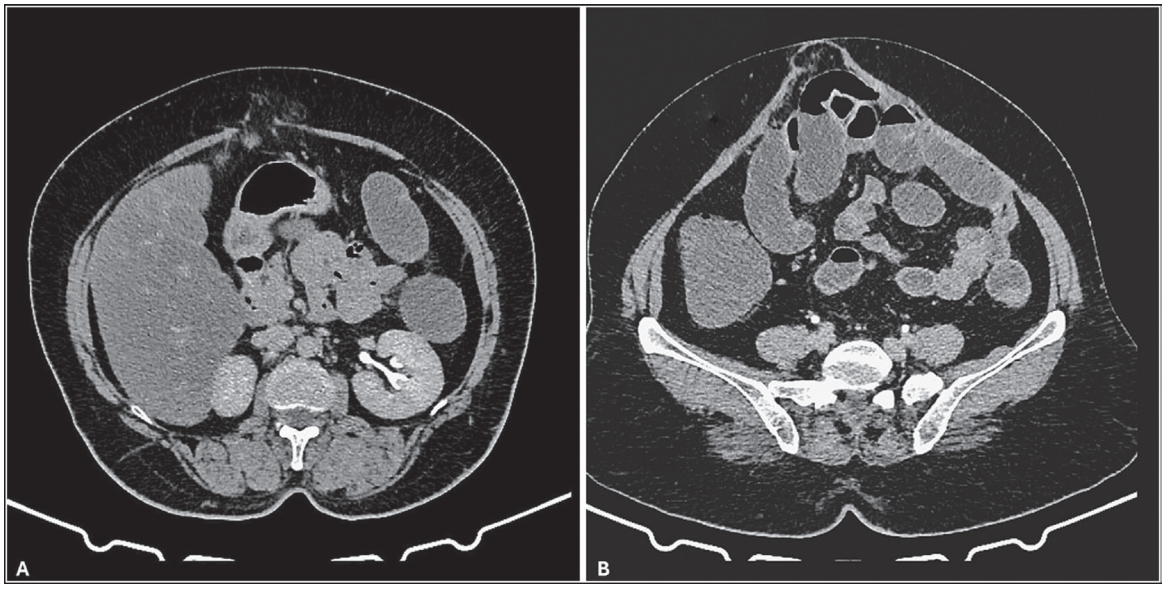

Figure 1: Plain CT abdomen showing hernial defects with herniation of intra-abdominal content at the supraumbilical level (A) and infraumblical level (B). CT = computed tomography

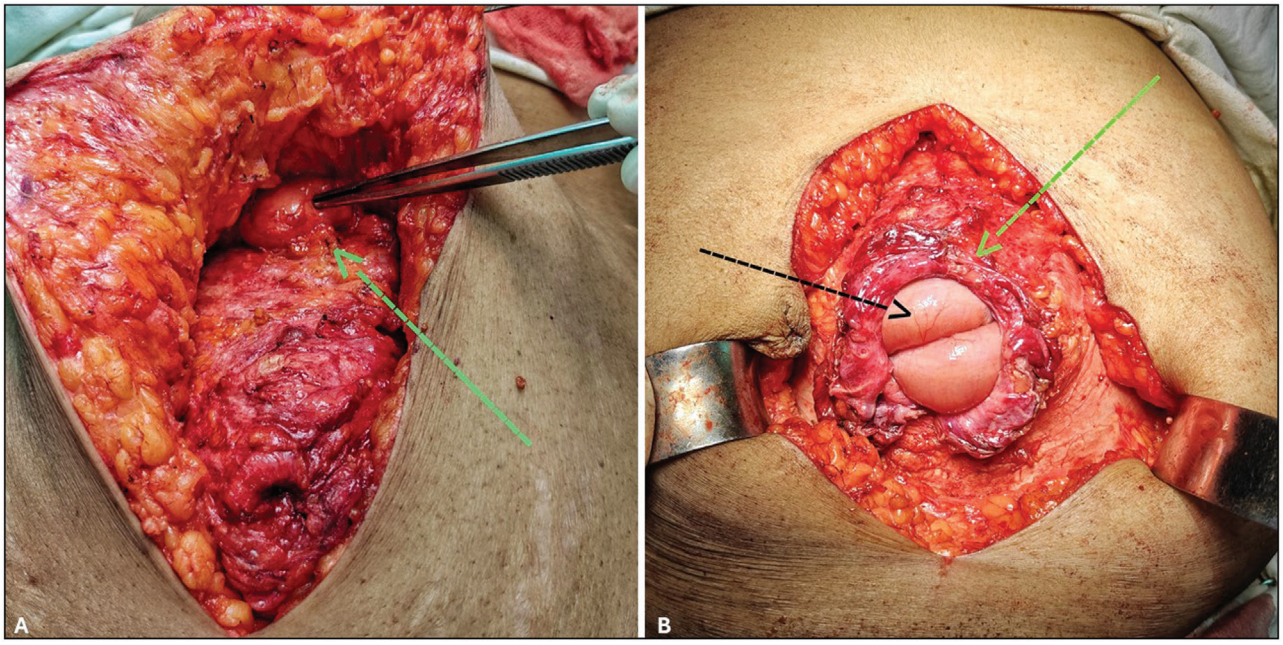

Figure 2: Intraoperative image showing a supraumbilical hernia defect (A, green arrow) and a second hernial defect at the infraumbilical level (B, green arrow), with herniation of small bowel loops (B, black arrow)

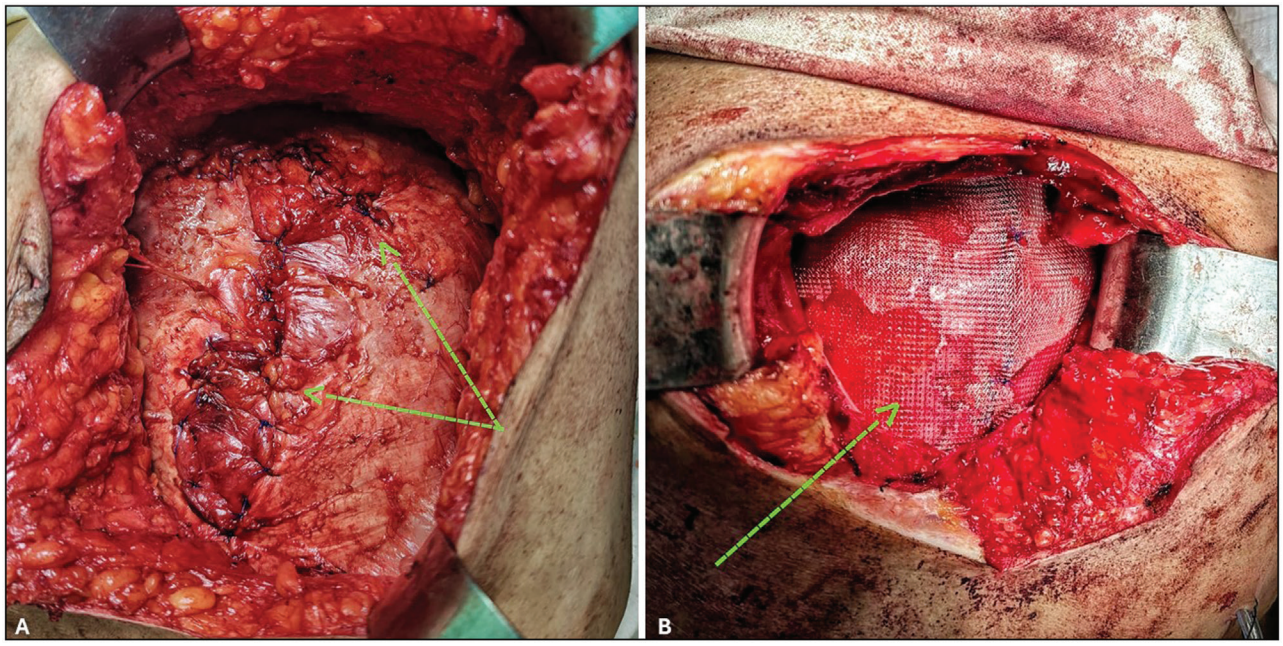

Figure 3: Primary repair of the hernial defects (A, green arrows); placement of onlay mesh over the repaired defects (B, green arrow)

Discussion

The eTEP technique distinguishes itself through its minimally invasive paradigm, affording access to the hernial defect without necessitating entry into the peritoneal cavity. This is accomplished by establishing a working space within the extraperitoneal compartment, facilitating meticulous dissection and subsequent repair. The RS modification augments this approach through the strategic deployment of a mesh prosthesis within the retrorectus space, situated posterior to the rectus abdominis muscle, encompassing the complete ventral and inguinal regions of the abdomen. This anatomical location provides robust support and reinforcement of the abdominal wall's structural integrity.[1]

Accumulating evidence suggests that eTEP RS may correlate with diminished recurrence rates compared to conventional approaches, which may be attributed to the strategic mesh placement coupled with the minimally

invasive nature of the procedure, which curtails tissue trauma and minimizes disruption of critical fascial planes. By circumventing entry into the peritoneal cavity, eTEP RS curtails the risk of complications associated with intra-abdominal manipulation, such as iatrogenic bowel injury, the formation of adhesions, and mesh infection. A triad of reduced pain, expedited recovery, and improved aesthetic outcomes contributes to heightened levels of patient satisfaction following eTEP RS.[2]

Despite the promising results observed with eTEP RS, recurrence remains a potential, albeit infrequent, complication. Factors that may contribute to recurrence include patient-centric issues like preexisting comorbidities such as obesity, tobacco use, diabetes mellitus, and connective tissue dysplasias. Apart from that, recurrence rates also depend upon the optimal surgical technique, defect number and size, extent of dissection, judicious mesh sizing and placement, and secure fixation.[3,4]

Numerous studies have demonstrated the superiority of the eTEP approach for management of ventral hernias. A prospective study by Radu and Cucu[5] evaluated 197 patients undergoing eTEP TAR over a period of 5 years, with only one patient experiencing recurrence 18 months following surgery. Another retrospective study by Prakhar *et al*.[6] demonstrated recurrence in only three patients following eTEP, out of 171 patients included in the study. Taşdelen[7] compared the results of eTEP RS with intraperitoneal onlay mesh (IPOM)-plus for W1–W2 midline incisional hernias and concluded that eTEP RS was superior in terms of shorter length of stay and lesser post-operative pain, with minimal, but similar recurrence rates as IPOM-plus. In a comprehensive cohort from Germany, over 1000 patients underwent E/MILOS (endoscopic or endoscopic assisted Mini—or less open sublay repair), with complication rates at ~1% and recurrence rates at 1 year at <0.5%. It is another potential approach that must be explored, with appropriate training.[8]

As mentioned above, morbid obesity acts as a major factor responsible for recurrence of ventral hernias, owing to increased intra-abdominal pressure, increased stress on the anterior abdominal wall, and compromised integrity of the tissues. Rayman *et al*.[9] conducted a retrospective cohort study detailing the performance of eTEP RS in patients with morbid obesity, with 11 patients suffering from recurrence from a group of 135 patients. As of the present day, there are no set guidelines for approaching recurrent ventral hernias following eTEP RS repairs. Our patient, with a BMI of 28.3 kg/m^2 was at a risk of recurrence and presented with the same and was managed by open onlay mesh repair of the hernia. The onus lies on the operating team to comprehensively evaluate the patient, with requisite imaging and examination, and decide the mode of management keeping in mind patient factors, hernial characteristics, and the surgical expertise at hand. The focus must also be on improving patient experience and ensuring adequate patient education and counseling to eliminate risk factors to the maximum possible extent.

Minimally invasive procedures like eTEP RS, EMILOS, and IPOM have rapidly evolved as the gold standard for ventral hernia repair, providing faster return to daily life, less post-operative pain, and minimal recurrence rates. Despite the superior advantages of all the surgical techniques, they require extensive training and expertise to perform. Recurrences, albeit infrequently reported, have been reported in literature and may be attributed to factors like obesity, large hernial defects, inadequate mesh coverage, or poor surgical technique. When dealing with recurrence following the procedures mentioned above, it is the responsibility of the surgical team to make clinically justified decisions, ensuring a patient-centric approach and treating the condition appropriately. Open onlay meshplasty is not the desired modality of recurrence management, but it may be used as a last resort, after exhausting all other options, keeping in mind the choices and feasibility of the respective procedures of the patients.

Author contributions

The manuscript has been read and verified by all the contributing authors and represents the original work of the authors.

Ethical policy and Institutional Review Board statement

The study is a retrospective case report, and the authors have followed the guidelines of conducting and reporting clinical research involving human participants in accordance with the Declaration of Helsinki.

Declaration of patient consent

Informed consent was obtained from patient for the use of clinical images for publication without revealing any personal information or identification.

Data availability statement

Data sharing is not applicable to this article as no datasets were generated and/or analyzed during the current study.

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Conflicts of interest

There are no conflicts of interest.

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Not applicable.

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