Case Report

A Case of Preperitoneal Herniation of the Small Bowel Causing Intestinal Obstruction Following a Totally Extra Peritoneal Hernia Repair

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ABSTRACT

Preperitoneal hernia is a very rare complication following laparoscopic inguinal hernia repair. A 57-year-old male underwent a right inguinal hernia totally extra peritoneal repair on 20/10/2021. Initial recovery was uncomplicated but on post operative day 10, he developed sudden onset of vomiting and abdominal pain. Initial imaging showed small bowel obstruction with a possible transition point. An internal hernia was suspected and he was offered urgent diagnostic laparoscopy following counseling. A preperitoneal defect was noted with distended proximal ileum and collapsed distal ileum and colon. A small bowel run-through did not reveal any pathological abnormalities. A presumptive diagnosis of a preperitoneal hernia was made, and the defect was closed with a running V lock suture. The patient made an uneventful postoperative recovery. An inadvertent breach in the peritoneum during a totally extra peritoneal repair can lead to preperitoneal herniation of the small bowel and intestinal obstruction postoperatively.

Keywords: laproscopic TEP repair, peritoneal defect, preperitoneal hernia

Introduction

Inguinal hernia repair is a very common operation performed by general surgeons worldwide [1]. With the advent of laparoscopic repair, most surgeons have taken up totally extra peritoneal (TEP) repair due to its proposed advantages of reduced post-operative pain, earlier return to work, better cosmesis, capacity to treat bilateral and recurrent hernia, and lesser incidence of chronic pain [2,3]. However, it is not without complications and with an ever-increasing number of TEP repairs, rare complications have emerged [4-6].

Complications of TEP repair include femoral vessel damage, pain, urinary retention, and paresthesia affecting lateral femoral cutaneous nerve distribution. We report the first case study of preperitoneal herniation of the small bowel through a defect in the peritoneum following preperitoneal repair, which was diagnosed promptly and managed successfully with laparoscopy.

Case Report

A 57-year-old male, with a past medical history of hypertension, presented with bilateral inguinal lumps and pain over the last year. On clinical examination, he had a bilateral direct inguinal hernia and after counseling about the risks and benefits, he opted for laparoscopic bilateral total extra peritoneal TEP repair. He had the laparoscopic bilateral TEP repair on 20/10/2021. The procedure was straightforward. Intraoperatively, the bilateral direct hernia was dissected out, reduced, and mesh was placed in the preperitoneal space. The hernia sac was left alone once reduced. No breaches in the peritoneal layer were noted intraoperatively.

The initial postoperative period was uncomplicated. However, on post operative day (POD) 10 he developed abdominal pain, distension, nausea, and vomiting. He was seen at the emergency department and evaluated (routine blood tests and abdominal...
X-rays). On clinical examination, the patient had a distended soft abdomen without any evidence of a recurrent hernia. Initial blood tests were unremarkable but the X-ray showed dilated small bowel loops compatible with intestinal obstruction (Figure 1). He was admitted to the Department of Surgery, kept “nil by mouth” and a nasogastric tube was inserted for decompression. An urgent computed tomography (CT) scan was performed in view of the recent surgery. The CT scan revealed that most of the ileal loops had collapsed and the Jejunal loops were distended with an air-fluid level that raised the suspicion of mechanical intestinal obstruction. There was a suggestion of internal herniation to the preperitoneal space (Figure 2).

Given the recent surgical procedure, a high index of suspicion was present for postoperative complication of the TEP repair because there had been no handling. After counseling of the patient, he was taken to the theatre for diagnostic laparoscopy.

Upon entry into the abdomen, significantly dilated loops of distal small bowel with a collapsed colon were observed (Figure 3). A proper inspection of the pelvis was difficult due to the distended bowel loops. Hence, the patient was positioned head down and the bowel was repositioned to the upper abdominal cavity taking care not to damage the mesentery or the friable and distended bowel. On careful inspection, a defect in the peritoneum adjacent to the distended ileum was observed as a possible site of the internal herniation (Figure 4). The steep head-down position had likely reduced the internal herniation back to the peritoneal cavity. However, the bruising, and the oedema of the affected loop where the transition point would have been, could be observed.

Following this, laparoscopy was performed on the small bowel, and no abnormalities were observed. The small intestine, which was bruised initially, was viable and promptly regained color, so the decision was made to leave it. A V lock suture was used to close the peritoneal defect to prevent recurrences of preperitoneal herniation. Following this procedure, the patient made an uneventful recovery and was discharged on POD 5. He remains well to date.
Discussion

TEP repair usually achieves excellent results and is considered safe because the peritoneal cavity is not entered. Nevertheless, it can lead to rare lethal side effects such as preperitoneal herniation previously described in total abdominal preperitoneal (TEP) repairs [7]. However, to the best of our knowledge, this is the first instance where preperitoneal repair complicating TEP repair has been reported.

Similar to TAPP repair, mesh is placed in the preperitoneal space in TEP repairs. Unlike TAPP repair the peritoneal cavity is not entered and access is wholly through the extra peritoneal approach. Usually, the peritoneum is not disrupted in TEP repairs but during balloon dissection, tears might happen inadvertently. In our patient, we believe this was the case, and the small bowel herniation occurred through the defect during the postoperative period.

Even though not previously reported for TEP repairs, internal herniation through the peritoneal defect occurring after a TAPP repair, has been reported. Rodda et al [8] first described such preperitoneal hernias following TAPP repairs. Peritoneal disruption is extremely rare and may follow inadequate closure of the peritoneum, trocar site herniation, as well as a breakdown of the peritoneal closure in the early postoperative period. The exact pathophysiological mechanism of preperitoneal herniation is not known, but rapid absorption of carbon dioxide from the peritoneal space acting as a vacuum has been proposed as a potential mechanism of preperitoneal herniation.

Early diagnosis and treatment are key in preventing morbidity and mortality following preperitoneal herniation after a TEP repair. A high index of suspicion should be maintained for ileus following a TEP repair because typically the peritoneum is not breached and the small bowel is not handled during a TEP repair. CT may have sensitivity and specificity of around 90% in the identification of the cause of small bowel obstruction following laparoscopic hernia repair [9]. Therefore, if CT imaging confirms small bowel obstruction, a very low threshold for diagnostic laparoscopy should be maintained.

During the diagnostic laparoscopy, the initial port of entry may be via the umbilical port or via a distant port other than the umbilical port; there is no evidence that either is superior. We prefer an open technique because the small bowel is dilated and the chances of bowel injury are higher if a closed method is used. Upon entry careful inspection of the bowel to identify the distended and collapsed bowel should be performed carefully and systematically. If there is frank necrotic or gangrenous bowel in the preperitoneal hernia, it should be resected. In such cases, mesh needs explanation because the necrotic bowel is in the preperitoneal space in contact with the mesh. Repair of the hernia should only be reattempted after the infection settles down and the patient recovers from the initial episode, and preferably by an experienced surgeon with interest in herniology, using virgin planes.

In conclusion, we report a case of preperitoneal herniation of the small bowel as a complication of TEP repair. To the best of our knowledge, this is the first report of such a complication following a TEP repair. A high degree of suspicion, prompt diagnosis, and low threshold for diagnostic laparoscopy are necessary to prevent the morbidity potentially resulting from intestinal ischemia and necrosis. To prevent this rare complication of TEP repair, meticulous attention to the peritoneum during balloon dissection of the extra peritoneal space, with prompt repair of peritoneal defects if identified intraoperatively, is recommended.

Author Contributions

Conceptualized the project, performed the literature survey and compiled the manuscript: LBS. Day to day care of the patient: SC. Performed the surgery and in charge of patients overall care: LBS, RF and PB. All authors read and approved the manuscript.

Conflict of Interest

The authors would like to confirm that there are no conflicts of interest to disclose.

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Ethical Statement

Not applicable.

Data Availability

All relevant data was included in this manuscript.

References


