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Case Report

Small Bowel Obstruction After Robotic-Assisted Transabdominal Preperitoneal Repair of Bilateral Inguinal Hernia in a Morbidly Obese Patient

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Abstract

Minimally invasive transabdominal preperitoneal repair of inguinal hernias is a common surgical procedure for this condition. Many surgeons are increasingly adopting these techniques, although they can be associated with serious complications.

We report the case of a 73-year-old woman with a high body mass index who underwent robotic-assisted transabdominal preperitoneal repair for bilateral inguinal hernias. Unfortunately, her postoperative recovery was complicated by a small bowel obstruction resulting from the dehiscence of the reperitonealized peritoneum. This case highlights the occurrence of dehiscence in the postoperative peritoneum, despite the use of a continuous V-lock running suture for closure, illustrating a potential cause of this complication.

Keywords: Small Bowel Obstruction; Robotic-Assisted Transabdominal Preperitoneal Inguinal Hernia Repair Complication; Transabdominal Preperitoneal Hernia; Failure of The Peritoneal Flap; Recurrent Hernia After Bilateral Inguinal Hernia Repair.

Introduction

Inguinal hernia repair is one of the most common surgical procedures performed by surgeons [1]. There are several methods for repairing an inguinal hernia, including open techniques and minimally invasive techniques, which can be either transabdominal or totally extraperitoneal [1,2]. Recently, there has been an increasing trend towards using robotic-assisted repair for inguinal hernias, particularly through the transabdominal preperitoneal approach [3]. While the robotic preperitoneal method is widely accepted today and has demonstrated good outcomes, there are risks of severe complications that may necessitate reoperation [3,4]. This case report highlights the early identification of and subsequent reoperation for a defect in the peritoneum that caused a small bowel obstruction.

Case Report

A 73-year-old woman with a body mass index (BMI) of 46 kg/m² and a medical history of hypertension, hyperlipidemia, and diabetes mellitus presented with right lower quadrant abdominal pain. Due to her high BMI, the clinical examination yielded limited findings. A computed tomography (CT) scan of the abdomen and pelvis revealed a bilateral inguinal hernia with incarcerated loops of the small bowel. The hernias were reduced at the bedside, and the patient subsequently underwent an elective robotic-assisted repair of the bilateral inguinal hernia, utilizing three robotic ports in the upper quadrant.

During the surgery, the findings confirmed bilateral inguinal hernias, with bowel loops herniating into the hernias. The procedure was performed in a standard manner. The surgeon initially brought down the peritoneum 4 cm above the deep inguinal ring hernial orifice, spanning from one anterior superior iliac spine to the other. The median and medial umbilical ligaments were bilaterally dissected downwards. Initial dissection was carried out in the retro-rectus plane towards the midline and Cooper's ligament,

while lateral dissection was performed in the preperitoneal plane to create a pocket for the mesh.

Bilateral inguinal hernias were identified, and the bowel loops were gently manipulated back into place. The patient's high BMI posed challenges, making it difficult to identify anatomical landmarks. After successfully reducing the hernias on both sides, a BARD 3DMax® mesh measuring 4 in x 6 in was placed in each groin to cover the myopectineal orifice. The peritoneum was then reperitonealized using V-lock absorbable 2-0 sutures in a running technique. This involved stitching from the midline to the left side, with a second reinforcing layer returning towards the midline with the same stitch. The same technique was applied on the right side, moving from lateral to medial and partially back towards the midline to provide a reinforced repair. Peritoneal closure was accomplished by reducing the abdominal insufflation pressure to 8 mm of mercury without evacuating insufflation from the preperitoneal space separately.

On postoperative day 4, the patient returned to the emergency room with abdominal pain, discomfort, and an absence of bowel movements. Again, the clinical examination provided limited information due to her high BMI. Blood work, including a complete blood count and chemistry profile, did not reveal any significant issues. A CT scan of the abdomen and pelvis showed a sizeable infra-umbilical hernia (Figure 1). A subsequent diagnostic laparoscopy revealed breaches in the sutured peritoneum at multiple sites (Figure 2). A closer inspection of the midline running suture at both ends showed multiple defects. The bowel loops were successfully returned to the abdominal cavity with minimal adhesion to the mesh. The mesh was retained in situ and not removed. The defects were closed using V-lock sutures, leading to an improvement in the patient's condition. The patient was discharged on postoperative day 2 and reported doing well at her follow-up visit.

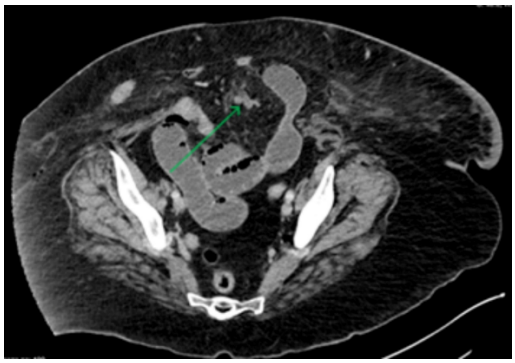

Figure 1: Arrow showing herniation of bowel.

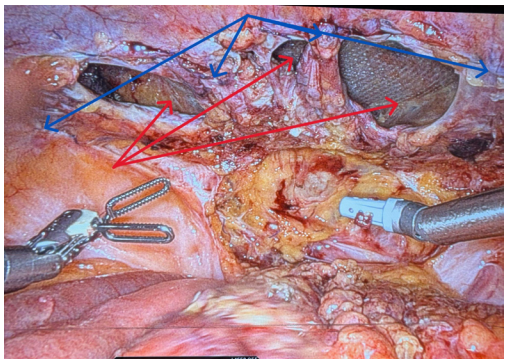

Figure 2: Red arrow showing multiple peritoneal defects, blue arrow showing continuous V-lock suture.

Discussion

Inguinal hernias are among the most commonly encountered surgical issues in clinical practice [5]. Over the years, there has been a significant shift from open repair techniques to minimally invasive methods [6]. The transabdominal preperitoneal (TAPP) approach, performed either laparoscopically or robotically, is widely used and offers favourable outcomes, such as faster recovery and reduced pain [4,6,7].

The TAPP approach involves incising the peritoneum to perform dissection in the preperitoneal plane. Since the peritoneum is a very thin layer, it is essential to close it properly after the repair to prevent serious complications like those experienced by our patients. It is universally accepted that complete closure of the peritoneum without any defects should be done in a tension-free manner to avoid intestinal adhesions to the mesh [8].

Surgeons have employed various methods for closure, including tackers, glue, and, more recently, sutures, which are currently the most widely accepted option. V-lock sutures are frequently used for this purpose due to their cost-effectiveness and reliability [8,9]. There have been isolated reports of small bowel herniation through a defect in the peritoneal cavity in the preperitoneal space, leading to small bowel obstruction shortly after surgery [10]. This complication is most likely due to a technical error in closing the peritoneum or failing to detect a defect during the closure process. If not recognized early postoperatively, it can lead to bowel ischemia and adhesions between the bowel and the mesh [11,12].

Patients may present with nausea, vomiting, the inability to have bowel movements, and signs of bowel obstruction [13,14]. Some incidents have been reported where barbed sutures caused adhesions to the bowel, resulting in obstruction [15,16]. Because such occurrences are rare, there are currently no standardized

guidelines to prevent complications during the preperitoneal procedure [17]. Many surgeons believe that using running sutures with small bites is the appropriate technique [18]. Additionally, slowly releasing pneumoperitoneum from the abdominal cavity at the end of the procedure or using suction to evacuate gas from the hernia preperitoneal region can help prevent sudden changes in pressure gradients, which may lead to peritoneal defects [19]. Excessive tension on the peritoneum could also contribute to the formation of such defects [20].

In our patient, the visualization of multiple defects during the second surgery suggests that there may have been excessive peritoneal tension, possibly exacerbated by obesity, which led to small bowel herniation.

Conclusion

Small bowel obstruction in the immediate postoperative period following transabdominal preperitoneal repair may result from failure of the preperitoneal flap. Early recognition and surgical correction are crucial.

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