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Case Report

Robotic assisted extended view totally extraperitoneal repair for inguinal hernia

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ABSTRACT

Robotic assisted transabdominal pre-peritoneal inguinal hernia repair is an effective and safe approach. This report describes a new technique of robotic extended view totally extraperitoneal repair. A supraumbilical retro rectus approach, creation of pre-peritoneal space, separation of hernia sac from cord structures, placement of mesh and fixing with vicryl suture was employed in a 58-year gentleman with right inguinal hernia. The surgery was performed with the use of a DaVinci robotic system. No intraoperative problems were encountered. The patient was discharged within 24 hours of surgical intervention. The work has been reported in line with the SCARE criteria. The patient had no groin pain, inguinal or scrotal swelling at 30 day follow up. He was pleased with the cosmetic result and has gone back to work. Robotic e-TEP is a viable option in inguinal hernia repair.

Keywords: Robotic, Inguinal hernia, R e-TEP

INTRODUCTION

The most commonly used approaches for minimally invasive inguinal hernia repair are laparoscopic totally extraperitoneal approach (TEP), and transabdominal preperitoneal repair (TAPP).[2,3] TEP completely avoids entry to the abdomen, and avoids the issue of peritoneal closure, problems associated with closure and trocar site hernias.[2,4] Robotic TAPP is being increasingly reported.[5-9] The authors describe a technique of robotic TEP (r-TEP) for repair of inguinal hernia.

Surgical procedure: r e-TEP

The surgical procedure was conducted using DaVinci Xi robotic platform (Intuitive surgical Inc.) under general anaesthesia. An indwelling urinary catheter was placed. The patient was placed in Trendelenberg position.

Port placement and creation of preperitoneal space: A supraumbilical incision was made 5 cm lateral and 3 cm above the umbilicus (Figure 1). The skin and subcutaneous tissue were retracted to expose the anterior sheath of the rectus abdominis muscle. The rectus abdominis muscle was retracted and the posterior sheath was exposed.

Creation of preperitoneal space: The space between rectus abdominis muscle and the posterior sheath was widened by blunt dissection. A 10mm trocar was placed and filled with carbon dioxide at a pressure of 12 mmHg. A 12 mm 30˚scope was inserted and used for blunt dissection to create a preperitoneal space. Two 8 mm working ports were placed about 7 cm below the umbilicus on either side as depicted in Figure 1. The advantage of this modified port placement is that a wider preperitoneal space is achieved and avoids the crowding of instruments.

Docking: The robot was then docked (Figure 2).

The preperitoneal space was widened by blunt dissection. Pubic symphysis was identified in the midline. Pubic tubercle and the Cooper's ligament were exposed. The lateral limit of the preperitoneal dissection corresponded to the anterior superior iliac spine (Figure 3). The inferior epigastric vessels were identified.

Figure 1: Port sites-right inguinal hernia.

Figure 2: Docking status.

Figure 3: Retrorectus space created.

The peritoneum was teased down as low as possible with careful dissection to expose the psoas major muscle, the nerves, and the deep ring (Figure 4).

Figure 4: Anatomical landmarks identified.

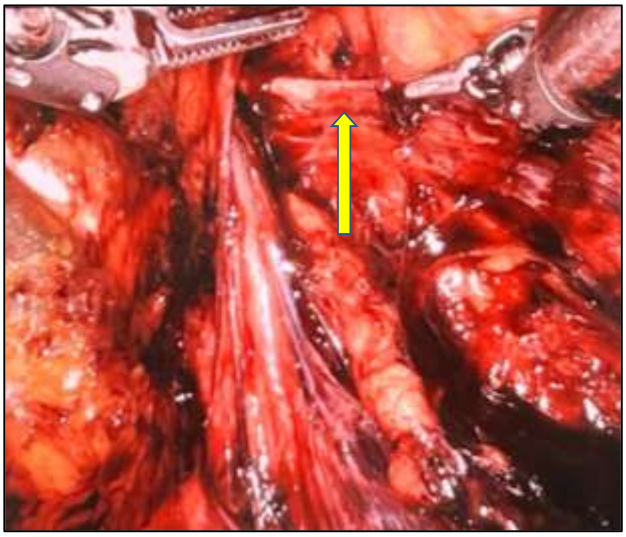

Figure 5: Identification and dissection of sac (arrow).

Hernial sac: The hernial sac was carefully separated from the spermatic cord, vas deferens, and spermatic vessels. (Figure 5).

Placement of mesh: After identifying the anatomy including dissection of the peritoneum, polypropylene mesh (10.8×16 cm, Bard 3D Max Mesh, Bard Davol Inc.) was unrolled in the preperitoneal space after inserting through 10mm trocar to adequately reinforce the entire myopectineal orifice and covered defects in the Hasselbach region, the indirect ring, the obturator ring and the femoral triangle (Figure 6).

Mesh fixation: The mesh was fixed to the Cooper's ligament with vicryl suture medial to inferior epigastric vessels (Figure 7).

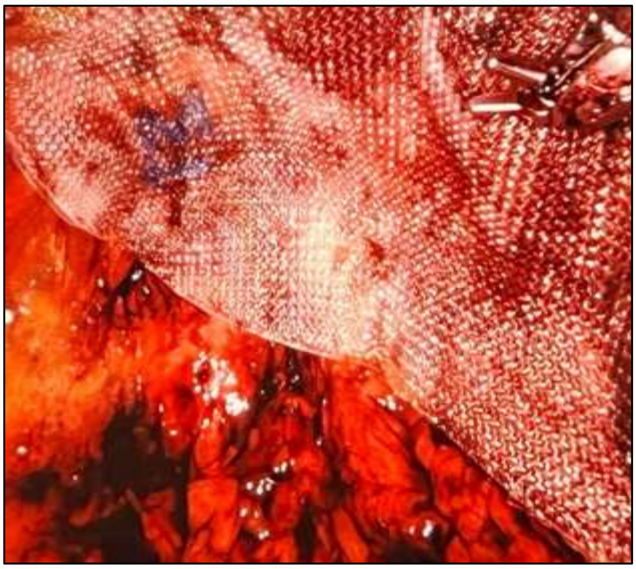

Figure 6: Retrorectus mesh placement.

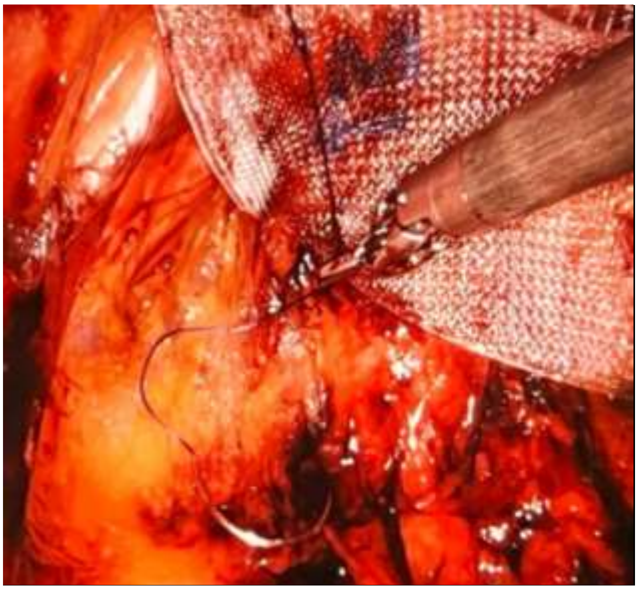

Figure 7: Mesh sutured to Cooper's ligament.

The mesh was kept under pressure while slowly releasing the carbon dioxide from the space under direct vision.

The anterior rectus sheath at supraumbilical port site was approximated with port closure suture (1-0 vicryl). The skin was approximated with interrupted monocryl sutures.

The operating time was 100 minutes.

Outcome

No intraoperative complications were encountered. No inguinal or scrotal swelling was observed. The patient had no surgical site pain at 30-day follow-up and has gone back to work (Figure 8).

Figure 8: Satisfactory cosmetic result.

DISCUSSION

Robotically assisted total extraperitoneal repair in patients with inguinal hernia is a promising new surgical technique and has not been published so far. This approach combines the advantages of minimally invasive approach without the access to the peritoneal cavity and with extraperitoneal mesh placement. rTEP completely avoids entry to the peritoneal cavity, issue of peritoneal closure and the problem associated with that closure-bowel obstruction and/or postoperative adhesions, and the risk of trocar site hernia. Cao et al reported similar advantages after laparoscopic TEP compared to laparoscopic TAPP.[10] Our procedure of placing the trocar in supraumbilical area as advocated by Daes, provided a wider space and obviated a cramped surgical field.[11] Robotic e-TEP is a viable option as a minimally invasive technique for inguinal hernia repair.

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