

Preliminary Report

Laparoscopic Inguinal Hernia Repair Using the TEP Technique: A Preliminary Report

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ABSTRACT

Objectives: To study laparoscopic hernia repair as a method of treatment for bilateral and recurrent inguinal hernias using the Totally Extra Peritoneal (TEP) technique

Design: Retrospective study

Setting: Mubarak Al-Kabeer Hospital, Jabriya, Kuwait

Subjects: The first 24 patients between the period April 2003 and April 2006.

Intervention: Laparoscopic hernia repair using the TEP technique

Main Outcome Measure: Indications for operation, operative time, hospital stay, and postoperative outcome

Results: The mean age of our patients was 47 years

(33 to 69 years). Six were recurrent hernias, 16 were bilateral hernias, and two patients had recurrent bilateral hernias. The postoperative hospital stay was one day in the majority of patients (n = 20, 83.3%), three patients stayed for two days and only one patient stayed for three days. Two patients had some testicular pain, one patient developed urine retention, and one patient developed cord seroma. Seventeen patients (70.8%) required a single dose of analgesia postoperatively.

Conclusion: TEP laparoscopic technique for recurrent and bilateral hernias is safe, with a short hospital stay and minimal complications.

KEY WORDS: laparoscopic repair, recurrent inguinal hernia, TEP

INTRODUCTION

Laparoscopic minimally invasive procedures are gaining popularity. This includes laparoscopic hernia repair, which is now less controversial and more readily acceptable. Numerous technical modifications were described in an attempt to identify the best procedure^[1].

Over the past fifteen years, laparoscopic herniorrhaphy became an acceptable procedure. However, it was reported that young patients in whom it is advantageous to avoid a mesh should not undergo this procedure^[2]. Many studies showed the superiority of laparoscopic hernia repair over open tension-free repair, as described by Gilbert and Lichtenstein, regarding the postoperative pain, early return to work, hematoma formation, and nerve injury. However, it is more expensive and more difficult to learn^[3,4].

Two major techniques are used for laparoscopic hernia repair: the transabdominal preperitoneal (TAPP) and the totally extraperitoneal (TEP). For unilateral hernias, the base-case analysis and most of the sensitivity analysis suggested that open-

flat-mesh is the least costly option but provides less quality adjusted life-years (QALYs) than TEP or TAPP^[5]. For the management of symptomatic bilateral hernias, laparoscopic repair would be more cost-effective with less operative time and shorter hospital stay compared to open mesh repair. However, TEP repair is considered more cost-effective but more technically demanding^[6]. This is a retrospective review of the TEP technique in the first 24 patients in our unit.

PATIENTS AND METHODS

This retrospective study includes the first 24 male patients who underwent inguinal hernia repair laparoscopically using the TEP technique between April 2003 and April 2006. A written informed consent was obtained from the patients. All patients underwent the procedure under general anesthesia in the supine position. They received one dose of a third generation cephalosporin antibiotic as prophylaxis. A urinary catheter was inserted in all patients after induction of anaesthesia and was removed at the end of the procedure.

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Three trocars were inserted in the midline. First, an incision was made below the umbilicus through which the posterior rectus sheath space was reached by blunt finger dissection. The camera was introduced and CO₂ insufflation started. The second trocar was introduced under vision through a lower midline incision. Dissection of fibrinous tissue in the preperitoneal space was done and the parietal peritoneum was pushed as cephalad as possible to allow the mesh to lie unfolded in place. The third trocar was inserted through a suprapubic incision.

The inguinal floor was dissected and the anatomic landmarks were recognized. The mesh was introduced and anchored with five staples over the Cooper's ligament and transversalis fascia above the iliopubic tract. Caution was taken not to open the hernial sac or the parietal peritoneum as much as possible. Whenever such an incident happened, the tear was sutured or clipped.

At the end of the procedure, the CO₂ was released while pulling the trocars out. The anterior rectus sheath at the level of the umbilical port was closed. All wounds were closed with intradermal absorbable sutures.

All patients were encouraged to return to their normal activities as soon as their physical condition enabled them to do so.

RESULTS

The age ranged between 33 and 69 years with a mean age of 47 years. Six patients (25%) were operated for recurrent inguinal hernia, three on the right and three on the left. Sixteen patients (66.7%) had bilateral inguinal hernia. The remaining two patients (8.3%) had combined pathology of recurrent bilateral inguinal hernia. All patients were followed up in the surgical outpatient by the surgical team at two weeks, six weeks, six months, and one year.

The operative time ranged between 40 to 75 minutes, with a mean time of 57.5 minutes. The hospital-stay period ranged from one to two days: 20 patients (83.3%) were discharged on the first postoperative day, three patients (12.5%) on the second postoperative day, and only one patient (4.2%) was discharged on the third day. None of the patients required postoperative sedation. Only 17 patients were given a single dose of indomethacin suppository during recovery.

Complications were minor (Table 1). All patients recovered spontaneously, except the seroma patient, who needed incision and drainage under local anesthesia. No recurrence of hernia was noted at one-year follow-up.

In our view, all patients were fit to return to work at about three days after discharge from the hospital. However, all patients took advantage of the 2-week sick leave allowed by the ministry of health regulations.

Table 1: Laparoscopic TEP complications

| Complication | n | Percentage |
|-----------------|---|------------|
| Urine retention | 1 | 4.2 |
| Testicular pain | 2 | 8.4 |
| Cord seroma | 1 | 4.2 |

TEP: Totally extra peritoneal

DISCUSSION

Laparoscopic inguinal hernia repair has raised a tremendous amount of controversy since it was introduced. Those who support the procedure argue about the less postoperative pain, early return to work, and better cosmetic results. However, the opponents argue about the higher incidence of complications, recurrence and higher cost compared to open repair. Furthermore, the long term results are unknown^[7].

For primary hernias, multi-centric randomized trials revealed no superiority of laparoscopic over open tension-free mesh repair. The recurrence rate was greater than 10% in laparoscopic repair whereas it was less than 5% in open repair. Moreover, the five year recurrence rate after Shouldice repair (6.6%) showed no difference from that of laparoscopic repair (6.7%)^[8,9]. The open repair of the recurrent hernia is a daunting task because of the already weakened tissues and obscured and distorted anatomy. The failure rate of these repairs using an open anterior approach may reach as high as 36%. Because of such a high failure rate, a number of investigators have focused on repairing these difficult recurrent hernias laparoscopically^[10].

The incidents of serious intraoperative complications such as visceral (especially bladder) and vascular injury were found to be more common with less experienced surgeons and with groups who follow the TAPP technique^[11,12]. Many studies showed less rates of recurrence and overall intra and postoperative complications with the TEP compared to the TAPP techniques. However, TEP has a steep learning curve and is technically more challenging^[13,14]. The postoperative complications included pain, trocar site hernia, small bowel obstruction and hydrocele. Ninety percent of these complications were in the first 50 cases during the learning period. Previous studies demonstrated that the incidence of significant complications of laparoscopic hernioplasty could be substantially reduced with time and more experience to less than 1%^[15].

We adopted the TEP technique as the procedure of choice for both bilateral and recurrent hernias. To overcome the technical difficulties with junior surgeons, the operations were performed by dedicated senior surgeons in our team who have a wide experience in laparoscopic surgery. The results showed that patients did not require any narcotic

sedative. Only a single dose of analgesics was used for 17 cases. There was also faster recovery as noted by discharge from the hospital after one to two days in most cases.

Technically, TEP approach allowed better anatomical orientation of the nerves, the inferior epigastric artery, the pubic tubercle and the internal ring. The mesh was placed from inside the abdominal wall with no tension. Some unsuspected hernias could be discovered intraoperatively and were treated. The TEP also provided a good space to apply meshes of different sizes, up to 15 x 15 cm in some cases. Finally, it treated the hernia at its origin rather than at the site of its presentation.

Recurrence in the literature is always related to less experience and early cases^[16,17]. We did not see any recurrence in this study at one-year follow-up. We need to continue for another four years to give the recurrence rate at five years. The complications were minimal. Except for the cord seroma, all resolved spontaneously.

CONCLUSION

This study showed that the TEP approach for recurrent and bilateral hernia is associated with a low complication rate, and less hospital stay. Our practice is in accordance with the recommendations of National Institute of Clinical Excellence (NICE) which states that open-mesh repair should be the procedure of choice for primary inguinal hernia and that laparoscopic approach should be limited to bilateral or recurrent hernias. Laparoscopic repair may not be a procedure for average general surgeons unless committed to mastering technical expertise^[18].

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