

# Experience with Laparoscopic Groin Hernia Repair in a Tertiary Care Hospital

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## Abstract

The results of 50 laparoscopic transabdominal pre-peritoneal inguinal hernia repairs are reported with a follow-up of 1-4 years. The patients' age range was 16-75 years. Two recurrences occurred. Only few complications were encountered. The procedure was remarkably pain-free, with 18% requiring no analgesia after the operation and 63% requiring no analgesia after discharge from hospital. There was a rapid return to normal activity, with 55% driving within 1 week of the operation and 84% within 2 weeks. Sixty-three per cent returned to work within 2 weeks of the operation and 71% within 3 weeks. The results show that laparoscopic hernia repair is remarkably pain-free, allows a rapid return to normal activity and has a low recurrence rate.

## INTRODUCTION

The introduction of laparoscopic repair of groin hernias in the early 1990s elicited a mixed, skeptical response. Various studies carried out since the inception of this procedure have highlighted its benefits, efficacy [1-6], cost effectiveness [7,8], and suitability as a day treatment option [2,7,9]. The purpose of this study was to review our experiences and results since the introduction of the procedure. We present our experience of 50 consecutive patients undergoing laparoscopic transabdominal pre-peritoneal hernia repair with 1-4 years of follow-up.

## PATIENTS AND METHODS

Between May 2004 and September 2007, 50 consecutive patients undergoing laparoscopic hernia repair were studied. Perioperative data were collected prospectively. After the induction of general anaesthesia, a dose of prophylactic antibiotic was given intravenously. A Veres needle was introduced above the umbilicus and 4 litres of carbon dioxide were insufflated at a pressure of 14mmHg. A 10mm trocar was inserted above the umbilicus followed by the insertion of a laparoscope and inspection of the peritoneal cavity. A 5mm trocar was inserted on the ipsilateral side of the hernia and a 12mm trocar on the contralateral side, both being in the mid-clavicular line 2cm below the umbilicus. With bilateral hernia repairs, two 12mm trocars were used. The hernia orifice was identified and the peritoneum incised transversely 3cm above the deep inguinal ring. A flap of peritoneum was then dissected inferiorly to expose the neck

of the hernia. The hernial sac, if small, was then invaginated and the dissection continued to separate the hernial sac and peritoneal flap away from the cord structures inferiorly, the dissection was continued medially until the midpoint of the symphysis pubis was exposed and laterally far enough to accommodate the mesh. With large indirect hernias, the neck of the sac was divided at the deep ring and the dissection continued as above, leaving the distal end of the sac in situ. With bilateral hernias, the dissection was performed first on one side and then continued on the other side until the dissected spaces met over the mid-point of the symphysis pubis. With unilateral hernias, a 15x10cm polypropylene mesh was then placed over the hernia orifice and stapled to the symphysis pubis and inferior pubic ramus using 4mm staples. The medial, superior and lateral margins of the mesh were then stapled to the abdominal wall muscle using 4.8mm staples, care being taken to avoid the inferior epigastric vessels. The mesh was then covered by stapling the peritoneal flap back together along the line of the original incision using 4.8mm staples. With bilateral hernias, a 30x10cm polypropylene mesh was used to cover both hernia orifices. Twenty milliliters of 0.5% bupivacaine were infiltrated into the trocar sites. All the patients were prescribed opiate and oral analgesics. The patients were encouraged to walk, drink and eat when they felt able to, and were discharged when they felt comfortable. All patients were seen in the outpatient department 6 weeks after the operation and detailed records of their progress and any complications were made. All patients were then sent a

questionnaire before completion of this study, enquiring about the analgesics taken after the discharge from hospital, length of time to driving, and to resuming work. All patients were asked to give an assessment of their satisfaction with the outcome of the operation ranging through very good, good, fair and poor.

**RESULTS**

A total of 50 patients, age range 16-75 years, with 56 hernias, were operated upon. Men constituted 86% (43/50) of the patient population. All the patients operated had primary hernias. Bilateral hernias were present in 6 patients. The average operative time per patient was 108 minutes (range, 54-135 minutes). The mean hospital stay for all patients was 50.4 hours. All patients have been followed up from the time of surgery: follow-up ranges from 1-4 years. All patients were followed up in the outpatient clinics with a physical examination. Two patients (4%) required conversion to an open procedure due to 1 case having pelvic adhesions and 1 having irreducible sliding hernias. There were a few observed complications, but none was serious (Table). Intraoperatively, there were no visceral or major vascular injuries. One patient had inadvertent injury to the ipsilateral inferior epigastric artery, which was controlled by clip application. Surgical emphysema occurred in 2 patients which resolved spontaneously. Two patients had immediate postoperative urinary retention that required temporary urethral catheterization. Of the 3 patients who presented with a seroma, which is a common problem, only one seroma that was large, tender and caused discomfort was aspirated. The remainder resolved within 2 months, requiring no further interventions. None of the patients developed persistent neuralgic pain lasting more than 3 months. Only 1 patient was readmitted to the hospital with a clinical diagnosis of mesh infection, but recovered uneventfully with conservative treatment which included antibiotic therapy. There were 2 (4%) recurrences in the series. Repair was difficult as this patient had had open prostatectomy previously and the mesh could not be put medially enough due to adhesions in the prevesical pouch.

**Figure 1**

No of patients	50
Age range	16-75 years
No of repairs	56
Male/female	43/7
Primary hernias	56
Bilateral hernias	6
Average operative time per patient	108 minutes (range, 54-135 minutes)
Mean hospital stay for all patients	50.4 hours
Conversion rate	2 patients (4%)
Complications	No of patients
Inferior epigastric artery injury	1 (2%)
Surgical emphysema	2 (4%)
Urinary retention	2 (4%)
Groin seroma	3 (6%)
Groin hematoma	2 (4%)
Mesh infection	1 (2%)
Recurrence	2 (4%)

**DISCUSSION**

Repair of groin hernia has been a surgical challenge for more than 100 years. The laparoscopic approach presents a promising solution to this common problem. This study represents the early experience of transabdominal preperitoneal hernia repair. It is a common problem and the ideal method of repair should be one that has the minimum incidence of long-term recurrence, gets patients back to their normal life in the quickest possible time, and, of course, has minimal morbidity and no mortality [10,11]. Laparoscopic TAPP tension-free mesh repair of groin hernias, as performed by us, was cost-effective. The fundamental principle of the operation was to place a preperitoneal mesh of sufficient size in the abdominal wall posterior to the musculo-aponeurotic layer to cover all possible areas of anatomic weakness in the groin that could lead to a hernia. The repair also simultaneously reinforces the other potential areas of weakness in the groin, namely the femoral and obturator rings. Two patients had postoperative retention of urine, and 1 patient had injury to the inferior epigastric artery. Refinement of the technique, better understanding of the anatomy of the posterior aspect of the inguinal canal, and greater experience with the procedure have resulted in a steady decline in the rate of recurrence, from alarmingly high unacceptable values to rates lower than for conventional open hernia repairs. Better dissection medially across the pubic symphysis and higher cranial dissection while creating the preperitoneal pouch, with the placement of a large mesh (15x10cm) without wrinkling, significantly reduced the recurrence rate [2,4]. It is now recognized that a 15x10 cm mesh should be used for unilateral laparoscopic hernia repair. Three patients developed seroma in the cord and the scrotum. We aspirated only one causing discomfort

or pain. The rest usually resolved spontaneously due to absorption by the body. Complications such as bruising, seroma formation and urinary retention are inevitable after any form of hernia repair and little can be done to prevent them. Our experience has been that seromas were less likely to develop if the sac was completely dissected and reduced. We attempted complete dissection and reduction of the sac in all cases. None of our patients developed neuralgic pain following surgery. We have been impressed by the low level of pain experienced by our patients undergoing laparoscopic hernia repair and by their rapid return to normal activity. One patient complained of aching discomfort at the groin area, which subsided within 3 months. A definite trend for patients is to return to normal activity earlier following laparoscopic hernia repairs, but the question of return to work is relative [2,7,12]. There was a rapid return to normal activity, with 55% driving within 1 week of the operation and 84% within 2 weeks. Sixty three per cent returned to work within 2 weeks of the operation and 71% within 3 weeks. Self-employed people return to work much sooner, as they have the incentive to go back to work. Our results have indicated that laparoscopic inguinal hernia repair was safely introduced in our organization and has provided high standard, cost-effective care to our patients. We conclude that with appropriate training, laparoscopic tension-free mesh repair of inguinal hernia could provide patients with less painful and earlier return to normal activities with low recurrence rates. Specialization and standardization of the

procedure remain paramount to deliver the above advantages.

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