

## LAPAROSCOPIC TOTALLY EXTRAPERITONEAL REPAIR OF INGUINAL HERNIA: A SERIES OF 70 REPAIRS

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### Abstract

The local experience of laparoscopic totally extraperitoneal hernia repair in Chittagong were reviewed.

Between Jan'2006 to Dec'2008, 70 consecutive patients underwent totally-extraperitoneal hernia repairs for inguinal hernia. 62 patients had unilateral hernia and 8 patients had bilateral hernias. The mean age was 48 years (range 20 to 83 years).

The mean operation duration was 70 minutes. Bilateral repairs took 24 percent longer than for unilateral repairs (82 versus 66 minutes). However, the mean operative duration for the last 35 (50%) cases decreased to 55 minutes. Two patients (2.8 percent) had conversion to open surgery. There was no major

complication and few patients had minor complications including port site infections and seroma. There was only one hernia recurrence (1.33%) in the case series. Mean postoperative hospital stay was 1.4 days.

TEP mesh herniorrhaphy is a safe and efficacious method of herniorrhaphy with a low rate of recurrence and chronic pain.

**Key words:** laparoscopic; totally extraperitoneal; inguinal hernia

### Introduction

There is considerable controversy regarding the best method of repairing inguinal hernias. This is reflected in the large number of available techniques currently in use. These may be broadly considered under the headings of open tension repairs such as Bassini, Shouldice, McVay procedures, open mesh

repairs such as Lichtenstein and Kugel repairs, and laparoscopic hernia repair which includes transabdominal preperitoneal herniorrhaphy (TAPP), Intra-peritoneal onlay mesh repair (IPOM) and totally extraperitoneal mesh herniorrhaphy (TEP)<sup>1-3</sup>. In the laparoscopic procedure, tension-free repair is achieved by placement of a prosthetic mesh to cover the entire groin area, including the sites of direct, indirect and femoral hernia. The laparoscopic approach is based on the principle of tension-free repair, which has been well established by open operation of Nyhus and Stoppa. The greater availability of space in the extraperitoneal approach facilitates the insertion of a much bigger mesh. Laparoscopic hernia surgery has been gaining popularity in recent years. Several randomized controlled trials and systematic reviews<sup>4-5</sup>, which compared laparoscopic repair to open repairs, showed that laparoscopy gave the following benefits: (a) less postoperative pain, less analgesic consumption, earlier return to normal activities and work in the early post-operative period; (b) less long term complications of groin pain and permanent paraesthesia; and (c) fewer recurrences than sutured herniorrhaphy, but with comparable efficacy to open mesh repairs. The endoscopic totally-extraperitoneal inguinal hernia repair (TEP) does not enter the peritoneal cavity, and reduces the risk of visceral injury, adhesion formation and the development of port site hernias<sup>5</sup>. It gives comparable results to other forms of laparoscopic repair, and for these reasons, it has become the preferred technique of laparoscopic repair of inguinal hernias. We report our initial local experience and results of TEP in Chittagong.

### Methods

Between Jan'2006 and Dec'2008, over a period of three years, 70 consecutive patients who underwent TEP in Chittagong medical college Hospital and different clinics of Chittagong city by same surgeon were reviewed. Data on patient demographics, types of hernia, operative aspects, postoperative recovery, complications, and results were collected. Patients with unilateral or bilateral reducible inguinal hernia, whether primary or recurrent, were included in the study. Patients with irreducible or obstructed hernia,

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previous lower abdominal operations, or had other forms of laparoscopic hernia repair (IPOM and TAPP), were excluded. General anaesthetics with muscle relaxation was administered. A 1cm infra-umbilical incision just lateral to midline was made, the anterior rectus sheath was exposed and incised. Medial lip of anterior rectus sheath was grasped with a Kocher's forceps and the rectus muscle retracted laterally. The space was created behind the rectus muscle and in front of posterior rectus sheath with a artery forceps and a 10mm Hasson cannula was placed and connected with insufflator. Carbon dioxide was insufflated to a pressure not exceeding 12mmHg. We used a 10 mm 00 telescope and initial space was created with gentle telescopic dissection. Second 5 mm port is then placed 4 to 5cm below and lateral (contra lateral to hernia) to the first port. The dissection was carried out by scissors under vision through the second port. The first step was to identify key anatomical landmarks such as the pubic bone, Cooper's ligament, inferior epigastric vessels (IEV) running superiorly, spermatic cord and the type of hernia (direct hernia medial to IEV and indirect hernia lateral to IEV). The next step was to put the third 5mm port and to reduce the hernia sac from the inguinal wall. The direct sac was easily reduced by simple traction. The indirect hernia sac was reduced and separated from the spermatic cord. Occasionally, a long large indirect sac could not be completely reduced from the deep inguinal ring; in such cases, the sac was dissected and the peritoneal side ligated with a ligature and divided with scissors. In the final step, a rolled polypropylene mesh (10cm by 14cm in size) was inserted through the 10mm port, and with the use of graspers, the mesh was placed horizontally, covering the inguinal wall from the midline of the pubis to lateral to the deep inguinal ring, this also covers the femoral ring and site for obturator hernia. In all bilateral repairs, two separate pieces of mesh were placed. The mesh was not fixed with tacker in any cases. Desufflation was performed with great care, under visual control keeping the mesh in position and the wounds were closed with absorbable sutures.

### Results

70 patients underwent TEP repairs. Of these, 62 patients had unilateral hernias and 08 patients had bilateral hernias. 66 patients presented with primary hernia and 4 patients had recurrences from previous open operations. Of unilateral hernias, 34 (54.8 %) were on the right side and 28 (45%) were indirect

hernias. Of the 8 bilateral hernias, 5 were indirect hernias, 3 were direct hernias. The mean age was 48 years (range 20-83 years), and 67 patients (95.7%) were men. The overall mean operative duration was 70 minutes (range 40 to 120 minutes). There was a mean of 66 minutes for unilateral hernias and a mean of 82 minutes (24% longer) for bilateral hernias. However, the mean operative duration for the last 45 (64 %) cases was decreased at 55 minutes. In the early part of series two patients had their operations converted to open surgery for technical difficulty due to opening of peritoneal cavity and resultant pneumoperitoneum. No serious peri-operative or postoperative complications were experienced. Post operative convalescence and recovery was uneventful in all the cases. No parenteral analgesics were used in postoperative period after the initial dose of pethidine during recovery. Five patients had minor port site infection, two patients had groin seroma treated by aspiration and one patient develops moderate pain on hip extension which was managed by analgesics and ambulation. There was no mortality. Sixty two (88.5%) patients were either satisfied or extremely satisfied with their repair and would or had recommended TEP to a friend. The mean postoperative hospital stay was 1.4 days (range 1-4 days). The mean follow-up period for patients was 6 months. During follow up period no patients had ongoing severe pain and only two patients described mild to moderate groin pain. No patients had sensory impairment, paresthesia or hyperesthesia. There was only one (1.33%) hernia recurrence. The recurrence occurred in the initial part of the series which was managed by open operation.

### Discussion

Laparoscopic inguinal hernia repair is a relatively new approach in the long history of groin hernia repair. However, it has been shown that the laparoscopic approach remains an alternative and feasible method to open hernia surgery<sup>5,7</sup>. We demonstrated in this series over a three years period that TEP hernia repair can be achieved with minimum morbidity. The majority of cases can indeed be performed in the day surgery setting, a learning curve has to be overcome, and the repair can be accomplished with acceptable recurrence rates. The results from this series are comparable to other reports of endoscopic hernia repair<sup>5-7</sup>. Large trials, mostly of subjects with primary and unilateral inguinal hernia, have shown that operative duration

ranges from 30 to 70 minutes, and recurrence rates range from 1.9% to 6%<sup>6-8</sup>. When compared to open surgery, laparoscopy results in less wound complications, less postoperative pain, reduced analgesic requirements, faster resumption of normal activities, and lowered overall cost when hospital and economic productivity costs are considered together, even though equipment costs are higher<sup>7</sup>. The endoscopic approach can be offered to patients with bilateral hernias, where repairs on both sides can be accomplished through the same wounds, and to those with recurrent hernia from previous open repairs, where no adhesions are encountered in the extraperitoneal space. TEP has clear advantages for both these situations, as recommended by the National Institute for Clinical Excellence<sup>9</sup>. Moreover, patients with primary, unilateral hernia who require rapid recovery from surgery to resume normal activities and work can also benefit from endoscopic repair. Early forms of laparoscopic repairs, such as IPOM, enter the peritoneal cavity to secure the mesh over the inguinal floor. However, intestinal obstruction may result from bowel that inadvertently becomes adherent to the exposed mesh. This is clearly an undesirable complication. TEP has the advantage of being extraperitoneal, thus minimizing the risk of visceral injury and adhesion formation. The laparoscopic approach also significantly reduces long-term morbidity of permanent paraesthesia or groin pain, compared to open surgery (5% vs. 33%) in a recent trial of 400 patients<sup>10</sup>. The learning curve for endoscopic hernia repair is one reason why most general surgeons still favor open hernia surgery. The learning curve seems steep, more so for non-laparoscopic surgeons than for dedicated laparoscopic surgeons. This may be because: (1) the anatomy of the inguinal region has to be re-learned from a laparoscopic viewpoint, i.e. from an interior view rather than the exterior approach as is taught in medical school and surgical training; (2) it is more difficult to operate in a confined extraperitoneal space than it is in the abdomen or thorax; and (3) regular practice is needed for endoscopic techniques of mesh placement. Some authors favor fixation of mesh and they claimed that fixation reduces recurrence<sup>11</sup> but others found that there is no significant difference in the recurrence rate with or without fixation rather fixation increases the risk of neuropathic complications<sup>12</sup>. As TEP without fixation may not be appropriate in everyone, Lau and Patil<sup>13</sup>

recommends that mesh fixation should be used in patients with larger hernial defects. We did not fix in any case which reduces cost and prevents occasional impingement of nerves by the tackers. Many studies of various open repairs, including tension-free repairs, report both a higher rate and greater severity of chronic pain<sup>14</sup>. One large review of >40 hernia studies including all major repair techniques demonstrated that laparoscopic TEP repairs had the lowest prevalence of chronic pain<sup>15</sup>. Indeed, a recent British prospective randomized trial showed that patients who had undergone Lichtenstein repairs had a fivefold higher risk of chronic pain when compared to those who had had laparoscopic repairs<sup>16</sup>. Patients who have had open herniorrhaphies are also twice as likely to seek the help of a pain specialist<sup>17</sup>. In our series, the chronic pain is also very less which is comparable with all these studies.

#### Conclusion

In conclusion, TEP mesh herniorrhaphy is a safe and efficacious method of herniorrhaphy with a low rate of recurrence and chronic pain. Surgeons experienced in TEP should be encouraged to report their long-term experience so that the true potential of this technique, rather than just learning curve results, is better understood. We recommend that initial cases should be performed under the guidance of a skilled surgeon to overcome the learning curve.

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