

ORIGINAL

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# INGUINAL HERNIA REPAIR; EXPERIENCE OF LAPAROSCOPIC TOTAL EXTAPERITONEAL APPROACH

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**ABSTRACT... Objective:** To evaluate early results of laparoscopic repair of inguinal hernia by totally extraperitoneal approach (TEP) performed. **Setting:** At Surgical unit III, Jinnah hospital Lahore. **Period:** From August 2005 to July 2008. **Methods:** 97 patients over the age of 30 years underwent TEP repair of their inguinal hernia. Post operative assessment of the patients included pain score assessment and analgesia requirement, along with ability to walk upright comfortably, time taken to return to normal activity and early complications like seroma, haematoma, infection etc. **Results:** Post-operative pain assessment at 8 hours after surgery showed 43(44.3%) patients required extra analgesia while 24 hours after surgery only 13(13.4%) patients required extra analgesia. Mean operative time was 95 min (range 55-130min) for unilateral hernia. However, as experience increased with TEP repair, mean operating time decreased to 75mins in the second half of the cases. 21(20.6%) patients at 24hrs and 51(52.6%) patients at 48hrs could walk upright without any help. Median period for return to normal activity at domestic level was 5days (range 3-23). Incidence of early complications is shown in table-III. **Conclusion:** Our results of TEP laparoscopic hernia repair are comparable to European experience in terms of postoperative pain, mobility of patient and rehabilitation, as well as early complications.

**Key words:** Inguinal Hernia, TEP, Postoperative pain

## INTRODUCTION

Inguinal hernia repair is one of the most common operation performed, both open and laparoscopic techniques are used<sup>1</sup>. Laparoscopic technique has been recommended especially for bilateral, direct & recurrent hernias<sup>2</sup>. European experience shows that patients treated with laparoscopic repair have less postoperative pain, fewer wound complications and return to normal activity and work sooner<sup>2,3,4,5</sup>.

A large, multicenter randomized trial found fewer early complications, lower incidence of chronic inguinal pain and fewer short term recurrences among the patients who underwent laparoscopic repair<sup>6</sup>. However, open

repair has its own advantages of being less expensive and easier to learn<sup>1,4,5,6</sup>. Moreover it can be performed under local anaesthesia unlike laparoscopic repair which requires general anaesthesia. Also laparoscopic technique for hernia repair is comparatively difficult to master, with a longer learning curve<sup>7,10</sup>.

Several favorable reports regarding laparoscopic inguinal hernia repair have been published in Western literature.

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This study evaluates and presents results of our local experience of laparoscopic repair of inguinal hernia with totally extraperitoneal technique (TEP) performed at surgical unit III, Jinnah hospital, Lahore from August 2005 to July 2008.

**MATERIAL AND METHODS**

Patients, age 30yrs and above, suffering from inguinal hernia, presenting in OPD of unit S-III from August 2005 onwards were selected for TEP repair provided there was no contraindication to TEP repair listed below. Age of 30yrs was chosen according to Nyhus LM recommendation of treating patients younger than 30 yrs with Nyhus type 1&2 hernia with non-mesh repair<sup>16</sup>.

**Contraindications of TEP Repair**

1. Irreducible hernia.
2. Patient medically unfit for general anaesthesia.
3. Coagulation disorder.
4. Previous lower abdominal incision like lower midline / paramedian or pfannenstiell incision, appendectomy scar for right sided hernia.
5. Patient refusal to pay for 15x15 prolene mesh.

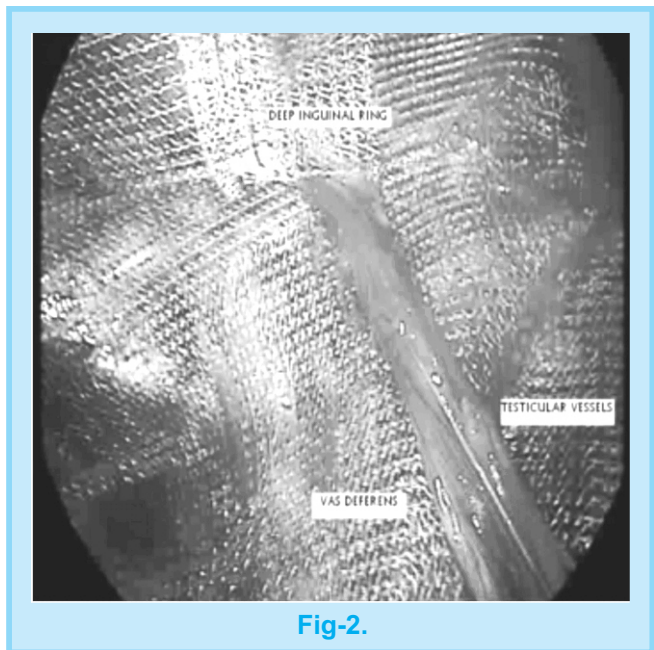
**SURGICAL TECHNIQUE OF LAPAROSCOPIC TEP REPAIR WITHOUT MESH FIXATION**

Mesh fixation was not performed because of added cost of the device needed for mesh fixation. Mesh stabilization was achieved by placing the mesh between spermatic cord and the abdominal wall as shown in picture-II.

A 15cm by 15 cm polypropylene mesh trimmed to 13cm by 15cm by cutting a 2cm wide sleeve along its one border, making the mesh 15cm wide (medial to lateral) and 13cm in height (cranio-caudal). A vertical slit is cut in the middle of mesh beginning from its superior edge towards inferior edge but ending at a distance 5cm from inferior edge. With the mesh finally in place the structures of spermatic cord would pass through this slit before entering the internal ring. Moreover, an 8cm long piece of the 2cm wide sleeve initially cut from the edge of mesh is stitched, utilizing 2-0 polypropylene suture, to one side of vertical slit in mesh to cover the defect created by vertical slitting of mesh as shown in Pic-1. Pic-2 shows final placement of mesh, stabilized in its place by the structures of spermatic cord.



**Fig-1.**



**Fig-2.**

**Postoperative Care**

Postoperative pain was controlled by intramuscular diclofenac sodium 12hourly for the first 24hours after operation followed by, diclofenac orally twice a day.

further analgesia was required nelbuphine was given and record was made of number of extra doses given to the patient. All patients received I/V cefuroxime 750mg pre-operative, followed by three post operative doses. Further antibiotic was administered if there was evidence of infection, such as fever, wound redness or discharge.

**Postoperative parameters**

Pain was assessed according to a scale shown in table-I. Pain score was recorded 8 hours and 24 hours after surgery.

Table-I.	
Pain assessment	Score
Patient denies pain at rest	0
Mild pain but does not want analgesia*	1
Moderate pain wants analgesia*	2
Severe pain desperate for analgesia*	3
Almost in tears, repents to have undergone surgery	4

*\*Analgesia in addition to regular administration of Diclofenac*

Ease of mobility of the patient recorded according to the gait of patient, walking upright or bent forwards 24hours and 48hours after surgery. Also recorded were numbers of days needed by the patient before returning to normal level of activity at their domestic level.

Also recorded were wound infection, urinary retention, anterior abdominal wall bruising, and scrotal swelling. Patients were kept inpatient routinely for 48hrs postoperative, for the postoperative parameters mentioned above to be recorded. After discharge from hospital they were followed up in OPD of surgical department at 1week and 3 weeks interval.

**RESULTS**

101 patients were operated for their inguinal hernia by laparoscopic TEP technique. 97 cases were successfully completed by laparoscopic technique, while 4 were converted to open surgery because of large tear in peritoneum. Mean operative time was 95min (range 55-130min) for unilateral hernia. However operating time

decreased as experience increased with TEP repair. This mean operative time in first half of the cases was 110mins as compared to 75mins in the later half of the cases.

Table-II. Shows post-operative pain score		
	Pain score 8 hrs	Pain score 24 hrs
0	13 (13.4%)	38 (39.2%)
1	41 (42.3%)	46 (47.4%)
2	32 (32.9%)	13 (13.4%)
3	9 (9.3%)	-
4	2 (2.06%)	-

Assessment of pain at 8 hours after surgery showed 43(44.3%) patients required extra analgesia while 24 hours after surgery only 13(13.4%) patients required extra analgesia. 21(20.6%) patients at 24hrs and 51(52.6%)patients at 48hrs could walk upright without any help. Mean period for return to normal activity at domestic level was 5days (range 3-23) .

Early postoperative complications are shown in table-III.

Table-III. Early complications (n=97)		
Total no. of cases	No of cases	%age
Scrotal haematoma	3	2.9%
Scrotal seroma	10	9.7%
Superficial infection	3	2.9%
Prolonged pain	-	-
Urinary retention	2	1.94%
Sensory loss in groin	-	-
Testicular swelling	3	2.9%

Haematomas were of small size and treated conservatively, did not need surgical evacuation. Out of 10 seromas, 3 needed to aspirated twice, 4 were aspirated once and the remaining 3 resolved without aspiration. Three patients suffered from superficial

infection of subumbilical wound, which settled down after removal of stitches along with oral antibiotic. There was no early acute recurrence. Incidence of late recurrence cannot be commented upon because of lack of long term follow up.

## DISCUSSION

Use of a prosthetic mesh to create tension free repair, as well as the laparoscopic technique have gained popularity for repair of inguinal hernia<sup>9,11</sup>. Use of mesh is common and increasing<sup>11</sup>. With the use of mesh in open hernia surgery resulting in tension free repair, the recurrence rate as well as rehabilitation period has reduced compared to sutured repairs<sup>10</sup>. Mesh repair has shown to reduce recurrence by 50% no matter what technique of mesh placement is used<sup>12</sup>.

Stoppa and others have used preperitoneal subumbilical approach to retrofascial space since 1969<sup>9</sup>. Advantages of this approach were the ease of separation of retrofascial cellular space, direct access to posterior inguinal structures, clear understanding of hernial defects and clear exposure of the musculopectineal opening<sup>9</sup>. In laparoscopic TEP technique dissection and placement of mesh is done in the preperitoneal retrofascial as done by Stoppa in his technique by open surgery. Therefore laparoscopic TEP repair is expected to combine advantages of Stoppa's approach with that of minimally invasive surgery.

Laparoscopic TEP repair of inguinal hernia is totally extraperitoneal approach as entry into peritoneal space is avoided. While the TAPP laparoscopic technique is transperitoneal approach to inguinal hernia in which abdominal cavity is entered with the possibility of injury to intraperitoneal contents<sup>13,15</sup>. Laparoscopic hernia repair has been criticized for technical difficulties, cost and a long learning curve<sup>7,10</sup>. However many publications that have been the foundation for the debate have been studies using TAPP technique in comparison to open repair with or without mesh<sup>10,14</sup>.

Author's experience shows that TEP repair took long time (mean operating time 110mins in first half of the cases), however as the experience with TEP repair increased the operating time decreased to 75mins in the second of the

cases. Our operating time is more than Bringman S MD et al<sup>10</sup>, who have reported an operating time of 50min(25-150). The economic impact of long operative time differs between health care systems in various countries<sup>10</sup>. How the duration of operating time would have economic impact in our setup is debatable.

In our series of 101 patients there were 4 conversions to open surgery. Wright D et al has shown 6 conversions to open surgery in their series of 149 TEP repair<sup>17</sup>.

A meta-analysis from EU Hernia Trialists Collaboration<sup>14</sup>, shows that laparoscopic repair had shorter rehabilitation than open repair.

In our series, postoperative pain score and time to return to usual activity (mean time of 5days) and rehabilitation are comparable to that shown in European series. Bringman S MD et al has reported a median sick leave period of 5 days in case of TEP repair<sup>10</sup>.

Incidence of early complications shown in table III compares well with the results of Bringman S MD et al in their series of 92 cases of TEP repair<sup>10</sup>, except that in our series there is higher incidence of seroma formation i.e. 9.7% which may be due to extensive dissection of extraperitoneal space in our technique of TEP repair.

## CONCLUSION

Our results of TEP laparoscopic hernia repair are comparable to European experience in terms of postoperative pain, mobility of patient and rehabilitation, as well as early complications.

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