

# Totally Extra-Peritoneal (TEP) Versus Tension Free Mesh Repair for Inguinal Hernia

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## ABSTRACT

**Aim:** To compare the outcome of the totally extra peritoneal (TEP) versus tension free mesh repair for inguinal hernia in terms of Post-Operative Pain and mean hospital stay

**Study design:** Randomized Controlled Trial

**Place and duration of study:** Department of Surgery, Mayo Hospital Lahore from Jan 2014 to Dec 2014 and Department of Surgery, Shalamar Hospital Lahore from Jan 2015 to Dec 2015.

**Methods:** Inguinal hernia patients were admitted electively. They were randomly assigned into groups A and B. The group A patients were treated with laparoscopic total extraperitoneal repair (TEP) and group B patients underwent Lichtenstein's repair. Patients were evaluated for discharge rate and postoperative pain.

**Results:** A total of 400 patients were included with 200 in each group. The post-op pain was observed in only 7% patients whereas it was not observed in 93% patients. Statistically there is significant difference was found between the study groups and post-op pain of the patients i.e. p-value=0.031. The mean hospital stay of group A was  $1.95\pm 0.75$  days whereas the mean hospital stay of group B was  $2.70\pm 0.85$  days. Statistically there is significant difference was found between the study groups and stay in hospital of the patients i.e. p-value=0.019.

**Conclusion:** Our study results showed that the TEP technique is more effective and safe as compared to Lichtenstein repair techniques for inguinal hernia repair.

**Keywords:** Extra peritoneal, Inguinal Hernia, Tension Free Mesh Repair, Lichtenstein 's repair.

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## INTRODUCTION

The inguinal hernia repair has been a controversial area in surgical practice ever since it was conceived<sup>1</sup> with recurrence rates have decreased as a result of the use of prosthetic mesh<sup>2,3,4,5</sup>. The laparoscopic procedure is the only technique that is achieved by placement of a prosthetic mesh to cover the entire groin area, including the sites of direct, indirect, femoral and obturator hernias. The totally extra peritoneal procedure (TEP) combines the advantage of tension-free mesh reinforcement of the groin with those of laparoscopic surgery, reduced postoperative pain and shortened recovery time<sup>6</sup>. The surgeon can use the endoscopic inguinal hernia technique for the repair of a primary hernia, providing the surgeon is sufficiently experienced in the specific procedure<sup>7</sup>.

TEP repair results in fewer complications and an earlier return to work and normal lifestyle but is more expensive and takes longer to perform<sup>8</sup>. Laparoscopic hernioplasty is superior to tension free open mesh repair in terms of postoperative pain and rehabilitation<sup>9</sup>.

In a study, two hundred and ninety-nine men 30 to 75 years old were randomized to undergo laparoscopic totally extraperitoneal hernioplasty (TEP) and

Lichtenstein's operation. In results, postoperative pain was 3.3% The surgeon can use the endoscopic inguinal hernia technique for the repair of a primary hernia, providing the surgeon is sufficiently experienced in the specific procedure<sup>7</sup> in case of TEP and 9% in case of Lichtenstein's operation<sup>10</sup>. While in another study a total of 345 patients were randomized to Lichtenstein's or TEP procedure and the results showed that mean hospital stay was similar in both groups i.e., it was  $2.2\pm 0.4$  days for TEP and  $2.5\pm 0.6$  days for Lichtenstein repair<sup>11</sup>.

Inguinal Hernia repair has been a matter of debate for centuries. There are multiple factors to this debate. Starting from the complexity of inguinal canal, poor compliance of the patients, poor follow up, poor surgical technique to employ for the repair, infection and the conditions predisposing to catching an infection, conditions leading to an increase in intra abdominal pressure that persist and the hernia surgery is conducted etc.

The rationale of the study is to evaluate that which procedure is safer and with less complications. Moreover, there is lot of controversies in the previous studies; my study will support the procedure which is good or better. Local study or local data is not present. This will help us to formulate strategies to cure the patients in less time with no or less complications.

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**METHODOLOGY:**

A randomized control trial was conducted in the Department of Surgery , Mayo Hospital, Lahore from. A total of of 400 patients of inguinal hernia were included through non probability purposive sampling with 95% power of test, 5% margin of error. Patients with obstructed hernia were excluded. All patients were evaluated by history and clinical examination. They were randomly allocated into two groups A and B by using random numbers table method after matching the confounding variables. After informed consent all patients were operated under general or spinal anesthesia. Group A (TEP) and Group B (Tension free mesh Repair) comprising 200 patients in each group. The procedure was carried out by an experienced surgeon. The pain score was recorded on the 1<sup>st</sup> and 2<sup>nd</sup> post-operative day using visual analogue chart. Post- operative events were recorded till the patient is Data was entered and analyzed accordingly by using SPSS version 10.0. The quantitative variables like age and hospital stay was presented by Mean and Standard Deviation. The qualitative variables like gender and pain were presented as frequencies and percentages. t-test was applied to check the significant difference of mean hospital stay in both groups. A p-value ≤ 0.05 was considered as significant. Chi- square test was used to compare post-operative pain

**RESULTS**

In this study, Total 400 cases of inguinal hernia were presented in this study. The mean age of the patients was noted as 33.89±13.45 years with minimum and maximum ages of 18 and 50 years respectively. In this study out of 400 patients, 304 (76%) patients were males whereas 96(24%) patients were females.

In this study the post-op pain was observed in only 28(7%) patients whereas it was not observed in 372 (93%) patients. Out of 28 patients with post-op pain, 8(4%) were from TEP group and 20 (10.0%) were from LP group. Similarly, out of 372 patients without post-op pain, 192(96%) were from TEP group and 180(90%) were from LP group. Statistically there is significant difference was found between the study groups and post-op pain of the patients i.e. p-value=0.031.

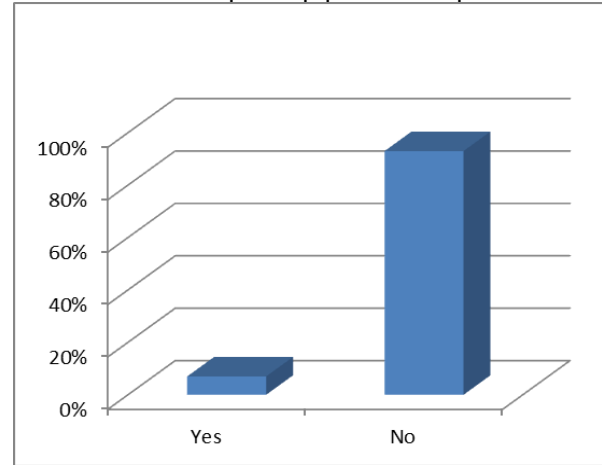
The study results showed that the mean hospital stay of the patients was 2.32±0.89 days with minimum and maximum days of 1 & 5 days respectively. In this study, the mean hospital stay of TEP group was 1.94±0.75 days whereas the mean hospital stay of LP group was 2.70±0.86 days. Statistically there is significant difference was found

between the study groups and stay in hospital of the patients i.e. p-value=0.000.

In this study, the mean hospital stay of male patients was 2.26±0.89 days while mean hospital stay of female patients was 2.53±0.85 days. Statistically there is significant difference was found between both genders i.e., p-value=0.008 and females have more hospital stay as compared to male patients.

In this study, out of 28 patients with post-op pain, in which 20(6.6%) were males and 8(8.3%) were females. Similarly 372 patients with no post-op pain, 284(93.4%) were males and 88(91.7%) were females. Statistically there is insignificant difference was found between the post-op pain of and sex of the patients i.e. p-value=0.557.

Distribution about post-op pain of the patients



Comparison of post-op pain in accordance with study groups

Postop pain	Study Group		Total
	TEP	LP	
Yes	8 (4%)	20(10%)	28(7%)
No	192(96%)	180(90%)	372(93%)

Chi-square = 5.530 p-value = 0.031 (Significant)

Descriptive statistics of Hospital stay in days

n	400
Mean	2.32
SD	0.89
Minimum	1
Maximum	5

Comparison of Hospital stay in accordance with study groups

Hospital stay	Study Group	
	TEP	LP
n	200	200
Mean	1.94	2.70
SD	0.75	0.86

t-value= 9.370

p-value = 0.000 (Significant)

## DISCUSSION

Laparoscopic hernia repair has been criticized for technical difficulties, cost, and a long learning curve<sup>10,16</sup>. The indications for laparoscopic hernia repair have been debated. One of the problems in inguinal hernia research is that the patients must be followed for a significant period to evaluate the recurrence rate and the rate of late postoperative morbidity<sup>10,16,17</sup>.

In laparoscopic herniorrhaphy either totally extraperitoneal or transabdominal preperitoneal (TAPP) method is preferred.

In our study the post-op pain was observed in only 7% patients whereas it was not observed in 93% patients. Statistically there is significant difference was found between the study groups and post-op pain of the patients i.e., p-value=0.031 as discussed by different authors. Sven Bringman et al. showed in their study there was less postoperative pain and shorter time to full recovery in TEP compared to both open methods. Meta-analysis showing that laparoscopic repair had a shorter rehabilitation than open repair<sup>10,18</sup>.

As reported elsewhere postoperative complications are usually self-limiting minor complications, and had lower incidence. The postoperative recurrence rate of both laparoscopic and open-tension free methods is generally lower than 1%<sup>20,21</sup>.

Gokalp et al., showed that TEP group was able to return back to work earlier than the LP group and this was significant statistically ( $p < 0.05$ )<sup>22</sup>.

In our study the mean hospital stay of TEP group was 1.95±0.75 days whereas the mean hospital stay of LP group was 2.70±0.85 days. Statistically there is significant difference was found between the study groups and stay in hospital of the patients i.e. p-value=0.019 Although many reports indicated the superiority of laparoscopic intervention for hospital stay length, for duration of restricted daily normal activities, and shorter duration for returning back to work but our observation suggested only shorter duration for returning back to work appeared to be advantageous for TEP group<sup>23</sup>.

Lau et al did not find any complications during TEP procedure<sup>14</sup>. Postoperative recovery was significantly better in the TEP group, with less pain until 6 weeks postoperatively.

Another study a total of 345 patients were randomized to Lichtenstein's or TEP procedure and the results showed that mean hospital stay was similar in both groups i.e. it was 2.2± 0.4 days for TEP and 2.5± 0.6 days for Lichtenstein repair.<sup>(11)</sup>

A study carried out on 239 patients by Bringman Sven et al., published in annals of surgery in January 2003 showed that all the patients were discharged

within 24hrs and in TEP the median sick leave period was 5 days while in Lichtenstein repair it was 7 days<sup>10</sup>.

Alberto MEYER et al concluded in their study that Totally extraperitoneal procedure is preferred over transabdominal preperitoneal hernia repair as the peritoneum is not violated and with an acceptably low complication rate. As the opening of peritoneum is the major step in TAP approach of Laparoscopic Inguinal hernia repair, injury to intraabdominal viscera and intra operative bleeding are the two most unavoidable complications that render this approach to be applied only in experienced hands. Adequacy of operating field is indeed a big advantage of this approach. TEP repair results in fewer complications and an earlier return to work and normal lifestyle but is more expensive and takes longer to perform<sup>8</sup>. Laparoscopic hernioplasty is superior to tension free open mesh repair in terms of postoperative pain and rehabilitation<sup>9</sup>.

## CONCLUSION

In this randomized control trial, Laparoscopic total extraperitoneal repair was found superior to open mesh repair in terms of lower postoperative pain and earlier hospital

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