



ORIGINAL ARTICLE

Comparison of total extraperitoneal and Lichtenstein repair for Inguinal Hernia.

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ABSTRACT... Objective: To compare the outcome of surgical repair of inguinal hernia between total extra peritoneal repair (TEP) and Lichtenstein repair. **Study Design:** Randomized Controlled Trial. **Setting:** Department of Surgery, Sheikh Zayed Hospital, Rahim Yar Khan. **Period:** 24-03-2021 to 23-09-2021. **Material & Methods:** Non probability consecutive sampling. The cases of both genders with age range of 20-60 years with inguinal hernia (both direct and indirect) were included. The cases in group A were managed by laparoscopic TEP while those in group B underwent Lichtenstein repair. Prolonged hospital stay was labeled when the patients were not discharged after 24 hours of surgery and post-operative pain was labelled as yes when the patient had pain of score of 3 or more assessed by visual analogue scale after the 2 weeks of the surgery. **Results:** In this study 62 cases were included, 31 in each group. The mean age in group A and B was 32.90 ± 9.89 vs 32.67 ± 7.57 years and mean duration of hospital stay was 22.77 ± 6.84 vs 26.00 ± 11.25 hours with $P=0.004$ in group A and B respectively. Postoperative pain was seen in 08 (25.80%) cases in group A and 19 (61.29%) cases in group B with $P=0.01$. Prolonged hospital stay was observed in 10 (32.25%) cases in group A and 18 (58.06%) cases in group B with $P=0.07$. **Conclusion:** Postoperative pain is significantly higher in cases managed with Lichtenstein repair as compared to total extra peritoneal repair.

Key words: Comparison, Hernioplasty, Inguinal Hernia, Lichtenstein Repair, TEPP.

INTRODUCTION

Statistical data from different studies show that more than 20 million people annually undergo surgery for the repair of inguinal hernias worldwide.¹ The global data shows that 3-6 % of women and 27-43% men suffer from either femoral or inguinal hernia.² Inguinal hernias usually produce symptoms and require surgery while 70% of asymptomatic patients managed conservatively also end-up in surgery within 5 years.^{1,3} Despite the different improved modalities used for hernia repair, recurrence rate is app 11%.³

In the past, hernia repairs were done mostly by different approaches using tension free techniques like Lichtenstein, Darning, Nyhus & Rutkow and Stoop long before the introduction of laparoscopic mesh repair.⁴ Among these repairs Lichtenstein (tension-free hernia repair)

was considered the best treatment method.⁵ The international guidelines for groin hernia management, Hernia-Surge, recommended only TAPP(transabdominal patch plasty), TEPP (total extra peritoneal patch plasy) and Lichtenstein approach.⁶

In most of the centers in our country open repairs are being practiced because of unavailability and long learning curve of laparoscopic hernia repairs. As we have started the TEPP and TAPP procedures at our center in the recent past but we are not sure of its outcome, so we have conducted this study at General Surgical department of Sheikh Zayed medical college Rahim Yar Khan for a period of six months between 24-03-2021 to 23-09-2021 to compare the outcome in terms of post-operative pain and hospital stay between two surgical procedures (TEPP and Lichtenstein repair). By the results of this study, we can

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perform the procedure with better outcome more confidently and our practice would be evidence based.

MATERIAL & METHODS

This randomized control trial was conducted at the Department of Surgery, Sheikh Zayed Hospital, Rahim Yar Khan for a duration of six months from 24-03-2021 to 23-09-2021. After taking the ethical approval from the institutional review board of Sheikh Zayed medical college Rahim Yar Khan with letter No. 221/IRB/SZMC/SZH dated 28-02-2021, total 62 patients were selected by non probability consecutive sampling technique. Patients with any gender between the age of 20-60 years with unilateral inguinal hernia (both direct and indirect) assessed by history for any duration and medical examination were enrolled for the study. Patients with bilateral inguinal hernia, recurrent inguinal hernia, having history of diabetes mellitus, hypertension and end stage liver disease were excluded from the study.

An informed consent was taken from patients fulfilling the inclusion criteria. Socio demographic and clinical data like age, gender, and duration of hernia was taken at Department of Surgery SZH, RYK and recorded on a specially designed proforma. These cases were divided into group A and B with the help of a sealed opaque envelope method. The cases in group A, laparoscopic TEP was done and 15 cm x 15 cm polypropylene mesh was placed in the preperitoneal pocket and fixed with tackers. The group B underwent Lichtenstein repair, which was performed through suprainguinal incision, the posterior wall was strengthened with the 6 cm x 11 cm polypropylene mesh, fixed with polypropylene suture. Time of surgery was calculated in minutes from skin incision to closure. Both the groups were offered 5 days of antibiotic and analgesics. They were assessed at 24 hours in terms of hospital discharge and then at 2 weeks to assess for pain on visual analogue scale. The final results were collected and recorded on the proforma.

Data was analysed with the help of SPSS version 21. Quantitative variables like age, duration of hernia, duration of hospital stay, duration of

surgery, size of hernia and pain on visual scale were presented in terms of mean \pm SD (Standard Deviation). Frequency and percentages were calculated for gender, type of inguinal hernia and outcome i.e. prolonged hospital stay (yes/no), post-operative pain (yes/no). Both the groups were compared for outcome by using chi square test and the p value less than 0.05 was considered as significant. Effect modifiers were controlled through stratification of age, duration of hernia, size of hernia and duration of surgery. Post stratification chi-square test was applied and $p \leq 0.05$ was taken as significant.

RESULTS

In this study 62 cases were included, 31 in each group. The mean age in group A and B was 32.90 ± 9.89 vs 32.67 ± 7.57 years. There were 27 male in group A and 29 in group B as shown in figure. Mean duration of hernia was 3.41 ± 1.31 vs 4.11 ± 2.03 months and mean duration of surgery was 53.35 ± 11.18 vs 53.48 ± 10.53 minutes as shown in Table-I. Mean duration of hospital stay was 22.77 ± 6.84 vs 26.00 ± 11.25 hours with $p = 0.004$ while mean size of hernia was 6.03 ± 1.22 vs 5.52 ± 1.18 cm as shown in Table-I. Mean severity of pain on VAS was 1.77 ± 1.96 vs 2.81 ± 1.99 . Post-operative pain was seen in 08 (26%) cases in group A and 19 (61%) cases in group B with $p = 0.01$ as shown in Table-II. Prolonged hospital stay was observed in 3(10%) cases in group A and 18 (58%) cases in group B with $p = 0.04$ as shown in Table-II. Post-operative pain was significantly higher in age groups 20 to 39 years, male gender, duration of hernia up to 1 month and duration of surgery up to 1 hour with p values of 0.04, 0.008, 0.04 and 0.02 respectively. Prolonged duration of hospital stay was significantly higher in cases where the duration of hernia was more than 1 month with p value of 0.001 as shown in Table-I.

DISCUSSION

Hernias are amongst the highly reported entities in the surgical outpatient and indoor patients. Hernia is defined as the protrusion of internal organ through an anatomical defect or weakness of the muscle fibers lining the body wall. Prevalence of this surgical pathology is estimated to be around 5% worldwide.⁷

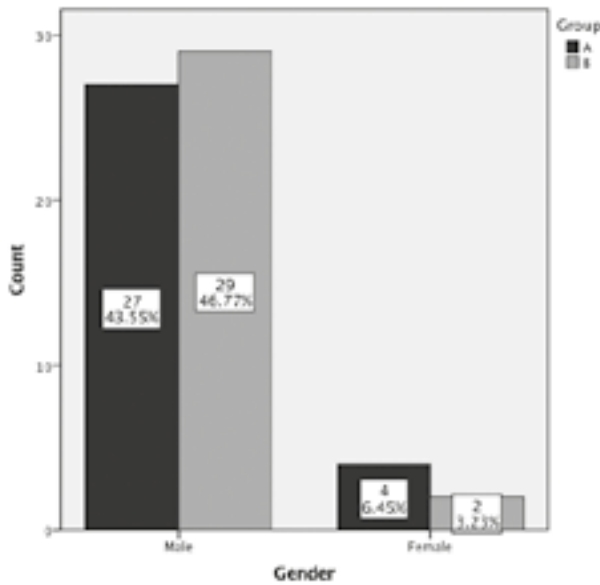


Figure-1. Gender distribution of study subjects

	Prolonged Hospital Stay	Group		P-Value
		A	B	
Duration of hernia (upto 01 month)	Yes	4	2	0.59
	No	1	2	
>1 month	Yes	6	16	0.001
	No	20	11	
Size of hernia (upto5cm)	Yes	2	9	0.05
	No	10	7	
Size of hernia >5cm	Yes	8	9	0.49
	No	11	6	
Duration of surgery (upto 1 Hr)	Yes	8	13	0.35
	No	11	9	
Duration of surgery >1Hr	Yes	2	5	0.15
	No	10	14	

Table-I. Comparison of prolonged hospital stay with respect to duration of hernia, size of hernia and duration of surgery n=31 in each group

	Group A	Group B	P Value
Post op Pain	8 (26%)	19 (61%)	0.01
Prolonged Hospital Stay	03 (32%)	18 (58%)	0.04

Table-II. Comparison of post-operative pain and prolonged hospital stay in group A and B

Among all types of hernias, inguinal hernia is the most common type comprising 74% of all hernias documented.⁸ While prevalence of ventral hernia

and femoral hernia is found to be 10 % and 3% respectively among all cases.⁹ There are two broader groups of hernia i.e; reducible (that can be pushed back manually) and irreducible.

If the blood supply of the hernia is impaired, it can be a surgical emergency and is denoted as strangulated hernia where urgent surgical correction and reduction of hernia is needed and sometimes resection of the necrotic areas i.e. intestine or omentum may also be needed if it's the content of the hernia sac to be strangulated. There are many predisposing factors which can contribute in the development of hernia such as chronic cough, COPD, exertional physical activity or any previous lower incisions.¹⁰ The treatment of choice for hernia is surgery. In order to eliminate or reduce the development of morbidities like postsurgical pain, recurrence rate or prolong hospital stay, many different techniques have been implied. Recurrence rate after surgical repair of hernia has reduced remarkably with the use of prolein meshes. Surgery can be done as open surgery or laparoscopy in the form of trans abdominal preperitoneal repair (TAPP) and total extra peritoneal repair (TEP). The TEP has lesser degree of morbidity but the cost and the expertise required are the major concerns for its frequent use and this technique adds to increase financial burden. In contrast open repair by Lichtenstein technique is a cheaper method but the complication rates are higher.^{11,12}

In the present study post-operative pain was seen in 08 (25.80%) cases in group A managed with TEP and 19 (61.29%) cases in group B treated with Lichtenstein repair with p= 0.01. Similarly, prolonged hospital stay was observed in 10 (32.25%) cases in group A and 18 (58.06%) cases in group B with p= 0.07. These results were comparable to the results of the studies done in the past. According to a study done by Nawaz A et al the discharge at 24 hours with TEP was seen in 68.08% and prolonged hospital stay was seen in 31.92% of the cases. In contrast the cases which were managed by Lichtenstein repair, out of them only 31.91% of were discharged while 68.09% had prolonged hospital stay. At 2 weeks time post-operative pain was seen in 66% of the

cases with TEP and 88% of cases with Lichtenstein repair.¹³

This was also seen by the study done by Anadol ZA et al where they found that mean post-operative hospital stay was significantly shorter with laparoscopic surgeries as compared to Lichtenstein repair and was seen as 1.52 ± 0.51 days vs 2.24 ± 0.97 days respectively with $p < 0.05$.¹⁴ This was also supported by the data of three hundred cases of inguinal hernia operated by Moreno Egea et al where they concluded that Laparoscopic repair done as day case surgery and out of 300 cases none needed an admission. Similar results were seen in the study done by Lau et al in which 100% cases were discharged on the same day.^{15,16} Witten becher et al also found similar results in favour of TEP.¹⁷ This can be explained by the factor that the laparoscopic surgery has minimal invasion and lesser degree of surgical incisions and hence these cases need lesser hospital stay and care, hence discharged earlier.

According to a study done by Murthy PK et al compared these both techniques and it was seen that mean operative time was 92.25 minutes with TEP and 43.5 minutes with Lichtenstein repair with $P < 0.05$ but on the other hand, pain was seen in 75% with traditional repair as compared to the laparoscopic repair with $P < 0.05$.¹⁸

Meta-analysis of 16 randomized control trials of trans abdominal pre-peritoneal repair demonstrated an overall increase of 13.33 minutes compared with open repair. Meta-analysis of eight randomized control trials of totally extra peritoneal (TEP) repair demonstrated an overall increase of 7.89 minutes compared with open repair.¹⁹

In a Cochrane review it was seen that persistence and the severity of postoperative pain was much higher in Lichtenstein repair as compared to the laparoscopic technique and these were the cases that were even discharged earlier with p value of less than 0.05. In the other studies they evaluated different minor and major complication rates which were 3% of the cases with TEP and 25% with open surgical technique.²⁰

The limitation of our study was the short term follow up for only six months and measurement of only two variables, post-operative pain and hospital stay. This research can be extended to long term follow up by adding the variable of comparison of recurrence rate of hernia between the two surgical modalities.

CONCLUSION

Postoperative pain was significantly higher in cases managed with Lichtenstein repair as compared to TEP and this difference is significantly higher in terms of male gender, duration of hernia up to one month and duration of surgery up to 1 hour and similarly, prolonged duration of stay is also higher in Lichtenstein group and is significantly higher in cases with hernia duration more than one month.






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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
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2	Sohail Sabir	Data collection, Review, Proof reading.	
3	Naureen Kauser	Data analysis, Critical review.	
4	Sajida Nasim	Proof reading, Data analysis, Bibliograph.	
5	Syeda Sabahat Haider	Research concept, Critical evaluation, Proof reading.	
6	Sadaf Shahzadi	Data collection, Statistical modeling.	