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Research Article

POST-OPERATIVE PAIN OF LAPAROSCOPIC TOTAL EXTRAPERITONEAL VS OPEN INGUINAL HERNIOPLASTY: RANDOMISED CONTROL STUDY

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A R T I C L E I N F O

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A B S T R A C T

Background: Inguinal hernia is a surgical issue that frequently brings patients to surgical OPD. Inguinal hernia surgery is the commonest procedure performed by surgeons worldwide. Most common post operative complain of patients remains groin pain and discomfort.

Aim: To compare the Laparoscopic total extra peritoneal mesh procedure with the Lichtenstein tension free mesh repair in terms of post operative pain frequency and pain score.

Study Design-Randomised Control Study.

Setting and study duration: July 2019 to March 2021. Dept of Surgery, VMMC & Safdarjung Hospital

Methods: A total of 100 patients with reducible inguino-scrotal hernia, 20 to 60 years of age were included. Patients with irreducible and recurrent hernia were excluded. Patients were randomly divided into 2 groups i.e., Group-A underwent Lichtenstein mesh repair & Group-B who underwent (total extra peritoneal mesh repair) by using lottery method. Patient were admitted for 24 hours and the postoperative pain was evaluated by visual analogue scale.

Results: Average age of patients in group A was 45.88 ± 12.41 years and in group B was 43.79 ± 12.99 years. The most frequent age group in this study was 20-40 years in which 55 (55.0%) patients were present. Post- operative pain was found in 38 (76.0%) patients in group A (Lichtenstein repair) while in group B (TEP repair), it was found in 28 (56.0%) patients with p-value of 0.034.

Conclusion: This study concluded that total extra peritoneal mesh repair results are better in terms of less postoperative pain as that of Lichtenstein mesh repair.

INTRODUCTION

Hernia is protrusion of the content of the abdominal cavity which may be a viscus or part of a viscus through a weak point in the wall [1]. Risk factors for development of hernia includes Smoking, COPD, BMI>30, Pregnancy, collagen vascular disease, peritoneal dialysis and previous history of open appendectomy [2,3]. Hernia is primarily diagnosed clinically. Inguinal hernia is the most frequent types of hernia and inguinal hernia repair is one of the most common types of surgery performed by the surgeons. [4-5] Posterior inguinal wall reinforcement can be done by open surgery techniques like Darns repair, Bassini repair, Shouldice repair and Lichtenstein repair or minimal invasive techniques like Total Extra peritoneal and Transabdominal Preperitoneal mesh repair. In Laparoscopic Total Extraperitoneal approach the preperitoneal space is dissected to place the mesh. Lichtenstein repair is done using prosthetic polypropylene mesh, fixed by polypropylene sutures or by applying self-adhesive mesh to the posterior wall thereby reinforcing it. [4]

Post operative complications including headache, post-operative pain, seroma formation, surgical site infection and recurrence can occur in both type of repairs. [1] TEP has a long learning curve but produce better results in terms of post-surgery pain and early recovery to work as compared to Lichtenstein mesh repair.

Inguinal hernia repair is the most common elective procedure performed in our hospital both laparoscopically and by Lichtenstein mesh repair. Post operatively patients remain unsatisfied due to groin pain and discomfort. The objective of the study was to compare postoperative pain in patients undergoing total extraperitoneal mesh repair and Lichtenstein mesh repair.

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METHODS

This study was conducted at Department of General Surgery, VMMC & Safdarjung Hospital, New Delhi during time period July 2019 to April 2021. Approval from the "Institute Ethical Committee" was taken before the start of this study. Inclusion criteria was: Age between 20-60 years, Male Gender, Primary reducible incomplete inguinal hernias. Exclusion criteria was patient having a complete inguinal hernia, recurrent inguinal hernias, bilateral hernias, morbid obesity, Acute or chronic kidney or liver diseases, ASA class 3 and more. Sample Size: Total of 100 patients, 50 patients as "Group A": Lichtenstein repair and 50 patients as "Group-B": TEP Repair.

Data Collection Procedure: Total 100 patients were included in the study. The patients were admitted in department of surgery with diagnosis of inguinal hernia as per inclusion and exclusion criteria. All patients were explained about the procedure and an informed written consent was taken. Patient were divided by lottery method in 2 groups. i.e., Group-A and B. In Group A (Lichtenstein group) procedure was prerfromed under spinal anaesthesia. Inguinal canal was approached through skin crease incision made in supra inguinal region. In case of indirect hernia, hernial sac was dissected separately from spermatic cord and herniotomy was done., Plication of the sac with vicryl 2/0 was done in case of direct inguinal hernia. In both direct and indirect inguinal hernia posterior wall was reinforced with polypropylene mesh fixed with prolene 2-0. External oblique aponeurosis was closed with continuous suturing by vicryl 1. Skin closed by ethilon 2-0 in interrupted fashion. In laparoscopic hernia repair pre-peritoneal space was created below abdominal muscles. Mesh was placed after dissection and reduction of hernia sac. To prevent mesh unrolling a single tack was placed in Cooper's ligament. All the surgeries were done by same consultant surgeon. All the patients received single dose Inj. ceftriaxone 500 intravenously as a prophylaxis at the time of induction.[6]

Oral feeds were resumed once the patient recovered from anaesthesia. All patients received intramuscular Diclofenac sodium 75mg intramuscularly every 8 hours during first 24 hours, followed by oral Diclofenac 50mg sos for pain. Patient was kept in the ward for 24 hours to observe the postoperative pain assessed by visual analogue scale. [7] Patient was followed up in OPD and pain was assessed by VAS on 7th day postoperatively.Stitches were removed at 7th day postoperatively. Data was entered in the preformed Proforma for analysis. Analysis Plan: Data entry and analysis was done using SPSS version 16. Age (quantative variables) was presented as mean ± SD. Frequency and percentage was used for qualitative variables- ASA, BMI, Type of hernia and post-operative pain (Presence/Absence). Comparison of postoperative pain in both groups was carried out with the help of Chi Square test. Criteria for significance was set as p-value <0.05. Stratification was done to control effect modification for the following variables (Age, BMI, ASA and hernia type). Post stratification chi square test was applied to see the effect of these variables on postoperative pain in both treatment groups. p-value significance criteria were set as <0.05

RESULTS

Mean age of all 100 patients in this study was 44.83±12.69. Mean age of patients in Group-A and in Group-B was 45.88±12.41 years and 43.79±12.99 years respectively. Majority of the patients 55(55.0%) were between 25 to 40 years of age. Distribution of patients according to ASA status showed that 54% of the patients were of ASA I status and 46% of the patients were of ASA II status. Mean BMI of patients was 29.30±2.64 (Group-A) and 29.0±2.27 (Group-B) respectively. (Table-1)

Post-operative pain was found in 38(76.0%) patients in (Lichtenstein Repair) while in (TEP repair), it was found in 28 (56.0%) patients with p-value was 0.034 which shows that significantly higher number of patients had pain in Group-A as that of patients in Group-B. (Figure-1) Stratification of post-operative pain with respect to age groups, BMI, ASA status and type of hernia is shown in Table-2.

Table 1 Characteristics of patients in study groups.

	Group A	**Group B**
n	*50*	*50*
Age in years	45.88 ± 12.41	43.79 ± 12.99
20-40 Years	28(56%)	27(54%)
40-60 Years	22(44%)	23(46%)
BMI(Kg/m2)	29.30 ± 2.64	29.0 ± 2.27
ASA-Status (I/II)	ASA-I:24(48%) & ASA-II: 26(52%)	ASA-I:30(60%) & ASA-II:20(40%)
Direct hernia	21(42%)	21(42%)
Indirect hernia	29(58%)	29(58%)

Group-A: Lichtenstein mesh repair & Group-B: Total extra peritoneal mesh repair

Table 2 Treatment Groups post-operative pain stratification with respect to various factors

		Lichtenstein mesh repair				**Total extra peritoneal mesh repair**				**P-value**
		Post-operative pain								
		Yes		**No**		**Yes**		**No**		
Age (years)	20-40	21	55.26%	07	58.33%	16	57.14%	11	50.00%	0.213
	40-60	17	44.73%	05	41.66%	12	42.85%	11	50.00%	0.078
BMI	≤27	13	34.21%	02	16.66%	11	39.28%	04	18.18%	0.361
	>27	25	65.78%	10	83.33%	17	60.71%	18	81.81%	0.050
ASA Status	I	20	52.63%	04	33.33%	15	53.57%	15	68.18%	0.010
	II	18	47.36%	08	66.66%	13	46.42%	07	31.81%	0.761
Hernia Type	Direct	14	36.84%	07	58.33%	10	35.71%	11	50.00%	0.212
	Indirect	24	63.15%	05	41.66%	18	64.28%	11	50.00%	0.077

DISCUSSION

Minimal costs, and early return to normal activities determines the success of hernia repair. Minimally Invasive hernia repair with Laparoscopic (Transabdominal Preperitoneal and Total Extraperitoneal) surgery has now become a choice for hernia repair. Literature claims that patients undergoing laparoscopic procedure has less postoperative pain as well as shorter hospital stay than those undergoing open hernioplasty. [8,9]

Still the controversy continues as to which procedure is better than the other.

In this study post-operative pain was found in 38(76%) patients in group A (Lichtenstein repair) while in group B (TEP repair), it was found in 28(56%) patients with p-value of 0.034.

Internationally conducted studies report Total Extraperitoneal (TEP) has significantly less postoperative pain and discomfort 50% as compared to 80% at 1 week and 24% as compared to 70% at 1 month. [5] This postoperative pain in main cause of delay in return to daily activities.

A study conducted on 60 patients divided in 2 groups of 30 each, in group-I (open hernioplasty) 53.33%, n=16 reported severe pain where as in group-II (laparoscopic hernioplasty), 63.34%, n=19 reported moderate severity of pain. The mean post operative pain score was 6.23 in group-I and 4.43 in group-II patients respectively. Comparing the mean length of post operative stay in the hospital it was less (35.10 hrs) in group-I and (38.70 hrs) in group-II respectively [10]

It is evident from literature that laparoscopic repair results in less postoperative pain as compared to the open repair. This study showed significant difference for postoperative pain. i.e. (p-value=0.034).Pain level was less in patients undergoing laparoscopic procedure as compared to open procedure.

A literature review done by Memon et all from 29 randomized clinical trials, concluded that there was early discharge and early return to normal activities in patients undergoing laparoscopic than patients undergoing open procedures. [11]
A multicentric trial conducted in Australia by Pokorny H et al reported no significant difference regarding complications and recurrence for laparoscopic and open hernioplasty. [12]

McCormack et al concluded that laparoscopic hernioplasty takes longer intraoperative time to perform than open procedure and patients undergoing laparoscopic procedure have less discomfort and return to their routine activities earlier. There was similar recurrence rate with the two approaches. [13]

A meta-analysis published in UK concluded that both open and laparoscopic hernia repair are equally effective and choice of procedure varies patient to patient as well as it depends on patient preference as well as other variables like nature of work, age and health status of the patients. [14]

Various studies published reported no significant difference for both surgical techniques in terms of recurrence rate and morbidity but laparoscopic technique requires more operative time. [14,15]

In a large study from 11 hospitals, in which 1371 male patients underwent surgery for hernia repair, among these men 665 underwent TEP and 706 underwent Lichtenstein repair. Median duration was 55 minutes for both procedures and in both the groups 91% of the patients got discharged on the same post-operative day. Patients with TEP procedure experienced less pain postoperatively, shorter stay period, early return to work and normal physical activity. (20 Days vs. 31-Days; p-value<0.001). [16]

Sven Bringman et al. concluded that TEP results in less postoperative pain as well as shorter time to full recovery as compared to open procedure. A meta-analysis reported shorter rehabilitation time in patients undergoing with laparoscopic hernia repair. [17,18]

CONCLUSION

Results of this study demonstrate that Laparoscopic Total extraperitoneal mesh repair results in less postoperative pain to the patients as compared to Lichtenstein tension free mesh repair and, that it should be used routinely to reduce postoperative pain and improve quality of life.

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