ORIGINAL ARTICLE

Randomized control trial comparing early post-operative pain in mesh fixation versus without fixation in open lichtenstein mesh hernioplasty

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Abstract

Objective: To compare early post-operative pain in mesh fixation versus without fixation in open Lichtenstein hernioplasty.

Material and Methods: All patients meeting the inclusion criteria and presenting with inguinal hernia were admitted from out-patient department (OPD) in Surgical unit, District Headquarter (DHQ) Hospital, Abbottabad from period February 2019 till October 2021. The patients were randomized into two groups of 40 patients each and were managed with Lichtenstein repair followed by either suture fixation for mesh or non-fixation of Mesh. Standard protocols set by the department were followed.

Results: There was statistically significant difference between the two groups in terms of post-operative pain (p <0.001). Independent samples t-test was used to compare the VAS score in two groups and the results were found to be statistically significant (p <0.001).

Conclusion: There was statistically significant difference in occurrence of post-operative pain in fixed versus non-fixed mesh.

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Introduction:

Inguinal hernia is a frequent problem affecting many people worldwide. It is a disease with significant impact, nearly 20-million inguinal hernia surgeries completed throughout the world per year. Inguinal hernia surgery is accomplished when there are less adverse effects, less expenditure of surgery, and early return of patient to normal activity.[1] The risk of developing inguinal hernia is 27%-43% in male while 3%-6% in female. Recurrence occurs in 11% patients while chronic pain in 10%-12%. Usually Lichtenstein repair is preferred open technique while totally extra-peritoneal inguinal hernia repair is preferred in laparoscopic type. Totally extra-peritoneal repair (TEP) is not advocated for patients with previous abdominal surgery, huge scrotal hernias, hernias of ir-reducible variety and recurrence after posterior approach.[2] Acute and chronic groin pain occurring post-operatively can be distressing for patient. Chronic pain incidence after inguinal hernia surgery is up to 16%. It impairs quality of life of patient. The incidence of pain after inguinal surgery is variable in different studies. Lichtenstein repair also is known to cause post-operative pain in few patients. Causes of pain include nerve injury pre-operatively, nerve being entrapped and destroyed by suture or torn by fixation devices such as tacks. A mesh can entrap nerve and inflammation around mesh can also cause pain. Difference between neuropathic and not deceptive pain is difficult. The cause of groin pain in some patients can be other source such as hip pathology or pubalgia.[3] Since it is assumed that suture fixation causes trapping of nerve leading to pain. Because of this different mesh fixation products like fibrin glue fixation and cyanoacrylate glue fixation are also used.[4] Weight and texture of mesh also lead to pain. Light weight

Table 1: Comparison of variable between two groups

	Group A(n=40)	Group B (n=40)	p value
Operative time (min)	63.98±8.95	36.95±4.80	<0.001
Duration of stay (days)	2.18±0.45	2.10±0.30	0.38
BMI	28.20±2.08	28.20±1.84	1.00
VAS	5.30±1.38	4.10±1.21	<0.001

mesh and those with large pores reduce the incidence of chronic pain. The use of absorbable suture has shown to lessen the intensity of acute pain, still it has no effect on chronic pain.[5] There are few studies on common complications particularly on pain management after Lichtenstein meshplasty so there is a need to conduct study to assess open hernioplasty without mesh fixation in terms of pain. The purpose of this study is to compare occurrence of early post-operative pain in mesh-fixation with no mesh fixation in Lichtenstein technique hernioplasty.

Material and Methods:

The study was conducted after approval from hospital ethical and research committee from February 2019 till October 2021. All patients meeting the inclusion criteria between 18 to 70 years of age and presenting with inguinal hernia were admitted through out-patient department (OPD) in Surgical Hospital, District Headquarter (DHQ), Abbottabad.

Patients with recurrent hernia, obstructed, strangulated type, and uncontrolled diabetes mellitus were excluded from study. The purpose and benefits of the study were explained to all patients and when agreed upon a written informed consent was obtained from attendant. Patients were randomized into group A and B by simple randomization.

All patients were subjected to detailed history and clinical examinations followed by routine investigations. Patient remained in ward on the day of admission and surgery was done on next day elective list. Both procedures were performed under spinal anesthesia. After wound closure patients from both procedures were shifted to general ward. Patients from both groups were observed for 24 hrs and early post-operative pain was assessed using visual analogue scale (VAS). All patients were provided standard post-operative care as per protocols set in the department. Statistical analysis of data was performed using SPSS software version 20. Mean and standard deviation were calculated for numerical variables like age, BMI and visual analogue scale (VAS) score. Frequency and percentage were computed in both groups for gender. Comparison of the two groups was done with respect to VAS score and independent t-test was applied and a p-value of <0.05 was considered as significant.

Results:

80 patients were included in study. Each group comprised of 40 patients. Group-A with mesh fixation. Group-B without fixation. Mean age in group-A was 39.90±12.80 years. Group-B mean age was 41.58±13.66 years. Mean operative time in group-A was 63.98±8.95 min. Group-B mean operative time was 36.95±4.8min. Duration of stay in mesh fixation group was 2.18±0.4 days while in without fixation group it was 2.10±0.3 days. BMI in group-A was 28.20±2.07 while in group-B it was 28.20±1.84. VAS of group-A was 5.30±1.38 while in group-B it was 4.10±1.20 as shown in table-1. Group-A comprised of male patients. While group-A consisted of 39 male and one female patient.

Discussion:

As inguinal hernia repair is among the common procedure in surgical setup, different type of procedures have been described and quest for novel technique has not come to an end. The main purpose is to lessen recurrence. Apart from that adverse incidence rate, hospital stay, usefulness and overall cost of each procedure have been a matter of debate till now. In all these studies use of mesh of synthetic variety has been shown to be better than other procedures, in both open and laparoscopic surgery.[6,7] The main problem with herniorrhaphy is that two tissues which are far apart are sutured or repaired tightly creating tension. Because of the tautness of sutures, the area near suture gets necrosed. In contrast to this, mesh repair is tension free, does not cause

alteration in normal anatomy and has less recurrence rate. Therefore tension free repair for inguinal hernia are preferred.[8] The most frequent tension-free surgical techniques used recently for inguinal hernia repair are classified into two categories with regard to placement of the mesh in relation to the transversalis fascia: anterior (e.g. Lichtenstein technique) and posterior with the mesh placed behind the transversalis fascia utilizing Stoppa open technique, Nyhus or totally extra-peritoneal repair (TEP) or trans-abdominal pre-peritoneal (TAPP) technique. For primary inguinal hernia surgery however the most common treatment of choice is the open Lichtenstein method, which is relatively uncomplicated and highly effective for prevention of hernia recurrence.[9] Pain after Lichtenstein hernioplasty is a common problem. There are many causes of which foremost is the use of sutures for anchoring mesh to inguinal ligament and tissue overlying pubic tubercle. Various modifications have been done having different results.[10] As during mesh fixation nerve compression and vascular damage can occur leading to pain and bleeding, initially it was thought that mesh fixation was necessary in laparoscopic repair but later studies without mesh fixation have shown to have good results and avoided complications.[11] Many studies have compared the mesh fixation versus non fixation studies in laparoscopic hernia but there are few studies related to open Lichtenstein technique.[12,13] In our study the visual analogue score in group-A was 5.30±1.38 while in group-B it was 4.10±1.21 with a p-value of <0.001. In another study VAS of mesh fixation group was 5.88±2.06 while without mesh fixation was 3.88±1.78 with a p value of < 0.001.14 A meta analysis showed no difference in chronic pain between both techniques while short term pain was lessened in non sutured method.[15] Self fixating mesh have also been developed recently and many studies have shown that there is low incidence of pain in post-operative phase along with chronic pain.[16,17]

Conclusion:

There was statistically significant difference in occurrence of post-operative pain in fixed versus non-fixed mesh. Also the operating time in without fixation technique was less. Although there is less incidence of pain without fixation this technique can lead to mesh migration.

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Role and contribution of authors:

Sameeah Hanif, wrote initial manuscript and references, collected data.

Bushra Abdul Waheed, collected data and helped in introduction writing.

Soweba Hanif, critical review and final changes.

Nida Shahid, collected the references and helped in interpretation of data.

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