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Research Article

Comparative study between polypropylene suture and skin staples in cases of inguinal hernia for securing mesh

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ABSTRACT

Objective: To compare polypropylene suture and skin staples in cases of inguinal hernia for securing mesh.
Material and methods: This comparative study was conducted at Department of Surgery Services Hospital, Lahore from June 2017 to December 2017. Total 266 cases of inguinal hernia were selected and assessed for post-operative pain.
Results: Mean age of the patients was 34.37 ± 10.95 years, mean duration of hernia and VAS was 5.52 ± 3.312 years and 4.54 ± 2.811 respectively. Post-operative pain was noted in 39 (29.3%) patients of group A and in 59 (44.4%) patients of group B. Statistically significant (P = 0.02) difference between the frequency of post-operative pain was noted.
Conclusion: Results of this study revealed that post-operative pain rate was significantly high in Polypropylene as compared to skin staple group. Significant difference was seen between the male patients of both groups but the difference was insignificant between female patients of both groups. Similarly difference in younger age group as significant but insignificant in older age group for both study groups.

Keywords: Polypropylene suture, Lichtenstein inguinal hernioplasty, Mean operative time. Skin staples, Post-operative pain

INTRODUCTION

External hernias (EH) are one of the common surgical problem and inguinal hernias accounted for about73% cases.[1]Surgery is the best option for prevention of hernia's complications.[2,3]Inguinal hernia repair is one of the commonly performed surgeries. Annual incidence rate of inguinal hernia is 13/1000 patients.[1]By the year 1989, tension-free hernioplasty was started at the Lichtenstein Hernia Institute to reduce the post operative pain, recurrence and recovery period.[5]The Lichtenstein hernioplasty consists of reduction of the hernia contents followed by reinforcement of the inguinal floor with a prosthetic mesh and creation of a new internal ring.[6] Polypropylene suture is standard way of securing mesh in position on the posterior wall of the inguinal canal. [7,8]With the recent advancement, a modified hernioplasty using skin staples for the anchorage of mesh is under trial which may decrease post-operative pain and operative time.[3] A recent study compared the results of both methods of mesh fixation. It showed that the technique of mesh fixation with skin staples is as effective as conventional fixation with polypropylene sutures with an important added advantage of fewer complications.[3]

As inguinal hernia is a common clinical problem, new innovations in the surgical intervention are

developing day by day in order to benefit the patients by reducing the postoperative pain. The results of this study may guide us that which one procedure has less pain. So, the surgeons adopt that procedure with less pain.

MATERIAL AND METHODS

This comparative study was conducted at Department of Surgery Services Hospital, Lahore from June 2017 to December 2017. Total 266 patients of inguinal hernia either male or female and having age 20-60 years were selected for this randomized controlled. Patients having inguino-scrotal swelling (reducible, non-tender) were labelled as having inguinal hernia.

Patients having complicated (irreducible, strangulated or obstructed) inguinal hernia, all the patients with history of diabetes mellitus, patients with history of chronic renal failure, patients with history of bleeding disorders, immunocompromised and patients with history of recurrent and bilateral inguinal hernia were excluded from the study. All the selected patients were into two equal groups A & B randomly.

Patients of group A were managed with skin staples and patients of group B were managed with polypropylene suture. After surgery for pain management, Injection diclofenac sodium 75mg IM BD was given.

Assessment of postoperative pain was done by using VAS (Visual Analogue Scale) and score 4 and above was taken as pain at the end of 24 hours of surgery. After 24 hours of surgery post-operative pain was assessed and recorded on pre-designed proforma along with demographic profile of all the patients.

All the collected data was analysed by using SPSS version 20. Mean and standard deviation was calculated for age and frequencies were calculated for gender and post-operative pain (Yes/No). Chi-square test was applied to compare the frequency of post-operative pain in both groups. Stratification was done for age and gender and chai-square test was applied to see the effectof these on postoperative pain. P-value less than or equal to 0.05 was considered significant.

RESULTS

Total 266 cases of inguinal hernia were selected for this study. Patients were equally divided into two groups A & B. Ppatients of group A were managed with skin staples and patients of group B were managed with polypropylene suture and post-operative pain was noted on after 24 hours of surgery. Mean age of the patients was 34.37 ± 10.95 years, mean duration of hernia and VAS was 5.52 ± 3.312 years and 4.54 ± 2.811 respectively. Mean age of the patients of Group A was 34.91 ± 10.886 years, mean duration of hernia and VAS was 5.53 ± 3.327 years and 4.54 ± 2.811 respectively. Mean age of the patients of Group B was 33.83± 11.033 years, mean duration of hernia and VAS was 5.50 ± 3.309 years and 4.53± 2.843 respectively.

Comparison of frequency of post-operative pain between both groups was done. Post-operative pain was noted in 39 (29.3%) patients of group A and in 59 (44.4%) patients of group B. Statistically significant (P = 0.02) difference between the frequency of post-operative pain was noted. (Table 1)

In age group 20-40 years, out of 100 patients of group A, post-operative pain was noted in 33 (33%) patients. Out of 107 patients of group B, post-operative pain was noted in 49 (45.8%) patients. Difference between post-operative pain for both groups was statistically in significant with p value 0.0658.

In age group 41-60 years, out of 33 patients of group A, post-operative pain was noted in 6 (18.2%) patients. Out of 26 patients of group B, post-operative pain was noted in 10 (38.5%) patients. Difference between post-operative pain for both groups was statistically in significant with p value 0.1391. (Table 2)

After comparing post-operative pain between male patients of both groups, significant (P = 0.0243) difference was noted between the post-operative pain in both groups but insignificant (P = 0.6372) difference was noted between the post-operative pain for female patients of both groups. (Table 3)

Table 1 Comparison of frequency of post-operative pain

Group	Post-operative pain		Total	P. Value
	Yes (%)	No (%)		
A (Staple Group)	39 29.3%	94 70.7%	133 100.0%	0.02
B (Polypropylene Group)	59 44.4%	74 55.6%	133 100.0%	

Table 2 Age distribution

Group	Post-operative pain		Total
	Yes (%)	No (%)	
20-40 years (P= 0.07)			
A	33 33.0%	67 67.0%	100
B	49 45.8%	58 54.2%	107
41-60 years (P = 0.14)			
A	6 18.2%	27 81.8%	33
B	10 38.5%	16 61.5%	26

Table 3 Gender distribution

Group	Post-operative pain		Total
	Yes (%)	No (%)	
Male (P = 0.02)			
A	36 28.8%	89 71.2%	125 100.0%
B	53 43.1%	70 56.9%	123 100.0%
Female (P = 0.63)			
A	3 37.5%	5 62.5%	8 100.0%
B	6 60.0%	4 40.0%	10 100.0%

DISCUSSION

About 5% of male population of the world affected by inguinal hernia.[9] About 100 years ago, Edward Bassini described the open method of inguinal herniorrhaphy.[10] Many changes have been made to this surgical procedure in the interim, with varying degrees of efficacy.[11] Lichtenstein described the tension-free inguinal hernia repair with the help of prosthetic mesh.[12] Originally, the mesh is fixed on the posterior wall of inguinal canal with the help of polypropylene 2/0 suture.[13] But Quality of life has increasingly been a matter of consideration in the assessment of medical, and above all, surgical procedures. In inguinal hernia repair, several factors of postoperative quality of life, such as pain and recovery, have recently been assessed.[14]A new modification in the repair of inguinal hernia has been developed in which prolene mesh is being fixed on the posterior wall of inguinal canal with staples instead of polypropylene suture.[15]

Total 266 cases ofinguinal hernia were selected for this study. Patients were equally divided into two groups A & B. Ppatients of group A were managed with skin staples and patients of group B were managed with polypropylene suture and post-operative pain was noted.

In our study, average age of the cases was 34.37 ± 10.95 years, mean duration of hernia and VAS was 5.52 ± 3.312 years and 4.54 ± 2.811 respectively.

Average age of the cases of Group A was 34.91 ± 10.886 years, mean duration of hernia and VAS was 5.53 ± 3.327 years and 4.54 ± 2.811 respectively. Average age of the cases of Group B was 33.83± 11.033 years, mean duration of hernia and VAS was 5.50 ± 3.309 years and 4.53± 2.843 respectively.

In one study by Khan et al[6] mean age of the cases managed with polypropylene suture was 48.99 ± 14.27 years and mean age of the cases managed with skin staple was 46.37 ± 14.12 years. In another study by Bawahab et al[16], mean age of the cases was 35.83 ± 13.338 years

In present study, post-operative pain was noted in 29.3% patients of group A (Skin staple group) and in 44.4% patients of group B (polypropylene group). Statistically significant (P = 0.0155) difference between the frequency of post-operative pain was noted.

In one study by Khan et al,[6] postoperative pain was noted in 23.3% cases managed with polypropylene group and in staple group, postoperative pain was noted in 29.3% cases. Findings of this study are in agreement with our study. Similarly Zwaal et al reported that postoperative pain was reduced when staples were used to fix the mesh 66% for polypropylene group versus 51% for staple group.[3] This study showed that the technique of mesh fixation with skin staples is as effective as conventional fixation with polypropylene sutures with an important added advantage; fewer complications or postoperative pain.[3] Shaikh et al[17] also found significant difference between post-operative pain between the both groups after surgery.

Damaniet al[18] also reported that postoperative pain was less in skin staples group than in Polypropylene suture group. Interpretation of the results of our study shows that anchoring mesh with staples in Lichtenstein inguinal hernioplasty is superior as compared to fixation with polypropylene suture in term of post-operative pain.

On the other hand, Shivhare et al[19] reported in their study insignificant difference in post-operative pain between the polypropylene and skin staple group.In another study, Mills et al[20] alsoreported insignificant difference between postoperative pain of both groups.Similarly Garg et al[21] reported insignificant difference between the post operative pain of both groups.

CONCLUSION

Results of this study revealed that post-operative pain rate was significantly high in Polypropylene as compared to skin staple group. Significant difference was seen between the male patients of both groups but the difference was insignificant between female patients of both groups. Similarly difference in younger age group as significant but insignificant in older age group for both study groups.

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