

**Research Article****Comparison between Polypropylene Suture and Skin Staples  
for Securing Mesh in Lichtenstein Inguinal Hernioplasty  
In Terms Of Post-Operative Pain****<sup>1</sup>Karim Shah Faizi, <sup>2</sup>Ali Akbar Shah,  
<sup>3</sup>Inam Ur Rehman Khan Qaisrani**<sup>1</sup>Associate Professor, Department of Surgery, Sahiwal Medical College,  
Sahiwal, E-mail: faizishah@hotmail.com<sup>2</sup>House Officer, Department of Surgery, DHQ Hospital, Sahiwal,<sup>3</sup>Medical Officer, RHC Shaadan Lund Dera Ghazi Khan, Cell: 3210204133303.**ABSTRACT****Objective:** To compare the polypropylene suture and skin staples for securing mesh in Lichtenstein inguinal hernioplasty in terms of post-operative pain.**Material and methods:** This randomized controlled trial was conducted at Department of Surgery, Sahiwal Medical College, Sahiwal from February 2017 to August 2017. Total 200 with inguinal hernia having age range 20-60 years either male or female were selected. After 24 hours of surgery pain was assessed by using VAS.**RESULTS:** In present study, total 200 patients (100 patients in each group) selected. Age range was 20-60 years with mean age  $35.25 \pm 11.44$  years. In present study, postoperative pain was noted in 28 (28%) patients of skin staples group and in 43 (43%) patients of Polypropylene suture group. Statistically significant difference of post operative pain between the both groups was noted with p value 0.038.**Conclusion:** In present study, significantly higher frequency of post operative pain was noted in Polypropylene suture group as compared to skin staples group.**Keywords:** Mean operative time, polypropylene suture, lichtenstein inguinal hernioplasty, skin staples, postoperative pain**INTRODUCTION:**

Inguinal hernias, constituting 73% of all external hernias are a common clinical problem.<sup>1</sup> Surgery is the treatment of choice for hernia in order to prevent complications.<sup>2,3</sup> Inguinal hernia repair is the most common operation undertaken in routine surgical practice with an annual incidence of 13 per 1000 population of all ages.<sup>1</sup> The importance of the postoperative disability period of hernia repair was brought to the attention of surgeons by Lichtenstein in 1966.<sup>4</sup> The tension-free hernioplasty project was started at the Lichtenstein Hernia Institute in June of 1989 to decrease postoperative pain, recovery period and recurrence

rate.<sup>5</sup> 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.<sup>6</sup> The standard way of securing the mesh in position on the posterior wall of the inguinal canal is with polypropylene sutures.<sup>7,8</sup> With recent advancement, a modified hernioplasty using skin staples for anchorage of mesh is under trial which may reduce operative time and decrease postoperative pain.<sup>3</sup> 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.<sup>3</sup>

**MATERIAL AND METHODS:**

This randomized controlled trial was conducted at Department of Surgery, Sahiwal Medical College, Sahiwal from February 2017 to August 2017. Total 200 with inguinal hernia having age range 20-60 years either male or female were selected. 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. Selected patients were randomly divided into two equal groups i.e. A and B. 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. Postoperative pain was assessed by using VAS (Visual Analogue Scale) and score 4 and above was taken as pain after 24 hours of surgery. Data was analyzed by using SPSS version 18. Mean and SD was calculated for numerical data and frequencies were calculated for categorical data.

**RESULTS:**

In present study, total 200 patients (100 patients in each group) selected. Age range was 20-60 years with mean age 35.25 ± 11.44 years. In present

study, postoperative pain was noted in 28 (28%) patients of skin staples group and in 43 (43%) patients of Polypropylene suture group. Statistically significant difference of post operative pain between the both groups was noted with p value 0.038 (Table 1) Patients were divided into two age group i.e age group 20-40 years and age group 41-60 years. In age group 20-40 years, post operative pain was noted in 25 (33.33%) patients and 35 (44.30%) patients of study group A and B but the difference was statistically significant with p value 0.188. In age group 41-60 years, post operative pain was noted in 3 (12%) patients and 8 (38.1%) patients of group A and B but the difference was statistically significant with p value 0.08. (Table 2) Out of 95 male patients of group A, post operative pain was noted in 27 (28.42%) patients and out of 94 male patients of group B, post operative was noted in 39 (41.59%) patients but the difference was not statistically significant with p value 0.068. Out of 5 female patients of group A, post operative pain was noticed in 1 (20%) patients and out 6 female patients of group B, post operative pain was noticed in 4 (66.67%) patients but the difference was not statistically significant with p value 0.242. (Table 3) Out of 25 obese patients group A and 27 obese patients of group B, post operative pain was noted in 7 (28%) patients and 11 (40.74%) patients of study group A and B but the difference was not statistically significant with p value 0.392. Post operative was noted in 21 (28%) patients of group A and 32 (43.84%) patients of group B but the difference was not statistically significant with p value 0.059. (Table 4)

**Table 1** :Comparison of frequency of post-operative pain between both groups

Group	Post-operative pain		Total	P. Value
	Yes(%)	No(%)		
<b>A</b> (Skin staples)	28 (28)	72 (72)	100	0.038
<b>B</b> (Polypropylene suture)	43 (43)	57 (57)	100	

**Table 2** Comparison of post-operative pain between the both groups for age

Group	Post-operative pain		Total	P. Value
	Yes(%)	No(%)		
<b>Age group 20-40 years</b>				
<b>A</b>	25(33.33)	50(66.67)	75	0.188
<b>B</b>	35(44.30)	44(55.70)	79	

Age group 41-60 years				
A	3(12)	22(88)	25	0.08
B	8(38.1)	13(61.9)	21	

**Table 3** Comparison of post-operative pain between the both groups for male/female patients

Group	Post-operative pain		Total	P. Value
	Yes(%)	No(%)		
<b>Male patients</b>				
A	27(28.42)	68(71.58)	95	0.068
B	39(41.59)	55(58.51)	94	
<b>Female patients</b>				
A	1(20)	4(80)	5	0.242
B	4(66.67)	2(33.33)	6	

**Table 4** Comparison of post-operative pain between the both groups for obese/non obese patients

Group	Post-operative pain		Total	P. Value
	Yes(%)	No(%)		
<b>Obese Patients</b>				
A	7(28)	18(72)	25	0.392
B	11(40.74)	16(59.26)	27	
<b>Non-obese Patients</b>				
A	21(28)	54(72)	75	0.059
B	32(43.84)	41(56.16)	73	

**DISCUSSION:**

Objective of present study was to compare the polypropylene suture and skin staples for securing mesh in Lichtenstein inguinal hernioplasty in terms of post-operative pain. Age range was 20-60 years with mean age 35.25 ± 11.44 years. Khan et al<sup>6</sup> reported mean age in polypropylene group was 48.99 ± 14.27 years and in staple group was 46.37 ± 14.12 years with the average age in both groups was 47.68 ± 14.23 years. Bawahabet al<sup>9</sup> reported mean age of the with inguinal hernia as 35.83 ± 13.338 years. In present study, postoperative pain was noted in 28 (28%) patients of skin staples group and in 43 (43%) patients of Polypropylene suture group. Statistically significant difference of post operative pain between the both groups was noted with p value 0.038.

In one study by Khan et al,<sup>6</sup> on 3rd postoperative day, 31 (23.3%) in polypropylene group had no pain, 68 (51.1%) had mild pain, 18 (13.5%) had moderate pain and 16 (12.0%) had severe pain. On 3rd postoperative day in the staple group, 39 (29.3%) had no pain, 79 (59.4%) had mild pain, 9 (6.8%) had moderate pain and 6 (4.5%) had severe pain (p = 0.026). Findings of this study are in

agreement with my 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).<sup>3</sup> 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.<sup>3</sup> Shaikh et al<sup>10</sup> also found significant difference between post operative pain between the both groups.

Damani et al<sup>11</sup> also reported that postoperative pain by using the visual analogue scale was less in skin staples group than in Polypropylene suture group. Interpretation of the results 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<sup>12</sup> reported no significant difference in post-operative pain in both groups after surgery. Mills et al<sup>13</sup> have reported that there was no difference in pain score between the two groups. Garg et al<sup>14</sup> also stated that there was no difference in the pain duration in both groups of their study. Van der

Zwaal et al<sup>15</sup> also reported that pain scores were similar in term of post-operative pain.

### CONCLUSION:

In present study, significantly higher frequency of post operative pain was noted in Polypropylene suture group as compared to skin staples group.

### REFERENCES

1. Bierca J, Kosim A, Kołodziejczak M, Zmora J, Kultys E. Effectiveness of Lichtenstein repairs in planned treatment of giant inguinal hernia – own experience. *Wideochirurgia i Inne Techniki Maloinwazyjne*. 2013 Mar;8(1):36–42.
2. Kingsnorth AN, Giorgobiani G, Bennet DH. Hernia, umbilicus and abdominal wall. In: Williams NS, Bulstrode CJ, Connel PR, editors. *Bailey and Love short practice of surgery*. 25th ed. London: Champion Hall; 2008.p.968-90.
3. Zwaal PV, Berg IR, Plaisier PW, Nolthenius RP. Mesh fixation using staples in Lichtenstein's inguinal hernioplasty: fewer complications and fewer recurrences. *Hernia* 2008;12:391.
4. Fitzgibbons RJ Jr, Giobbie-Hurder A, Gibbs JO, Dunlop DD, Reda DJ, McCarthy M Jr, et al. Watchful waiting vs. repair of inguinal hernia in minimally symptomatic men: a randomized clinical trial. *JAMA* 2006;295:285-92.
5. Simons MP, Aufenacker T, Bay-Nielsen M, Bouillot JL, Campanelli G, Conze J, et al. European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia*. 2009 Aug;13(4):343–403.
6. Khan AA, Majeed S, Shahzadi M, Hussain SM, Ali MZ, Siddique K. Polypropylene suture versus skin staples for securing mesh in lichtenstein inguinal hernioplasty. *J Coll Physicians Surg Pak*. 2014;24(2):88–90.
7. Javid PJ, Brooks DC. Hernias. In: Zinner MJ, Ashley SW, eds. *Maingot's Abdominal Operations*. USA: McGraw-Hill Professional, 2006: 103-41.
8. Wantz GE. Abdominal wall hernias. In: Shwartz SI, ed. *Schwartz: principles of Surgery*.: McGraw-Hill Companies, Inc., 1999: 39-49.
9. Bawahab MA, El Maksoud WMA. Evaluation of chronic postoperative pain after hernia repair using self fixating mesh for management of primary inguinal hernia in adult males. *Pak J Surg*. 2013;29(3):159–164.
10. Shaikh FA, Alvi AR, Jiwani ASA, Murtaza G. Recurrence and chronic pain after mesh fixation with skin staples versus sutures in Lichtenstein's inguinal hernioplasty: a retrospective cohort study. *Hernia*. 2013 Jun;17(3):307–11.
11. Damani SAR, Haider S, Shah SSH. Outcome of Mesh Anchoring Using Stainless Steel Skin Staples Versus Polypropylene Suturing in Lichtenstein's Tension Free Inguinal Hernia Repair. *Journal of Surgery Pakistan (International)*. 2016;21:2.
12. Shivhare P, Dugg P, Mittal S, Singh H, Kumar A. A PROSPECTIVE RANDOMIZED STUDY COMPARING SKIN STAPLES VERSUS POLYPROPYLENE SUTURES FOR SECURING THE MESH IN LICHTENSTEIN'S REPAIR. *Archives of Clinical and Experimental Surgery (ACES)*. 2014;3(3):1.
13. Mills IW, McDermott IM, Ratliff DA. Prospective randomized controlled trial to compare skin staples and polypropylene for securing the mesh in inguinal hernia repair. *Br J Surg* 1998;85:790-792.
14. Garg CP, Bhatnagar AM, Parmar CD, Darshan JR, Sehgal RA. Comparative study of skin staples and polypropylene sutures for securing the mesh in lichtenstein's tension free inguinal hernia repair: A Prospective randomized controlled clinical trial. *Indian J Surg* 2004;66: 152-155.
15. van der Zwaal P, van den Berg IR, Plaisier PW, TuteinNolthenius RP. Mesh fixation using staples in Lichtenstein's inguinal hernioplasty: fewer complications and fewer recurrences. *Hernia* 2008;12:391-394.