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Original Research Article

A comparative study of postoperative chronic pain after tension free inguinal hernia repair using absorbable versus non absorbable sutures for mesh fixation

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ABSTRACT

Background: Inguinal hernia is a one of common diagnosis which is frequently encountered in routine clinical practice. The Lichtenstein technique (tension free mesh repair) is currently the gold standard in open inguinal hernia repair. Currently chronic groin pain (Inguinodynia) is one of the common complications after hernia repair and it may affect quality of life and it has been reported in 16% to 62% of the patients.
Methods: This prospective, randomized study was conducted in the department of general surgery in S.M.S. Medical College and attached group of hospitals, Jaipur from May 2014 to December 2015. All patients of 18-80 years old, who were admitted for elective inguinal hernia repair, were included for the study. Patients with bilateral, recurrent, irreducible or incarcerated hernia, pregnant patients and patients with co morbid conditions, were excluded from the study.
Results: Mean age was 46.5 years in absorbable group and 45.4 years in non absorbable group. Male to female ratio was 142:13 in absorbable group and 143:12 in non absorbable group. Post operative pain was measured by VAS score. Mean postoperative pain (VAS score) was lower in absorbable sutures group as compared to non absorbable group at 3 months (0.92±0.879 vs. 1.23±1.2; p=0.013) and at 6 months (0.48±0.57 vs. 0.77±0.65; p≤0.001), which was significant.
Conclusions: Patients with absorbable suture for mesh fixation has less groin pain as compared to non-absorbable suture in hernia repair during 6 months follow up period.

Keywords: Chronic groin pain, Inguinal hernia, Mesh, Suture

INTRODUCTION

Inguinal hernia is a one of common diagnosis which is frequently encountered in routine clinical practice. The Lichtenstein technique (tension free mesh repair) is currently the gold standard in open inguinal hernia repair.[1] The Lichtenstein repair has reduced the incidence of recurrent inguinal hernia.[2] Currently chronic groin pain (Inguinodynia) is one of the common complications after hernia repair and it may affect quality of life.[3] Chronic groin pain has been reported in 16% to 62% of the patients.[4] It should be differentiate with early post-operative pain.[2] According to International Association for the Study of Pain (IASP), chronic groin pain is defined as "groin pain as any VAS (visual analogue scale) score above zero which lasts for more than 3-months following inguinal hernia repair".[5] Cut- off point to differentiate post operative pain and chronic groin pain is 3 months as per major consensus.[6] It may be continuous as described by patients as an ongoing awareness of pain or it may be activity related pain occurring only during activity like cycling, running,

kneeling, walking up stairs, gardening, lifting at work. Chronic groin pain may be caused by nerve injury either during dissection or retraction, or nerve entrapment due to post-operative fibrosis, or mesh related fibrosis, or lastly sutures used to fix the mesh.[2] The mesh can be secured by nonabsorbable sutures or absorbable sutures. Aim of this study was to compare postoperative chronic pain after tension free inguinal hernia repair using absorbable sutures versus non absorbable sutures for mesh fixation.

METHODS

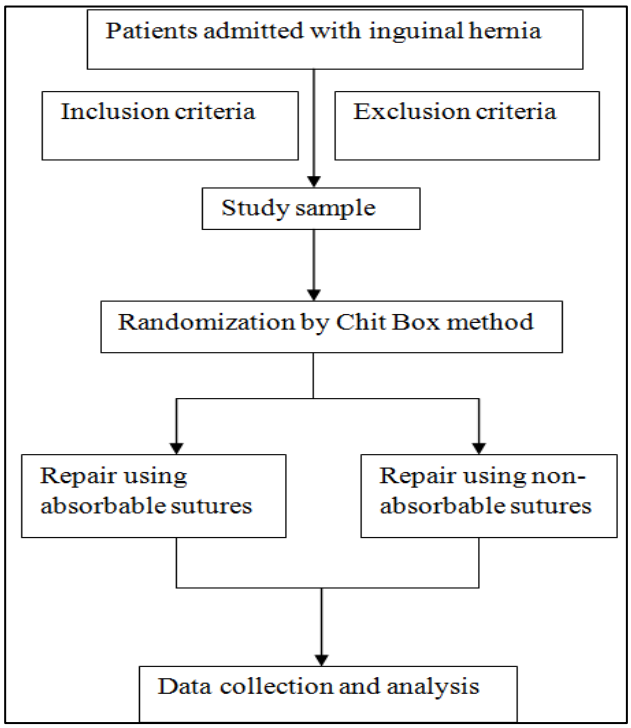

Figure 1: Study design.

This prospective, randomized study was conducted in the department of general surgery in S.M.S. Medical College and attached group of hospitals, Jaipur from May 2014 to December 2015. All patients of 18-80 years old, who were admitted for elective inguinal hernia repair, were included for the study. Patients with bilateral, recurrent, irreducible or incarcerated hernia, pregnant patients and patients with co morbid conditions that might interfere with pain assessment (e.g. impaired cognitive function, limited mobility, daily use of pain medicine); and patients who had undergone surgery in the groin area, were excluded from the study. The sample size was calculated to be 155 subjects for each of two groups at alpha error 0.05 and power 80%. Randomization into two groups (repair using absorbable sutures and repair using nonabsorbable sutures) was done by chit box method (Figure 1).

RESULTS

In this study, a total 310 patients were enrolled and randomized into two groups (repair using absorbable sutures and repair using nonabsorbable sutures) with 155 patients in each group.

Mean age was 46.5 years in absorbable group and 45.4 years in non absorbable group. Male to female ratio was 142:13 in absorbable group and 143:12 in non absorbable group. Both are comparable.

Post operative pain was measured by VAS score. Mean postoperative pain (VAS score) at 3 months was lower in absorbable sutures group as compared to non absorbable group (0.92±0.879 vs. 1.23±1.2; p=0.013) which was significant. VAS score at 6 months was also lower in absorbable sutures group as compared to non absorbable group (0.48±0.57 vs. 0.77±0.65; p≤0.001) which was also significant (Table 1).

Table 1: Mean post operative pain at 3 months and 6 months.

	Absorbable sutures (n=155)	Non absorbable sutures (n=155)	P value
VAS at 3 months	0.92±0.9	1.23±1.3	0.013
VAS at 6 months	0.48±0.6	0.77±0.7	<0.001

Table 2: Pain scale score at 3 months and 6 months.

Post-operative time	Pain scale score	Absorbable sutures (n=155) (%)	Non absorbable sutures (n=155) (%)	P value
At 3 months	No pain	57 (36.8)	64 (41.3)	P=0.02, significantly more pain (moderate) in non absorbable suture group
	Mild	93 (60)	76 (49)	
	Moderate	5 (3.2)	15 (9.7)	
At 6 months	No pain	87 (56.1)	52 (33.5)	P<0.001, significantly more pain (mild+ moderate) in non absorbable suture group
	Mild	68 (43.9)	101 (65.2)	
	Moderate	0 (0)	2 (1.3)	

There was no pain in 36.8% patients in absorbable group and 41.3% patients in non absorbable group at 3 months. At 6 months follow up, 56.1% patients in absorbable group and 33.5% patients in non absorbable group had no pain. At 3 months, 60% patients in absorbable suture group and 49% patients in non absorbable suture group

experienced mild pain. While at 6 month follow up, there occurred decrease in number of patients experiencing mild pain in absorbable suture group (43.9% patients), in contrast this number increases in non absorbable suture (65.2% patients). Moderate pain was more in non absorbable group as compared to absorbable group both at 3 months and 6 months (Table 2).

DISCUSSION

The Lichtenstein repair has decreased the incidence of recurrence of inguinal hernia by using prosthetic mesh and has become routine practice.[7,8] Main morbidity after hernia repair is chronic groin pain nowadays that occurs in 16%-62% of patients and 3%-11% patients suffer with severe debilitating pain.[9-11].

Chronic groin pain may be due to nerve damage during operation, post-operative fibrosis or mesh-related fibrosis.[2] Nerve injury occurs due to inadequate dissection, failure to visualize the nerves and aberrant location of nerves.[12]

Fränneby et al predicted the factors that contributing the post-operative inguinodynia.[13] Younger age, absence of a visible swelling and history of moderate to severe groin pain before operation and recurrent hernia repair are common factors that influence the post-operative groin pain.

In hernia repair, sutures are used to fix the mesh to the underlying tissue. They may be absorbable suture materials or non absorbable suture materials. Jeroukhimov et al conducted a single-blind randomized control trial to compare the effect of absorbable sutures and nonabsorbable sutures used in inguinal hernia repair and they did 1- year follow up to find out the rate of chronic pain.[14] 100 patients were included in each group and concluded that nonabsorbable suture repair is associated with a higher rate and longer duration of groin pain as compared with absorbable sutures.

Paajanen et al prospectively studied 168 patients who underwent hernia repair.[15] The mesh was secured by absorbable sutures in half of the patients and by non absorbable sutures in another half of the patients. Patients were followed up for mean periods of 2 years. In their study they did not find out the any difference in groin pain in both of the groups.

In our study, patients in which mesh was secured by absorbable sutures (vicryl 2-0), experienced less groin pain (VAS score) during follow-up of 3 months and 6 months.

In follow up period of 3 months, mean postoperative pain on VAS scale was 0.92±0.9 SD for absorbable suture while it was 1.23±1.3 SD for non absorbable suture groups.

In follow up period of 6 months, mean postoperative pain on VAS scale was 0.48±0.6 SD for absorbable suture group while it was 0.77±0.7 SD for non absorbable suture. In both of the follow up periods i.e. at 3 and 6 months, pain was found to be significantly lower in group in which absorbable sutures were used for mesh fixation.

At 3 months follow up, 93 patients (60%) of absorbable suture group experienced mild pain as compared to 76 patients (49%) of non absorbable suture group. While at 6 month follow up, there occurred decrease in number of patients experiencing mild pain in absorbable suture group (43.9% patients) in contrast to non absorbable suture group (65.2% patients).

Limitation of our study is short follow up period of 6 months and we also not compared the recurrence rate in both the absorbable suture groups and non absorbable suture group.

CONCLUSION

We conclude that patients with absorbable suture for mesh fixation has less groin pain as compared to non-absorbable suture in hernia repair during 6 months follow up period. Large, multi-centric and long follow up study are needed to confirm the results of our study.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Zhao G, Gao P, Ma B, Tian J, Yang K. Open mesh techniques for inguinal hernia repair: a meta-analysis of randomized controlled trials. Ann Surg. 2009;250:35-42.
2. Hakeem A, Shanmugam V. Inguinodynia following Lichtenstein tension-free hernia repair: A review. World J Gastroenterol. 2011;17(14):1791-6.
3. van Hanswijck de Jonge P, Lloyd A, Horsfall L, Tan R, O'Dwyer PJ. The measurement of chronic pain and healthrelated quality of life following inguinal hernia repair: a review of the literature. Hernia. 2008;12:561-9.
4. Mui WL, Ng CS, Fung TM, et al. Prophylactic ilioinguinal neurectomy in open inguinal hernia repair: a double-blind randomized controlled trial. Ann Surg. 2006;244:27-33.
5. Merskey H, Bogduk N. Classification of chronic pain: descriptions of chronic pain syndromes and definitions of pain terms. InTask Force on Taxonomy of the IASP. 2nd ed. Seattle, WA: IASP Press; 1994: 209-214.
6. Loos MJ, Houterman S, Scheltinga MR, Roumen RM. Evaluating postherniorrhaphy groin pain: Visual Analogue or Verbal Rating Scale? Hernia. 2008;12:147-51.

7. EU Hernia Trialists Collaboration. Repair of groin hernia with synthetic mesh: meta-analysis of randomized controlled trials. Ann Surg. 2002;235:322-32.
8. Vrijland WW, van den Tol MP, Luijendijk RW, Hop WC, Busschbach JJ, de Lange DC. Randomized clinical trial of non-mesh versus mesh repair of primary inguinal hernia. Br J Surg. 2002;89:293-7.
9. van Veen RN, Wijsmuller AR, Vrijland WW, Hop WC, Lange JF, Jeekel J. Randomized clinical trial of mesh versus non-mesh primary inguinal hernia repair: long-term chronic pain at 10 years. Surgery. 2007;142:695-8.
10. Paajanen H. Do absorbable mesh sutures cause less chronic pain than nonabsorbable sutures after Lichtenstein inguinal herniorraphy? Hernia. 2002;6:26-8.
11. O'Dwyer PJ, Alani A, McConnachie A. Groin hernia repair: postherniorrhaphy pain. World J Surg. 2005;29:1062-5.
12. Smeds S, Löfström L, Eriksson O. Influence of nerve identification and the resection of nerves 'at risk' on postoperative pain in open inguinal hernia repair. Hernia. 2010;14:265-70.
13. Fränneby U, Sandblom G, Nordin P, Nyrén O, Gunnarsson U. Risk factors for long-term pain after hernia surgery. Ann Surg. 2006;244:212-9
14. Jeroukhimov I, Wiser I, Karasic E, Nesterenko V, Poluksht N, Lavy R, et al. Reduced Postoperative Chronic Pain after Tension-Free Inguinal Hernia Repair Using Absorbable Sutures: A Single-Blind Randomized Clinical Trial. J Am Coll Surg. 2014;218(1):102-7.
15. Paajanen H. Do absorbable mesh sutures cause less chronic pain than nonabsorbable sutures after Lichtenstein inguinal herniorraphy? Hernia. 2002;6:26-8.

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