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ORIGINAL ARTICLE

Comparison of the Efficacy of Absorbable Versus Non-Absorbable Sutures after Lichtenstein Mesh Hernioplasty Regarding Post Operative Pain

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ABSTRACT

Objective: Comparison of the efficacy of absorbable versus non-absorbable sutures after Lichtenstein mesh hernioplasty.

Methodology: We planned this Randomized Control Trial consisting of 200 cases, from Surgical outdoor booked for hernioplasty. All patients were examined in a comfortable environment. All the information was kept confidential. The patients were not aware of the randomization arm and selected via lottery method. All patients underwent Lichtenstein mesh hernioplasty under local anesthesia. Before surgery, a course of prophylactic antibiotics consisting of 1 g of IV cefazolin was administered to each patient. All procedures were done by skilled post graduate general surgical residents under consultant supervision. Predictable bias and confounding factors were controlled by restriction (inclusion and exclusion criteria) and randomization. Rest was addressed during final analysis through stratification. GROUP A patients undergo mesh fixation using Prolene 1. (non-absorbable) GROUP B patients undergo mesh fixation using Vicryl 0. (absorbable). For all treatments, a conventional tension-free uniformed surgical method was adopted. Patients were evaluated at 3 months followup to record the efficacy.

Results: Mean age was calculated as 44.7+9.45, mean pain score on VAS was calculated as 2.04+0.72 in Group-A and 1.54+0.76 in Group-B,p-value=0.018. Comparison of efficacy of absorbable versus non-absorbable sutures after Lichtenstein mesh Hernioplasty shows that 83(n=83%) in Group-A and 94(n=94) in Group-B had efficacy while, p value 0.014 showing a significant difference.

Conclusion: Our findings indicate that, following Lichtenstein mesh hernioplasty, absorbable suture is more effective than non-absorbable suture regarding post operative pain.

Keywords: Inguinal hernia, hernioplasty, absorbable versus non-absorbable sutures, efficacy

INTRODUCTION

The inguinal hernia is the most frequent type of hernia in both men and women; however it is significantly more common in men. Patients sometimes refer to this type of hernia as a "rupture." [1] An inguinal hernia is one of the disorders that is most commonly encountered in general surgery.[2] Over the course of the previous few decades, a number of different surgical procedures have been developed with the purpose of repairing it; these treatments finally led to the utilization of prosthetic materials (mesh) for wall reinforcement.[3] Lichtenstein hernioplasty is a technique for tension-free open inguinal hernia repair that uses a polypropylene mesh to support the inguinal muscle layer. This technique was developed by Lichtenstein.[4] However, there is a possibility that this procedure will result in an unacceptably high percentage of ongoing discomfort, numbness, and agony.[5] Chronic inguinal pain affects anywhere from 16% to 62% of patients undergoing inguinal hernia surgery.[2]

The International Association for the Study of Pain defines chronic pain as pain that lasts longer than the typical tissue-healing period (which is assumed to be three months).[6]There are several theories as to what causes prolonged pain, numbness, and discomfort after hernia repair.[5] The discomfort might be caused by suture or mesh irritation or injury to the inguinal nerves, an inflammatory response to the mesh, or just scar tissue.[4] In reality, chronic inflammation after mesh implant is proportional to the quantity of non-absorbable material remaining in place, and the sutures used to secure the prosthesis may cause nerve or muscle injury.[3] Because hernia surgery with or without mesh insertion resulted in equal rates of persistent groyne pain, nerve irritation caused by suture is thought to be a primary underlying reason.[7]

Both internationally and locally non absorbable suture and staplers are mostly used for mesh fixation. A few clinical trials have shown that absorbable sutures is associated with lesser rate of chronic pain, therefore I want to study this aspect and determine it's outcome in our population.

METHODOLOGY

We prepared this Randomized Control Trial with a sample size of 200 patients who were scheduled to have hernioplasty performed at Surgical outdoor. Between the ages of 20 and 70, male patients with both direct and indirect inguinal hernias, educible hernias diagnosed on ultrasound, and either side, left or right, were included in the study. However, patients with bilateral or recurrent hernias, strangulated hernias diagnosed clinically that are associated with pain, tenderness, and redness of an irreducible hernia along with nausea and vomiting, as well as patients who develop post (eg, impaired cognitive function, limited mobility, daily use of pain medicine). The examinations of each of the patients were performed in a soothing setting. Every piece of information was held in strict confidence. Patients were assigned to a randomization arm without their knowledge and were chosen using a lottery approach. All patients had Lichtenstein mesh hernioplasty under local anaesthetic. Before surgery, a course of prophylactic antibiotics consisting of 1 g of IV cefazolin was administered to each patient.

All procedures were done by skilled post graduate general surgical residents under consultant supervision. Predictable bias and confounding factors were controlled by restriction (inclusion and exclusion criteria) and randomization. Rest was addressed during final analysis through stratification. GROUP A patients undergo mesh fixation using Prolene 1. (non-absorbable) GROUP B patients undergo mesh fixation using Vicryl 0 (absorbable). Patients were evaluated at 3 months follow-up to record the efficacy (pain score of <3 on VAS).

RESULTS

Mean age was calculated as 44.7+9.45, mean pain score on VAS was calculated as 2.04+0.72 in Group-A and 1.54+0.76 in Group-B,p-value=0.018. Comparison of efficacy of absorbable versus non-absorbable sutures after Lichtenstein mesh Hernioplasty shows that 83(n=83%) in Group-A and 94(n=94) in Group-B had efficacy while, p value 0.014 showing a significant difference.

Table 1: Comparison of Mean Pain Score on Vas

Pain on VAS	Group-A		Group-B		P value
	Mean	SD	Mean	SD	0.018
	2.04	0.72	1.54	0.76	

Table 2: Comparison of Efficacy of Absorbable Versus Non-Absorbable Sutures after Lichtenstein Mesh Hernioplasty

Efficacy	Group-A		Group-B	
	No. of patients	%	No. of patients	%
Yes	83	83	94	94
No	17	17	6	6

P value=0.014

DISCUSSION

The reason behind this study was that both internationally and locally non absorbable suture and staplers are mostly used for mesh fixation. A few clinical trials have shown that absorbable sutures is associated with lesser rate of chronic pain, therefore I we wanted to study this aspect and determine it's outcome in our population.

The results of our study are comparable with a previous study showing that (no and mild pain) in both groups was 95.8%[2] in absorbable group v/s 86.5% in non-absorbable group in patients undergoing Lichtenstein mesh hernioplasty.

In yet another study[8], the self-gripping mesh was used to treat primary inguinal hernia in adult men for chronic post-operative pain. The researchers found that the use of self-fixating semi-absorbable mesh resulted in favourable outcomes in terms of chronic post-operative discomfort and recurrence up to one year after surgery..

Since hernia surgery with or without mesh insertion resulted in the same rates of persistent groin discomfort, it is thought that the fundamental underlying component is suture-induced irritation of the nerves. As a result of this, preliminary findings on the utilization of skin staples (rotating skin stapler), spiral tacks, or tissue adhesives8 have only been reported, but they show a great deal of promise as alternative, suture-less mesh fixation treatments.[9] Pain relief after mesh fixation using glue (tissue adhesive) seems to be the best option since there is no risk of direct nerve irritation or nerve entrapment. The early findings reported with several glues all showed promise in terms of reducing postoperative discomfort. Consistent with these findings, short-term outcomes after mesh fixation with glue have previously been published. Since glue is absorbed after some time, however, it was unclear whether this non-traumatic fixing method would result in higher recurrence rates.

In absence of clinical trials that absorbable sutures is associated with lesser rate of chronic pain, our results are primary in local setup, which justify the hypothesis that "There is a difference in efficacy of absorbable (Vicryl) v/s non-absorbable suture (Prolene) after Lichtenstein mesh hernioplasty". However, these results need to be validated through someother multi-center studies.

CONCLUSION

According to the results of our research, absorbable suture is superior to non-absorbable suture in terms of effectiveness after Lichtenstein mesh hernioplasty. Nevertheless, these findings need to be verified using data from more multi-center investigations.

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