Recent Research in Science and Technology 2010, 2(8): 57-60
ISSN: 2076-5061
www.recent-science.com

MEDICAL SCIENCES

COMPARISION OF PROPERITONEAL NON TENSION SUTURED MESH REPAIR VERSUS CONVENTIONAL MESH REPAIR FOR REDUCING POSTOPERATIVE PAIN IN DIRECT INGUINAL HERNIA - A RANDOMISED CONTROL TRIAL

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Abstract

Background:

Numerous repairs exist for direct inguinal hernias. These repairs are limited by the shortcomings of their respective technique. Each study has its own self limitations for the reduction of postoperative pain. With the introduction of Properitoneal nontension sutured mesh repair, the postoperative pain has been lessened,proving efficacy in terms of decreased hospital stay, patient comfort and early return to activities. Hence there is need for comparing Properitoneal nontension sutured mesh repair with Conventional mesh repairs for the reduction of postoperative pain.

Materials and Methods:

A Randomized clinical trial was designed with a sample size of 60 patients, which were divided into 2 groups; Group A (properitoneal non tension sutured mesh repair) & Group B (conventional mesh repair). These two groups were analyzed for postoperative pain (visual analogue score) from 2 weeks to 12 weeks.

Results:

On analysis, three months follow up pain score is significantly less in the group A patients at 2week and even upto 8weeks, thereafter no patients experienced any pain. In group B the pain is significantly more than Group A and minimal pain persisted until 11weeks.

Conclusion:

The results of the new technique demonstrate that it provides less postoperative pain than has been reported in other nontension mesh repairs. There is apparent advantage in the use of properitoneal nontension sutured mesh repair compared to conventional mesh repair. Short term follow up of the study did not allow any conclusion regarding recurrence rates, thus larger cohorts with longer follow up are needed.

Keywords: hernia repair, properitoneal nontension sutured mesh repair, lichenstein mesh repair

Introduction

The use of prosthetic meshes for open surgical repair of inguinal hernia has become increasingly popular in western countries as well as in India. Numerous techniques are there for the repair of direct inguinal hernias. The Properitoneal non tension sutured mesh repair is the new technique of placement of mesh, as it provides a tension-free repair with minimal postoperative pain. In addition, several randomized clinical trials have reported minimal postoperative pain with this repair than with conventional mesh techniques. For decades long-term analysis of results of hernia repair concentrated on post operative and recurrence rates. More recently however, several studies have focused on aspects of chronic pain and quality of life after hernia repair. This technique differs from the Lichtenstein's in only few steps which has the advantage post-operatively in minimal post-operative pain. Hence the study has been taken as the initiative.

Materials and Methods

Source of data

60 cases undergoing hernia repair for direct inguinal hernia in KLES Prabhakar Kore Hospital, Belgaum over 1 year.

Method of collection of data

Study Design: Randomized control trial. Randomization was done by computerized randomization table into 2 groups, group A (Properitoneal nontension sutured mesh repair) and group B (conventional mesh repair)

Sample Size: 60 Cases

1) In 30 cases Properitoneal nontension sutured mesh repair.
2) In 30 cases conventional mesh repair.

Sample size has been arrived based on statistical data available of the previous years at

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KLES's Hospital. Hence 80% of the average of last three years is taken as sample size.

Duration: One year

Exclusion Criteria:- 1)Immunocompromised individual, 2)Subject with tuberculosis, 3)Subject with post operative cough & wound infection(redness & purulent discharge), 4)Patients with pantaloon hernia. 5)Patients with recurrent hernia, 6)Patients with compliated hernia.

OUTCOME: Postoperative pain is measured using visual analogue scale from 2week to 12week daily twice. The results of the study will be analyzed by using Mann Whitney U Test. After taking the informed consent, patients are randomized and divided in two groups A and B .

In Group A- underwent Properitoneal nontension sutured mesh repair using standard polypropylene mesh (5*10 cm prolene mesh).

In Group B- underwent conventional mesh repair. All standardized incision will be medial 3/5 and 2.5 cms above and parallel to inguinal ligament. All the procedures are carried under standardized spinal anaesthesia. Closure of the abdominal layer are done with continuous proline for external aponeurosis, intermitant plane catgut for subcutaneous tissue and mattress suture with 2-0 silk for skin closure.

Results

Patient demographs

60 patients with inguinal hernia are randomised prospectively to either Properitoneal nontension sutured mesh repair or conventional mesh repair. There were no significant demogrophic difference between two groups is noted as shown in table 1.

Post operative pain

It is assessed by visual analogue scale from 2 weeek to 12 week postop daily twice. In our study results are analyzed with Mann Whitney U Test. Results are shown in Table 2.

Table 1: AGE (Mean ± SD)

Group	Male
A	52.5±15.26
B	45.4±16.21

t = 1.590: DF = 48: P = 0.118

Table 2: Visual Analogue Scale by Mann whitney U test

Group	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	9th week	10th week	11th week	12th week
A	5.7±0.52	4.7±0.52	3.7±0.52	2.7±0.52	1.7±0.54	0.7±0.54	.04±0.2	0±0	0±0	0±0	0+0
B	8.1±0.74	7.1±0.74	6.1±0.74	5.1±0.74	4.2±0.81	3.1±0.74	2.1±0.74	1.3±0.49	0.9±0.33	0.5±0.51	0.3+023
Mann whitney U test	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 2.5 P = 0.000	U = 0 P = 0.000	U = 1.625 P = 0.000	U = 0.83 P=0.000

Table 3: Grading of pain by Fischer test

Group	2WEEK		3WEEK		4WEEK		5WEEK		6WEEK		7WEEK			8WEEK		9WEEK		10WEEK		11WEEK		12WEEK	
	Mod	Sev	Mod	Sev	Mild	Mod	Mild	Mod	Mild	Mod	No pain	Mild	Mod	No pain	Mild	No pain	Mild	No pain	Mild	No pain	Mild	No Pain	Mild
A	25	0	25	0	7	18	25	0	25	0	8	17	0	Pain F test P = 0.00		24	1	25	0	25	0	25	0
B	5	20	15	10	0	25	0	25	5	20	0	9	16	4		0	25	0	25	2	23	13	12	25	0
	F test P = 0.000		F test P = 0.000		F test P = 0.010		F test P = 0.010		F test P = 0.010		X^2 = 26.462, DF= 2 P = 0.000					F test P = 0.000		F test P = 0.000		F test P = 0.000		F Test P = 0.000	

Discussion

The current methods of repair of direct inguinal hernias have the disadvantage of inguinodynia[2]. Number of causes for inguinodynia are put foreworth like: Tissue handling, Placement of mesh at deep inguinal ring, Sutures for fixing the mesh. In the present conventional mesh repair, the postoperative pain is attributed to entrapment of ilioinguinal nerve, because of the placement of mesh lateral to deep inguinal ring. The placement of mesh in our technique ends medial to deep inguinal ring, so that that the ilioinguinal nerve is not entrapped causing less postoperative pain[1].

The use of mesh has become well established in hernia surgery. The stability of the mesh must match the physiological forces that are exerted on the abdominal wall[3].

The ideal mesh is selected on certain important characteristics like: Minimal foreign body response, Tensile strength, Pore size, Biocompatibility, No degradation, Tissue integration, No adhesion / fistula formation.

The aim of the present randomized trial was to determine the minimal postoperative pain using properitoneal nontension sutured mesh repair compared to conventional mesh repairs in the repair of direct inguinal hernias.

The groin pain is assessed by Visual Analogue Scale at rest and following exercise (regular flexion of the hip joint), showed that the pain is less following properitoneal nontension sutured mesh repair compared to conventional mesh repairs. No patients reported severe chronic pain during follow up[4].

All the patients presented with groin swelling in both groups. In our study all the patients are male in group A, but in group B one female. The mean age and standard deviation in group A and group B is 52.5±15.26 and 45.4±16.21 respectively. Pain score by Mann whitney U test is 2.5 upto 9weeks, at 10week its 0, 11week 1.625, 12week 0.83. P value is significant. In group A mean pain score at 2week is 5.7 and from 9week onwards is 0, where as in group B at 2week is 8.1 and at 12week is 0.3 by Fischer test. Analysis showed statistical difference present between the two groups.

In our study in properitoneal nontension sutured mesh group out of 30 patients at 7week only one patient experienced mild pain, and no patients experienced any pain after 8weeks on VAS. In conventional mesh repair out of 30 patients, 12 patients experienced mild pain at 11week and all patients experienced no pain on VAS from 12week.

In one study, out of 52 patients who underwent properitoneal nontension sutured mesh repair in three years follow-up, postoperative pain on VAS(0 to 10) at 2 months (mean+SD; 1.39+0.58), 1 year (0.37+0.27), 3 years(0.58+0.40). More than one third of patients had returned to work 1week after surgery (37.8%) with 62.2% returning by 2weeks and 100% by 6weeks. Most significantly 90.9% of patients had resumed full recreational activities by 8weeks. Most significantly 100% of patients in group A had resumed full recreational activities by 8weeks.

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