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COMPARATIVE CLINICAL STUDY OF NON-MESH VERSUS MESH REPAIR IN PRIMARY INGUINAL HERNIA

Surgery

Dr. Samir Toppo Associate Professor (Gen. Surgery) RIMS, Ranchi.

Dr Seth Kachhap* Junior Resident (Gen. Surgery) RIMS, Ranchi. *Corresponding Author.

Dr Amar Pratap Junior Resident (Gen. Surgery) RIMS, Ranchi.

Dr Md. Umar Junior Resident (Gen. Surgery) RIMS, Ranchi.

Dr Viswanathan Junior Resident (Gen. Surgery) RIMS, Ranchi.

KEYWORDS

INTRODUCTION

A hernia is defined as a protrusion of a viscus through an opening in the wall of the cavity in which it is contained. Hernias of the abdominal wall occur only in areas where aponeurosis and fascia are devoid of the protecting support of striated muscle. Without a counteracting force, the bare aponeurotic areas are subjected to the ravages of intra-abdominal pressure and give way if they deteriorate or contain anatomical irregularities.

The inguinal region is one of the natural weak areas in the abdominal wall and is the most common site of herniation.

The incidence of inguinal hernia in adults varies between 10% to15%[1]. The male to female ratio is 12:1[1]. Hernias are present in more than 45% of males at 75 years of age and older[1]. Casper Stromayr in 1559 classified in guinal her nia in to direct and indirect hernia[1].

Inguinal hernia repair is one of the most frequently performed operations. Failure of inguinal hernia repair leads to increased patient discomfort and re-operations results in a considerable burden on the patient. Chances of hernia recurrence after open surgery ranges from 1% to 7% for an indirect hernia and from 4% to 10% for a direct hernia[2]. Though there are various reasons for the failure of repair, the method of repair plays a vital role in the success of inguinal hernia repair. Until recently the standard procedure has been open musculo-aponeurotic repair using sutures under tension to close the defect but 'tension- free' repair using prosthetic mesh is becoming increasingly common in many countries. Use of Lichtenstein mesh repair increased from 33% in January 1998 to 62% in June 2000[3]. No consensus has yet been reached about the surgical approach to inguinal hernia repair that gives best clinical results[4,5,6]. The optimal method for inguinal hernia repair is yet to be determined[4].

Aims And Objectives

The aim of this study is to compare open mesh and non-mesh suture repair of primary in guinal hernia clinical out come which includes:

- Post operative pain
- Complications
- Time of return to work
- Recurrence

MATERIALS & METHODS

This study had been conducted on patients admitted for primary inguinal hernia who were either repaired by non-mesh suture method using 2/0 prolene suture or by open polypropylene (Prolene) prosthetic mesh. The study was done at Department of Surgery, Rajendra Institute of Medical Sciences, Ranchi.

After approval from Institutional Ethics Committee, prospective study was carried out on cases performed between April 2018 to September 2019 which included 102 patients who underwent primary inguinal hernia repair. Of the 102 patients, 52 patients underwent non-mesh repair whereas 50 patients underwent open mesh repair.

INCLUSION CRITERIA:

- All the patients visited RIMS in whom there was primary inguinal hernia and operated for that.
- Patients age >18 years

Exclusion Criteria:

- Patient who refused t he consent for the study.
- Patient age <18 years.
- Patient having strangulated or obstructed hernia.

STATISTICAL ANALYSIS

Data collected in proforma were analysed by SPSS and MS Excel software.

OBSERVATIONS AND RESULT

Table – 1: Demographic profile

Age incidence:		
Age group(in years)	**No.of cases**	**%of cases**
18–30	5	4.9
31–40	13	12.7
41–50	23	22.5
51–60	22	21.5
61–70	25	24.5
71–80	14	13.7
60%of the cases were >50years of age.		
Sex incidence:		
Male	100	98.03
Female	2	1.97

Table2:

	No.ofcases	**%**
Presenting symptoms:		
Swelling in the inguinoscrotal region	66	64.7
Pain in the inguinal region	20	19.6
Discomfort in the inguinoscrotal region	16	15.7
Side:		
Right	62	60.8
Left	40	39.2
Type of herniaon clinical examination:		
Indirect hernia	64	62.7
Inguinal hernia among indirect hernia	54	84.4
Inguino-scrotal among indirect hernia	10	15.6
Directhernia	38	37.3

Table3:

	No.ofcases	**%**
Type of anaesthesia:		
Local anaesthesia	18	17.6
Spinal anaesthesia	84	82.4
Operative procedure:		
Meshrepair	50	49
Non-meshrepair	52	51
Time taken:		
	Average(minutes)	**Range(minutes)**
Meshrepair	40	30–90
Non-meshrepair	45	40–90

Table – 4: Post operative pain

Verbalrank	**Non-meshrepair**		**Meshrepair**	
	No.ofcases	**%**	**No.ofcases**	**%**
Nopain	8	15.4	13	26
Lightpain	30	57.7	33	66

Moderate pain	10	19.2	2	4
Severe pain	4	7.7	2	4

Table5:

Hospital stay:		
Method	**Median(days)**	**Range(days)**
Non-mesh	5	2–10
Mesh	3	1–5
Timeoffwork:		
Non-mesh	21	7–45
Mesh	19	7–30

Table – 6: Complications

	Mesh		**Non-mesh**	
Complications	**No.of cases**	%	**No.of cases**	%
Wound infection	1	2	3	5.76
Hematoma	0	0	2	3.8
Seroma	0	0	4	7.7

Table – 7: Recurrence

Follow upperiod	**Non-meshrepair**	**Meshrepair**
0–1month	0	0
1–6months	0	0
6–12months	1	0
1–2years	0	0
1.9% recurrence following non-mesh repair.		

DISCUSSION

In our prospective study of 102 cases that underwent primary hernia repair, 100 were male patients and 2 were female patients. 60% of the cases were above the age of 50 years and 60% were right sided.

18 cases randomly received local anaesthesia whereas 84 cases received spinal anaesthesia. No cases of urinary retention were found in those who received local anaesthesia but 26 cases (30%) of those who received spinal anaesthesia developed urinary retention in the postoperative period and had to be catheterised. Early ambulation soon after operation was also possible in the cases who received local anaesthesia.

In our study there was no specific criteria for allocation of the method of repair and of 102 patients 52 patients randomly underwent non-mesh repair and 50 patients underwent mesh repair.

Both groups experienced pain in the postoperative period. The intensity of pain at 24 hours, 48 hours and 7 days after surgery was greater in the non-mesh repair group. 60% of the patient experienced persisting pain and had to be given oral Diclofenac 50mg daily for 5 days. Intensity of pain was less in the mesh repair group and 20% of the patients experienced persisting pain. Neuropraxia and hypesthesia have been reported in 15% to 20% of patients following open hernia repair, whereas chronic pain was seen in 5% case`s[7].

In our study median hospital stay were 5 days (range 2–10 days) for non-mesh repair group and 3 days (range 1–5 days) for mesh repair group.

Time off work was 21 days (range 7–45 days) for non-mesh repair group and 19 days (range 7–30 days) for mesh repair group. It was found perhaps not surprisingly that manual workers took slightly longer (median of 30 days) than did desk workers or retirees (median of 20 days) to return to normal routine.

In our study 1 case (2%) of mesh repair group had a localized stitch abscess which subsided following intravenous Cefotaxime for 5 days. In the non-mesh repair group 3 cases (5.7%) had acute cellulites around the wound with pus discharge from the open wound. The phase settled down following intravenous Cefotaxime and regular dressing and the wound healed. All these patients who had wound infections were of the elderly age group. It has been reported that older patients specifically over 70 years of age show a 3.2 fold higher incidence of wound infections[7].

Hematoma occurred in 2 cases (3.8%) of non-mesh group while subsided after aspiration whereas it was not noted in any case of mesh repair group. Seroma was noted in 4 cases (7.7%) of non-mesh repair group.

During the 2 years follow up 1 case (1.9%) recurrence was found in the non-mesh repair group and none in the mesh repair group. The case which recurred was male and more than 70 years of age. The recurrence was noted during the first year of postoperative period. The case didn't had any postoperative complication. Though 50% of recurrences are caused by infection, in our study infection was not associated with recurrence.

The case was non-smoker and didn't had any co-morbid conditions like chronic cough or prostatism. A higher percentage of smoker develops recurrences after repair as systemic protease/antiprotease imbalance in them leads to fascial degeneration and interference with normal wound healing. Abramson and colleagues showed that chronic cough was not associated with recurrence. As such prostatic hypertrophy is of no significance in the development of a hernia or recurrence after repair[8].

The approximation of tissues under tension is a cardinal factor in the failure of a hernia repair. Tissues sutured under tension tend to pull apart but are prevented from doing so by the sutures; however, the tissue pulling on the sutures create an area of ischemic pressure necrosis where the suture meets the tissue. This process of ischemic necrosis progresses until there is no longer any tension, which usually occurs when the tissues have returned to their previous unsutured position and the hernia recurs through the resultant gap. In more extreme cases in which the tension is greater than the strength of the tissues, the sutures simply tear the tissues and the hernia recurs.

SUMMARY

This prospective study of 102 cases of primary inguinal hernia repair was carried out at Department of Surgery, Rajendra Institute of Medical Sciences, Ranchi, with the aim of comparing open mesh and non-mesh suture repair with respect to clinical outcome which included postoperative pain, complications time of return to work and recurrence.

Results Obtained Were :

- 60% of the cases were more than 50 years of age.
- Males out numbered females.
- 64.7% presented with swelling in the inguinoscrotal region.
- 60.8% were right sided hernias.
- 62.7% were indirect hernias.
- No. cases of urinary retention in those done under local anaesthesia.
- Operative time was longer in case of mesh repair than non-mesh repair.
- Postoperative pain was less in mesh repair group in comparison to non-mesh repair group.
- Median Hospital stay was less in mesh (3 days) repair group vs non-mesh (5 days) repair group.
- Time off work was less in mesh (19 days) vs non-mesh (21 days) repair groups respectively.
- Postoperative complication rates were less in mesh repair group than non-mesh repair group : wound infection (2% vs 5.7%). Hematoma (0% vs 3.8%) Seroma (0% vs 7.7%).
- Following 2 years follow up, there were no recurrence in the mesh repair group but 1 case (1.9%) recurrence was found in the non-mesh repair group.
- Chronic cough or prostatism was not associated with recurrence.
- The case recurred in the first year of postoperative period.
- Infection was not associated with recurrence.

CONCLUSION

Inguinal hernia repair performed by suturing and displacement of anatomic structures may lead to excessive tension on the suture line and surrounding tissue. The use of prosthetic mesh allows tension-free repair of inguinal hernia and in theory better results. Our study proves the superiority of this method over non-mesh repair in the long term with regard to hernia recurrence; in addition, there were less complications and postoperative pain. Duration of hospital stay was less and return to work was earlier following mesh repair. Therefore, mesh repair is the method of choice for primary inguinal hernia repair.

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