

# To Compare the Recurrence Rate of Suture Repair V/S Mesh Repair In Incisional Hernia: An Hospital Based Prospective Study.

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## Abstract

**Background:** The technique of hernia repair is usually based on custom rather than evidence. The aim of this study to compare the recurrence rate of suture repair v/s mesh repair in incisional hernia. **Subjects and Methods:** A Prospective Clinical Hospital Based Study done on 30 patients in Department of Surgery, P.D.U. Medical College & Hospitals, Churu (Rajasthan) during one year period. Patients were randomly assigned to undergo suture repair or mesh repair. Follow-up of cases was done after 6 months after surgery on an outpatient basis for recurrence of hernia. **Results:** Our results showed that small (0-5cm) gap size 86.66% cases. Most common post-operative complication was 26.66% chest infection, followed by 20% wound infection in group A and fever was present 20% in group B. The recurrence of hernia was present in 26.66% cases in group A and 6.66% in group B. It was statistically significant ( $P=0.0488^*$ ). **Conclusion:** We concluded that in small defect incisional hernias, mesh repair provides better results than suture repair modalities.

**Keywords:** Incisional hernia, Mesh repair, suture repair, Recurrence rate.

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## Introduction

A hernia described as an abnormal protrusion of a viscera, in part or in complete, through a normal or abnormal-congenital or acquired-defect in the wall through the region of the abdominal wall that contains it. The inguinal section is a weakest part of the abdominal wall by the presence of the inguinal canal, the deep inguinal ring and the superficial inguinal ring. All groin hernias appear through the myopectineal orifice of Fruchaud, is bound superiorly by the arching fibers of the transversus abdominis and internal oblique muscles, and inferiorly by the pectineal line. The opening in the lower abdominal wall bounded by the transverse abdomen arch and superior pubic ramus.<sup>[1]</sup>

Inguinal hernia is the most common diversity accounting for roughly 75% of all hernia. The etiology of an inguinal hernia is clearly not understood, but it is patent processus vaginalis with increased intra-abdominal pressure and relative weakness of posterior inguinal wall are some of the factors related with occurrence of inguinal hernia.

Inguinal mesh hernioplasty is the most common surgical entity performed by general surgeons these days. In the 1990s, mesh hernioplasties became most commonly used, whereas in Finland, the widely used Bassini procedure was almost entirely replaced by tension free Lichtenstein mesh hernioplasty<sup>[2]</sup>, because Bassini repair was related with high recurrence rate as compared to Lichtenstein mesh repair.<sup>[3]</sup>

More than 2 million laparotomies are executed per annum in the US, with a reported incidence of incisional hernia 2% to 11%.<sup>4</sup> Suture repair techniques have prominent repairing of ventral and incisional hernia over a century. The most standard of these techniques was the Mayo repair. In larger hernias, the suture repairing involved the relevance of tension to the fascia in order to close the orifice.

Therefore, many suture repairs were found to disappoint mechanically, and incidence of recurrence rates were 54%. The advantages of mesh implantation have first been established as dominant trial by Luijendijk et al. (2000)<sup>[5]</sup> who found that incidence of recurrence rates to be 46% in suture repair as compared to 23% in mesh repair.

The technique of hernia repair is usually based on custom rather than evidence.<sup>[4]</sup> According to data there is a good observation that open mesh repair is better than suture repair in terms of recurrences. And also an insufficient data to reveal as which type of mesh or which position of mesh (onlay- or sublay) should be used.<sup>[6]</sup>

## Subjects and Methods

A Prospective Clinical Hospital Based Study done on 30 patients in Department of Surgery, P.D.U. Medical College & Hospitals, Churu (Rajasthan) during one year period.

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## Inclusion criteria

- Age between 10-70 years
- Patients with incisional hernia post laparotomy

## Exclusion Criteria

- Laparoscopic incision site hernia will be excluded
- Pregnant females with incisional hernia

## Methods

Patients were randomly assigned to undergo suture repair or mesh repair. Intravenous antibiotic injection ceftriaxone 1 gm given 1 hour before surgery. Location of hernia and size of the defect was noted. Relevant investigations were done, and medical fitness for surgery obtained. In suture repair, continuous polypropylene no-1 stitches with stitch width and interval of approximately 1 cm were used. In mesh repair polypropylene mesh was used over the fascia (overlay) with at least 4 cm of mesh overlapping the edges and fixed with polypropylene stitches to the fascia. Suction drain was used in most of the patients. Factors related to the operation including the surgical technique, presence or absence of seroma, hematoma, infection, dehiscence were recorded. Follow-up of cases was done after 6 months after surgery on an outpatient basis for recurrence of hernia.

## Results

Our study showed that the majority of cases (43.33%) were seen in 40-49 years of age group, followed by 26.66% cases in 50-59 years of age and 20% cases in 60-69 years of age group [Table 1].

Our results showed that small (0-5cm) gap size 86.66% cases and 13.33% cases have medium gap size in our study [Table 2].

The type of incision was mostly transverse over swelling 60% & midline incision was given 33.33% of patients in group A and transverse incision was 53.33% in group B [Table 3].

Most common post-operative complication was 26.66% chest infection, followed by 20% wound infection in group A and fever was present 20% in group B [Table 4].

The recurrence of hernia was present in 26.66% cases in group A and 6.66% in group B. It was statistically significant ( $P=0.0488^*$ ) [Table 5].

**Table 1: Age wise distribution of cases.**

Age distribution (yrs)	No. of patients	%
	20-29	1
30-39	2	6.66%
40-49	13	43.33%
50-59	8	26.66%
60-69	6	20%
Total	30	100%

**Table 2: Gap size**

Gap Size (CM)	No. of patients	%
0-5 (Small)	26	86.66%
5-10 (Medium)	4	13.33%
Grand Total	30	100%

**Table 3: Types of Incisions during incisional hernia repair**

Type of incision	Group A (Suture repair)		Group B (Mesh repair)	
	No. of patients	%	No. of patients	%
Mid line	5	33.33%	3	20%
Pfannestial	0	0%	1	6.66%
Right inguinal incision	0	0%	1	6.66%
Right paramedian	0	0%	2	13.33%
Right sub costal over previous scar	1	6.66%	0	0%
Transverse	9	60%	8	53.33%
Grand total	15	100%	15	100%

**Table 4: Post-operative complications**

Post-op Complications	Group A (Suture repair)		Group B (Mesh repair)	
	No. of patients	%	No. of patients	%
Chest infection	4	26.66%	2	13.33%
Cough	3	20%	1	6.66%
Fever	2	13.33%	3	20%
None	2	13.33%	7	46.66%
Seroma formation	1	6.66%	2	13.33%
Wound infection	3	20%	0	0%
Grand total	15	100%	15	100%

**Table 5: Follow-up at 6 months.**

Follow Up Of 6 Month	Group A (Suture Repair)		Group B (Mesh Repair)	
	No. of patients	%	No. of patients	%
Normal	11	73.33%	14	93.33%
Recurrence	4	26.66%	1	6.66%
Grand total	15	100%	15	100%

Chi-square test, 1 degree of freedom,  $P=0.0488^*$

## Discussion

In our study the mean age of presentation was 48 years (range 20-68 years) and female to male ratio was 1.38:1. As per the Maingot's studies, mean age was around 45 years.<sup>[7]</sup> Another study done by Bhutia WT et al study, the female to male ratio was 2:1 with female preponderance 84%.<sup>[8]</sup> T Shivakumar et al (2016)<sup>[9]</sup> found most of the patients were between 20 and 50 years & male: female was 1:16.5., these are conflict with our results. Our results showed that small (0-5cm) gap size 86.66% cases and 13.33% cases have medium gap size in our study. The size of the fascial defect and the appearance strength of the fascia should impose the

preference of the most suitable method of repairing hernia.<sup>[6]</sup>

The type of incision was mostly transverse over swelling 60% & midline incision was given 33.33% of patients in group A and transverse incision was 53.33% in group B. A similar our result with the study done by Burger et al. (2002)<sup>[10]</sup> stated that remarkably less incisional hernias were occurred when given transverse, oblique and paramedian incisions as compared to the midline incisions. Grantcharov and Rosenberg (2001)<sup>[11]</sup> reported lower incidence of late incisional hernia when tranverse incision was given.

Liang MK et al (2013)<sup>[12]</sup> reported a risk of incisional hernia was more in long incision than compare to short incision. Multiple incisions destroy nerve and vascular supply.

In conflict to our results, Seiler et al. (2009)<sup>[13]</sup> & O'Dwyer and Courtney (2003)<sup>[14]</sup> did not show any superiority to reducing rate of incisional hernias when given transverse abdominal incisions over midline incisions.

Most common post-operative complication was 26.66% chest infection, followed by 20% wound infection in group A and fever was present 20% in group B. Wound infection is the major etiologic factor of post-operative herniation having a high tendency for fascial necrosis with significant loss of stability of the closure. Sepsis is the second major cause of quickly wound failure, in more than 50% of post-operative hernias that develop in 1st year after operation (Jack Abrahamson).<sup>[15]</sup> Approximately, 35-40% of incisional hernias occur with a wound infection in documentation, but the reported incidence of hernia in treated wound infections varies from 5% to 20% (Baker).<sup>[16]</sup> Post-operative wound infection was related with five times increase in the risk of development of a hernia (23%) as only 4.5% incidence in patients with uninfected wounds.<sup>[9]</sup> Similar findings had been reported earlier by Blomstedt and Welin Berger (1972). Incisional hernia occurs in 23% of those who develop postoperative wound infection.<sup>[17]</sup>

Post-operative pulmonary difficulties elevated the prevalence of herniation because of the stress placed on the wound closure by straining or coughing. Wound tensile stress was abnormal and ultimate wound stability is usually unsatisfactory in malnourished patients Baker. Et al (1995).<sup>[16]</sup>

Recurrence rate were high in suture group A (26.66%) as compared to mesh group B (6.66%). In techniques for the repair of incisional hernias in which sutures are used, the edges of the defect are brought together, which may lead to excessive tension and subsequent wound dehiscence or incisional herniation as a result of tissue ischemia and the cutting of sutures through the tissues.<sup>[18]</sup> With prosthetic mesh, defects of any size can be repaired without tension. In addition, polypropylene mesh, by inducing an inflammatory response, sets up a scaffolding that, in turn, induces the synthesis of collagen. Our study establishes the superiority of mesh repair over suture repair with regard to the recurrence of hernia.

The recurrence rate in suture repair group in our study is comparable to Korenkov et al.<sup>[19]</sup> series. Another study

showed that the matapurkar (1995)<sup>[20]</sup> showed 0% recurrence rate in mesh repair.

## Conclusion

We concluded that in small defect incisional hernias, mesh repair provides better results than suture repair modalities.

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