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Research Article

A COMPARATIVE STUDY BETWEEN ANATOMICAL VS MESH REPAIR OF INCISIONAL HERNIA

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A R T I C L E I N F O

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A B S T R A C T

Background: Incisional hernia is a very common problem encountered by surgeons and represent a serious complication of abdominal surgery. The exact incidence of incisional hernia has not been well defined, although reported incidence suggests the possibility between 2-11% following abdominal surgeries. Incisional hernias enlarge over time and can result in serious complications. Various types of repair have been described. Commonly practiced are anatomical and mesh repairs, but the results are disappointing with a high incidence of reported complications and recurrence following various techniques of repair. To evaluate the outcome of anatomical repair (as regards to non affordability of mesh due to its cost by patients) and mesh repair of incisional hernia with reference to technical difficulty, convalescence, wound infection and recurrence. **Methods:** 50 cases of incisional hernia admitted in the Tertiary Care Hospital, Telangana from March 2019 to February 2020. Study includes all incisional hernias admitted and treated. **Results:** The majority of patients were in the age group of 41-50 years and more commonly females than males. Most common symptom that patient presented with was swelling in the abdomen usually below umbilicus in the midline (54% cases). 58% patients presented with incisional hernia within 5 years of previous surgery. Duration of surgery varied with each case, average time taken for surgery in anatomical group was 63.8 min and mesh group was 73.8 min. No technical difficulty was encountered in performing both anatomical and mesh repair. All the cases were followed up for a period of 1 year and no recurrence was noted in both the groups within the study period. **Conclusion:** Based on the evidence from the present and previous studies, the anatomical repair is superior in terms of occurrence of wound infections and other post operative complications with shorter period of convalescence. Whereas mesh repair is superior in terms of recurrence as is evidenced by the previous studies, but the present study is insufficient to know the true recurrence rate due to the shorter period of follow up. Thus, we conclude that anatomical repair in most of the patients can be done without compromising the outcome in the patients who cannot afford mesh and without any underlying factors like obesity, very large and multiple defects and recurrent cases which obviates the need for mesh repair.

INTRODUCTION

Incisional hernia is a very common problem encountered by surgeon[1] and has followed abdominal surgery like a shadow for more than a century now.[8]Incisional hernia is a truly iatrogenic hernia,[9] also termed eventration, laparocele or post operative hernia, is the protrusion of abdominal contents through orifices or areas of the abdominal wall weakened by traumas or surgical incisions.[10]

The exact incidence of incisional hernia has not been well defined, although a numberof reports in the literature suggested the probability of incidence between 2-11% following all abdominalsurgeries.[1-4,6,7.] The incidence of incisional hernia has increased with each increment of abdominal surgical intervention. It is the most perfect example of a `surgeon dependent variable‟. The recent introduction of continuous ambulatory peritoneal dialysis has been followed by its own unique harvest of incisional hernias. Laparoscopic surgery has also added a new entity: `port site hernia‟ although infrequent with advent of smaller ports and the currently available instrumentation.[9.]

Many factors singly (or) in various combinations may cause failure of the wound to heal satisfactorily and may lead to the development of incisional hernia. These include age, sex, obesity, chest infections, type of suture material used, smoking, surgeon`s experience, closure method, site of incision, sepsis, primary wound healing defects, malnutrition, Diabetes Mellitus, post operative abdominal distension, immune-compromised state (renal failure, steroid use, diabetes), pregnancy, multiple prior procedures, prior incisional hernias, malignancy etc. All these presenting a challenging problem to the surgeon. [6,8,9,11]

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The incisional hernia usually starts early after surgery, as a result of defective closure following laparotomy.[4,8] They occur at the defective healing sites within the approximated incision or at the suture puncture sites created during the closure or both. Hernias are also responsible for considerable economic loss to the patient and the family. It is, therefore, important to perform the type of operation, which will offer the best chance for a permanent cure with minimal risk.

This is a non- randomized, prospective comparative study, which examines the various risk factors involved in causation of incisional hernia, its various clinical presentations, role of anatomical repair as well as mesh repair in its management, complications and cost effectiveness.

Aim of the study

To evaluate the outcome of anatomical and mesh repair of incisional hernia with reference to technical difficulty, convalescence, wound infection and recurrence.

MATERIAL & METHODS

This study has been taken from 50 patients who got admitted for the treatment of incisional hernia from March 2019 to February 2020.

Inclusion Criteria: A detailed clinical study and management of 50 cases of incisional hernia treated with anatomical repair and mesh repair, has been personally made. The cases have been selected at random. All patients of primary incisional hernia with previous history of laparotomy are selected at random.

Exclusion Criteria: Patients with obstructed or strangulated incisional hernias, intra-abdominal malignancies and patients with severe co-morbid conditions (severe cardio-pulmonary disease, uncontrolled ascites), pregnant women with incisional hernias and recurrent incisional hernias are excluded from the study.

All cases were clinically diagnosed, and all patients included in the study underwent surgery following routine pre-operative investigations. They were subjected either to anatomical repair or mesh repair by the affordability of the patient to buy polypropylene mesh. All patients underwent surgical procedure after routine preoperative preparations. Informed written consent was obtained after explaining the surgical procedure, its results, risk factors and complications. Ethics committee approval was taken before beginning the study. Data was collected using a pretested, semi structured questionnaire and entered in excel sheet, analyzed by SPSS software. The patients were followed up once a month for 3 months and subsequently after 3 and 6 months thereafter for any complications orrecurrence.

During follow up patient was examined for fresh symptoms and signs pertaining to recurrence and surgical procedure. The patients were studied the outcome of anatomical and mesh repair of incisional hernia with reference to technical difficulty during surgery, duration of hospital stay following surgery, various complications during post operative period, period of convalescence and recurrence.

Procedure

Anatomical Repair

It includes simple fascial closure, modified mayo technique, use of internal retention sutures, 'keel' procedures, the Nuttall procedure, use of layered steel wire and others.8,9 Modified mayo technique includes overlapping of fascial edges and use of internal retention sutures.

Mesh Repair

Those include: Inlay where mesh is sutured between the fascial gap; Onlay where mesh is placed on top of the fascia; Sub lay or the Rives-Stoppa technique where mesh is place anterior to the posterior rectus sheath; or intra-peritoneal underlay.

Onlay repair

Peritoneum is closed after reduction of the viscera.

Sublay repair

Sublay repair is often considered more challenging and complex to perform. Dissection of this plane can risk damaging the muscles, blood supply, and nerves to the rectus abdominis. However, this space potentially protects the mesh from both superficial wound complications and intra peritoneal contents. In addition, it also allows for load bearing tissue in growth from two directions.

RESULTS

Maximum numbers of cases (28%) were in age group of 41-50 years followed by 51-60 years age group (26%). the youngest patient was 25 yrs. old and oldest was 65yrs old. Mean age in this study is 48.93±10.25 years. Majority of the patients (72%) in our study were females while only 28% were males. This study shows that the distribution of incisional hernia is more common in females than males with female to male ratio 7.2: 2.8 This may be due to multiple deliveries in female makes the abdominal wall weaken and prone for herniation.

Table 1 Distribution according to clinical presentation

Clinical Presentation	No.of Cases	Percentage
Swelling	33	66
Pain	1	2
Both	16	32

Table 2 Distribution of the cases according to the position of the swelling

Position of the Swelling	No.of Cases	Percentage
Supraumbilical	13	26
Infraumbilical	37	74

Table 3 Time of onset of incisional hernia after previous surgery

Time of onset	No. of cases	Percentage
Upto 1 year	18	36
>1year-5 years	11	22
>5years-10 years	7	14
>10 years	14	28

Table 4 Distribution according to type of previous surgery and incision

Site	Type of Incision	Type of Operation	No of Cases	Total	Percentage	Total Percentage
UPPER	Midline	Laparotomy	7	7	14	14
	Right Paramedian	Laparotomy	2	2	4	4
	Right subcostal	Chole cystectomy	4	4	8	8
LOWER	Midline	Laparotomy	2	27	4	54
		LSCS	10		20	
		Tubectomy	7		14	
		Hysterectomy	4		8	
		Hysterectomy/ Tubectomy	1		2	
		LSCS/Tubectomy	2		4	
		LSCS/Hysterectomy	1		2	
	Pfannenstiel	Hysterectomy	3	4	6	8
		LSCS	1		2	
	RIF	Appendicectomy	6	6	12	12

Table 5 Distribution of cases according to duration of surgery (in minutes)

Duration of surgery	Anatomical repair	Mesh repair
<45MIN	6 (24%)	0 (0%)
46-60MIN	8 (32%)	10 (40%)
61-90MIN	11 (44%)	13 (52%)
>91MIN	0 (0%)	2 (8%)

Table 6 Distribution according to postoperative complications

Complications	Anatomical repair	Mesh repair	P value
Bowel Adhesions	0	0	
Intestinal Fistula	0	0	
Intestinal Obstruction	0	0	
Seroma	1	6	>0.05
Superficial Wound Infection	2	5	>0.05

Table 7 Distribution of cases according to recurrences at follow up at 12 months

	Anatomicalrepair	Meshrepair
FOLLOW UP	12 Months	12Months
NO. OF CASES	25	25
RECURRENCE	0	0

DISCUSSION

The mean age in our study was 48.93±10.25 years, which was comparable with the study of Bhattaria (47 years), Ellis *et al* (49.4 years), Jehad (50.5 years) and Dhaigude (49.46%) and differs from the study of Garg where the mean age was 23.82±3.14 years which is lesser than our study.[12-17]

The sex incidence of incisional hernia in our study was 2.8:7.2 (M: F) showing a female preponderance. This was likely because of laxity of abdominal muscles due to multiple pregnancies and also an increased incidence of obesity in females. The present study was comparable to authors Jehad and Garg where male: female ratio was 25:39 and 37:63 respectively.[15,17]

Similar to our study Kumar, Tulaskar and Amer *et al* also found the swelling as the main presenting complaint followed by swelling and pain.[18-20]

In our study, 74% of the incisional hernias were in midline and infraumbilical which was found to be concordant with the Bhattaria, Nanjappa and Thakore.[13,21,22] Our study differed from the study by author Goel[23] who showed supraumbilical as the common site of incisional hernia compared to infraumbilical.

In our study 36.67% of patients developed incisional hernia within 1 year of previous surgery, 28.33% within 1-5years and 18.33% in 5-10 years. It was comparable to the study by Garg and Amer *et al* where approximately one third of incisional hernia occurred within one year of the previous surgery.[17,20]

Similar to our study, many authors also observed increased incidence of incisional hernia in previous LSCS .[13,18,19]

Similar to our study Kumar, Tulaskar and Amer *et al* have also shown lower midline incision as the most common incision in previous surgery which had led to incisional hernia.[18-20] Our study differs from Omer and Fakhar who had found comparatively increased incidence of right paramedian incision (11.7%) and (12%) respectively.[20,24]

In our study poor muscle tone was observed in 14% cases, which differs from the study by Nanjappa where the incidence is 26.7% while Kumar has shown poor muscle tone in 42.85% of cases which is higher than the incidence found in our study.[21,18]

Majority of the incisional hernia size was lesser than 10 cms (96%) in our study. It is similar to Kumar who found size of lesser than 10cms in 96% cases.[18]

On comparison of average duration of surgery our study was concordant to study by Baracs and Dhaigude who also showed shorter duration of surgery in anatomical repair compared to mesh repair .[16,25]

Based on distribution of postoperative complications between anatomical and mesh repair groups our study is similar to the study by Luijendijk and Shiv Kumar but differs from study by Jehad who showed increased incidence of seroma formation in anatomical repair group.[15,18, 26,27] Superficial wound infection was the second most common complication observed in our study. Our study is similar to Luijendijk[26] who has also shown increased incidence of wound infection in mesh group but differs from the Kumar[18] and Jehad[15] who have observed increased wound infection in anatomical group. There was no incidence of mesh infection, wound gaping, bowel obstruction or fistula formation in our study similar to the study of authors who also did not observed these complications.[15,18]

In our study, time taken to resume normal activity in majority of patients after anatomical repair was <10 days and in mesh repair was 11-20days, i.e the average duration of hospital stay was higher in mesh repair group compared to anatomical

repair group similar to the study by Baracs, Jehad and Kumar.[15,18,25]

CONCLUSION

1. The present study aimed at evaluating technique of anatomical and mesh repair of incisional hernia with reference to technical difficulty, convalescence, wound infection and recurrence.
2. Based on the evidence from the present and previous studies, the anatomical repair is superior in terms of occurrence of wound infections and other post operative complications with an average duration of one hour to perform the surgery with shorter period of convalescence. Whereas mesh repair is superior in terms of recurrence as is evidenced by the previous studies, but the present study is insufficient to know the true recurrence rate due to the shorter period of follow up.
3. Thus, we conclude that anatomical repair in most of the patients can be done without compromising the outcome in the patients who cannot afford mesh and without any underlying factors like obesity, very large and multiple defects and recurrent cases which obviates the need for mesh repair.
4. This study may not reflect all the aspects of incisional hernia, as the series is small and follow up period is short. This is considered limitations for my study. No echnical difficulty was experienced.

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

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