



ORIGINAL ARTICLE

Re-appraisal of application of mesh in hernia surgery.

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ABSTRACT... Objective: Evaluation of mesh associated complications and reviewing its selective application in hernia surgery. **Design:** Descriptive study. **Setting:** Department of Surgery, Fauji Foundation Hospital, Rawalpindi. **Period:** Jan 2019 – June 2022. **Material & Methods:** Patients having undergone hernia surgery in past with mesh repair at FFH or any other hospital that had developed complications and reported to surgical unit 1 FFH. Patients of hernia surgery without mesh repair were excluded. **Results:** A total of 50 cases were included in the study. Majority of patients were females 42(84%). Paraumbilical hernia 18(36%), Epigastric hernia 13(26%), Incisional hernia 12(24%) and Inguinal hernia 7(14%) cases were included in study. Chronic discharging sinus 16(32%), Recurrent acute local sepsis 12(24%), Large painful seroma 5(10%), Recurrent hernia 13(26%), Acute fulminant sepsis after primary surgery 2(4%) and intestinal obstruction 2(4%) were the mesh associated complications present in patients. Majority of the patient required hospitalization and delayed removal of mesh [43 cases] (86%). Early removal of mesh was required in 2(4%) cases. The residual defect after the removal of mesh was managed by Component separation and slide method: Early in 2(4%) cases and delayed in 17(34%), double breasting of facial sheath 10(20%), double breasting of external oblique with exteriorization of cord 6(12%) cases. Wound toilet and symptomatic treatment without removal of mesh was advised in 3(6%) cases. Emergency laparotomy and gut anastomosis was performed in 2(4%) cases. **Conclusion:** Indiscriminate use of mesh in hernia surgery needs to be checked, as a significant number of patients develop mesh related complications.

Key words: Complications, Component Separation and Slide, Hernias, Mesh Repair, Surgical Site Infection.

INTRODUCTION

Hernia is one of the most commonly discussed subjects in general surgery.¹ Inguinal and ventral hernias make the major proportion of the cases in most of the surgical set ups and comprise a significant disease burden in all age groups.² Various methods have been discussed to deal with different types of hernia however the basic principles of hernia repair remain the same. The pivot principle of hernia surgery is ensuring a tension free repair after dealing with the hernia sac and its contents.³ In addition, the pre-operative selection of cases to address the causative and aggravating factors, post-operative care and monitoring are as important as is the surgery itself.⁴ Surgical practices for treatment of hernias have tremendously changed from open to laparoscopic method and improvisations

in essential technique.⁵ In both open and laparoscopic procedures, the application of mesh is in vogue, the concept that stemmed out of the work of Lichtenstein.⁶ Whereas a sound and reliable repair is certainly achieved by a mesh, this practice is not all without complications, and not every patient may require it.⁷ The desired results of hernia repair in significant number of patients are often not met even with meticulous application of mesh, on account of complications that may lead to removal of mesh. So, a blind trust to apply mesh in every case of hernia needs to be checked. This study endeavors to evaluate mesh associated complication, reviewing its selective application in hernia surgery.

MATERIAL & METHODS

This is a descriptive study, conducted at surgical

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unit -1 Fauji Foundation Hospital, Rawalpindi from January 2019- to June 2022. After getting approval from ethical committee (647/RC/FFH/RWP) 50 patients of all ages and either sex were included in the study. Cases of ventral and inguinal hernias who had undergone mesh repair in past either open or laparoscopic, and had developed a complication requiring admission and a redo surgical intervention with or without removal of mesh to treat the complication were included in study. Patients having minor symptoms, not requiring hospitalization or any surgical intervention were excluded from study. Patients having complication after hernia surgery without mesh repair were also excluded from the study. Cases had under gone primary surgery either at our own hospital or were received as referrals from peripheral hospitals or private setups. The Demographic features of the patients, previous surgical details, the type of complication, the remedial procedure performed to treat the complication and the outcome were documented on proforma.

DATA ANALYSIS

Data analysis was done by using SPSS version 26. Quantitative variable like age was analyzed by mean and standard deviation while qualitative variables like sex, previous surgical details, the type of complication developed in the patients, the remedial procedure performed and outcome were analyzed by frequency.

RESULTS

Patient population comprised a total of 50 cases undergone a hernia repair in past with application of mesh. Most of the patients were female 42(84%) and 8(16%) were male. The patients were of different age groups and age range was 20 to 70 years. Mean age was 45.4 years. Majority of the patients had under gone open surgery 47(94%), whereas only 3(6%) patients with inguinal hernia had undergone laparoscopic repair. Paraumbilical hernia 18(36%), Epigastric hernia 13(26%), Incisional hernia 12(24%) and Inguinal hernia 7(14%) cases were included in study. Chronic discharging sinus 16(32%), Recurrent acute local sepsis 12(24%), Large painful seroma 5(10%), Recurrent hernia 13(26%), Acute

fulminant sepsis after primary surgery 2(4%) and intestinal obstruction 2(4%) were the mesh associated complications present in patients. One or a combination of Co- morbid conditions were found in large number of cases. Diabetes mellitus 26(52%), Hypertension 24(48%) and Morbid obesity 8(16%) were most noticeable.

Early removal of mesh with delayed repair with component separation and slide technique was performed in 2(4%) cases. Delayed removal of mesh was performed in majority of cases 43(86%). Repair of the residual defect after removal of mesh was performed by Layered suture technique (double breasting) of facial sheath 10(20%) cases and Component separation and slide method in 17(34%). In inguinal hernia the removal of mesh was followed by double breasting of external oblique with exteriorization of cord 6(12%) cases. Wound toilet and symptomatic treatment without removal of mesh was advised in 3(6%) cases. Emergency laparotomy and gut anastomosis was performed in 2(4%) cases. Average hospital stay for treating the complication was 12 days. No fatality is reported in this study.

N	Mean	Std. Deviation	Median	Minimum	Maximum
50	45.4000	12.08811	43.0000	20.00	70.00

Table-I. Age of patients in years (N=50)

		Frequency	Percent
Valid	Paraumbilical Hernia	18	36.0
	Incisional Hernia	12	24.0
	Epigastric Hernia	13	26.0
	Inguinal Hernia	7	14.0
	Total	50	100.0

Table-II. Type of hernia operated in past (N=50)

		Frequency	Percent
Valid	Chronic discharging sinus	16	32.0
	Recurrent acute local sepsis	12	24.0
	Large painful seroma	5	10.0
	Recurrent hernia	13	26.0
	Acute fulminant sepsis after primary surgery	2	4.0
	Intestinal obstruction	2	4.0
	Total	50	100.0

Table-III. Type of Mesh associated complications requiring surgery (N=50)

		Frequency	Percent
Valid	Early removal of mesh, debridement & delayed repair with component separation and slide (acute fulminant cases)	2	4.0
	Delayed removal of mesh with repair of defect by component separation and slide.	17	34.0
	Wound debridement & delayed removal of mesh (recurrent acute local sepsis), closure of skin & subcutaneous tissue only.	10	20.0
	Delayed removal of mesh with layered suture repair of residual defect (discharging sinus & recurrent sepsis).	10	20.0
	Removal of mesh with exteriorization of spermatic cord & double breasting of external oblique muscle.	6	12.0
	Emergency laparotomy, gut resection anastomosis.	2	4.0
	No surgical intervention, wound toilet & conservative care with antibiotics only.	3	6.0
	Total	50	100.0

Table-IV. Surgical procedures to treat mesh associated complications (N=50)

DISCUSSION

Voluminous literature exists on hernia surgery and various types of procedures are described with their merits and demerits for different types of hernia.⁸ One pivotal thought that has evolved as main principle of hernia repair is to perform a “tension free repair” of the hernia defect. The same can be achieved by different methods described in literature.⁹ After the introduction of Lichtenstein repair, the thoughts have indeed become unidirectional, with the practice of mesh repair developing rapidly and applied in all types of hernia surgery.¹⁰ However, over a period of time a number mesh associated complications have been reported from different centers.¹¹ It is difficult to describe the exact incidence of complications attributable to mesh application however a study by Dirk Wehye et.al. describes it approximately 8-10%.¹² Our study does not describe the incidence of mesh associated complication as the cases were referred from different centers only after having developed complications. Our study focuses only on the type of complication and the remedial surgical procedures performed. Surgical site infection is one on the commonest complication that may present as acute fulminant sepsis, recurrent wound infection or a chronic discharging sinus. Maatouk M et.al.¹³ has reported an incidence of 13.4% in ventral hernias and Masood A et.al.¹⁴ reported incidence of sepsis in 10-13% in cases of inguinal hernia, whether performed laparoscopic ally or by open surgery. In our study there were

45(90%) cases who required removal of mesh of account of persistent infection and was regarded as either a breach in anti septic measures or host response to mesh.

Recurrence after mesh repair is well documented now in ventral as well as inguinal hernia. Afzal H et.al.¹⁵ has described a recurrence rate of 6% in ventral herna cases and Memom GA et.al.¹⁶ described rate of recurrence of 2-6% in inguinal hernia repair. In our study 13(26%) cases reported with recurrent hernia requiring a-re-do surgery. Doing surgical repair after the removal of mesh is a challenge. It may require repeated wound toilet and control of local sepsis before implying a definitive surgical technique to manage the hernial defect. This often requires prolonged admission and meticulous wound care. Sean C O’ Conner in his study suggested management of florid sepsis and recurrent hernia complication after hernia surgery by mesh removal and primary closure with bilateral myofascial rectus abdominis release.¹⁷ In our study the ventral hernias were successfully managed by Component separation and slide, double breasting of facial sheath or by layered approximation with suture. Post-operative complications like surgical site infection and recurrence in inguinal hernia cases are managed by wound debridement, removal of mesh, antibiotics and redo surgery by tension free and suture-free repairs.¹⁸ All inguinal hernias in our study were managed with double breasting of external oblique with exterioraization

of cord. The factors other than mesh itself are often ignored and not taken into account when hernia repair is planned in a particular patient. In our study 8(16%) cases had morbid obesity and 26(52%) cases were diabetics. A study by Wilson RB et.al. highlight higher complication rate in this population and our study supports it.¹⁹ A tailor made surgical planning is thus stressed that would take into consideration all the pre-operative, operative and post operative factors that contribute to causation of complication and recurrence of hernia. Evaluation of the defect size and evaluation of various options of repair in a particular patient needs to be stressed rather than a blind decision to apply mesh in every case of hernia. We could not precisely determine that which type of mesh material had been used in our patients and is thus a limitation of our study in attributing it to causation of complication.

CONCLUSION

Indiscriminate use of mesh in hernia surgery needs to be checked, as a significant number of patients develop mesh related complications.

RECOMMENDATIONS

1. Patient need careful evaluation before hernia repair.
2. The risk factors for complications such as body mass index, co-morbid conditions, surgical techniques, departmental surgical volumes, surgical experience and anesthesia all must be taken into consideration for a tailor-made plan of treatment for every individual case.
3. Mesh application may be avoided whenever a tension free repair is possible with conventional repair techniques.






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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Muhammad Taimur	Formulated Data, Data analysis.	
3	Shazia Naqvi	Literature search and manuscript writing.	
4	Samiullah	Manuscript writing and did proof reading of article.	
5	Shanza Faridi	Manuscript writing.	
6	Sundas Ishtiaq	Manuscript writing and did formatting of article.	