ORIGINAL RESEARCH PAPER

General Surgery

OUTCOME OF MESHPLASTY V/S HERNIORRAPHY IN INGUINAL HERNIA REPAIR IN A TERTIARY CARE INSTITUTE-A PROSPECTIVE STUDY

KEY WORDS: Hernia, Mesh repair, Tissue repair, Hematoma, Seroma.

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ABSTRACT

A hernia is defined as a protrusion, bulge, or projection of an organ or a part of an organ through the body wall that normally contains it. There is still very limited evidence regarding prevalence, particularly in low-income countries, but hernia repair is an extremely common general surgical procedure. The current hospital based prospective study was conducted among 102 patients, 51 participants enrolled in Mesh repair and 51 for Herniorrhaphy presenting to the Department of General Surgery at tertiary health care institute. with objectives to study the hernia repair with mesh versus without mesh. Outcomes like hernia recurrence, postoperative pain, duration of operation, postoperative hospital stay, time to return to activities of daily living & also to evaluate the benefits and complications of different inguinal hernia repair techniques in adults studied. Total 102 patients were considered between age group of 15 to 35 years for present study from Aug.2019 to Jan.2022,after applying inclusion and exclusion criteria. In each group 51 patients were operated. Majority of patients for mesh repair (70%) & tissue repair (60%) were belonged to 21-25 & 15 -20 years of age group respectively. Mean operation time for tissue repair (41.8 4.6) was more as compare to mesh repair (39.7 4.3).Outcome like post-operative stay, post-operative pain, days required for return to daily basic activities were significantly more for tissue repair as compared to mesh repair. In case of post-operative pain scale majority of mesh group will have chronic pain compared with Tissue repair group. Hematoma & urinary retention were statistically more significant in tissue repair ($p<0.05$). Wound infections, seroma, recurrence, reduced testicular perfusion, reduced sperm count were more in mesh repair as compare to tissue repair out of that only seroma shows significant in mesh repair . Concluded that the tissue repairs does not use a mesh, this makes tissue repair cost effective. Postoperative pain is significantly less initially with Mesh repair but increased on day 7 and chronic pain is seen with mesh repair but is not significant statistically. Most of the complications between 2 groups are not statistically significant except for seroma significant in mesh repair,hematoma and urinary retention significant in tissue repair.

INTRODUCTION

Hernia can be defined as bulging of part of the contents of the abdominal cavity through a weakness in the abdominal wall. Amongst groin hernias, inguinal hernia is the most common type (75%) of groin hernia in both males and females. Men are eight times more likely to develop a groin hernia than women and 20 times more likely to require a groin hernia repair. The life time risk of development of inguinal hernia is approximately 27% in males and 3% in females. Abdominal wall hernias are common, with a prevalence in the general population of 4% for those aged over 45 years .inguinal and femoral hernias are known collectively as groin hernias[1]. Of all groin hernias, 96% are inguinal and 4% are femoral. There is still very limited evidence regarding prevalence, particularly in low-income countries, but hernia repair is an extremely common general surgical procedure. Inguinal hernias are further classified as indirect or direct. Indirect inguinal hernias protrude through the internal inguinal ring, which is the site where the spermatic cord in males and the round ligament in females exits the abdomen. Direct inguinal hernias protrude medial to the inferior epigastric vessels within Hesselbach's triangle (formed by the inguinal ligament inferiorly, the inferior epigastric vessels laterally and the rectus abdominis muscle medially)

Much of modern surgical technique results from the contributions of early surgeons, but it was not until the late 19th century that hernia surgeon Edoardo Bassini,a wellknown surgeon from Pavia,Italy (who is considered the father of modern day hernia surgery) experienced any measurable degree of success in repairing hernias. Bassini's aggressive approach was to perform "a radical cure of inguinal hernia," and his operation epitomized the essential steps of an ideal tissue repair[7] Improvements in surgical technique and a better understanding of the anatomy and physiology of the inguinal canal have significantly improved outcomes for many patients[8]. But, none of the relevant published reports were representative of the population of study area.Therefore, this study was started.

AIM AND OBJECTIVES

1. To study the outcome of hernia repair with mesh versus without mesh in age group of 15 to 35 years.
2. To study the outcomes, include hernia recurrence, complications(including neurovascular or visceral injury, hematoma, seroma,testicular injury, infection, postoperative pain,mortality,durationof operation, postoperative hospital stay,time to return to activities of daily living.
3. To evaluate the benefits and harms of different inguinal hernia repair techniques.

METHODS AND MATERIALS:

Study design: Hospital based comparative study.

Study setting: Surgery male ward at tertiary health care institute.

Study duration: August 2019 to January 2022.

Study subjects: All the patients of hernia admitted in surgery ward of surgery department, at the tertiary care hospital during the study period.

51 participants enrolled in Mesh repair and 51 for Tissue repair group

Inclusion Criteria-

1) Male patients aged 15 to 35 years diagnosed with inguinal

or inguino scrotal hernias.
2) Direct, Indirect, Bilateral inguinal, hernias
3) Cases willing to participate and give informed consent.

Exclusion Criteria-
1) Obstructed and strangulated inguinal hernias
2) Previous operated for hernia on same side and having recurrence.
3) Genitourinary infections
4) Cases with immuno deficiency symptoms

Type of interventions:
Mesh repairs: Lichtenstein approach (On lay meshplasty), Rive's meshplasty (Inlay meshplasty), Stoppa's repair (GPRVS)-For bilateral inguinal hernia repairs.

Tissue repairs:
Bassini's and Modified Bassini's Herniorrhaphy , Shouldice's repair, Moloney's darn repair, Desarda's repair.

Patients who satisfy the inclusion criteria were enrolled for the study. Clinical diagnosis of inguinal hernia was made, based on visible reducible inguinal or inguino scrotal swelling, presence of cough impulse, inability to get above the swelling, dull aching pain in inguinal region. Once the diagnosis of inguinal hernia was made, all patients were subjected to preoperative evaluation including history taking, clinical examination and basic laboratory investigations were done.

Intraoperative Observation like operative time in minutes calculated from time of skin incision to skin closure. Postoperative observation like Post operative hospital stay,Post operative pain scores accessed within 24 hours , day 3,day 7,day 30 and at day 90.using Visual Analogue Scale. No pain,5=Moderate pain,10=Unbearable pain. Days required to return to daily normal activities(in days) as patient's able to perform daily basic activities like getting dressing, walking and performing basic home activities like bathing, and performing daily household chores, Post operative complication of Wound infection, Hematoma formation at surgical site, seroma, urinary retention, Recurrence, post operative testicular perfusion 6 months after surgery, Post operative seminal analysis for sperm count 6 months after surgery was recorded.

RESULTS AND ANALYSIS

Table 1: Age wise distribution of patients

Age group in years	Mesh repair (n=51)	Tissue repair (n=51)
15 to 20	2 (40%)	3 (60%)
21 to 25	7(70%)	3(30%)
26 to 30	19 (57%)	14(42.42%)
31 to 35	23(42.59%)	31(57.4%)
p>0.05(0.61) not significant		

Table 2: socio-economic class wise distribution of patients

socio-economic class	Mesh repair (n=51)	Tissue repair (n=51)
I	3(42.85%)	4(57.14%)
II	4(50%)	4(50%)
III	7(46.66%)	8(53.33%)
IV	8(53.33%)	7(46.66%)
V	29(50.87%)	28(49.12%)
p>0.05(not significant)		

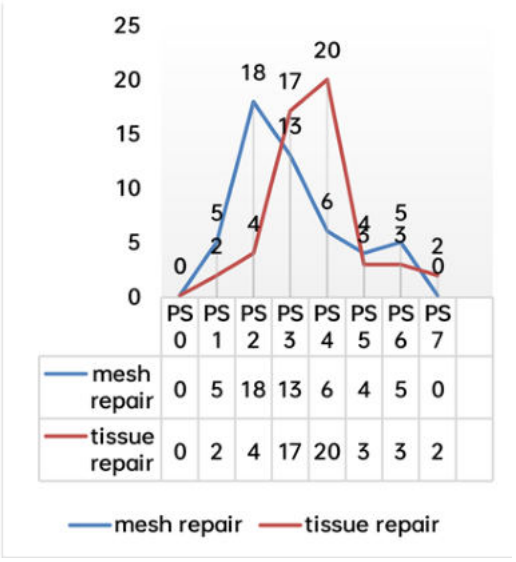
Table 3: Distribution of patients according type of inguinal hernia

Type of inguinal hernia	Mesh repair (n=51)	Tissue repair (n=51)
Direct	13(46.42%)	15(53.57%)
Indirect	38(51.35%)	36(48.64%)
p>0.05(not significant)		

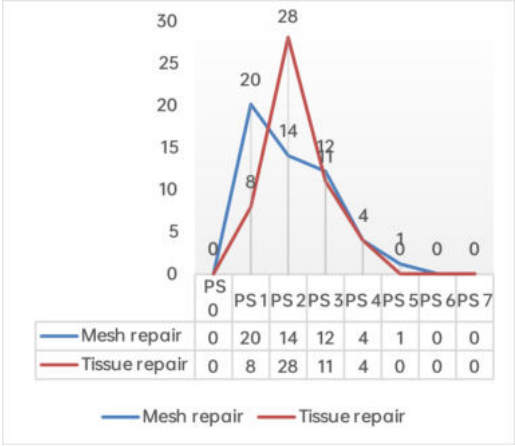
Table 4: Distribution of patients according to operation time

Operation time	Mesh repair (n=51)	Tissue repair (n=51)	chi square test
≤ 40min	30(63.82%)	17(36.17%)	χ^2=6.66
>40 min	21(38.18%)	34(61.81%)	**p- 0.009**
Mean SD	39.74.3	41.84.6	

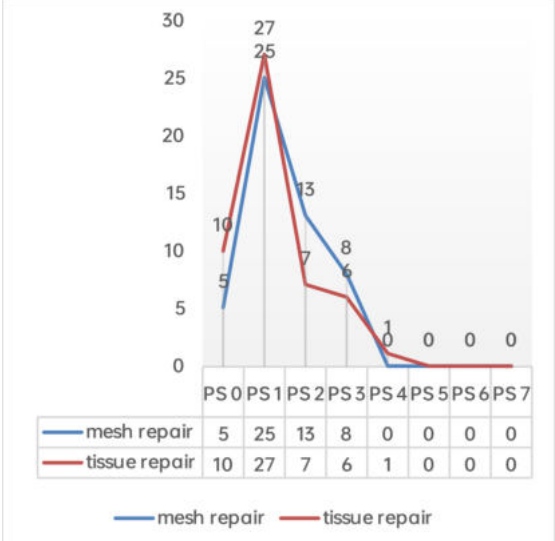
Comparison of post-operative pain:



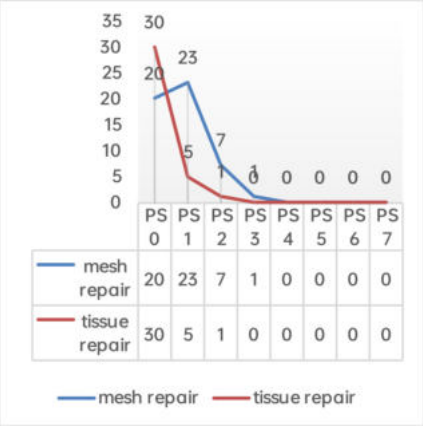
Graph 1: post operation pain scale comparison between Mesh and Tissue repairs in < 24hrs



Graph 2 : Post operation pain scale comparison between Mesh and Tissue repairs on day 3.



Graph 3: Post operation pain scale comparison between Mesh and Tissue repairs on day 7



Graph 4: Post operation pain scale comparison between Mesh and Tissue repairs on day 30

Table 5: Distribution of patients according postoperative complications

postoperative complications	Mesh repair (n=51)	Tissue repair (n=51)	p value (Fisher exact test)
wound infection	4	3	1
Hematoma	1	8	**0.03**
Seroma	9	1	**0.015**
Urinary retention	2	10	**0.02**
Recurrence	1	2	1
Testicular perfusion (Reduced)	1	2	1
Post op sperm count after 6mnths (Reduced)	2	1	1

Table 6: Distribution of patients according to post-operative hospital stay

Post op hospital stay	Mesh repair (n=51)	Tissue repair (n=51)	chi square test
<36 hours	48(53.93%)	41(46.06%)	χ^2=4.31
>36 hours	3(23.07%)	10(76.92%)	**p- 0.03**

Table 7: Distribution of patients according to days required for return to daily activities

Return to daily activities	Mesh repair (n=51)	Tissue repair (n=51)	Fisher exact test
<7 days	48(53.93%)	41(46.06%)	p value **0.049**
≥7 days	3(23.07%)	10(76.92%)	
(Mean±SD)	3.58±1.53	4.35±2.14	

DISCUSSION

We conducted a hospital based comparative study conducted among102 patients, 51 participants enrolled in Mesh repair and 51 for Herniorrhaphy presenting to the Department of General Surgery at tertiary health care center.

Of all groin hernias, 96% are inguinal and 4% are femoral. Most of the patients of hernia present with pain or discomfort and groin swelling especially when intra-abdominal pressure increases while coughing, exercise, or bowel movements. Choosing the best or most suitable groin hernia repair technique is a true challenge. Improvements in surgical technique and a better understanding of the anatomy and physiology of the inguinal canal have significantly improved outcomes for many patients[16]

In our study table 1 shows ,majority were found to be among the 31 to 35yrs age group i.e. 54(52.94%), followed by 26 to 30yrs age group 33(32.35%). There was no statistical difference between the two groups for age. p>0.05(0.61) not significant.

Contrary with our findings Manyilirah W et al where majority of age group was 20-29 and is 32.7% but p value was 0.234 and is above 0.05, not significant.

In our study as shown In table 2 Majority of the patients belonged to class V socio economic status 57(55.8%), followed by class III and IV constituted 15(14.7%) each, there is no statistically significant association between socio-economic status and operative procedure among patients under study. My study is contrary with H Shankar et al who studies risk factor of hernia in 200 patients and majority of patients come under class IV 74.5% (n=200) belonged to socioeconomic class IV.

As shown in table 3, among patients with indirect hernia 72.5% (n=102) majority underwent mesh repair 38(51.35%) and rest underwent mesh repair 13(46.42%). Statistically there is no significant association between type of inguinal hernia and the procedure used for surgical repair. Majority of cases are having indirect inguinal hernia 72.5 %(74/102) and remaining had direct inguinal hernia 27.4% (28/102) my study results comparable with JM Hay et al[176] 52.2% were indirect and 25.6% were direct and 23.2% are combined.

In this study as shown in table 4, Mean duration for mesh repair is 39.7± 4.3 minutes and Tissue repair is 41.8±4.6minutes with X^2 =6.6 and p value is <0.05 i.e. tissue repair is taking significantly longer duration than mesh repair. Similar to our finding study done by S P Sinha et al (164) mean duration for tissue repair (60.3 min) was more than mesh repair (45.6 min). Contrast to that PG Janu et al observed that mean duration for mesh repair (111 min) was more than tissue repair (91 min).

In present study as in table 5, postop complications like hematoma, seroma & urinary retention shows statistically significant difference between two groups. (p<0.05) but complications like wound infection, recurrence, testicular perfusion & post op sperm count after 6 months were not found statistically significant.(p>0.05).

Other studies like B.Kaynak et al. observed findings like wound infection, hematoma, seroma were found statistically not significant. B.S.Gedam et al shows recurrence was not significant. Testicular perfusion found not significant by S.G.Taylor et al. post op sperm count found not significant in two groups by Yavetz.H et al also.

As shown in table 6, Majority of the patients i.e., 89 have up to 36hrs hospital stay, of which majority were mesh repair 48(53.93%) Patients whose hospital stay was more than 36hrs is 13, of which majority were tissue repair 10 (76.92%) & this difference was statistically significant (p<0.05). S P Sinha et al[164] found the duration of hospital stay after non mesh repair (5.4 days) was significantly higher than after mesh repair (3.8 days; p= 0.003),There statistically significant association between postoperative hospital stay and type of surgical procedure.

In this study as shown in table 7, Days required to return to daily activity when compared with mean ±SD, 4.35±2.14 for tissue repair and is more than for Mesh group 3.58±1.53, there is statistically significant association between time taken to return to daily activities and surgical procedure.

B.S.Gedam et al also found significant difference between time taken to return daily activities and surgical procedure.

In this study as show in graph 1, 2, 3, 4 & 5. post-operative pain significantly more in tissue repair surgery as compare to mesh repair in first 24 hours, which was similar to study done by W.Manyilirah et al butnot found to be significant. Maximum pain was observed in tissue repair during the 3rd day post operatively, which was statistically significant in our study similarly with Ganesh Ganpatrao Degloorkar et al but the difference was statistically non-significant. On post op day 7, 30 & 90 maximum pain observed with mesh repair surgery which was statistically significant as compare to tissue repair.

These findings were similar to study done by B.S.Gedam et al which also shows post op pain with mesh repair was significantly higher than tissue repair on day 7, 30 & 90.

CONCLUSION

In our present study it was concluded that the results of inguinal hernia treatment with the Mesh repair are similar to that of Tissue repair in age group of 15-35 years of age. Postoperative pain is significantly less initially with Mesh repair but increased on day 7 and chronic pain is seen with mesh repair when compared with Tissue repair but is not significant statistically. Patients after Mesh repair get into daily basic activities sooner than Tissue repair. Tissue repairs does not use a mesh, this makes it cost effective. Most of the complications between 2 groups are not statistically significant except for seroma significant in mesh repair, hematoma and urinary retention significant in tissue repair.

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