

Research Article**A CLINICAL STUDY OF INGUINAL HERNIA AND COMPARISON BETWEEN OPEN MESH AND NON-MESH REPAIR****Aslam Basha K¹, Nahil Najfi²**

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Received date: 03-07-2026, Date of Acceptance: 26-07-2026,

Date of Publication: 12-08-2026

Abstract:

Background: Hernias are among the oldest surgical challenges and are currently the most commonly performed general surgical operations. Also, it can be argued that more progress has been made in hernia surgery in the last 15 years than has been made in the previous 1500 years. Many of the newer techniques, have demonstrated that when performed well' the recurrence rate should be relatively low. While staying aware of what it takes to prevent recurrence of a hernia, it is also important to focus on what it takes to allow the hernia patient to return to regular activities as quickly as possible.

Objective: The objective of this study is to know the risk factors, clinical presentations, and also the comparative study between open- mesh and non-mesh repair of inguinal hernia in one year duration of follow up.

Method: A total of 120 patients admitted in Basaveshwara Teaching And General Hospital attached to Mahadevappa Rampure Medical College, Kalaburagi.,

who met with both inclusion and exclusion criteria were studied from October 2018 to April 2020 including one year of follow-up period. A randomized comparative study of open mesh and non-mesh repair was done for 100 patients presenting with primary inguinal hernia with one year of follow-up period.

Results: Out of 120 patients who underwent inguinal hernia surgery, majority were men in their fourth, fifth and sixth decade. The common type was right indirect inguinal hernia 60%. Majority of the patients in the study were of uncomplicated type. Patients with irreducible hernia were 10 in number; Strangulated hernia was presented by 2 patients. Most of the patients from lower socio-economic group opted for non-mesh type of repair.

Out of these 120 patients, 100 patients were randomized and studied prospectively to compare non-mesh and mesh repair of inguinal hernia. Patients were followed for one year duration and complications

compared between the two groups. Except for two recurrence in non-mesh group no other significant difference in the complications noted.

Conclusion: Inguinal hernia being one of the most common surgical problems is most common in men in their fourth and fifth decade. Strain factors do have significant role in predisposition to hernia formation. After Randomized study, it was not possible to identify clearly or to rule out putative benefits of mesh repair in respect to short term outcomes.

Key Words: Inguinal hernia, direct, indirect. Mesh repair, non-mesh repair.

INTRODUCTION

A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. Hernia is derived from the Latin word for rupture.

Hernias are a common problem; however, their true incidence is unknown. About 75% of all hernias occur in the inguinal region. Two thirds of these are indirect and the remainder are direct inguinal hernias.

An indirect inguinal hernia is the most common hernia, regardless of gender. In men, indirect hernias predominate over direct hernias at a ratio of 2:1. Direct hernias are uncommon in women. Although femoral hernias occur more frequently in women than in men, inguinal hernias remain the most common hernia in women.¹

Today any new technique must be based on a careful evaluation of its benefits and costs; benefits must be measured in clinical, social and economic terms.

Similarly, benefits are accounted across the whole patient environment and across the whole healthcare system. It is no longer adequate to demonstrate that something 'works'; it must be tested in proper trials to eliminate confounding variables. Patients own their hernias and they must consent to participate in what are becoming increasingly complex trials to evaluate the new techniques.²

The inguinal hernia is a very common ailment amongst surgical patients, and irreducibility, obstruction and strangulation are its commonest complication encountered in surgical practice as acute emergency. The identification of risk factors like age, sex, type of hernia, presenting symptoms and associated preexisting medical illness helps in prioritizing such patients for admission. The delay in surgery in a case of complicated hernia increases the morbidity and mortality in such patients.³

Anterior repairs are the most common operative approach for inguinal hernias. Tension-free repairs are now standard and there are a variety of different types. Older tissue types of repair are rarely indicated nowadays. The results of these repairs have varied not for different methods but also for the same methods in the hands of different surgeons.

So this study is being done to evaluate the risk factors, clinical presentations, complications, management protocol and comparison between open mesh and non-mesh repair short term outcomes in one year follow up period.

MATERIAL AND METHODS

The data will be collected from Patients above 18 years visiting the surgery outpatient department and inpatient department in Basaveshwar Teaching and General Hospital (BTGH) attached to Mahadevappa Rampure Medical College, Kalaburagi, Karnataka.

Sample size:

One hundred twenty cases admitted and operated from all the surgical units during a period of October 2018 to April 2020 were studied.

Collection of Data:

All the patients presenting with inguinal hernia, which met with inclusion and exclusion criteria were selected for this study.

Inclusion Criteria

Patients presenting with inguinal hernia including those with complicated presentations to Basaveshwara Teaching and General Hospital attached to Mahadevappa Rampure Medical College, Kalaburagi.

For Comparative Study between Mesh and Non-Mesh repair, uncomplicated primary inguinal hernias considered.

1. Patients diagnosed as having inguinal hernia aged 18yrs and above giving valid written informed consent.
2. Patients with unilateral or bilateral inguinal hernia.

Exclusion criteria

1. All the patients less than 17 years were excluded from the study.
2. Patients who refused for surgery were not included in the study.

And for comparative study, patients with complicated inguinal hernias, coagulation abnormalities, anticoagulation treatment and patients for whom anesthesia was considered unsuitable were excluded.

So, this study consisted of one hundred and twenty patients, who met with these criteria. Informed consent was taken from each patient before any investigations or surgery.

A thorough history was taken in all patients. A detailed clinical examination was done. The routine investigation was also done. The patients underwent surgery and post-operative course was noted.

A comparative study between the 100 patients undergoing open mesh and non-mesh repair was done based on randomization. Just before taking the patient for surgery, sealed envelopes (written mesh/ non mesh) was opened and thus randomized. Randomized patients were followed for one year duration post-operatively and outcomes compared.

All the information was taken in a proforma, designed for the study. Important data pertaining to each case is shown in the master chart. Ethical clearance was taken from the ethical committee prior to conducting the study.

Statistical Analysis: Descriptive and inferential statistical analysis has been carried out in the present study. The results were analysed by using SPSS version 18 (IBM Corporation, SPSS Inc., Chicago, IL, USA). Results on continuous measurements were presented on Mean $\pm$ SD (Min-Max) and results on categorical measurements were presented in Frequency (Percentage). Normality of

the data was assessed using Shapiro-Wilk test. Inferential statistics like Chi-square test/Fischer exact test and Independent t test was used. P value less than 0.05 was considered to be significant.

RESULTS

The youngest patient included in this series was 21 years and the eldest was 82 Year old. Almost 55.83% of patients were in 41-60 year age group.

Only 2% of patients in this study were females, as compared to males who made 98% of total cases.

The study showed that hernia was more common on right side 70.83%. Left sided

Hernias comprised about 20 %, whereas, 9.17% was bilateral.

Most of the swellings were symptomatic with 64.16 %, others developed pain in 32.5%, and vomiting in 9.16%

Most of the swellings were reducible with 82%, and the others were obstruction with 8%, irreducibility with 8% and strangulation with 2%.

In this study, 83 cases were indirect inguinal hernia which contributed about 69% of the cases collected. Less common was of direct type, constituted about 31% of the cases collected.

Table 1: Strain factor

Strain factor	Frequency (n)	Percentage (%)
Coughing	12	10
Constipation	6	5
Lifting heavy weight	24	20
Prostatism	18	15

In this study 15% of patients showed the features of prostatism, 5% had Constipation, 10% had chronic cough, 20% of patients work was lifting heavy weights.

Table 2: Surgery

Surgery	Frequency (n)	Percentage (%)
Bassini	56	46.67
Mesh	64	53.33
Total	120	100

Majority of the patients in this clinical study underwent mesh type of repair. Bassini repair constituted 47%. Open mesh repair patients were 55 in number.

Table No.3: Comparison of duration of stay between two types of surgery

Duration of stay	N	Mean	Std. Deviation	P value
Bassini	45	6.60	2.18	0.561
Mesh	55	6.83	1.86	

No significant difference is observed for duration of stay

Table No.4: Comparison of complications at different time period

	1 week		1 month		6 months		1 year	
	Bassini	Mesh	Bassini	Mesh	Bassini	Mesh	Bassini	Mesh
Edema	5	3	-	-	-	-	-	-
Hematoma	3	2	-	-	-	-	-	-

Hydrocele	1	0	-	-	-	-	-	-
Infection	1	0	-	-	-	-	-	-
Seroma	2	2	-	-	-	-	-	-
Scrotal Abscess	1	0	-	-	-	-	-	-
Scrotal hematoma	1	0	-	-	-	-	-	-
Sinus formation	1	0	-	-	-	-	-	-
Neuralgia	-	-	3	3	1	2	-	-
Scar tenderness	-	-	1	0	-	-	-	-
Recurrence	-	-	-	-	-	-	2	0
	0.347		0.518		0.499		0.114	

No statistically significant difference noted for complications at different time period

Table No.5: Comparison of strain factor

Strain factor	Bassinin(%)	Mesh n(%)	P value
Coughing	0	10(18.19)	0.001*
Constipation	0	4(7.28)	
Lifting heavy weight	21(46.67)	0	
Prostatism	0	17(30.90)	
Absent	24(53.33)	24(43.63)	
Total	45(100)	55(100)	

Statistically significant difference noted for comparison of strain factor

Table No.6: Comparison of type of hernia

Type of hernia	Bassinin(%)	Mesh n(%)	P value
Direct	3(6.67)	27(49.09)	0.001*
Indirect	42(93.33)	28(50.91)	
Total	45(100)	55(100)	

Statistically significant difference noted for comparison of type of hernia

Table No.7: Comparison based on age

Age (Years)	Bassinin(%)	Mesh n(%)	P value
21-40	22(48.88)	0	0.001*
41-60	23(51.12)	31(56.37)	
61-80	0	22(40)	
>80	0	2(3.63)	
Total	45(100)	55(100)	

Statistically significant difference noted for comparison of age

COMPARISON OF STUDY GROUPS

Hundred patients were randomized. Among the 55 patients, whose envelopes showed mesh repair, three refused the procedure; and two did not return back during follow-up period. So, after randomization, 45 patients belonged to non mesh group and 55 in mesh group.

Table-8 Comparison of study group

	NON-MESH REPAIR(44)	MESH REPAIR(40)
Age group	20-90	18-85
Prostatism	6	5
Constipation	5	4
Coughing	5	7
Diabetes	5	3
Use of steroids	0	1
Indirect hernia	36	29
Direct hernia	8	11

The above table shows the comparison of patients demography who participated in the randomized prospective trail for comparison between open mesh and non mesh repair. In this study, patients with primary uncomplicated type of inguinal hernias participated.

Hundred patients were randomized for the trail. Out of 55 patients who participated, and were asked to undergo mesh repair as per randomization, three patients changed their mind and opted out and two patient

missed in follow-up period. So, at the end of the study, 45 patients with non mesh repair and 50 patients with open mesh repair were available till one year of follow-up period.

Age, type of work and type of hernia were equally distributed between the groups. Patients in non-mesh group underwent Bassini repair. The patients after surgery were followed-up for one year duration at 1,6 and 12 months interval

COMPLICATIONS IN FOLLOW-UP PERIOD

Table-9 Complications in follow up period.

Complications	Non mesh	Open mesh
Seroma	2 (4.54)	3 (7.5)
Ecchymosis	4 (9.09)	5 (12.5)
Haematoma	2 (4.54)	3 (7.5)
Infection	1 (2.27)	0
Sinus formation	1 (2.27)	0
Scrotal edema	6 (13.63)	2 (5)
Scrotal infection	1 (2.27)	0
Urinary retention	6 (13.63)	9 (22.5)
hydrocele	1 (2.27)	0
Scar tenderness	1 (2.27)	0
Neuralgia	2 (4.54)	5 (12.5)

Recurrence	1 (2.27)	0
Death	0	0

The above table shows the cumulative complication in mesh and non-mesh group in one year of follow-up period. The comparison was done using Chi Square test and p value compared.

Finding p value for each one of the complications compared, none of them showed any significance.

DISCUSSION

In the present study a total of 120 patients, including 10 patients with bilateral inguinal hernia were admitted, investigated, operated and followed up.

In this study 98 % of the patients were male and less than 2% were female which is almost same as the study done by O'Dwyer⁴. The low incidence of inguinal hernia in females is due to the difference in the embryology and anatomical contents of the inguinal canal.

The present study showed 24 patients associated with lifting heavy weights, 12 patients with history of chronic cough, 18 with prostatism and 6 with constipation. My study correlates well with the study done by Vrijland⁵ and Chandaramani⁶.

The study also reveals the fact that the factors causing chronic increase in the intra abdominal pressure increases the risk of occurrence of inguinal hernia.

Though it is obvious that inguinal hernia patient's chief complaints is swelling in the region of the groin, some sort of discomfort or pain is always associated as shown in the table above. In this present study, pain or discomfort was present in 39 patients as compared to Chandiramani⁵ series.

Also the study reveals that complicated presentation of inguinal hernia is less common in this modern era of health awareness. People seeking for surgery before getting complicated are admirable. In my study only two patients presented

with strangulated type of inguinal hernia.

The present study showed that right sided indirect inguinal hernia is the commonest type encountered. Sidhu⁷ series is also with same results.

Present study:

In this present study, the age range of the patients in mesh group was 40-85 years and non-mesh group was 20-60 years, who were randomized and operated. Non-mesh repair included Bassini repair using prolene. In the mesh repair mesh was placed on lay by open method.

Post operatively, there was no significant difference between the complaints of pain, analgesia requirement in both the study group.

Also the time taken for patients to get back to normal activity was identical in the two groups.

There was no statistical difference between the two groups in the rate of early complications.

Only two case of recurrence resulted after non-mesh repair which was lateral to the deep inguinal ring and was judged to be due to inadequate tightening at the deep ring.

Koukourou et. al.⁸ study

In their study, one hundred men underwent 105 repairs by consultant surgeons and registrars: there were 54 mesh and 51 non mesh repair. Demographics in both groups were similar at the start of the trail, as were the types of hernia. The pain scores at 24, 48 and 72h were similar, as were the

duration of analgesia requirement. There was no difference in early or late complication. Return to normal activity in each group was also similar with a mean time of 5 weeks. The recurrence rate in both groups was comparable: 4% after mesh repair and 4% after non-mesh repair at 1 year review.

EU Hernia Trialist Collaboration⁹

Abdominal wall reinforcement using various types of mesh is increasingly popular in open inguinal hernia repair. Despite wide adaptation, few rigorous evaluations have been carried out to compare these techniques with traditional suture techniques. Fifteen such trials were identified, involving over 4000 participants, all reported in the last 5 years. In the majority of these trials, the tension free or Lichtenstein repair was the most frequently performed mesh technique, reflecting the most widely adopted open mesh operation.

In all these studies, it was not possible either to identify clearly or rule out putative benefits in respect of shorter operating time, less short term pain and more rapid recovery. Post operative complications appear similar for both open groups, and there was no evidence that use of mesh increases the specific risk of deep infection and chronic pain. While the data on recurrence should be viewed cautiously because of the variability of length of follow-up, method of ascertainment and reported prevalence.

Van Den Tol Study¹⁰

There was no significant difference between the non-mesh and mesh groups regarding post operative wound infection, wound dehiscence, hematoma and seroma. In the non-mesh group one patient suffered from urinary retention and one

patient from pneumonia. Apart from recurrence there were no long term complications.

CONCLUSION

Inguinal hernia being one of the most common surgical problems is most common in men in their fourth and fifth decade. Strain factors do have significant role in predisposition to hernia formation. After Randomized study, it was not possible to identify clearly or to rule out putative benefits of mesh repair in respect to short term outcomes.

Though it is advised, particularly in training institution, use mesh because recurrence rate is low, the present study results indicate that this is not the case of early recurrence, thus emphasizing the importance of training and supervision, no matter which technique is employed. Early recurrence is likely to represent technical failure. And also, studies on hernia surgeries, says that long term follow-up is required for full determination of recurrence rate.

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