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ORIGINAL ARTICLE

Comparison of non-mesh vs mesh technique for inguinal hernias. A randomized clinical study.

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ABSTRACT… Objective: To assess the efficacy of mesh with non-mesh techniques in the management of primary inguinal hernias. **Study Design:** Randomized Clinical Trail. **Setting:** Teaching Hospital Peshawar. **Period:** March 2022 till January 2023. **Methods:** This RCT study was conducted 166 on individuals with primary, reducible inguinal or inguino-scrotal hernias based on predetermined inclusion criteria. For the purpose of hernia repair, they were split into two groups: non-mesh and mesh repair. Computer-generated random numbers were contained in sealed opaque envelopes. Acute groin discomfort, the amount of time needed to return to duty, and sequelae were evaluated as clinical outcomes. SPSS version 23 was used to enter and analyzed the data. **Results:** Age range for mesh group was 33-65 while for non-mesh 34-65. Observed Male to female ratio was 9:1. In both groups, there was no discernible difference in pain. There were notable variations in the amount of time needed to resume work. **Conclusion:** Both repairs techniques are effective to treat hernias but mesh repair has superior results.

Key words: Hernia, Inguinal, Mesh, Repair, Technique.

INTRODUCTION

Hernia repairs are the most common abdominal wall surgery, and they are done for a number of reasons.[1-2] Numerous medical conditions, such as trauma and underlying illnesses that weaken the abdominal wall, can cause hernias. Based on where in the body they occur, hernias can be classified into several different types. The World Society of Emergency Surgery (WSES) categorizes abdominal wall hernias into two general categories: groin hernias and ventral hernias, based on anatomical location.Groin hernias are a type of hernia that affect the lower half of the body, they can be inguinal, femoral, or indirect inguinal hernias.The category of ventral hernias includes lumbar, incisional, umbilical, epigastric, and Spigelian hernias.[2-5] The two most common forms of groin hernias are inguinal (96%) and femoral (4%). They are incredibly prevalent, with a 27% lifetime risk in men. Obesity, genetic disorders, pregnancy, bowel trauma, and prolonged heavy lifting are risk factors for ventral hernias.[6-11]

Upon diagnosis, patients are treated with surgery to repair the hernia or closely monitored to prevent it from getting worse. Both traditional non-mesh repairs (herniorrhaphy) and mesh (hernioplasty) are frequently used, with high-income nations favoring mesh procedures more and more. The most common surgical procedure uses a mesh to seal the patient's defect. The non-mesh approach is said to provide better results, such as little to no postoperative groin pain and almost no recurrence rates. It is a straightforward and cost-effective method that is better suited for resource-constrained societies than mesh-based.[12-15]

The purpose of the study is to compare the efficacy of non-mesh and mesh techniques for the management of primary inguinal hernias. Acute groin pain, the amount of time needed to return to

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duty, and complications were evaluated as early clinical outcomes.Up to six months following surgery, the participants were monitored.

The researchers postulate that adult patients undergoing non-mesh inguinal hernia repair have a different mean postoperative pain score or mean postoperative day of return to work than those undergoing mesh inguinal hernia repair.

METHODS

The institution's Ethics Committee gave its approval to this RCT study (428/LRH/MTI). The eligible patients were divided into two groups, one for mesh repair (Lichtenstein procedure) and the other for non-mesh repair (Shouldice procedure), using sealed opaque envelopes containing computer-generated random numbers. Of these subjects, 83 underwent mesh management, whereas the remaining 83 patients underwent non-mesh treatment. Patients aged 20 and above suffering from primary, reducible inguinal or inguino-scrotal hernia were included in the study whereas individuals with giant inguino-scrotal hernias and obstructive uropathy were not allowed to participate in the study. The study was carried out in the teaching hospital's surgical unit from March 2022 till January 2023 in which overall 166 participants with inguinal hernia were included.

Acute groin pain was recorded on VAS after surgery. Time taken to return to normal work in days was recorded. Once the data was entered into SPSS 23, the results were analyzed using percentages and frequencies among the various variable categories.The student's t-test was used to compare the arithmetic means and standard deviations of the quantitative variables in each group in order to assess them.Chi-square was used to compare the percentages that were computed for the remaining prognostic variables. The comparison of the groups operating with and without mesh was done using the relative risk (RR) and 95% confidence intervals.

RESULTS

166 patients in total who were lost to follow-up were included in the study, in group A mesh was performed on 83 patients with age ranging 33-65 while on group B 83 without mesh with age ranged from 34-65 was performed (Table-I). Male to female ratio was 9:1. Although gender imbalance was the result of chance, it is useful to consider how pain differs between both genders.

Although there was no discernible difference in pain between the two groups, each patient experienced pain at a different level. Regarding fluctuating pain, 0 represents no pain, 1 to 3 represents mild pain, 4 to 7 represents moderate pain, and 8 to 10 represents severe pain. Group B's pain threshold was very high. Regarding the intensity of pain, there was no discernible difference in the gender scores in either group.

Compared to patients who underwent mesh technique surgery, patients who did not receive mesh had a nearly five-fold higher risk of wound infection (ARR=5.4% NNT=16.1). One wound infection was found in each of the sixteen patients treated without the use of mesh. Recurrence and work reinsertions are shown in the Table-II. There was no significant difference in the presence of seromas at different evolution times between the two patient groups (p=0.6).

When patients were categorized based on the type of surgery (with or without mesh), significant differences were found in the recovery times, with patients undergoing mesh technique surgery recovering faster (p<0.0001). The mean duration (in days) for returning to work depending on the type of surgery was 30 days for mesh and 90 days for non-mesh (p=<0.0001). When patients were categorized based on the type of operation, notable variations were seen in the recovery time before returning to work. Patients who underwent mesh surgery were able to resume work soon.

Age	Group A	Group B	
Range	33-65	34-65	P=0.08
Median	52	51	

Table-I. Age range and median of the participants in years

Variables	Group A (With Mesh)	Group B (Without Mesh)	P-Value
Wound infection	02	10	0.04
Recurrence	00	00	-
Seroma formation	03	00	0.06
Urinary retention	00	00	-
Work reinsertion In Hours(mean ± DS)	21 (26.2)	53.7 (41.5)	0.001

Table-II. Patient's postoperative complication regards to type of surgery

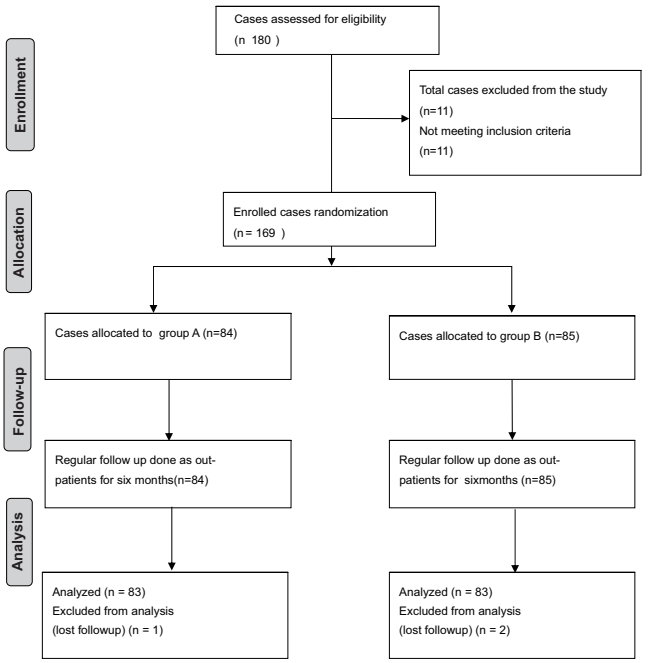

Figure-1. Methodology flow diagram

DISCUSSION

It might be challenging to choose an operation to repair a hernia because there are so many different methods available and none of them stand out as being clearly superior to the others.

In the past century, little has changed with regard to Bassini's 1887 conventional hernia repair procedure. Along with the most widely utilized non-mesh procedures like Shouldice and Mc Vay, among others, annual figures from several nations reveal a recurrence rate of 10-15%.[8-10]
The following fundamental standards guide the selection of the technique:
1) The patient: the tissue's stiffness as well as the tension to which the tissue has been exposed;
2) The hernia: A tiny indirect hernia with an intelligent muscle wall is very different from a serious groin collapse with multiple recurrences;
3) The surgeon's degree of training, experience, and surgical specialization.[12-18]

Our research revealed a substantial difference between the two hernia repair approaches in terms of the likelihood of wound infection. The two methods required about the same amount of time to get back to normal living. This was comparable to what Beffa et al[11] and Wamalwa et al.[15] found. All of Wamalwa[15] study patients took an average of four days to return to their daily activities, while Barth patients took nine days on average. Results regarding pain are similar to the other studies done by O'Dwyer PJ[5], It had been noted that the mesh group's chronic pain and any ongoing surgical pain were unremarkable. Since the goal of the hernia procedure is to lessen the chance of recurrence in addition to repairing the existing hernia defect, our study revealed no recurrence. According to research by Brooks[12], depending on the location, kind, and clinical characteristics of the hernia, response rates for primary repairs may range from 0.5% to 15%.

These could be brought on by the operating surgeon's skill, which in this study did not significantly differ from the length of the procedure.

CONCLUSION

Both mesh and non-mesh repairs are efficient surgical methods for treating hernias, and they have several advantages.Although non-mesh repairs have a lower risk of causing seroma formation, mesh repairs are likely to decrease the likelihood of wound infection and the amount of time needed for daily activities.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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3	Waqar Alam Jan	Data collection and paper write up.	
4	Alina Zaidi	Data collection and paper write up.	
5	Muhammad Ayaz	Study designing and drafting.	
6	Lubna Gul	Study designing and drafting.	