

Original Research

Assessment of efficacy of Sutureless mesh repair of inguinal hernia: A clinical study

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ABSTRACT:

Aim- To assess the efficacy of the new sutureless mesh repair technique. **Material and methods-** The study was conducted on 50 participants aged 25 to 55 with uncomplicated inguinal hernias, ensuring the exclusion of individuals with systemic illnesses. Comprehensive demographic data were gathered from all participants. The surgical procedure involved placing a lightweight prolene mesh on the posterior inguinal wall without the use of sutures or adhesive. The operations were performed under spinal anesthesia, with postoperative care consisting of intravenous fluids for the first 12 hours. Pain levels were measured using a visual analogue scale (VAS) on the first postoperative day. Sutures were removed after 1 week, followed by a comprehensive follow-up examination for each participant. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. **Results-** The current investigation involved the evaluation of 50 individuals aged between 25 and 55 years, with a mean age of 32.6 years. Among the participants, 64 percent were within the 25 to 35-year age group, 16 percent fell into the 36 to 45-year category, and 20 percent were aged 46 to 55 years. While classifying patients on the basis of content, it was observed that gut was present in 24 percent of the cases, while omentum was seen in 76 percent of the cases. Punched out defect in transversalis fascia was seen in 24 percent of the cases. Postoperative pain was encountered by 8 percent of the patients, and hematoma formation occurred in 4 percent. A recurrence rate of 2 percent was documented among the patients. **Conclusion-** Sutureless tension-free mesh repair has proven to be an effective method for treating inguinal hernia cases, demonstrating success in minimizing postoperative discomfort and ensuring favourable outcomes

Keywords- hernia, inguinal, suture

Received: 14 April, 2023

Accepted: 16 May, 2023

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This article may be cited as: Arora H. Assessment of efficacy of Sutureless mesh repair of inguinal hernia: A clinical study. J Adv Med Dent Scie Res 2023;11(6):159-162.

INTRODUCTION

Hernias are one of humanity's oldest known medical conditions, with inguinal hernias being particularly common and predominantly affecting males. Annually, approximately 20 million inguinal hernia repairs are performed worldwide, underscoring the significant surgical relevance of this issue¹. The evolution of hernia surgery has seen considerable advancements, culminating in the development of tension-free repair techniques in the twentieth century. While laparoscopic repairs are an option, they involve a steep learning curve, leaving open repair as the primary treatment method. Modern hernia repair is guided by five key principles: performing the surgery under antiseptic or aseptic conditions, high ligation of the hernial sac, tightening the internal ring,

reconstructing the posterior inguinal floor, and ensuring a tension-free repair. Reconstructing the posterior inguinal wall with excessive tissue tension is believed to be a primary cause of hernia recurrence^{2,3,4}.

To reduce this tension, synthetic non-absorbable mesh grafts have been increasingly utilized to strengthen the posterior inguinal wall. The adoption of alloplastic materials for hernia repair began with pioneers like Stock in 1954 and Usher in 1962. In 1970, Lichtenstein introduced his revolutionary concept of tension-free repair using synthetic mesh for primary inguinal hernias. This technique has since been enhanced by Gilbert's method of tensionless and sutureless repair.⁵

Today, hernia repairs primarily fall into two categories: sutured (traditional Lichtenstein) and sutureless techniques. The sutureless approach has garnered attention for its associated benefits of reduced morbidity and lower recurrence rates. Improvements in surgical technique and the development of advanced prosthetic materials have notably enhanced outcomes. Nonetheless, there remain conflicting views regarding sutureless techniques, leading to hesitation among some surgeons to fully embrace this method^{6,7}. Therefore, the aim of our study was to assess the efficacy of the new sutureless mesh repair technique.

MATERIALS AND METHODS

The study was conducted on 50 participants aged 25 to 55 with uncomplicated inguinal hernias, ensuring

the exclusion of individuals with systemic illnesses. Comprehensive demographic data were gathered from all participants. The surgical procedure involved placing a lightweight prolene mesh on the posterior inguinal wall without the use of sutures or adhesive. Participants fasted for eight hours before surgery, and the surgical site was prepared the day prior. The operations were performed under spinal anesthesia, with postoperative care consisting of intravenous fluids for the first 12 hours. Pain levels were measured using a visual analogue scale (VAS) on the first postoperative day. Sutures were removed after 1 week, followed by a comprehensive follow-up examination for each participant. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

Table 1: Age-wise distribution of subjects

Age Group (Years)	Number of Subjects	Percentage
25-35	32	64
36-45	8	16
46-55	10	20
Total	50	100
Mean Age: 32.6 years		
Standard Deviation (SD): ± 10.21 years		

The current investigation involved the evaluation of 50 individuals aged between 25 and 55 years, with a mean age of 32.6 years. Among the participants, 64 percent were within the 25 to 35-year age group, 16 percent fell into the 36 to 45-year category, and 20 percent were aged 46 to 55 years.

Table 2: Categorization of patients based on hernia site

Site of hernia	Frequency	Percentage
Right	33	66
Left	17	34

Right-sided involvement was noted in 66 percent of the cases, whereas left-sided involvement was observed in 34 percent.

Table 3: Patient distribution by content

Content	Frequency	Percentage
Gut	12	24
Omentum	38	76

While classifying patients on the basis of content, it was observed that gut was present in 24 percent of the cases, while omentum was seen in 76 percent of the cases.

Table 4: Patient distribution by posterior wall status

State of posterior wall	Frequency	Percentage
Punched out defect in transversalis fascia	12	24
Normal	38	76

Punched out defect in transversalis fascia was seen in 24 percent of the cases.

Table 5: Postoperative pain score across different time intervals

Time Interval	Mean Postoperative pain score	SD
1 hour	6.02	2.58
6 hour	3.99	2.35
12 hour	3.72	2.11

Mean postoperative pain at 1 hour postoperatively, 6 hour postoperatively and 12 postoperatively was found to be 6.02, 3.99 and 3.72 respectively.

Table 6: Complications

Complication	Number	Percentage
Post operative pain	4	8
Hematoma	2	4
Recurrence	1	2

Postoperative pain was encountered by 8 percent of the patients, and hematoma formation occurred in 4 percent. A recurrence rate of 2 percent was documented among the patients.

DISCUSSION

Inguinal hernia repair ranks among the most frequently executed surgical interventions globally, especially in adult male populations. Historically, the procedure has relied on sutures to anchor the mesh that reinforces the compromised area, with the objective of minimizing recurrence rates and ensuring enduring stability. Nevertheless, the application of sutures may lead to postoperative complications, including chronic pain, a sensation of foreign bodies, and the risk of nerve injury^{8,9}.

Recently, techniques for sutureless mesh repair have emerged as a minimally invasive alternative. These methods forgo sutures, depending instead on the natural integration of the mesh with surrounding tissue for support. The key benefits of this approach include shorter operative durations, diminished postoperative discomfort, and potentially expedited recovery, rendering it an attractive choice for both healthcare providers and patients¹⁰. Despite its increasing acceptance, the long-term effectiveness of sutureless mesh repair concerning outcomes and complication rates continues to be an area of clinical inquiry and investigation. This study seeks to evaluate the effectiveness of sutureless mesh repair for inguinal hernias, concentrating on variables such as postoperative pain, recovery duration, recurrence rates, and overall patient quality of life¹¹.

The current investigation involved the evaluation of 50 individuals aged between 25 and 55 years, with a mean age of 32.6 years. Among the participants, 64 percent were within the 25 to 35-year age group, 16 percent fell into the 36 to 45-year category, and 20 percent were aged 46 to 55 years. Right-sided involvement was noted in 66 percent of the cases, whereas left-sided involvement was observed in 34 percent. While classifying patients on the basis of content, it was observed that gut was present in 24 percent of the cases, while omentum was seen in 76 percent of the cases.

In a similar study by Kumar D (2020)¹², 50 patients aged between 20 and 50 years were assessed, with a mean age of 25.7 years. The majority of patients, 52 percent, were in the 20 to 30-year age group, while 30 percent were in the 41 to 50-year age group. Right-sided hernia was observed in 70 percent of the cases, and left-sided hernia in 30 percent. Classification based on content revealed that gut was present in 14 percent of the cases, whereas omentum was observed in 86 percent.

The current study evaluated 50 individuals, finding that a punched-out defect in the transversalis fascia

was present in 24% of the cases. In comparison, a similar study conducted by Keshari AK et al. 2020¹³, which involved 100 participants, reported a punched-out defect in 19% of cases. Also, the mean postoperative pain scores were recorded as 4.99, 3.96, and 2.13 at 1, 6, and 12 hours post-surgery, respectively. These results are similar to those found in our study, where the mean postoperative pain scores were 6.02, 3.99, and 3.72 at the same time intervals.

In our study, postoperative pain was reported by 8 percent of patients, hematoma formation occurred in 4 percent, and the recurrence rate was 2 percent. In comparison, the study by V Maruti Sankar Reddy et al. (2020)¹⁴ found that pain was experienced by 6 percent of patients, hematoma formation occurred in 2 percent, and recurrence was observed in 3 percent.

Therefore this study provides valuable insights into the sutureless mesh repair technique for inguinal hernias, demonstrating its potential benefits in terms of reduced operative time and postoperative discomfort. The demographic and clinical findings align closely with similar studies, although some variations in pain levels, hematoma formation, and recurrence rates were noted. The comparable results in mean pain scores and defect presence underscore the reliability of this approach. Continued research and longer follow-up periods are essential to further validate the long-term efficacy and safety of sutureless mesh repair, ultimately guiding best practices and improving patient outcomes in hernia repair surgeries.

CONCLUSION

In conclusion, sutureless tension-free mesh repair has proven to be an effective method for treating inguinal hernia cases, demonstrating success in minimizing postoperative discomfort and ensuring favourable outcomes.

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