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Original Research Article

COMPARISON BETWEEN DARNING TECHNIQUE AND MESH HERNIOPLASTY IN INGUINAL HERNIA REPAIR IN A TERTIARY CARE CENTRE

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ABSTRACT

Background: Inguinal hernia is one of the most common surgical conditions encountered worldwide and accounts for a significant proportion of general surgical procedures. Various operative techniques have been developed for hernia repair, among which darning repair and mesh hernioplasty are commonly practiced. Selection of an appropriate surgical technique is important to reduce postoperative complications, recurrence, pain, and duration of hospital stay while ensuring effective reinforcement of the posterior wall of the inguinal canal. **Aims:** To compare the surgical outcomes of darning repair and mesh hernioplasty in patients undergoing inguinal hernia repair.

Materials and Methods: This prospective comparative study was conducted in the Department of General Surgery over a duration of 15 months. A total of 54 patients diagnosed with uncomplicated inguinal hernia were included in the study and divided into two groups of 27 patients each. Group D underwent darning repair, while Group M underwent mesh hernioplasty. Detailed clinical history, type of hernia, operative duration, postoperative pain score, complications, duration of hospital stay, were recorded. Postoperative pain was assessed using Visual Analog Scale (VAS). Patients were followed periodically after surgery to evaluate recovery and recurrence. Statistical analysis was performed using SPSS software version 25, and a p-value less than 0.05 was considered statistically significant.

Results: Mean operative duration was significantly shorter in the darning group compared to the mesh hernioplasty group (48.6 ± 6.4 minutes vs 62.3 ± 7.1 minutes, p <0.001). Postoperative pain scores were lower in the mesh hernioplasty group during follow-up. Postoperative complications such as seroma formation and wound infection were slightly higher in the darning group, although the difference was not statistically significant. Mean duration of hospital stay was 4.2 ± 1.1 days in the darning group and 3.6 ± 0.9 days in the mesh group. Recurrence was observed in 3 (11.1%) patients in the darning group and 1 (3.7%) patient in the mesh hernioplasty group during follow-up.

Conclusion: Mesh hernioplasty demonstrated better postoperative outcomes with lower pain scores, shorter hospital stay, and lower recurrence rates compared to darning repair. However, darning repair required shorter operative duration and may still be useful in selected patients. Mesh hernioplasty remains an effective and reliable technique for inguinal hernia repair.

Keywords: Darning repair, Hernia recurrence, Inguinal hernia, Mesh hernioplasty, Postoperative complications, Visual Analog Scale.

INTRODUCTION

Inguinal hernia is one of the most frequently encountered surgical conditions worldwide and constitutes a major proportion of elective general surgical procedures. It occurs due to protrusion of abdominal contents through a weakened area of the inguinal canal, resulting in swelling and discomfort in the groin region.[1] Inguinal hernias are more common in males because of the anatomical weakness associated with descent of the testes through the inguinal canal during embryological development.[2] Factors such as advancing age, chronic cough, constipation, heavy lifting, obesity, smoking, and increased intra-abdominal pressure contribute significantly to the development of inguinal hernia.[3]

Clinically, patients commonly present with groin swelling, dragging pain, or discomfort that increases on standing, coughing, or straining.[4] Complications such as incarceration, obstruction, and strangulation may occur if timely surgical intervention is not performed. Surgical repair remains the definitive treatment for inguinal hernia, aiming to restore abdominal wall integrity, relieve symptoms, and prevent recurrence.[5]

Over the years, several operative techniques have been developed for inguinal hernia repair. Traditional tissue-based repairs such as Bassini's repair, Shouldice repair, and darning repair were commonly performed before the introduction of prosthetic mesh techniques.[6] Darning repair involves reinforcement of the posterior wall of the inguinal canal using non-absorbable sutures woven between the conjoint tendon and inguinal ligament, creating a mesh-like support without the use of synthetic material. This technique is relatively economical, technically simple, and useful in contaminated surgical fields where mesh placement may be avoided.[7,8]

The advent of mesh hernioplasty revolutionized inguinal hernia surgery by introducing tension-free repair techniques. Mesh hernioplasty, particularly the Lichtenstein tension-free mesh repair, has become widely accepted because of its lower recurrence rates and improved postoperative outcomes.[9] Placement of a synthetic mesh strengthens the posterior wall without creating tissue tension, thereby reducing postoperative pain and recurrence. However, mesh-related complications such as chronic groin pain, foreign body sensation, infection, fibrosis, and increased cost remain important concerns.[10]

Despite the widespread use of mesh hernioplasty, tissue-based repairs such as darning repair continue to be practiced in selected cases, especially in resource-limited settings and situations where mesh use is contraindicated. The choice between these techniques depends on multiple factors including surgeon preference, patient affordability, operative findings, and risk of complications.[11] Limited regional studies have directly compared postoperative outcomes, complications, and recurrence between these two techniques. Comparative evaluation of both procedures is therefore important to determine their effectiveness and suitability in clinical practice.

Aims and Objectives

- To compare the surgical outcomes of darning repair and mesh hernioplasty in patients undergoing inguinal hernia repair.

MATERIALS AND METHODS

This prospective comparative study was conducted in the Department of General Surgery at Sree Mookambika Institute of Medical Sciences over a period of 15 months from January 2025 to March 2026. Written informed consent was obtained from all patients prior to inclusion in the study.

Inclusion Criteria

- Patients aged more than 18 years.
- Patients diagnosed with unilateral uncomplicated inguinal hernia.
- Patients willing to undergo surgery and participate in the study.
- Patients fit for elective surgical intervention.

Exclusion Criteria

- Patients with recurrent and bilateral inguinal hernia.
- Patients with obstructed, strangulated, or incarcerated hernia.
- Patients with severe systemic illness unfit for surgery.
- Patients with local skin infection at the operative site.
- Patients unwilling to participate in the study.

A total of 54 patients diagnosed with uncomplicated inguinal hernia were included in the study. Patients were divided into two groups consisting of 27 patients each. Group D underwent darning repair, while Group M underwent mesh hernioplasty. Patients were admitted after detailed clinical evaluation including history taking, general physical examination, and local examination of the hernia. Routine laboratory investigations such as complete blood count, blood sugar, renal function tests, urine analysis, electrocardiogram, and chest radiograph were performed wherever indicated. Ultrasonography was done in selected patients when diagnosis was uncertain.

All surgeries were performed under spinal anesthesia using standard aseptic precautions. The choice of surgical technique was based on study allocation. In the darning repair group, the posterior wall of the inguinal canal was reinforced using continuous non-absorbable polypropylene sutures placed between the conjoint tendon and inguinal ligament in a mesh-like fashion. In the mesh hernioplasty group, a polypropylene mesh was placed over the posterior wall of the inguinal canal using the Lichtenstein tension-free technique.

Operative duration, intraoperative findings, and immediate postoperative complications were documented.

Postoperative monitoring included assessment of pain using the Visual Analog Scale (VAS), wound condition, seroma formation, hematoma, wound infection, urinary retention, and duration of hospital stay. Patients were followed up periodically after discharge at regular intervals to evaluate wound healing, return to normal activity, chronic groin pain, and recurrence of hernia. All findings were recorded in a structured proforma.

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) software version 25. Quantitative variables were expressed as mean ± standard deviation, while qualitative variables were expressed as frequency and percentage. Student's t-test and Chi-square test were used for comparison between the two groups. A p-value less than 0.05 was considered statistically significant.

RESULTS

Majority of patients belonged to the 41–60 years age group in both study groups. Male predominance was observed, reflecting the higher incidence of inguinal hernia among males. No statistically significant difference was noted between the groups with respect to age and gender distribution. (Table 1)

Table 1: Age and gender distribution of study population (n = 54)

Variable	Group D n (%)	Group M n (%)	p-value
21–40 years	7 (25.9%)	6 (22.2%)	0.88
41–60 years	15 (55.6%)	16 (59.3%)	
>60 years	5 (18.5%)	5 (18.5%)	
Male	25 (92.6%)	24 (88.9%)	0.64

Indirect inguinal hernia was more common than direct hernia in both groups. Right-sided hernias were slightly more frequent than left-sided hernias, though the difference was not statistically significant. (Table 2)

Table 2: Distribution of type and side of inguinal hernia

Variable	Group D n (%)	Group M n (%)	p-value
Indirect inguinal hernia	18 (66.7%)	17 (63.0%)	0.78
Direct inguinal hernia	9 (33.3%)	10 (37.0%)	
Right-sided hernia	16 (59.3%)	15 (55.6%)	0.78
Left-sided hernia	11 (40.7%)	12 (44.4%)	

Operative duration was significantly shorter in the darning repair group compared to mesh hernioplasty. However, postoperative pain, duration of hospital stay, and time taken to return to normal activity were significantly lower in patients undergoing mesh hernioplasty. (Table 3)

Table 3: Comparison of operative and postoperative parameters

Parameter	Group D	Group M	p-value
Operative duration (minutes)	48.6 ± 6.4	62.3 ± 7.1	<0.001
Postoperative pain score (VAS)	5.8 ± 1.1	4.3 ± 0.9	<0.001
Hospital stay (days)	4.2 ± 1.1	3.6 ± 0.9	0.03
Return to normal activity (days)	14.5 ± 2.8	11.9 ± 2.4	0.001

Postoperative complications were more frequently observed in the darning repair group compared to the mesh hernioplasty group. Although individual complications did not show statistical significance, the overall complication-free recovery rate was significantly higher in patients treated with mesh hernioplasty. (Table 4)

Table 4: Postoperative complications among study groups

Complication	Group D n (%)	Group M n (%)	p-value
Seroma	4 (14.8%)	2 (7.4%)	0.39
Wound infection	3 (11.1%)	1 (3.7%)	0.29
Hematoma	2 (7.4%)	1 (3.7%)	0.55
Chronic groin pain	5 (18.5%)	2 (7.4%)	0.22
No complications	13 (48.2%)	21 (77.8%)	0.02

Recurrence was more commonly observed in the darning repair group compared to the mesh hernioplasty group. Although the difference was not statistically significant, mesh hernioplasty demonstrated better long-term durability and lower recurrence tendency. (Table 5)

Table 5: Recurrence during follow-up period

Recurrence status	Group D n (%)	Group M n (%)	p-value
Recurrence present	3 (11.1%)	1 (3.7%)	0.29
No recurrence	24 (88.9%)	26 (96.3%)	

DISCUSSION

A total of 54 patients with uncomplicated inguinal hernia were included in the study, with 27 patients each undergoing darning repair and mesh hernioplasty. Majority of patients belonged to the 41–60 years age group, and male predominance was observed in both groups. This finding is consistent with the established epidemiology of inguinal hernia, which occurs more frequently in males due to anatomical factors and increased exposure to physical exertion. Similar demographic patterns were reported by Mughir MS et al.[12] who observed that 69.3% of patients were males, and by Kabir AA et al.[13] who reported a mean patient age of 51.93 ± 10.12 years.

Indirect inguinal hernia was the most common type in both groups, followed by direct hernia. Right-sided hernias were slightly more frequent than left-sided hernias. Comparable findings were reported by Kabir AA et al.[13] where indirect inguinal hernias constituted the majority of cases and right-sided involvement predominated. These observations support the recognized tendency for indirect hernias to occur more frequently due to persistence of the processus vaginalis and anatomical predisposition.

The mean operative duration was significantly shorter in the darning repair group compared with the mesh hernioplasty group. The reduced operative time may be attributed to the absence of mesh preparation and fixation. Similar observations were reported by Samee MU et al.[14] who found shorter operative times among patients undergoing darning repair. In contrast, Ahmed M et al.[15] reported a longer operative duration with darning repair than with Lichtenstein mesh repair, indicating that operative time may vary according to surgeon experience and technical factors.

Despite the shorter operative duration associated with darning repair, postoperative recovery parameters favored mesh hernioplasty. Patients undergoing mesh repair experienced significantly lower postoperative pain scores, shorter hospital stay, and earlier return to routine activities. These findings are comparable to those reported by Olasehinde O et al.[16] who demonstrated significantly less postoperative pain, reduced analgesic requirement, and faster return to work among patients undergoing Lichtenstein repair. Similarly, Pirzado AG et al.[17] observed shorter hospital stay, lower pain scores, and earlier recovery of physical activity in patients treated with mesh repair.

Postoperative complications such as seroma, wound infection, hematoma, and chronic groin pain were more frequent in the darning repair group, although most complications were minor and managed conservatively. Mughir MS et al.[12] also reported higher rates of recurrence, seroma, hematoma, and chronic pain among patients undergoing darning repair compared with mesh repair. Likewise, Khyrallh AA et al.[18] documented slightly lower recurrence rates following Lichtenstein repair, although the difference was not statistically significant.

Recurrence during follow-up was observed more frequently in the darning group than in the mesh hernioplasty group. Similar findings were reported by Mughir MS et al.[12] who observed recurrence rates of 4.34% following darning repair compared with 1.7% after mesh repair. Ahmed M et al.[15] also reported a higher recurrence rate in the darning group than in the mesh group. Conversely, Samee MU et al.[14] found similar recurrence rates between both techniques during one-year follow-up, suggesting that both methods can provide acceptable long-term outcomes when performed appropriately.

Although darning repair remains a cost-effective option, particularly in resource-limited settings, mesh hernioplasty demonstrated superior postoperative recovery, lower morbidity, and reduced recurrence in the present study. Similar conclusions were drawn by Olasehinde O et al.[16] Pirzado AG et al.[17] and Mughir MS et al.[12] who reported more favorable postoperative outcomes with mesh repair. However, studies by Mahesh SV et al.[19] Samee MU et al.[15] and Khyrallh AA et al.[18] have highlighted that darning repair continues to be a safe, effective, and economical alternative with acceptable recurrence rates, particularly where mesh availability or affordability remains a concern.

CONCLUSION

Patients undergoing mesh repair experienced lower postoperative pain, shorter hospital stay, earlier return to normal activity, fewer complications, and lower recurrence rates. Although darning repair required shorter operative duration and remains a useful alternative in selected situations, mesh hernioplasty provided better long-term surgical outcomes and patient recovery. The tension-free nature of mesh repair contributes to improved postoperative comfort and reduced recurrence. Mesh hernioplasty can therefore be considered a safe, effective, and reliable technique for routine inguinal hernia repair in clinical practice.

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