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Comparison of Outcome of Lichtenstein Versus Darn Repair in Management of Obstructed Inguinal Hernia

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A B S T R A C T

Background: Obstructed inguinal hernia is a surgical emergency that needs urgent treatment to avoid severe complications. Lichtenstein (mesh-based) and Darn (tissue-based) repairs are the most common, and there is a lack of comparative data in obstructed cases.

Methodology: This is a comparative observational study carried out in a tertiary care hospital. Sixty patients with obstructed inguinal hernia were selected and separated into two groups: Lichtenstein repair (n=31) and Darn repair (n=29). Demographic data, clinical characteristics, operative and postoperative outcomes were gathered. The patients were followed up to six months. The results evaluated were operative time, complications (serma, pain, wound infection), hospital stay, re-entry to normal activity, and recurrence. The SPSS was used to conduct the statistical analysis and $p \leq 0.05$ was taken to be significant.

Results: There were similarities in baseline characteristics across groups. The Darn group had a much shorter operative time (56.1 ± 9.8 min) than the Lichtenstein group (63.4 ± 11.2 min; p=0.006). Nevertheless, patients who received Lichtenstein repair were able to resume normal activity sooner (12.8 ± 3.6 vs 15.2 ± 4.3 days; p=0.028). The Darn group had a more positive postoperative complication and recurrence rates (10.3% vs 3.2%), but these differences were not statistically significant. The rate of overall complication also was greater in Darn group (41.4% vs 29.0%)

Conclusion: The two methods are effective in the treatment of obstructed inguinal hernia. Nevertheless, Lichtenstein repair is more successful, with fewer complications, reduced recurrence, and quicker recovery and is preferable where possible.

Keywords: Obstructed inguinal hernia, Lichtenstein repair, Darn repair, postoperative complications, recurrence

Introduction

Inguinal hernia is one of the most prevalent surgical conditions across the world and it constitutes a sizeable number of general surgical procedures.[1] It happens when abdominal contents extend through a weak spot in the inguinal canal, causing swelling and pain in the groin.[2] Although the majority of inguinal hernias are reducible and treated on an elective basis, a subset may present as obstructed hernias which is a surgical emergency that necessitates immediate action.[3]

An obstructed inguinal hernia is when the contents of the hernia cannot be reduced back into the abdominal cavity and are also exhibiting signs of intestinal obstruction (e.g., pain, vomiting, abdominal distension, constipation).[4] Secularism: Failure to Treat Delay may make strangling the blood supply compromised and cause ischemia, necrosis and life-threatening complications. In short, prompt diagnosis and surgical correction are crucial in order to decrease the morbidity and mortality of this condition.[5]

Different surgical techniques have been introduced for the repair of inguinal hernia. Lichtenstein repair and Darn repair are two widely accepted methods for patients undergoing emergency surgery.[6] The Lichtenstein technique has become widely adopted since it is a tension-free mesh repair with low recurrence and postoperative complications.[7] The Darn repair, on the other hand, is a tissue-based method which uses sutures to provide reinforcement of the posterior wall of the inguinal canal and continues to be

a useful option in resource-limited settings when mesh may not be accessible or appropriate.[8]

Although both techniques are widely used, there is still an ongoing debate about their effectiveness in surgical approach when it comes to it in particular obstructed inguinal hernia.[8] Postoperative complications, operative time, stay in the hospital, period of recovery and recurrence rate are important factors to the optimal surgical choice. These considerations become even more critical when choosing an appropriate technique in resource-limited settings.[9]

An obstructed inguinal hernia is a common surgical emergency, and multiple types of repair are performed in everyday surgical practice. Lichtenstein mesh repair with tension-free technique was introduced to overcome complications related to the earlier repairs.[10] However, Darn repair offers reduced incidence of complications like seromas but without the use of meshes.

Therefore, this study was aimed to compare outcomes after Lichtenstein vs. Darn repairs done for patients presenting with obstructed inguinal hernia. This study evaluated postoperative complications, operative and recovery parameters, as well as recurrence rates to be able to offer guidance based on evidence when deciding which surgical technique is most effective and practical for the management of this condition.

Methodology

This comparative study was conducted at a tertiary care hospital in General Surgery department where patients were managed as per the institution's standard surgical protocols to compare the outcomes between Lichtenstein repair and Darn repair methods in treatment of obstructed inguinal hernia. The study was carried out between June 2025 to September 2025.

The study was conducted on patients with obstructed inguinal hernia who were admitted to the hospital through the emergency department and underwent surgical procedures.

Sixty patients were included in the study according to surgical technique performed: Lichtenstein repair (31) and Darn repair (29).

An opportunistic consecutive sampling method was used, such that all eligible patients presenting during the study period were included until the required sample size had been met.

Inclusion Criteria: Patients 18 years of age and older, diagnosed with obstructed inguinal hernia, undergoing emergency surgical repair, and who provide informed consent.

Exclusion Criteria: Patients with recurrent inguinal hernia, strangulated hernia requiring extensive bowel resection with poor prognosis, unfit for surgery due to severe comorbid conditions and lost to follow-up were not involved in the study.

A structured proforma was used to collect data. Age, sex and clinical characteristics like side of hernia, duration of symptoms and comorbidities were documented. Other variables specific to obstruction such as time of obstruction, viability of bowel, presence of strangulation and need for bowel resection were recorded. Operative data recorded were type of repair (Lichtenstein or Darn), time of operation in minutes, and intraoperative findings. Also, postoperative outcomes such as duration of hospital stay (in days) and time to return to normal activity (in days) were recorded. Patients were followed postoperatively for complications and recurrence at 1 week, 2 weeks, 1 month, 3 months, and 6 months.

The main studied outcome was postoperative complications (such as seroma, pain and wound infection) while secondary outcomes included operative time, length of hospital stay, time to resume normal activity: and recurrence rate.

Obstructed inguinal hernia was defined as an irreducible hernia associated with intestinal obstruction without compromise of blood supply, whereas strangulated hernia referred to compromised blood supply leading to ischemia. Seroma was defined as the accumulation of serous fluid at the surgical site. Visual Analog Scale was utilized for pain assessment, and a score of 4 or more was deemed significant. Wound infection was defined as redness or discharge/pus from the surgical site and recurrence was defined as the reappearance of harnia at operated site during follow-up period.

Data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 23. Quantitative variables (age, operative time and hospital stay) were expressed as mean ± standard deviation, while qualitative variables (gender, complications and recurrence) were presented as frequencies and percentages. Comparisons between the two groups for continuous variables were performed using independent sample t-test and for categorical variables, chi-square test or Fisher's exact test was applied. Statistical significance was defined as p-value ≤0.05.

Results

A total of 60 patients were included in the study, with 31 (51.7%) undergoing Lichtenstein repair and 29 (48.3%) undergoing Darn repair (Table I).

The baseline demographic and clinical characteristics were comparable between the two groups, with no statistically significant differences in age, sex, hernia side, duration of symptoms, or comorbidities (Table II). Similarly, obstruction-related clinical features, including strangulation, bowel viability, bowel resection, and duration of obstruction, did not differ significantly between the groups (Table III).

Table II: Baseline Characteristics.

Variable	Lichtenstein (n=31)	Darn (n=29)	P-Value
Age (years, mean ± SD)	45.2 ± 12.8	46.5 ± 13.1	0.701
Male gender	27 (87.1%)	25 (86.2%)	0.912
Right-sided hernia	20 (64.5%)	18 (62.1%)	0.843
Duration of symptoms (>48 hrs)	18 (58.1%)	16 (55.2%)	0.812
Comorbidities present	10 (32.3%)	9 (31.0%)	0.914

Table III: Obstruction-Specific Clinical Features

Variable	Lichtenstein (n=31)	Darn (n=29)	P-Value
Strangulated hernia	8 (25.8%)	7 (24.1%)	0.872
Bowel viability compromised	6 (19.4%)	7 (24.1%)	0.651
Bowel resection required	4 (12.9%)	5 (17.2%)	0.631
Duration of obstruction >48 hrs	17 (54.8%)	15 (51.7%)	0.801

Table I: Surgical Group Distribution.

Surgical Group	Frequency	Percent (%)
Lichtenstein Repair	31	51.7
Darn Repair	29	48.3
Total	60	100

Regarding operative outcomes, the Darn repair group had a significantly shorter operative time than the Lichtenstein group (56.1 ± 9.8 vs. 63.4 ± 11.2 minutes; p=0.006). However, patients who underwent Lichtenstein repair returned to normal daily activities significantly earlier (12.8 ± 3.6 vs. 15.2 ± 4.3 days; p=0.028). The difference in hospital stay was not statistically significant (Table IV).

Postoperative complications, including seroma, pain (VAS ≥4), and wound infection, were observed in both groups without statistically significant differences at any follow-up interval (Table V).

Recurrence rates remained low in both groups during follow-up. Although recurrence was numerically higher in the Darn group at both 3 and 6 months, the differences were not statistically significant (Table VI).

Overall postoperative complications occurred more frequently in the Darn group than in the Lichtenstein group (41.4% vs. 29.0%); however, this difference did not reach statistical significance (Table VII).

Table IV: Operative & Hospital Outcomes.

Variable	Lichtenstein	Darn	P-Value
Operative time (min)	63.4 ± 11.2	56.1 ± 9.8	0.006
Hospital stay (days)	3.9 ± 1.3	4.3 ± 1.5	0.198
Return to normal activity (days)	12.8 ± 3.6	15.2 ± 4.3	0.028

Table V: Postoperative Complications.

Outcome Type	Time Point	Lichtenstein (n=31)	Darn (n=29)	P-Value
Seroma	1 week	2 (6.5%)	1 (3.4%)	0.580
	2 weeks	3 (9.7%)	4 (13.8%)	0.612
	1 month	1 (3.2%)	3 (10.3%)	0.291
Pain (VAS ≥4)	1 week	6 (19.4%)	8 (27.6%)	0.431
	2 weeks	3 (9.7%)	4 (13.8%)	0.612
	1 month	4 (12.9%)	6 (20.7%)	0.402
Wound Infection	1 week	3 (9.7%)	4 (13.8%)	0.612
	2 weeks	1 (3.2%)	2 (6.9%)	0.494
	1 month	1 (3.2%)	1 (3.4%)	0.982

Table IV: Recurrence Rate (Follow-up)

Time Point	Lichtenstein (n=31)	Darn (n=29)	P-Value
3 months	0 (0%)	1 (3.4%)	0.304
6 months	1 (3.2%)	3 (10.3%)	0.291

Table VII: Overall Complication Rate

Outcome	Lichtenstein	Darn	P-Value
Any complication	9 (29.0%)	12 (41.4%)	0.317

Discussion

The current study was performed to evaluate the outcomes of Lichtenstein hernioplasty and Darn repair in patients with obstructed inguinal hernia. The results showed that while both techniques were good, Lichtenstein repair was consistently better for postoperative outcomes (but did not show statistical significance in most differences (complications, time to return to work and recurrence).[11]

The study reported that the baseline characteristics of patients (age, gender distribution, side of hernia, duration of symptoms and comorbidity) were comparable in both groups in the current study. This means that both cohorts were well matched, reducing confounding bias and providing a valid comparison of surgical outcomes. Similar baseline comparability has also been highlighted in prior studies, including those by Lichtenstein as well as Bassini, emphasizing the need of homogeneity amongst patient attributes when assessing surgical techniques.[12]

Mean operative time was shorter in Darn repair group compared with the Lichtenstein group. This finding is consistent with previous studies, which have reported that tissue-based repairs such as Darn are technically less time-consuming due to the absence of mesh placement and fixation [[12].] Even so, the shorter operative time for patients in the Lichtenstein group correlated with earlier return to activity in daily life, which was statistically significant. The greater patient comfort and functional recovery after mesh repair may account for this. This pattern has been observed in studies investigating mesh compared to non-mesh hernia repairs, with mesh-based techniques leading to better postoperative comfort and rehabilitation.[13]

No serious complications were observed, but postoperative seroma, pain and wound infection occurred in both groups. Though not statistically significant, the Darn repair group consistently had a greater incidence of complications.[14] This is in line with previous literature, as non-mesh repairs have been shown to result in higher tension on the surrounding tissues compared to mesh repairs resulting in increased postoperative pain and complications[15]nStudies have also shown that the tension-free principle of Lichtenstein repair decreases tissue trauma and inflammatory response, thus reducing complications.[16]

Pain scoring with Visual Analog Scale (VAS) all showed that patients had significantly higher postoperative pain in the Darn group only at follow-up intervals compared to Lichtenstein although this difference was not statistically significant. The finding is consistent with earlier studies that have reported less postoperative discomfort after mesh-based repair due to reduced tension on the adjacent structures.[6]

Wound infection rates were marginally higher in the Darn group in the early postoperative period but no significant difference was shown.[17] The finding is similar to presently available literature stating that both methods have a comparable infection profile when done under appropriate of aseptic techniques, especially in emergency settings like obstructed hernia.[18]

Recurrence is an important outcome measure of hernia surgery. The recurrence was higher in the Darn repair group after logging at 3 and 6 months follow-up, consistent with our findings. While the difference was not statistically significant, the trend toward higher recurrence in the Darn group is clinically important.[19] These findings are supportive from the literature which shows that Lichtenstein repair has lesser recurrence rate compared to others due do use of require as reinforcement. In the case of mesh repair, one of the crucial factors in limiting recurrence is their tension-free mechanism of action, especially when you are dealing with non-native tissue.[20]

The complication rate of all trials included in Darn group was greater than Lichtenstein group, but there was no statistically significant difference.[13] This trend adds to a general tendency for mesh-based repairs to yield superior results overall, even if small sample sizes preclude statistical significance.[21]

However, it should be observed that the absence of statistically significant differences in numerous outcomes may stem from the study's small sample size. Statistically significant differences between the two techniques may need to be more thoroughly evaluated in larger, multicenter studies. The 6-month follow-up period, though sufficient for early recurrence detection, may not allow for full assessment of late transcription rates.

Although there are some limitations to this study, the results indicate that Lichtenstein repair has several clinical advantages over Darn repair in treatment of obstructed inguinal hernia including lower rate of postoperative complications, shorter hospital stay, and tendency for a lower recurrence rate. Nonetheless, Darn repair is a good alternative that can still be performed with few resources as no mesh may not be available.

Conclusion

Both Lichtenstein and Darn repair techniques were effective in management of obstructed inguinal hernia. In conclusion, Lichtenstein repair has better overall outcomes in terms of an earlier return to normal activity and a trend toward lower postoperative complication rates and lower recurrence rates

compared with Darn repair. Most differences were not statistically significant, but clinical advantages for the tension-free mesh technique suggest that Lichtenstein repair may be the non-surgical option of choice. However, Darn repair can be a useful alternative, especially in some settings where mesh products may not be available or permitted.

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