



A COMPARATIVE ANALYSIS OF DESARDA AND LICHTENSTEIN MESH HERNIA REPAIR TECHNIQUES: EFFICACY, COMPLICATIONS, AND LONG-TERM OUTCOMES IN INGUINAL HERNIA MANAGEMENT

General Surgery

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ABSTRACT

Background: Inguinal hernia repair remains one of the most commonly performed general surgical procedures. Although Lichtenstein tension-free mesh repair is widely practiced, mesh-related pain and postoperative complications have encouraged evaluation of tissue-based alternatives such as Desarda repair. **Objectives:** To compare Desarda and Lichtenstein repairs with respect to postoperative pain, recovery, complications, return to normal activity, chronic groin pain, patient satisfaction, and overall clinical outcome. **Materials and Methods:** This prospective comparative study included 40 patients with primary inguinal hernia treated at the Department of General Surgery, B.R.D. Medical College and Nehru Hospital, Gorakhpur, during 2024–2025. Twenty patients underwent Desarda repair and 20 underwent Lichtenstein mesh repair. Clinical and operative variables were recorded prospectively. Postoperative pain was assessed using the Visual Analogue Scale. Recovery, complications, return to normal activity, chronic groin pain, and satisfaction were evaluated during follow-up. Data were analysed using SPSS version 22.0, with $p < 0.05$ considered statistically significant. **Results:** Day-1 postoperative pain was significantly lower with Desarda repair (4.65 ± 1.50 vs 5.85 ± 1.46 ; $p = 0.014$). Recovery duration was shorter (3.65 ± 0.49 vs 5.35 ± 0.67 days; $p < 0.001$), and return to normal activity occurred earlier (11.05 ± 1.70 vs 14.60 ± 2.04 days; $p < 0.001$). Chronic groin pain at six months occurred in 1 Desarda and 4 Lichtenstein patients, without statistical significance ($p = 0.151$). Patient satisfaction was higher with Desarda repair (8.45 ± 1.05 vs 6.60 ± 0.88 ; $p < 0.001$). Overall complications were significantly fewer with Desarda repair (7 vs 14; $p = 0.027$). **Conclusion:** Desarda repair demonstrated favorable early postoperative recovery, lower pain, fewer overall complications, earlier return to normal activity, and greater patient satisfaction, supporting its role as an effective non-mesh alternative to Lichtenstein repair in selected patients with primary inguinal hernia.

KEYWORDS

Desarda repair; Lichtenstein repair; inguinal hernia; postoperative pain; complications; recovery; patient satisfaction.

INTRODUCTION

Inguinal hernia is one of the most common conditions in general surgical practice and results from protrusion of abdominal contents through a weakened inguinal region. Integrity of the posterior wall of the inguinal canal, transversalis fascia and surrounding musculofascial structures is essential for groin stability. Direct and indirect inguinal hernias are the principal anatomical types, with the disorder occurring predominantly in adult males. The lifetime risk is approximately 27% in men and 3% in women, producing a substantial socioeconomic burden.

Open tension-free Lichtenstein repair remains established because of its reproducibility and low recurrence rate; however, prosthetic mesh may be associated with chronic groin pain, foreign-body sensation, infection and stiffness. Pathak et al. compared Desarda and Lichtenstein repairs over three years, including recurrence, chronic pain, complications, return to activity and patient satisfaction.¹ Sasmal et al. evaluated both procedures under local anaesthesia in a randomized non-inferiority trial.² Recent systematic evidence has continued to compare postoperative complications and outcomes between the techniques.³

The Desarda technique reinforces the posterior wall using an undetached strip of external oblique aponeurosis and avoids prosthetic material. Three-year randomized follow-up has supported evaluation of its short- and long-term results.⁴ Updated systematic reviews have reassessed its effectiveness for unilateral inguinal hernia.⁵ Indian comparative research has examined operative time, pain, seroma, infection, hospital stay, return to work and recurrence.⁶

Earlier meta-analysis similarly emphasized recurrence and postoperative complications as major comparative outcomes.⁷ Randomized Indian evidence has assessed postoperative pain, chronic inguinodynia and functional recovery,⁸ while pooled evidence has evaluated recurrence, complications and return to normal activity.⁹ Chronic groin pain remains relevant because it can impair quality of life despite successful repair.¹⁰

In a Tier-II Indian tertiary-care setting, affordability, early recovery and

return to productive activity are important. Direct evaluation is therefore needed to determine whether non-mesh repair can provide comparable efficacy with acceptable complications and functional outcomes. The present study compares Desarda and Lichtenstein repair with respect to efficacy, postoperative pain, recovery, complications, recurrence, patient satisfaction, long-term outcomes and economic value.

MATERIAL AND METHODS

Study Design: Prospective comparative study was done to compare the outcome of Desarda repair and Lichtenstein tension free mesh repair in cases of primary inguinal hernia. Early and late postoperative results were evaluated prospectively.

Study setting: The study was conducted in the Department of General Surgery, B.R.D. Medical College and associated Nehru Hospital, Gorakhpur, Uttar Pradesh, India, a tertiary care teaching hospital serving patients from both rural and urban population.

Study period 2024-2025: Patient enrollment was performed over a period of 1 year with a follow-up period of up to 12 months post-operatively.

Inclusion Criteria: Patients with primary reducible inguinal hernia meeting the study inclusion criteria, who were ASA Grade I or II and gave written informed consent were included.

Exclusion Criteria: Recurrent inguinal hernia, ASA Grade III and above, coagulopathy, repeat previous abdominal operations, major comorbid conditions (eg. severe asthma or coronary artery disease), concomitant surgical procedures and refusal to participate were excluded.

Study Sampling: Eligible patients presenting during the study period were screened and recruited in a sequential manner until the required sample size was achieved.

Sample Size of the Study: The study was performed on a total of 40 patients.

Study Groups: Patients were classified into two groups according to operative technique. The Desarda group underwent tissue based repair with autologous strip of external oblique aponeurosis whereas the Lichtenstein group underwent tension free repair with polypropylene mesh. Both procedures were performed following standard surgical protocols.

Study Parameters: Outcomes assessed included operative time, postoperative pain, surgical site infection, seroma, hematoma, urinary retention, postoperative wound swelling, testicular complications, chronic groin pain, recurrence, duration of recovery, return to normal activity and patient satisfaction.

Study Procedure: All patients were subjected to thorough pre-operative history and clinical examination. Demographic data, relevant clinical history, hernia characteristics, symptoms and examination findings were recorded. The operations were carried out by experienced surgeons under aseptic standard conditions.

Study Data Collection: Data were collected by a structured proforma. Pain after surgery was assessed using a Visual Analog Scale on Day 1, Day 7 and one month. Recovery-related outcomes and postoperative complications were documented, while recurrence and chronic pain were assessed during follow-up extending up to 12 months.

Data Analysis: Data were entered in Microsoft Excel and analysed using SPSS version 22.0. Continuous variables were expressed as mean $\pm$ standard deviation, while categorical variables were presented as frequencies and percentages. Unpaired Student's t-test and Chi-square test were applied as appropriate. A p-value <0.05 was considered statistically significant.

Ethical Considerations: Ethical approval was obtained from the Institutional Ethics Committee of B.R.D. Medical College, Gorakhpur. Informed consent was obtained from all the participants and their confidentiality was preserved throughout the study.

RESULTS

Table 1: Postoperative pain score on day 1 according to study group (n=40)

Study group	N	Mean $\pm$ SD
Desarda	20	4.65 $\pm$ 1.50
Lichtenstein	20	5.85 $\pm$ 1.46

t = -2.566, df = 38, p = 0.014

The average pain score on Day 1 postoperatively was significantly less in Desarda group (4.65 $\pm$ 1.50) as compared to Lichtenstein group (5.85 $\pm$ 1.46) (Table 1). The difference between the two groups was statistically significant (t = -2.566, df = 38, p = 0.014). This means better early postoperative pain control in the Desarda repair group.

Figure 1: Bar graph showing the Postoperative pain score on day 1 according to study group

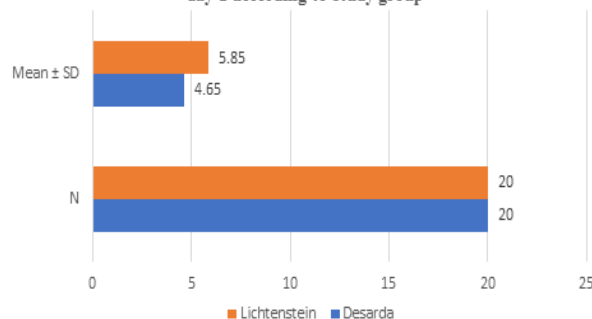


Table 2: Duration of according to study group (n = 40)

Study group	N	Mean $\pm$ SD (days)
Desarda	20	3.65 $\pm$ 0.49
Lichtenstein	20	5.35 $\pm$ 0.67

t = -9.156, df = 38, p < 0.001

Table 2 shows that the mean duration of recovery was significantly less in Desarda group (3.65 $\pm$ 0.49 days) compared to Lichtenstein group (5.35 $\pm$ 0.67 days). This was a statistically significant difference (t = -9.156, df = 38, p < 0.001) suggesting that Desarda repair was associated with faster post-operative recovery.

Table 3: Time to return to normal activity according to study group (n=40)

Study group	N	Mean $\pm$ SD (days)
Desarda	20	11.05 $\pm$ 1.70
Lichtenstein	20	14.60 $\pm$ 2.04

t = -5.984, df = 38, p < 0.001

Table 3 shows that patients who had Desarda repair resumed normal activities significantly earlier (11.05 $\pm$ 1.70 days) than patients who had Lichtenstein repair (14.60 $\pm$ 2.04 days). The difference was statistically significant (t = -5.984, df = 38, p < 0.001) showing faster functional recovery with Desarda technique.

Figure 2: Bar graph showing the Time to return to normal activity according to study group

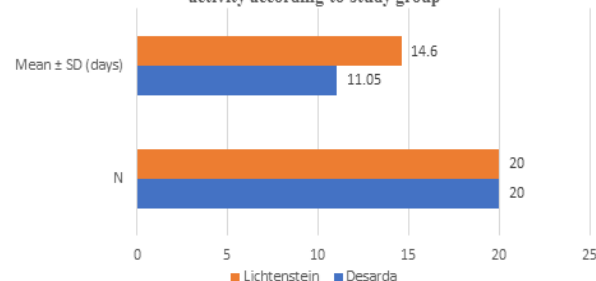


Table 4: Chronic groin pain at 6 months according to study group (n=40)

Chronic groin pain at 6 months	Desarda n (%)	Lichtenstein n (%)	Total n (%)
No	19 (54.3)	16 (45.7)	35 (100.0)
Yes	1 (20.0)	4 (80.0)	5 (100.0)
Total	20 (50.0)	20 (50.0)	40 (100.0)

$\chi^2 = 2.057$, df = 1, p = 0.151

Chronic groin pain at 6 months was seen in 1 (5.0%) patient of Desarda group and 4 (20.0%) patients of Lichtenstein group as shown in Table 4. Although chronic pain was numerically less frequent following Desarda repair, the difference between the groups was not statistically significant ($\chi^2 = 2.057$, df = 1, p = 0.151).

Figure 3: Bar graph showing the Chronic groin pain at 6 months according to study group

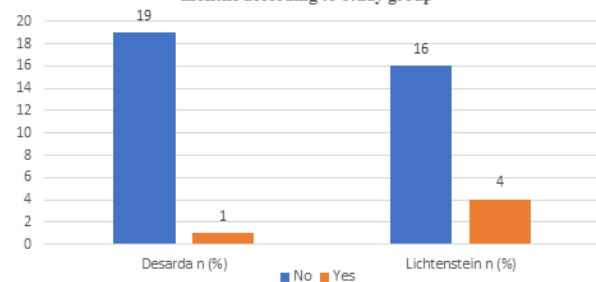


Table 5: Patient satisfaction score according to study group (n = 40)

Study group	N	Mean $\pm$ SD
Desarda	20	8.45 $\pm$ 1.05
Lichtenstein	20	6.60 $\pm$ 0.88

t = 6.032, df = 38, p < 0.001

As shown in Table 5, the mean patient satisfaction score was significantly higher in the Desarda group (8.45 $\pm$ 1.05) than in the Lichtenstein group (6.60 $\pm$ 0.88). There was a statistically significant difference between the two groups (t = 6.032, df = 38, p < 0.001) with greater patient satisfaction following Desarda repair.

Table 6: Overall complications according to study group (n = 40)

Overall complications	Desarda n (%)	Lichtenstein n (%)	Total n (%)
No	13 (68.4)	6 (31.6)	19 (100.0)
Yes	7 (33.3)	14 (66.7)	21 (100.0)
Total	20 (50.0)	20 (50.0)	40 (100.0)

$\chi^2 = 4.912$, df = 1, p = 0.027

Table 6 shows that overall complications occurred in 7 patients in the Desarda group and 14 patients in the Lichtenstein group. The proportion of complications was significantly lower following Desarda repair, with a statistically significant difference between the two groups ($\chi^2 = 4.912$, df = 1, p = 0.027), indicating a more favourable overall postoperative complication profile.

DISCUSSION

Post operative pain on Day 1 was less in Desarda repair (4.65 ± 1.50) than Lichtenstein repair (5.85 ± 1.46) ($t = -2.566$, $df = 38$, $p = .014$) which was statistically significant. This is in accordance with findings of Vupputuri et al (2019)⁴ who reported significantly more post-operative pain with Lichtenstein repair and Jain et al (2021)⁸ who found lower pain scores with Desarda repair. Pathak et al. (2024)¹ have also obtained similar results with better pain profile after Desarda repair. Kumar et al. (2025)⁶ however did not find any significant difference in post-operative pain but Desarda repair had slightly higher pain scores. The recovery duration was significantly lesser in Desarda repair.

The average recovery duration was 3.65 ± 0.49 days in Desarda repair and 5.35 ± 0.67 days in Lichtenstein repair ($t = -9.156$, $df = 38$, $p < 0.001$). This is in agreement with the meta-analysis by Usmani et al (2025)⁵ showing significant reduction in the hospital stay with Desarda repair (MD -0.97 days, $p < 0.00001$). Better functional recovery was found with Desarda repair as reported by Jain et al. (2021)⁸ Desarda repair also had shorter hospital stay in patients but the difference was not clinically important (Kumar et al. 2025)⁶. Sasmal et al. (2023)² reported similar recovery between the two techniques.

The time to return to normal activity was significantly shorter after Desarda repair (11.05 ± 1.70 days) than after Lichtenstein repair (14.60 ± 2.04 days) ($t = -5.984$, $df = 38$, $p < 0.001$). Usmani et al. (MD -2.19 days, $p < 0.00001$)⁵ also reported earlier return to normal activities with Desarda repair. Jain et al. 2021⁸ reported early return to work, Vupputuri et al. 2019⁴ reported better functional improvement with Desarda repair. Lower time to return to work was also reported by Kumar et al. (2025)⁶. Similarly, time to recovery was reported by Mohamedahmed et al. (2020)⁷ and Sasmal et al. (2023)² reported median gait recovery of 5 versus 4 days with no significant difference.

Chronic groin pain at 6 months was observed in 1 patient following Desarda repair and in 4 patients following Lichtenstein repair; the difference was not statistically significant ($\chi^2 = 2.057$, $df = 1$, $p = 0.151$). Desarda repair showed a similar change in direction with more amelioration of chronic inguinal pain as reported by Pathak et al. (2024)¹. Significantly higher incidence of chronic groin pain with Lichtenstein repair was reported by Vupputuri et al. (2019)⁴. Jain et al (2021)⁸ have also reported more chronic inguinodynia after Lichtenstein repair. Sasmal et al. (2023)² also reported similar chronic groin pain with the methods. However, Gaur et al (2022)¹⁰ reported chronic pain in 45.7% of Desarda and 44% of Lichtenstein patients ($p = 0.871$).

Patient satisfaction was significantly more following Desarda repair (8.45 ± 1.05) as compared to Lichtenstein repair (6.60 ± 0.88) ($t = 6.032$, $df = 38$, $p < 0.001$). This finding is consistent with the findings of Vupputuri et al. (2019)⁴ who reported better patient reported improvement and functional outcomes with Desarda repair. More satisfaction with Desarda repair was found by Gaur et al. (2022)¹⁰ but the difference was statistically not significant. Patient satisfaction was also considered as one of the long-term outcomes evaluated by Pathak et al. (2024)¹, however, numerical comparison is not given in the supplied data. Likewise, the remaining supplied studies do not report specific satisfaction scores; therefore, further statistical comparison for this outcome would not be appropriate.

There were 7 and 14 overall complications after Desarda and Lichtenstein repairs respectively, statistically significant difference, ($\chi^2 = 4.912$, $df = 1$, $p = 0.027$). The Desarda repair had significantly lower overall postoperative complications ($p = 0.003$), seroma ($p = 0.0004$) and surgical-site infection ($p = 0.04$) (Mohamedahmed et al., 2020)⁷.

Pereira and Varghese (2022)⁹ also reported higher postoperative complications after Lichtenstein repair with significantly less seroma formation after Desarda repair ($p = 0.02$). Jain et al. (2021)⁸ also had preference for Desarda in terms of complications. Lesser seroma and surgical site infection in Desarda but these are not clinically significant reported by Kumar et al. (2025)⁶. Vupputuri et al. (2019)⁴ and Pathak et al. (2024)¹ Reported similar overall or short term complication rates between the two techniques.

CONCLUSION

Desarda repair is a good non-mesh alternative to Lichtenstein repair for primary inguinal hernia and provides benefits in terms of early

postoperative recovery and patient-reported outcomes. Desarda repair was associated with significantly less postoperative pain on day 1, shorter duration of recovery, earlier return to normal activity, higher patient satisfaction and less overall postoperative complications. Repair with the Desarda technique resulted in fewer patients with chronic groin pain at six months, but this was not a statistically significant difference, suggesting that the long-term benefit in terms of pain seen should be interpreted cautiously. The shorter recovery period and earlier functional restoration may also reduce hospitalization-related expenditure and loss of working days. However, the reported results did not show formal cost-effectiveness or return-on-investment analysis. In the overall both techniques gave good clinical results but Desarda repair showed a better profile for selected patients with primary uncomplicated inguinal hernia especially when avoidance of prosthetic mesh and rapid postoperative rehabilitation are of importance.

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