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**ORIGINAL ARTICLE**

# Evaluation of Postoperative Pain Following Desarda vs. Lichtenstein Mesh Repair in Inguinal Hernia Surgery

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## ABSTRACT

**Background:** Inguinal hernia repair is one of the most frequently performed surgical procedures globally. While the Lichtenstein mesh repair is widely accepted as the gold standard due to its low recurrence rate, it is associated with mesh-related complications and significant postoperative pain. The Desarda technique, a tissue-based repair method that avoids mesh use, has emerged as a promising alternative, potentially reducing postoperative discomfort and complications.

**Objectives:** To evaluate and compare postoperative pain and recovery outcomes following Desarda versus Lichtenstein mesh repair in patients undergoing inguinal hernia surgery.

**Study Design & Setting:** This comparative study was conducted at Department of General Surgery Fatima Hospital/ABU Amara Medical College Lahore.

**Methodology:** This study enrolled 120 patients diagnosed with unilateral inguinal hernia. Patients were randomly assigned to either Desarda or Lichtenstein repair groups. Patients aged 18 to 60 years with primary inguinal hernia were included. Postoperative pain was assessed using the Visual Analog Scale (VAS) at 6, 12, 24, and 48 hours. Additional analgesic requirements, operative time, hospital stay, and pain-free mobilization time were recorded and analyzed.

**Results:** The Desarda group demonstrated significantly lower mean pain scores at all time intervals compared to the Lichtenstein group ($p < 0.001$). Operative time and hospital stay were shorter in the Desarda group ($p < 0.01$). A greater proportion of Desarda patients required no additional analgesia (63.3% vs. 35.0%; $p = 0.002$) and achieved pain-free mobilization earlier ($p = 0.004$).

**Practical Implication:** The Desarda technique offers a viable mesh-free option for inguinal hernia repair, associated with reduced postoperative pain and faster recovery, which may improve patient satisfaction and reduce healthcare costs.

**Conclusion:** Desarda repair is an effective alternative to Lichtenstein mesh repair, providing superior postoperative pain control and quicker mobilization.

**Keywords:** Desarda repair, inguinal hernia, Lichtenstein repair, postoperative pain, tissue-based repair

## INTRODUCTION

Inguinal hernia is one of the most common general surgical conditions worldwide, with millions of repairs performed annually.[1] It occurs when abdominal contents protrude through a weak spot in the inguinal canal, resulting in discomfort, bulging, and potential complications such as incarceration or strangulation.[2] Surgical repair remains the definitive treatment, aimed at restoring abdominal wall integrity and preventing recurrence.[3] Over the decades, numerous techniques have been developed to optimize outcomes, reduce complications, and enhance patient recovery, particularly with regard to postoperative pain—a significant determinant of patient satisfaction and return to daily activities.[4]

Among the available techniques, the Lichtenstein tension-free mesh repair has gained wide acceptance as the standard approach for inguinal hernia surgery due to its simplicity, low recurrence rates, and favorable long-term outcomes. It involves the placement of a synthetic mesh over the posterior wall of the inguinal canal to reinforce the weakened area.[5] However, despite its popularity, Lichtenstein repair is associated with certain drawbacks, including chronic groin pain and foreign body sensation, which are largely attributed to mesh-induced fibrosis, nerve entrapment, and tissue reaction.[6]

In contrast, the Desarda technique offers a tissue-based, tension-free alternative that avoids the use of prosthetic mesh. This method utilizes an undetached strip of the external oblique aponeurosis to reinforce the posterior wall of the inguinal canal, aiming to restore the physiological anatomy and muscular function.[7,8] The Desarda repair has shown promising results in reducing postoperative complications, especially in terms of pain and discomfort, while maintaining comparable recurrence rates to mesh-based techniques. Its non-mesh nature makes it particularly attractive in settings with limited resources or in patients who have contraindications to synthetic implants.[9,10]

Postoperative pain is a critical outcome in hernia surgery, as it directly influences early mobilization, hospital stay, patient satisfaction, and long-term quality of life.[11] While numerous studies have compared the efficacy and recurrence rates of Desarda and Lichtenstein techniques, fewer have focused specifically on the comparative evaluation of postoperative pain between the two. A deeper understanding of pain patterns associated with each technique can guide surgical decision-making and patient counseling, especially in individuals concerned about chronic pain or foreign body sensation.[12]

This study aims to evaluate and compare the intensity and duration of postoperative pain following Desarda versus Lichtenstein mesh repair in patients undergoing inguinal hernia surgery. By identifying differences in pain outcomes between these two widely practiced techniques, this research hopes to contribute to the growing body of evidence supporting patient-centered surgical choices in hernia management.

## MATERIALS AND METHODS

This comparative cross-sectional study was conducted at the Department of General Surgery of Surgery Fatima Hospital/ABU Amara Medical College Lahore, over a period of six months from February 2023 to July 2023 after obtaining approval from the institutional ethics committee. A total of 120 patients diagnosed with primary unilateral inguinal hernia and scheduled for elective surgical repair were included in the study. Patients were allocated into two groups using simple random sampling: Group A underwent Desarda repair, and Group B underwent Lichtenstein mesh repair, with 60 patients in each group.

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The sample size was calculated using OpenEpi software, considering a 95% confidence level, 80% power, and an effect size of 0.5 for detecting a difference in mean postoperative pain scores between the two groups. Based on these parameters, a total sample size of 120 patients was determined to be sufficient.

All patients included in the study were aged between 18 and 65 years, were diagnosed with reducible unilateral inguinal hernia, and were classified as ASA (American Society of Anesthesiologists) physical status I or II. Patients with recurrent, strangulated, or bilateral hernias, those with comorbidities affecting pain perception (such as neuropathies), or those requiring emergency surgery were excluded from the study.

Preoperative assessments included detailed history, physical examination, and routine laboratory investigations. All procedures were performed by experienced surgeons under spinal anesthesia. In Group A (Desarda), a strip of the external oblique aponeurosis was used to reinforce the posterior wall of the inguinal canal without mesh placement. In Group B (Lichtenstein), a standard polypropylene mesh was placed over the posterior wall and fixed with non-absorbable sutures.

Postoperative pain was assessed using the Visual Analog Scale (VAS) at 6, 12, 24, and 48 hours post-surgery. Patients were given standard analgesia (paracetamol and diclofenac) postoperatively, and any additional analgesic requirement was recorded. Data were collected on demographic characteristics, operative time, hospital stay, and any postoperative complications. Follow-up was conducted until the seventh postoperative day to assess wound healing and pain.

All data were entered into SPSS version 25.0 for statistical analysis. Continuous variables such as pain scores were expressed as mean ± standard deviation, and comparisons between the two groups were performed using the independent t-test. Categorical variables were compared using the chi-square test. A p-value of <0.05 was considered statistically significant.

## RESULTS

Table 1 shows that the mean age of patients in the Desarda group was 42.6 ± 11.2 years, while in the Lichtenstein group it was 43.8 ± 10.7 years (p = 0.524), indicating no significant difference. Males comprised the majority in both groups: 91.7% in the Desarda group and 88.3% in the Lichtenstein group (p = 0.538). The mean BMI was similar between the two groups (24.7 ± 3.1 vs. 25.1 ± 2.9 kg/m²; p = 0.413). Right-sided hernias were more common in both groups (60.0% in Desarda vs. 63.3% in Lichtenstein; p = 0.713). Most patients were ASA Grade I in both groups (66.7% in Desarda vs. 70.0% in Lichtenstein; p = 0.692). None of the baseline characteristics showed statistically significant differences.

Table 2 presents the operative and postoperative parameters of both groups. The mean operative time was significantly shorter in the Desarda group (54.3 ± 7.8 minutes) compared to the Lichtenstein group (61.7 ± 8.2 minutes) with a p-value < 0.001. Similarly, the mean hospital stay was significantly less in the Desarda group (2.1 ± 0.6 days) than in the Lichtenstein group (2.4 ± 0.5 days; p = 0.003). Intraoperative complications were low and comparable between the groups (1.7% vs. 3.3%; p = 0.559), as were early wound infections (3.3% vs. 5.0%; p = 0.645), with no statistically significant differences.

Table 3 shows that postoperative pain scores, assessed using the Visual Analog Scale (VAS), were consistently lower in the Desarda group compared to the Lichtenstein group at all measured time intervals. At 6 hours post-surgery, the mean VAS score was 4.9 ± 1.1 in the Desarda group versus 6.1 ± 1.3 in the Lichtenstein group (p < 0.001). At 12 hours, scores were 4.1 ± 1.0 and 5.4 ± 1.1 respectively (p < 0.001). At 24 hours, the pain scores further reduced to 3.2 ± 0.9 in the Desarda group and 4.6 ± 1.2 in the Lichtenstein group (p < 0.001). By 48 hours, the pain scores were lowest overall, with 2.1 ± 0.7 in the Desarda group and 3.5 ± 1.0 in the Lichtenstein group (p < 0.001), indicating a statistically significant reduction in pain for the Desarda group at all intervals.

Table 4 displays the postoperative additional analgesic requirements among the study groups. A significantly higher proportion of patients in the Desarda group (63.3%) did not require any additional analgesic dose compared to the Lichtenstein group (35.0%) (p = 0.002). One additional dose was needed in 25.0% of Desarda patients and 38.3% of Lichtenstein patients. Two or more additional doses were required in 11.7% of patients in the Desarda group versus 26.7% in the Lichtenstein group. These findings indicate a lower need for supplemental analgesia in the Desarda group.

Table 5 summarizes the pain-free mobilization time following surgery. A significantly higher number of patients in the Desarda group achieved pain-free mobilization within 12 hours (58.3%) compared to the Lichtenstein group (31.7%) (p = 0.004). Between 12–24 hours, 35.0% of Desarda patients and 55.0% of Lichtenstein patients were mobilized. Mobilization beyond 24 hours was reported in 6.7% of the Desarda group and 13.3% of the Lichtenstein group, indicating earlier recovery and ambulation in the Desarda group.

Table 1: Demographic and Baseline Characteristics of Study Participants (n = 120)

| Variable | Desarda Group (n = 60) | Lichtenstein Group (n = 60) | p-value |
|---|---|---|---|
| Mean Age (years) | 42.6 ± 11.2 | 43.8 ± 10.7 | 0.524 |
| Gender | | | |
| Male | 55 (91.7%) | 53 (88.3%) | 0.538 |
| Female | 5 (8.3%) | 7 (11.7%) | |
| BMI (kg/m²) | 24.7 ± 3.1 | 25.1 ± 2.9 | 0.413 |
| Side of Hernia | | | |
| Right | 36 (60.0%) | 38 (63.3%) | 0.713 |
| Left | 24 (40.0%) | 22 (36.7%) | |
| ASA Grade | | | |
| Grade I | 40 (66.7%) | 42 (70.0%) | 0.692 |
| Grade II | 20 (33.3%) | 18 (30.0%) | |

Table 2: Operative and Postoperative Parameters

| Parameter | Desarda Group (n = 60) | Lichtenstein Group (n = 60) | p-value |
|---|---|---|---|
| Mean Operative Time (minutes) | 54.3 ± 7.8 | 61.7 ± 8.2 | <0.001 |
| Mean Hospital Stay (days) | 2.1 ± 0.6 | 2.4 ± 0.5 | 0.003 |
| Intraoperative Complications (%) | 1 (1.7%) | 2 (3.3%) | 0.559 |
| Early Wound Infection (%) | 2 (3.3%) | 3 (5.0%) | 0.645 |

Table 3: Postoperative Pain Scores (VAS) at Different Time Intervals

| Time Interval | Desarda Group | Lichtenstein Group | p-value |
|---|---|---|---|
| 6 Hours | 4.9 ± 1.1 | 6.1 ± 1.3 | <0.001 |
| 12 Hours | 4.1 ± 1.0 | 5.4 ± 1.1 | <0.001 |
| 24 Hours | 3.2 ± 0.9 | 4.6 ± 1.2 | <0.001 |
| 48 Hours | 2.1 ± 0.7 | 3.5 ± 1.0 | <0.001 |

Table 4: Additional Analgesic Requirement Post-Surgery

| Analgesic Requirement | Desarda Group (n = 60) | Lichtenstein Group (n = 60) | p-value |
|---|---|---|---|
| No Additional Dose | 38 (63.3%) | 21 (35.0%) | 0.002 |
| One Additional Dose | 15 (25.0%) | 23 (38.3%) | |
| Two or More Additional Doses | 7 (11.7%) | 16 (26.7%) | |

Table 5: Pain-Free Mobilization Time (in hours)

| Mobilization Time | Desarda Group (n = 60) | Lichtenstein Group (n = 60) | p-value |
|---|---|---|---|
| <12 hours | 35 (58.3%) | 19 (31.7%) | 0.004 |
| 12–24 hours | 21 (35.0%) | 33 (55.0%) | |
| >24 hours | 4 (6.7%) | 8 (13.3%) | |

## DISCUSSION

Inguinal hernia repair is among the most commonly performed general surgical procedures worldwide. The Lichtenstein mesh

repair has long been considered the gold standard due to its low recurrence rate. However, it is associated with mesh-related complications and postoperative pain.[13] The Desarda technique, a tissue-based repair, offers a promising alternative without using mesh. It utilizes the external oblique aponeurosis to reinforce the posterior wall of the inguinal canal. This study compares postoperative pain and recovery outcomes between Desarda and Lichtenstein techniques.[14]

Our study evaluated postoperative pain and recovery outcomes between the Desarda and Lichtenstein techniques for inguinal hernia repair, revealing that the Desarda group experienced significantly lower pain scores at all measured intervals (6, 12, 24, and 48 hours) and earlier pain-free mobilization compared to the Lichtenstein group. These findings align closely with those reported by Iqbal et al. (2023), who observed mean pain scores of 4.0 ± 0.45 at 6 hours decreasing to 2.8 ± 0.31 at 24 hours and further to 2.1 ± 0.17 at 48 hours post-surgery.[15] While Iqbal's study reported even lower pain at later follow-ups (1.8 ± 0.12 at one week), our results support the trend of progressive pain reduction post-Desarda repair, confirming its advantage in early postoperative pain control ($p < 0.001$).[15]

Rana et al. (2023) similarly documented less operative time and quicker return to daily activities with Desarda repair compared to Lichtenstein, consistent with our findings of shorter mean operative time (54.3 ± 7.8 min vs. 61.7 ± 8.2 min; $p < 0.001$) and hospital stay (2.1 ± 0.6 vs. 2.4 ± 0.5 days; $p = 0.003$) in the Desarda group. Their observation of reduced procedural costs also echoes the practical benefits associated with the tissue-based Desarda method.[16]

In contrast, Riaz et al. (2023) reported lower postoperative pain in Lichtenstein repair without mesh fixation compared to mesh fixation, with mean pain scores of 3.23 ± 0.77 vs. 3.98 ± 0.76 ($p = 0.0001$). This contrasts with our study, where the Desarda technique, which entirely avoids mesh, demonstrated superior pain outcomes, highlighting that the absence of mesh itself, as in Desarda repair, may contribute to reduced pain beyond differences in mesh fixation techniques.[17]

Nadeem et al. (2022), studying 186 patients, found no statistically significant difference in pain severity at seven days between Desarda and Lichtenstein groups ($p = 0.415$), whereas our study showed significant early postoperative pain reduction with Desarda repair. This discrepancy could be due to differences in timing of pain assessment or sample size variations.[18]

Operative times in our study were comparable with Ali et al. (2022) and Ahmad et al. (2020), who reported mean operative times of approximately 54.5 ± 4.09 min and 42.08 ± 3.42 min for Desarda repair, respectively, both significantly shorter than Lichtenstein repair times (70.24 ± 5.30 min and 49.01 ± 4.77 min; $p = 0.000$).[19] These studies also noted comparable postoperative complication rates between groups, consistent with our low and statistically insignificant rates of intraoperative complications and wound infection ($p > 0.05$).[20]

Ahmad et al. further reported shorter hospital stays and earlier return to work in the Desarda group (2.08 ± 0.27 days and 11.10 ± 2.32 days) compared to Lichtenstein (3.00 ± 0.40 days and 13.92 ± 2.24 days), reflecting the faster mobilization observed in our study (58.3% vs. 31.7% mobilized within 12 hours; $p = 0.004$).[20]

This study was a prospective comparison with a well-calculated sample size and standardized pain assessment at multiple intervals. It included a balanced number of patients in both groups and used objective outcome measures. The exclusion of recurrent and complicated hernias enhanced homogeneity. However, it was limited by a single-center setting and relatively short follow-up duration. Patient-reported pain scores may be subject to individual variation. Long-term complications and recurrence rates were not evaluated.

## CONCLUSION

The Desarda technique demonstrated significantly lower postoperative pain and earlier mobilization compared to the Lichtenstein repair. It also resulted in reduced additional analgesic requirements and shorter hospital stays. Desarda repair may be a safer, mesh-free alternative in selected patients undergoing inguinal hernia surgery.

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