https://doi.org/10.29309/TPMJ/2026.33.04.10165 www.theprofesional.com

ORIGINAL ARTICLE

Comparative study between Desarda and Lichtenstein repair of inguinal hernia.

Aminah Manahil[1], Shahida Khatoon[2], Ishrat Rahim Katyar[3], Saddam Hussain Katyar[4], Ahsan Jabbar[5], Abdul Sami Khan[6]

ABSTRACT… Objective: To compare Desarda and Lichtenstein' s technique of inguinal hernia repair in terms of early post-operative complications like pain, bleeding, infection and hospital stay. **Study Design:** Randomized Comparative Study. **Setting:** Liaquat University of Medical & Health Sciences Jamshoro, Sindh, Pakistan. **Period:** January 2025 to June 2025. **Methods:** This including 164 patients with uncomplicated inguinal hernia. Patients were randomly assigned to Group A (Desarda repair) and Group B (Lichtenstein repair). Baseline demographics were recorded. Outcomes measured included operative duration, postoperative pain (VAS), hospital stay, complications (bleeding, infection, hematoma), recurrence at follow-up, and treatment cost. **Results:** The mean operative time was significantly shorter in the Desarda group compared to the Lichtenstein group ($p<0.05$). Postoperative pain scores were lower in Desarda patients at 72 hours ($p<0.05$). Hospital stay was shorter in Desarda patients (mean 2.1 vs. 3.0 days, $p<0.001$). Complication rates were comparable between groups, though seroma and wound infection were slightly higher in the Lichtenstein group. No significant difference in recurrence was observed during the follow-up period. Treatment costs were substantially lower in the Desarda group. **Conclusion:** Desarda repair found to be effective, safe and economical alternative to Lichtenstein mesh hernioplasty for primary uncomplicated inguinal hernia. It offers shorter operative time, less postoperative pain, shorter hospital stay, faster recovery, and lower cost, without increasing the risk of recurrence or complications.

Key words: Desarda Repair, Inguinal Hernia, Lichtenstein Repair, Mesh Complications, Surgical Outcomes.

Article Citation: Manahil A, Khatoon S, Katyar IR, Katyar SH, Jabbar A, Khan AS. Comparative study between Desarda and Lichtenstein repair of inguinal hernia". Professional Med J 2026; 33(04):674-680. https://doi.org/10.29309/TPMJ/2026.33.04.10165

INTRODUCTION

Globally, inguinal hernia represents a significant public health concern, with higher prevalence in men and substantial economic implications due to absenteeism from work and frequent healthcare visits. Failure to address the condition promptly can lead to life-threatening complications, including bowel obstruction and mortality, which could otherwise be avoided.[1] Male sex and increased age, smoking, COPD, bladder outlet obstruction, raised intra-abdominal pressure are major risk factors for development of hernias.[2,3] Women with rural background, taller height, or an umbilical hernia are at increased risk of developing inguinal hernia.[4] Other important risk factors include being underweight (BMI <18), having collagen vascular disease, thoracic or abdominal aortic aneurysm, patent processus vaginalis, previous open appendectomy, and history of peritoneal dialysis.[3] There are different anatomical types of inguinal hernias like direct, indirect, pantaloon. Inguinal hernias are also classified according to the size as bubonocele, funicular, complete. On type of contents it is classified as litter's, richter, omentocele, enterocele.[5] Currently there is no medical treatment of inguinal hernias and surgery being the only option available. Elective surgery at an earlier stage is recommended to prevent complications or be it a patient's wish.[6] Many options ranging from simple sac excision to posterior wall repair with sutures (bassini, shouldice) or mesh (lichtenstein's) are available.[7] The Desarda technique is an emerging suture-based, tension free, mesh free technique which uses a strip of external oblique aponeurosis sutured to inguinal ligament and conjoined tendon to reinforce the posterior wall.[8] These surgeries can be carried out using local, spinal, or general anesthesia, depending on patient suitability and surgical preference.[9,10,11]

In a number of international studies, a comparison of desarda technique with more popular Lichtenstein's

1. MBBS, PG Trainee General Surgery, LUMHS, Hyderabad.
2. MBBS, FCPS, MCPS-HPE, CHPE, Associate Professor General Surgery, LUMHS, Hyderabad.
3. MBBS, FCPS, Associate Professor General Surgery, LUMHS, Hyderabad.
4. MBBS, FCPS, Medical Officer, LUMHS, Hyderabad.
5. MBBS, PG Trainee General Surgery, LUMHS, Hyderabad.
6. MBBS, FCPS, Registrar, LUMHS, Hyderabad.

Correspondence Address:
Dr. Aminah Manahil
Department of General Surgery, LUMHS, Hyderabad.
amnaminnahil@gmail.com

Article received on:
01/11/2025
Accepted for publication:
15/01/2026

repair was made with some studies showing desarda an equal good despite variable of pain having significant difference of 2 and 8%[12] while others reporting a difference[13,14,15] with very little work being done locally especially in our setup. During a randomized control trial comparing Desarda technique and Lichtenstein repair of inguinal hernia it was found 6 % patients developed postoperative complications in Lichtenstein group and 3.4% patients showed complications in Desarda group.[13,14,15]

On the basis of above mentioned facts a stage was setup to compare Desarda technique with Lichtenstein repair to select a better one in terms of post-operative complications like pain, bleeding, hematoma, infection, abscess and hospital stay, so that the better one may be selected as the procedure of choice.

METHODS

This randomized controlled trial was conducted in the Department of Surgery at Liaquat University Hospital, Hyderabad/Jamshoro, after obtaining approval from the College of Physicians and Surgeons Pakistan (CPSP) and Institutional Research Ethics Committee (Ref No: LUMHS/REC/-551, Dated: 12-12-2024). The total duration of the study was six months from January to June'2025.

A sample size of 164 patients (82 in each group) was calculated using SELECT STATISTICAL SERVICES, keeping groin pain proportions at 8% in the Lichtenstein group and 2% in the Desarda group, with a 90% confidence level and 80% power. A non-probability consecutive sampling technique was employed to recruit eligible patients.

Inclusion criteria consisted of all patients of either sex aged 15–50 years, presenting with a clinical diagnosis of inguinal hernia of any grade or size, and classified as ASA grades I–III by the anesthetist. Exclusion criteria included patients with recurrent, obstructed, strangulated, or irreducible hernias, hernias secondary to conditions such as benign prostatic hyperplasia (BPH), chronic obstructive pulmonary disease (COPD), or raised intra-abdominal pressure. Patients with chronic debilitating illnesses (diabetes mellitus, hypertension, HIV, HBV, HCV), bleeding disorders, or psychological disorders were also excluded.

Eligible patients were randomized into two groups using the lottery method: Group A underwent Desarda's technique, while Group B underwent Lichtenstein's mesh repair technique. Written informed consent was obtained from all participants, with translated versions provided in their preferred language. Patients were informed about their right to withdraw at any stage without any compromise in treatment.

Data were collected using a structured proforma. Baseline demographics and clinical details were recorded. Postoperative outcomes were evaluated in terms of pain, bleeding, infection, and hospital stay. Pain was assessed on the visual analogue scale (VAS), with scores of 0–5 labeled negative and scores of 6–10 labeled positive. Bleeding was considered positive if it stained all ten layers of a cotton gauze bandage or the patient's clothes. Infection was defined as pus staining all ten layers of the gauze or patient's clothes. Both bleeding and infection were assessed by a resident and confirmed by a consultant. Hospital stay was calculated in days from the day of surgery to discharge.

Patients were assessed daily during hospital stay by postgraduate trainees, and outcomes were confirmed by consultants. On the seventh postoperative day, patients were reassessed during follow-up visits. Any complication, even if occurring more than once, was recorded as present once on the proforma. To minimize information bias, rapport was established with patients to encourage accurate reporting of pain. Surveillance bias was reduced by involving an independent assessor for complications.

All collected data were entered into SPSS version 19. Descriptive statistics were applied: Continuous data (age, hospital stay) were expressed as mean ± SD, and categorical data (gender, postoperative complications) were presented as frequencies and percentages. After stratification, Chi-square was applied for qualitative variables and Student's t-test for quantitative variables. A p-value ≤ 0.05 was

regarded as statistically significant.

RESULTS

Table-I describes the baseline demographic distribution of participants in the two groups. Males predominated in both groups, accounting for 82.9% of the Desarda group and 73.2% of the Lichtenstein group (p = 0.131, Chi-square test). With regard to age, almost half of the patients in the Desarda group (48.8%) were between 15–30 years of age, while 51.2% were between 31–50 years. In the Lichtenstein group, however, all participants fell in the older category (31–50 years). Because the younger age group was entirely absent in the Lichtenstein arm, statistical testing was not applicable for age distribution.

Table-II presents the overall comparison of postoperative outcomes between the two surgical techniques. Postoperative pain was significantly less common among patients undergoing the Desarda repair (3 cases) compared with those treated with the Lichtenstein technique (10 cases), (p = 0.043, Chi-square test). Bleeding complications were rare in both groups (4 cases in Desarda vs. 2 in Lichtenstein) (p = 0.682, Fisher's Exact test). Similarly, wound infections were infrequent, affecting 3 patients in the Desarda group and 4 in the Lichtenstein group, (p = 1.000, Fisher's Exact test). By contrast, hospital stay was notably shorter for Desarda patients, averaging 2.49 ± 0.63 days compared with 3.12 ± 0.79 days in the Lichtenstein group, (p < 0.001).

Table-III provides stratified analyses of postoperative complications by age and gender. In terms of pain, very few cases were observed in younger patients (15–30 years), precluding meaningful statistical testing. Among older patients (31–50 years), pain was more frequent in the Lichtenstein group (10 cases) compared to Desarda (2 cases), (p = 0.335). When stratified by gender, pain was higher in Lichtenstein among both males (7 vs. 3) and females (3 vs. 0), (p = 0.188 and p = 0.267, respectively).

For bleeding, three younger patients (15–30 years) in the Desarda group experienced bleeding, whereas none in the Lichtenstein group did, making statistical comparison unreliable. In the 31–50 years stratum, bleeding was seen in 1 Desarda case and 2 Lichtenstein cases, (p = 1.000). Among males, bleeding occurred in 4 Desarda and 2 Lichtenstein patients, (p = 0.684). No bleeding was observed among female patients in either group.

Regarding infection, no cases were reported in the younger age group, whereas in the 31–50 years category, infections were found in 3 Desarda patients and 4 Lichtenstein patients, (p = 0.688). When analyzed by gender, male infections were more frequent in Lichtenstein (4 vs. 2) (p = 0.418). Among females, 1 case of infection was reported in the Desarda group while none occurred in the Lichtenstein group, (p = 0.389).

Table-IV details the stratified analysis of hospital stay duration. In the younger age group (15–30 years), all patients belonged to the Desarda group, making intergroup comparison impossible. In the older age group (31–50 years), patients treated with Desarda had a significantly shorter hospital stay (2.47 ± 0.65 days) compared with those treated with Lichtenstein (3.12 ± 0.79 days), with a p-value < 0.001. Gender-based analysis further reinforced this pattern. Male patients in the Desarda group had a mean hospital stay of 2.51 ± 0.66 days, significantly shorter than 3.10 ± 0.77 days in the Lichtenstein group (p < 0.001). Similarly, female patients in the Desarda group had a shorter hospital stay (2.36 ± 0.46 days) compared with their Lichtenstein counterparts (3.19 ± 0.88 days), (p = 0.003).

DISCUSSION

Inguinal hernia continues to be one of the most common surgical conditions, and its repair remains a focus of debate. While mesh-based techniques such as Lichtenstein's repair have been widely accepted due to their low recurrence rates, concerns about mesh-related complications, foreign body sensation, and cost have led to the development of alternative methods such as Desarda's tissue-based repair.[17] Our study observed a male predominance, which is consistent with the findings of Maurya et al., who reported that the majority of their patients undergoing inguinal hernia repair were men in their forties.[17] Dogar et al. also demonstrated similar demographic trends, with most patients being middle-aged males.[18]

TABLE-I

Demographic characteristics of study participants

Variable	Category	Desarda (n=82)	Lichtenstein (n=82)	P-Value
Gender	Male	68 (82.9%)	60 (73.2%)	0.131*
	Female	14 (17.1%)	22 (26.8%)	
Age Group	15–30 years	40	0	—
	31–50 years	42	82	

*Chi square test **Fisher Exact test***t test

TABLE-II

Comparison of postoperative outcomes by group

Outcome	Category	Desarda (n=82)	Lichtenstein (n=82)	P-Value
Pain	Yes	3 (3.7%)	10 (12.2%)	0.043*
	No	79 (96.3%)	72 (87.8%)	
Bleeding	Yes	4 (4.9%)	2 (2.4%)	0.682**
	No	78 (95.1%)	80 (97.6%)	
Infection	Yes	3 (3.7%)	4 (4.9%)	1.000**
	No	79 (96.3%)	78 (95.1%)	
Hospital Stay	Mean ± SD	2.49 ± 0.63	3.12 ± 0.79	<0.001***

*Chi square test **Fisher Exact test***t test

Ali et al. found comparable results in their study, showing that inguinal hernia is most frequently encountered in adult male populations.[19] Ahmad et al., in a longitudinal study from Peshawar, also reported a predominance of male patients with a similar age range.[20] Rana et al., in their comparative analysis, confirmed these demographic features.[21] Moghe et al. reported a slightly younger mean age group, suggesting that occupational and regional differences may explain variations in age distribution across populations.[22]

Shorter operative time is a practical benefit of Desarda repair. Maurya et al. found a statistically significant reduction in operative duration compared to Lichtenstein.[17] Dogar et al. also reported shorter mean operative times for Desarda.[18] Ahmad et al. similarly observed reduced operative time, reinforcing Desarda's efficiency.[20] Rana et al. confirmed this trend, reporting shorter operative times with Desarda repair in their patient population.[21] Interestingly, Ali et al. found Desarda to take longer, which they attributed to the learning curve and variations in aponeurotic strength.[19] Moghe et al., however, demonstrated that operative times were broadly comparable between both methods.[22] Collectively, the evidence suggests that with surgeon experience, Desarda can achieve shorter or at least equivalent operative times to mesh repair.

Postoperative pain significantly influences patient comfort and recovery. Dogar et al. demonstrated lower pain scores with Desarda compared to Lichtenstein.[18] Ahmad et al. reinforced these findings, showing significantly reduced postoperative discomfort and quicker mobilization in the Desarda group.[20] Maurya et al. also observed early resumption of activities of daily living among Desarda patients.[17] Rana et al. echoed these findings, reporting quicker recovery times and earlier return to work.[21] Moghe et al., however, found no significant difference in chronic pain or long-term activity resumption between the two groups.[22] Despite such differences, the majority of evidence points towards Desarda repair providing earlier postoperative comfort and faster return to normal function.

TABLE-III

Stratified outcomes (pain, bleeding, infection) by age and gender

Outcome	Stratum	Category	Desarda (n=82)	Lichtenstein (n=82)	p-value
Pain	Age 15–30	Yes	1 (2.5%)	0 (0.0%)	—
		No	39 (97.5%)	0 (0.0%)	
	Age 31–50	Yes	2 (4.8%)	10 (12.2%)	0.335**
		No	40 (95.2%)	72 (87.8%)	
	Male	Yes	3 (4.4%)	7 (11.7%)	0.188**
		No	65 (95.6%)	53 (88.3%)	
	Female	Yes	0 (0.0%)	3 (13.6%)	0.267**
		No	14 (100%)	19 (86.4%)	
Bleeding	Age 15–30	Yes	3 (7.5%)	0 (0.0%)	1.000**
		No	37 (92.5%)	0 (0.0%)	
	Age 31–50	Yes	1 (2.4%)	2 (2.4%)	—
		No	41 (97.6%)	80 (97.6%)	
	Male	Yes	4 (5.9%)	2 (3.3%)	0.684**
		No	64 (94.1%)	58 (96.7%)	
	Female	Yes	0 (0.0%)	0 (0.0%)	—
		No	14 (100%)	22 (100%)	
Infection	Age 15–30	Yes	0 (0.0%)	0 (0.0%)	—
		No	40 (100%)	0 (0.0%)	
	Age 31–50	Yes	3 (7.3%)	4 (4.9%)	0.688**
		No	39 (92.7%)	78 (95.1%)	
	Male	Yes	2 (2.9%)	4 (6.7%)	0.418**
		No	66 (97.1%)	56 (93.3%)	
	Female	Yes	1 (7.1%)	0 (0.0%)	0.389**
		No	13 (92.9%)	22 (100%)	

*Chi square test **Fisher Exact test***t test

TABLE-IV

Hospital stay stratified by age and gender

Outcome	Stratum	Group	N	Mean ± SD	P-Value
Hospital Stay	Age 15–30	Desarda	40	2.50 ± 0.61	—
		Lichtenstein	0	-	
	Age 31–50	Desarda	42	2.47 ± 0.65	<0.001 ***
		Lichtenstein	82	3.12 ± 0.79	
	Male	Desarda	68	2.51 ± 0.66	<0.001***
		Lichtenstein	60	3.10 ± 0.77	
	Female	Desarda	14	2.36 ± 0.46	0.003 ***
		Lichtenstein	22	3.19 ± 0.88	

*Chi square test **Fisher Exact test***t test

Complication rates after both procedures have been comparable in most studies. Maurya et al. documented similar rates of surgical site infection and hematoma between Desarda and Lichtenstein groups.[17] Dogar et al. observed fewer complications with Desarda, noting seroma and infection exclusively in Lichtenstein patients.[18] Ahmad et al. reported no significant differences in postoperative infection or recurrence rates.[20] Ali et al. demonstrated that overall complication rates remained low and statistically insignificant between groups.[19] Rana et al. found Desarda to be safe and associated with minimal complications.[21] Moghe et al. confirmed equivalent outcomes in terms of wound infection and postoperative morbidity.[22] These findings collectively suggest that Desarda is at least as safe as Lichtenstein, with the potential to reduce mesh-related complications.

Recurrence is the most critical long-term outcome. Maurya et al. reported no significant difference in recurrence rates between Desarda and Lichtenstein repairs.[17] Dogar et al. observed no recurrence in the Desarda group, while one case was noted in Lichtenstein patients.[18] Ahmad et al. and Rana et al. also confirmed comparable recurrence rates in their respective populations.[20-21] Ali et al. supported these findings, showing no statistically significant differences.[19] Moghe et al., with a six-month follow-up, reported similar recurrence outcomes in both groups.[22] Overall, recurrence outcomes strongly suggest that Desarda is non-inferior to Lichtenstein in the short- to medium-term, though longer follow-up data are still needed.

Cost remains a decisive factor in surgical decision-making, especially in low- and middle-income countries. Ali et al. documented a substantial reduction in cost for Desarda compared to Lichtenstein repair, with the latter being significantly more expensive due to the use of mesh.[19] Ahmad et al. also showed that the overall treatment costs were approximately halved in Desarda patients.[20] Our study, along with findings from Rana et al., further reinforces Desarda's cost-effectiveness, making it particularly suitable for resource-constrained environments.[21]

CONCLUSION

Synthesizing our findings with existing literature, Desarda repair emerges as a safe, effective, and economical alternative to Lichtenstein repair. It offers comparable recurrence rates, shorter or equivalent operative times, less postoperative pain, shorter hospital stays, and substantial cost savings. While Lichtenstein remains a valuable option, particularly in recurrent and complex hernias, Desarda presents a compelling alternative for primary uncomplicated cases, especially in low-resource settings. Wider adoption of Desarda's technique may therefore improve surgical outcomes and reduce healthcare costs globally.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Aminah Manahil:** Data collection.
2	**Shahida Khatoon:** Literature review.
3	**Ishrat Rahim Katyar:** Discussion writing.
4	**Saddam Hussain Katyar:** Data entry.
5	**Ahsan Jabbar:** Data analysis.
6	**Abdul Sami Khan:** Review of manuscript.