

## A COMPARATIVE ANALYSIS OF DESARDA TISSUE REPAIR VERSUS LICHTENSTEIN MESH HERNIOPLASTY IN THE MANAGEMENT OF INGUINAL HERNIA

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### ABSTRACT

**Objective:** Inguinal hernia repair is among the most frequently performed surgical procedures worldwide. While the Lichtenstein mesh hernioplasty remains the gold standard, it carries risks such as infection, chronic pain, and foreign body complications. Desarda tissue repair, a mesh-free technique, has emerged as a potential alternative, claiming advantages including reduced complications and faster recovery. This study aims to compare clinical outcomes, post-operative pain, complications, and recovery times between Desarda tissue repair and conventional Lichtenstein mesh hernioplasty.

**Methods:** This comparative study was conducted at People's Hospital, Bhopal. Following ethical clearance and informed consent, 82 patients meeting the inclusion criteria were enrolled from March 2023 onward. Participants were divided into two groups: one undergoing Desarda tissue repair and the other receiving Lichtenstein mesh hernioplasty. Parameters such as duration of surgery, post-operative pain (Visual Analog Scale [VAS] score), complications, hospital stay, and time to return to normal activity were assessed and compared. Data were analyzed using the Statistical Package for the Social Sciences version 26.0.

**Results:** Desarda tissue repair demonstrated significantly superior outcomes compared to Lichtenstein mesh hernioplasty. It was associated with reduced operative time, faster recovery, shorter hospital stay, and notably lower postoperative pain (mean VAS score:  $2.76 \pm 2.02$  vs.  $4.88 \pm 2.66$ ;  $p=0.03$ ). In addition, Desarda repair showed fewer complications, with no instances of wound infection, seroma, chronic pain, or sensory loss. The incidence of overall complications was significantly lower in the Desarda group (97.56% complication-free vs. 73.17% in the mesh group;  $p=0.02$ ).

**Conclusion:** Desarda tissue repair is a safer and more effective alternative to Lichtenstein mesh hernioplasty for inguinal hernia management. Its association with reduced operative and recovery times, fewer complications, and lower post-operative pain supports its use, especially in patients seeking mesh-free surgical options.

**Keywords:** Hernioplasty, Desarda repair, Inguinal hernia, Mesh repair, Lichtenstein repair.

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### INTRODUCTION

An inguinal hernia is defined as the protrusion of abdominal contents through a weakness or defect in the inguinal region of the abdominal wall. These hernias commonly contain preperitoneal fat or loops of the small intestine, and in females, may occasionally involve reproductive structures such as the ovary. The herniated contents are typically enclosed within a peritoneal sac that pushes through the abdominal wall.

Inguinal hernias are more frequently observed on the right side, though bilateral involvement is not uncommon. Individuals presenting with a hernia on one side have an increased risk of developing a contralateral hernia [1-4].

Globally, the burden of inguinal and related hernias is significant. In 2019, an estimated 32.53 million prevalent cases and 13.02 million new cases of inguinal, femoral, and abdominal hernias were reported worldwide-reflecting a 36% increase in prevalence and a 63.7% rise in incidence since 1990. Males constituted approximately 86% of new cases, with a male-to-female ratio of 6:1. The majority of affected individuals were aged between 50 and 69 years. India, China, and Brazil together accounted for nearly 39% of the global burden [5].

Surgical intervention remains the definitive treatment for symptomatic inguinal hernias. The choice of technique-whether open or laparoscopic-depends on various factors including recurrence risk, complication

profile, and recovery time. Among the open techniques, Desarda tissue repair and Lichtenstein mesh hernioplasty are two widely practiced methods [6].

The Lichtenstein technique, considered the gold standard, utilizes a synthetic mesh to reinforce the inguinal canal, offering low recurrence rates. However, it is not without drawbacks, including risks of chronic groin pain, foreign body sensation, mesh infection, and seroma formation [7]. Conversely, the Desarda technique, introduced in 2001, employs an autologous strip of the external oblique aponeurosis, eliminating the need for prosthetic mesh. This approach minimizes mesh-related complications and has shown promise in reducing post-operative pain and expediting recovery [8].

Although both techniques have demonstrated comparable recurrence rates (typically around 1-2%) and similar overall complication profiles, the Desarda method is increasingly recognized for its advantages in terms of early post-operative outcomes [9].

Given the differences in recovery, complication risks, and long-term outcomes, there is a need for further comparative studies. This study, therefore, aims to evaluate and compare the post-operative pain, complication rates, recovery time, and overall clinical outcomes of Desarda tissue repair and conventional Lichtenstein mesh hernioplasty in patients undergoing inguinal hernia surgery.

## METHODS

This was a prospective, comparative study conducted at People's Hospital, Bhopal. This study received approval from the Institutional Ethics Committee. (Ref No.PCMS/OD/PS/2023/993, CODE No. - IEC-2023/22) A total of 82 patients diagnosed with inguinal hernia and meeting the inclusion criteria were enrolled from March 2023 onward.

### Inclusion criteria

- Patients aged 18 years and above
- Diagnosed with an inguinal hernia
- Provided informed written consent
- Patients opting for non-mesh surgery were also included.

### Exclusion criteria

- Patients below 18 years of age
- Absconded or left against medical advice cases
- Patients are unwilling to provide consent.

Before commencement, ethical clearance was obtained from the institutional ethics committee.

Demographic details and clinical histories of the patients were recorded. All patients underwent a standard pre-operative evaluation and were then randomly assigned into two equal groups:

- Group A (n=41): Desarda tissue repair
- Group B (n=41): Conventional Lichtenstein mesh hernioplasty.

All procedures were performed by the same surgeon using standardized surgical techniques to minimize interoperator variability.

### Post-operative evaluation

Patients were assessed for post-operative pain using the Visual Analogue Scale (VAS). Wound healing was evaluated using the Southampton Wound Grading System, and any surgical site infections were categorized according to the Centers for Disease Control and Prevention criteria. Patients were typically discharged between post-operative days 2 and 3. Follow-up assessments were conducted at 1 week for suture removal and continued through outpatient visits or telephonic follow-ups to evaluate long-term outcomes.

### Statistical analysis

All collected data were compiled and analyzed using Microsoft Excel 2010. Continuous variables were expressed as mean±standard deviation and compared using the unpaired t-test. Categorical variables were analyzed using the Chi-square test. A  $p < 0.05$  was considered statistically significant.

## OBSERVATION

A total of 82 patients were included in the study, with 41 in each group. The mean age of patients in Group-I (Desarda Tissue Repair) was  $52.06 \pm 12.13$  years, whereas in Group-II (Lichtenstein Mesh Hernioplasty), it was  $46.29 \pm 12.76$  years, showing a statistically significant difference ( $p = 0.039$ ), indicating that patients in the Desarda group were older on average. All patients in both groups were male (100%), and the side of the hernia was comparable between the two groups. In Group-I, 48.78% had left-sided and 51.12% had right-sided hernias, whereas in Group-II, 53.65% had left-sided and 46.34% had right-sided hernias. These differences were not statistically significant (Table 1).

The clinical characteristics were largely similar between the two groups. BMI, diastolic blood pressure (DBP), respiratory rate, total leukocyte count (TLC), and random blood sugar (RBS) showed no significant differences, though RBS was slightly lower in Group-I. Group-I had significantly higher systolic blood pressure (SBP) and hemoglobin levels than Group-II. Pulse rate and oxygen saturation ( $SpO_2$ ) remained normal across both groups (Table 2).

The distribution of presenting complaints showed minor variation between the groups. Constipation was the most frequent symptom, reported by 34.14% in Group-I and 39.02% in Group-II. Fever and trauma history were slightly more common in Group-II. Abdominal pain and nausea were present only in Group-II, while no cases of abdominal distension were noted in either group. All patients were conscious and oriented at presentation (Table 3).

Post-operative outcomes revealed significantly better results in the Desarda group across all parameters. Group-I had a shorter mean symptom duration (1.53 vs. 8.46 years), operative time (62.44 vs. 106.95 min), and surgery duration (65.00 vs. 106.95 min) compared to Group-II ( $p < 0.0001$ ). Recovery was faster (11.58 vs. 16.88 days) and hospital stay was shorter (4.41 vs. 5.34 days) in the Desarda group ( $p = 0.0003$ ). Overall, Desarda Tissue Repair demonstrated superior post-operative outcomes (Table 4).

Post-operative pain was significantly lower in the Desarda group (mean VAS score:  $2.66 \pm 2.02$ ) compared to the Lichtenstein group ( $4.78 \pm 2.66$ ;  $p = 0.03$ ). Mild pain (VAS 0–3) was more common in the Desarda group (70.73% vs. 51.22%), while severe pain (VAS 8–10) was less frequent (2.44% vs. 12.20%) (Table 5).

**Table 1: Comparison of demographic characteristics between group-A and group-B**

Parameters	Group-I (n=41) (%)	Group-II (n=41) (%)	p-value
Age (mean±SD)	52.06±12.13	46.29±12.76	0.039
Gender			
Male	41 (100)	41 (100)	-
Side			
Left	20 (48.78)	22 (53.65)	-
Right	21 (51.12)	19 (46.34)	

Mean±SD values are shown in above table for age.  $p < 0.05$  considered as significant. SD: Standard deviation

**Table 2: Comparison of clinical characteristics between group-A and group-B**

Variables	Group-I Mean±SD	Group-II Mean±SD	p-value
BMI	19.77±2.00	19.68±1.30	0.43
SBP	114.83±3.68	113.36±3.04	0.04
DBP	75.24±3.97	75.63±4.11	0.66
Pulse rate	Normal	Normal	-
Respiratory rate	16.10±1.55	16.57±1.87	0.09
SpO <sub>2</sub>	Normal	Normal	-
HB (%)	14.17±1.05	13.31±1.45	0.003
TLC	6957.54±772.33	7090.24±779.69	0.44
RBS	111.63±3.53	113.61±4.94	0.04

Mean±SD values are shown in Table 2.  $p < 0.05$  considered statistically significant. SD: Standard deviation, BMI: Body mass index, SBP: Systolic blood pressure, DBP: Diastolic blood pressure, SpO<sub>2</sub>: Oxygen saturation, TLC: Total leukocyte count, RBS: Random blood sugar

**Table 3: Distribution according to complaints in both groups**

Complaints	Group-I (n/%)	Group-II (n/%)
Abdominal pain	0 (0.00)	3 (7.32)
Nausea	0 (0.00)	2 (4.88)
Abdominal distension	0 (0.00)	0 (0.00)
Constipation	14 (34.14)	16 (39.02)
Fever	2 (4.88)	5 (12.20)
History of trauma	1 (2.44)	3 (7.32)
Conscious oriented	41 (100)	41 (100)

Post-operative complications were significantly lower in the Desarda group, with 97.56% of patients experiencing no complications compared to 73.17% in the Lichtenstein group ( $p=0.02$ ). Notably, seroma, chronic pain, and loss of sensation occurred only in the Lichtenstein group (Table 6).

## DISCUSSION

The present study compared the clinical outcomes of Desarda Tissue Repair and Lichtenstein Mesh Hernioplasty in patients undergoing inguinal hernia surgery. Our findings indicate that the Desarda group (Group I) had a significantly higher mean age compared to the Lichtenstein group (Group II) ( $51.56 \pm 14.11$  years vs.  $44.29 \pm 12.76$  years,  $p=0.02$ ). All participants were male, and there was no statistically significant difference regarding the side of the hernia. Group I also showed higher hemoglobin levels ( $p=0.003$ ) and slightly elevated SBP ( $p=0.04$ ), while other parameters such as BMI, DBP, respiratory rate,  $SpO_2$ , TLC, and random blood sugar were comparable between the groups.

Our results demonstrated that Desarda Tissue Repair was associated with better post-operative outcomes than the Lichtenstein Mesh Hernioplasty. Patients in the Desarda group experienced shorter symptom duration, reduced operative time, faster recovery, and shorter hospital stays. Importantly, the Desarda group also had significantly fewer post-operative complications ( $p=0.02$ ). Complications such as wound infections, seromas (9.77%), chronic pain (7.32%), and loss of sensation (4.88%) were exclusively observed in the Lichtenstein

group. In contrast, 97.56% of patients in the Desarda group were free of complications, compared to 73.17% in the Lichtenstein group.

These findings are consistent with previous studies. Tugave *et al.* [10] observed that patients undergoing Desarda repair had significantly shorter operative times ( $p=0.001$ ), hospital stays ( $p=0.002$ ), and quicker return to daily activities ( $p=0.03$ ) compared to those receiving Lichtenstein hernioplasty. Although the overall complication and recurrence rates were similar, early post-operative pain scores favored the Desarda group.

Similarly, Verma *et al.* [4] reported comparable operative durations between the two groups ( $p=0.167$ ). Although early post-operative pain was initially higher in the Desarda group ( $p=0.07$ ), by post-operative day 7, pain levels were significantly greater in the Lichtenstein group ( $p=0.03$ ), suggesting better long-term comfort with the Desarda technique.

Mehmood *et al.* [11] also found Desarda repair to be superior in terms of post-operative comfort and recovery. Their study revealed significantly lower pain scores on the 7<sup>th</sup> post-operative day ( $1.50 \pm 0.50$  vs.  $2.00 \pm 0.76$ ,  $p=0.003$ ), shorter hospital stays ( $p=0.02$ ), quicker return to work ( $p=0.0001$ ), and reduced operative time ( $p=0.0001$ ) in the Desarda group. Both groups had a low incidence of surgical site infections and no recurrences, further affirming the safety of the Desarda technique.

These findings are further supported by Neogi *et al.* [12], who conducted a comparative study of Lichtenstein and Desarda techniques and observed that while both methods are effective, the Desarda group demonstrated shorter operative times and faster post-operative recovery, with no increase in recurrence rates.

Gedam *et al.* [9] also reinforced the advantages of Desarda's technique in their prospective cohort study, which highlighted significantly fewer post-operative complications and shorter recovery time compared to Lichtenstein mesh repair. They emphasized Desarda's mesh-free nature as a significant benefit in reducing foreign body reactions.

Moreover, the feasibility and cost-effectiveness of Desarda's method were underscored in the article published by Sinha *et al.* 2017 [13], which found Desarda repair to be a viable and economical alternative, especially in low-resource settings, with minimal recurrence rates.

A recent comparative study published by Moghe *et al.* 2022 [14] added to the growing evidence ring Desarda's technique by demonstrating its superiority in terms of post-operative pain scores and complication rates, while maintaining comparable efficacy in preventing hernia recurrence when contrasted with Lichtenstein repair.

In addition, Saraswat *et al.* [15] in a study published in the Asian Journal of Pharmaceutical and Clinical Research found that the Desarda technique provided better short-term outcomes, including lower pain scores and fewer complications, further validating its effectiveness over mesh-based repairs in selected cases.

Contrastingly, Sahay *et al.* [1] found no significant differences in post-operative pain between the two techniques at any measured time point. Pain scores were similar on post-operative days 1, 3, and 5, suggesting that while recovery parameters may favor Desarda repair, the overall pain experience may not differ substantially in all populations.

Overall, the findings from the present study support the growing body of evidence that Desarda Tissue Repair is a safe and effective alternative to mesh-based hernia repair. Its advantages include fewer post-operative complications, faster recovery, and lower pain scores in the early post-operative period-making it a valuable option, particularly in settings where mesh use is contraindicated or declined by patients.

**Table 4: Comparison of post-operative findings between group-A and group-B**

Parameters	Group-I	Group-II	p-value
Duration of symptoms (years)	1.53±0.66	8.46±2.00	<0.0001
Duration of surgery (min)	65.00±16.66	106.95±11.11	<0.0001
Time of recovery (days)	11.58±1.66	16.88±2.23	<0.0001
Operative time (min)	62.44±14.23	106.95±11.11	<0.0001
Length of hospital stay (days)	4.41±1.18	5.34±1.04	0.0003

Mean±SD values are shown in this table.  $P<0.05$  considered as statistically significant. SD: Standard deviation

**Table 5: Comparison of VAS score between group-I and group-II**

VAS score	Group-I		Group-II		p-value
	No of cases	Percentage	No of cases	Percentage	
0-3	29	70.73	21	51.22	0.03
4-7	12	29.26	15	36.59	
8-10	1	2.44	5	12.20	
Mean±SD	2.66±2.02		4.78±2.66		

Mean±SD values are shown in above table.  $p<0.05$  considered as significant. SD: Standard deviation

**Table 6: Post-operative complications between both groups**

Complications	Group-I		Group-II		P-value
	No of cases	Percentage	No of cases	Percentage	
Wound infection	0	2.44	1	2.44	0.02
Seroma	0	0.00	4	9.77	
Scrotal swelling	1	2.44	1	2.44	
Chronic pain	0	0.00	2	4.87	
Loss of sensation	0	0.00	2	4.88	
Nil	40	97.56	30	73.17	

## CONCLUSION

Based on the findings of this study, Desarda Tissue Repair emerges as a safer and more effective alternative to Lichtenstein Mesh Hernioplasty for inguinal hernia repair. It was associated with a shorter duration of surgery, reduced post-operative complications, lower pain scores, and a quicker recovery. Given these advantages, Desarda repair may be particularly suitable for patients who wish to avoid mesh-related complications, making it a preferable option in appropriately selected cases.

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## AUTHOR CONTRIBUTION

Dr. Asma Azim: Methodology and data collection, formal analysis, Writing - Original Draft. Dr. Rahul Patel: Conceptualization, Methodology, Data Collection, Formal Analysis, Writing - final Original Draft, Supervision. DR. PIYUSH SINGH:- Statistical Analysis, Visualization, Critical Review of Manuscript. Dr. Ashwitha Crasta: Data collection and analysis.

## CONFLICT OF INTEREST

Nil.

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