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Research Article

Comparative Analysis of Lichtenstein Mesh Repair and Desarda Tissue Repair in Primary Inguinal Hernia: A Randomized Clinical Study

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Abstract

Background

Inguinal hernia is one of the most common surgical conditions worldwide and accounts for a large proportion of elective general surgery procedures. The Lichtenstein tension-free mesh repair is considered the current gold standard because of its low recurrence rate and reproducible results. However, the use of prosthetic mesh has been associated with chronic groin pain, a foreign body sensation, a mesh-related infection, and increased costs of treatment. The Desarda tissue repair, a mesh free technique using an undetached strip of external oblique aponeurosis, is a physiological alternative preserving the dynamic anatomy of the inguinal canal without prosthetic implantation. Evidence comparing the two techniques remains inconsistent especially in resource limited settings.

Objectives To compare the clinical outcomes of Lichtenstein mesh repair and Desarda tissue repair in patients undergoing elective surgery for primary inguinal hernia.

Materials and Methods

This prospective randomized clinical study was conducted in the Department of General Surgery of tertiary care teaching hospital from January 2024 to December 2024. One hundred adult patients with primary uncomplicated inguinal hernia were randomized into two groups equally, Lichtenstein mesh repair (n = 50) and Desarda tissue repair (n = 50). The main outcomes were operative time, post-operative pain, wound complications, length of hospital stay, time to return to normal activities, chronic groin pain and recurrence. Statistical analysis was performed using IBM SPSS Statistics version 26.0 and p value <0.05 was considered statistically significant.

Results

Of 100 randomized patients, the average age was approximately 46 years, and most of the participants were male. The operative time was less in Desarda group, while postoperative pain scores and wound complication rates were comparable between the groups. Patients undergoing Desarda repair were able to ambulate earlier and return to routine activities sooner . Lichtenstein repair was associated with higher incidence of chronic groin pain and a sensation of a foreign body, but recurrence rates after one-year follow-up did not differ between both procedures.

Conclusion.

Lichtenstein mesh repair and Desarda tissue repair are safe and effective methods of primary inguinal hernia repair. Desarda repair offers benefits in terms of avoiding prosthetic mesh, early functional recovery and decreasing chronic groin discomfort without affecting short-term recurrence rates. The optimal surgical approach remains dependent upon careful patient selection and surgeon expertise.

Keywords: Inguinal hernia; Lichtenstein repair; Desarda repair; Mesh repair; Tissue repair; Randomized clinical trial; Chronic groin pain; Hernia recurrence.

Introduction

Inguinal hernia is one of the most common diseases encountered in general surgical practice, accounting for nearly 75% of all abdominal wall hernias and affecting millions of people worldwide each year.[1] The lifetime risk of developing an inguinal hernia is estimated to be around 27% in men and 3% in women, making it a major contributor to the global surgical workload.[2] Despite advances in surgical techniques that have greatly improved patient outcomes, inguinal hernia continues to impose a significant socioeconomic burden due to loss of productivity, healthcare expenditure and postoperative morbidity.[3]

The main goal of inguinal hernia surgery is a durable repair with minimum post-operative pain, rapid recovery, low recurrence and minimal complications. In the last century, more than a hundred operative techniques have been described in the search for the ideal method of repair.[4] The Lichtenstein tension-free mesh repair, introduced in 1984, has become the most popular open technique for its simplicity, reproducibility, and consistently low recurrence rates.[5] International guidelines recommend mesh-based repair as a standard procedure for most adult patients with primary inguinal hernia given the extensive evidence supporting its efficacy.[6]

Widely accepted, but not without its limitations, is the implantation of mesh. Chronic inflammatory reactions, foreign body sensation, mesh infection, seroma formation, testicular complications, and chronic postoperative inguinal pain affecting long-term quality of life may be caused by prosthetic mesh.[7,8] Moreover, complications related to mesh may lead to further interventions, increasing treatment costs and patient morbidity. In addition, the cost and availability of mesh may restrict its routine use in low- and middle-income countries, especially in peripheral health facilities.[9]

Several non-mesh techniques have been revisited and modified to overcome these limitations. The Desarda repair, first described by Mohan P. Desarda in 2001, has gained increasing attention as a physiological tissue-based repair.[10] This technique uses an undetached strip of the external oblique aponeurosis to reinforce the posterior wall of the inguinal canal while preserving its dynamic function. Unlike conventional tissue repairs which generate tension between approximated structures, the Desarda technique preserves normal anatomy and prevents prosthetic implantation.[10,11]

Several randomized controlled trials and meta-analyses have compared Desarda tissue repair to Lichtenstein mesh repair. Most of the studies have reported similar rates of recurrence, but have suggested that Desarda repair may reduce chronic groin pain, foreign-body sensation and overall treatment costs.[12-15] However, some studies have not reported any significant differences between the two techniques in terms of postoperative complications or long-term outcomes.[16] Consequently, controversy remains regarding the general applicability of

Desarda repair, especially in different healthcare settings and patient populations.

Inguinal hernia is still very common in India and other developing countries in the economically productive adult population. The ideal repair technique should be safe, inexpensive, reproducible technically, have minimal postoperative morbidity and provide durable long term results. Studies comparing local populations are important to provide evidence for regional clinical practice and utilization of healthcare resources.

The present randomized clinical study was aimed at comparing the Lichtenstein mesh repair with Desarda tissue repair in patients with primary inguinal hernia. The comparison was based on the following parameters: operative duration, postoperative pain, early and late postoperative complications, duration of hospitalization, time to return to normal daily activities, chronic groin pain, and recurrence. The findings are likely to add to the increasing body of evidence of the role of mesh and non-mesh techniques in modern day inguinal hernia surgery.

Aim

To compare the clinical outcomes of Lichtenstein tension-free mesh repair versus Desarda tissue repair in patients undergoing elective surgery for primary inguinal hernia.

Primary Objectives

1. To compare operative time between Lichtenstein mesh repair and Desarda tissue repair.
2. To compare postoperative pain after both surgical techniques.
3. To assess early post operative complications i.e. seroma, haematoma, wound infection and scrotal oedema.
4. To compare the length of hospital stay.
5. To evaluate the time of return to normal daily activities.
6. To compare the incidence of chronic pain in the groin.
7. Comparison of recurrence rates at follow up.

Secondary Objectives

1. To compare the intraoperative complications of the two procedures.
2. To assess the patient's satisfaction post surgery.
3. To evaluate the overall safety and feasibility of Desarda tissue repair as an alternative to mesh-based repair.

Materials and Methods

Study Design

This prospective, parallel-group, randomized clinical study was conducted to compare the clinical outcomes of **Lichtenstein tension-free mesh repair** and **Desarda tissue repair** in patients with primary inguinal hernia.

Study Setting and Duration

The study was conducted in the **Department of General Surgery** of a tertiary care teaching hospital over a **12-month period from January 2024 to December 2024**.

Study Population

Adult patients diagnosed with primary uncomplicated inguinal hernia and scheduled for elective open hernia repair were considered eligible for inclusion.

Sample Size

A total of **100 patients** were enrolled and randomly allocated into two equal groups:

- **Group A (Lichtenstein Mesh Repair):** 50 patients
- **Group B (Desarda Tissue Repair):** 50 patients

Simple randomization was performed using a computer-generated random number sequence with allocation concealment through sequentially numbered, sealed opaque envelopes.

Eligibility Criteria

Inclusion Criteria

- Age ≥18 years.
- Primary unilateral reducible inguinal hernia.

- Elective surgery under spinal or general anesthesia.
- American Society of Anesthesiologists (ASA) physical status I–III.
- Written informed consent provided.

Exclusion Criteria

- Recurrent inguinal hernia.
- Bilateral inguinal hernia.
- Complicated hernia (obstructed, strangulated, or incarcerated).
- Femoral hernia.
- Previous lower abdominal surgery affecting the inguinal region.
- Severe systemic illness precluding elective surgery.
- Coagulopathy or active local infection.
- Refusal to participate.

Preoperative Assessment

All patients underwent a detailed clinical evaluation, including demographic profile, occupation, body mass index (BMI), smoking status, comorbidities, duration of symptoms, side and type of hernia, and ASA grading.

Routine preoperative investigations included:

- Complete blood count
- Blood glucose
- Renal function tests
- Liver function tests
- Coagulation profile
- Viral serology
- Urine examination
- Electrocardiography
- Chest radiography (when indicated)

The diagnosis of inguinal hernia was established clinically, with ultrasonography performed when diagnostic uncertainty existed.

Randomization and Allocation

Eligible participants were randomly assigned in a 1:1 ratio to either the Lichtenstein or Desarda group using computer-generated random numbers. Allocation concealment was maintained using sealed opaque envelopes opened immediately before surgery.

Because of the nature of the surgical procedures, blinding of the operating surgeon was not feasible. However, postoperative assessment was performed by investigators not involved in the surgical procedures whenever possible.

Surgical Technique

Group A: Lichtenstein Mesh Repair

Patients underwent standard open Lichtenstein tension-free hernioplasty under spinal or general anesthesia. After reduction of the hernia sac, a polypropylene mesh measuring approximately **7.5 × 15 cm** was placed over the posterior wall of the inguinal canal and secured using interrupted polypropylene sutures according to the standard Lichtenstein technique. Care was taken to preserve the ilioinguinal, iliohypogastric, and genital branch of the genitofemoral nerves.

Group B: Desarda Tissue Repair

Patients underwent Desarda tissue repair using an undetached strip of the external oblique aponeurosis to reinforce the posterior wall of the inguinal canal without prosthetic mesh implantation. The strip was sutured between the inguinal ligament inferiorly and the internal oblique/conjoint tendon superiorly according to the original Desarda technique while maintaining its vascular continuity.

Postoperative Management

All patients received standardized postoperative care, including:

- Intravenous antibiotics as per institutional protocol
- Analgesics
- Early oral feeding
- Early ambulation
- Scrotal support when required
- Daily wound assessment
- Discharge according to predefined clinical criteria

Patients were advised to avoid strenuous physical activity for six weeks following surgery.

Follow-up

Patients were evaluated at:

- Postoperative Day 1

- Day 7
- One month
- Three months
- Six months
- Twelve months

During each visit, patients were assessed for:

- Wound healing
- Surgical site infection
- Seroma
- Hematoma
- Scrotal edema
- Chronic groin pain
- Foreign-body sensation
- Return to normal daily activities
- Hernia recurrence
- Patient satisfaction

Outcome Measures

Primary Outcomes

- Operative duration (minutes)
- Postoperative pain measured using the Visual Analogue Scale (VAS)
- Surgical site infection
- Seroma formation
- Hematoma
- Scrotal edema
- Duration of hospital stay
- Time to return to normal activities
- Chronic groin pain at six and twelve months
- Hernia recurrence

Secondary Outcomes

- Intraoperative complications
- Foreign-body sensation
- Patient satisfaction
- Overall postoperative morbidity

Definitions

Operative Time: Time from skin incision to completion of skin closure.

Hospital Stay: Number of days from surgery until discharge.

Chronic Groin Pain: Pain persisting for more than three months after surgery that interfered with normal daily activities.

Recurrence: Clinically detectable recurrent inguinal hernia during the follow-up period.

Surgical Site Infection: Defined according to the Centers for Disease Control and Prevention (CDC) criteria.

Data Collection

Clinical information was prospectively recorded using a structured case record form. Data included demographic characteristics, clinical findings, operative details, postoperative recovery, complications, follow-up findings, and recurrence.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using **IBM SPSS Statistics version 26.0**.

Continuous variables were expressed as **mean ± standard deviation (SD)** and compared using the **Student's independent t-test**.

Categorical variables were expressed as **frequencies and percentages** and analyzed using the **Chi-square test** or **Fisher's exact test** wherever appropriate.

Relative risk with **95% confidence intervals (CI)** was calculated for major postoperative outcomes.

A **p-value <0.05** was considered statistically significant.

Results

A total of **100 patients** with primary uncomplicated inguinal hernia were enrolled and randomized into two equal groups: **Lichtenstein Mesh Repair (Group A, n = 50)** and **Desarda Tissue Repair (Group B, n = 50)**. There were no statistically significant differences in baseline demographic or clinical characteristics between the two groups, indicating successful randomization

.

Table 1. Baseline Demographic Characteristics of Study Participants (N = 100)

Variable	Lichtenstein (n=50)	Desarda (n=50)	p-value
Mean age (years)	46.8 ± 13.2	45.6 ± 12.8	0.64
Male	47 (94.0%)	46 (92.0%)	0.69
Female	3 (6.0%)	4 (8.0%)	
Mean BMI (kg/m²)	24.8 ± 2.9	24.5 ± 3.1	0.58
Smokers	16 (32.0%)	15 (30.0%)	0.83
Diabetes mellitus	8 (16.0%)	7 (14.0%)	0.78
Hypertension	10 (20.0%)	9 (18.0%)	0.80

The two study groups were comparable with respect to age, sex distribution, BMI, smoking status, and associated comorbidities ($p>0.05$), confirming baseline homogeneity.

Table 2. Clinical Profile of Primary Inguinal Hernia

Variable	Lichtenstein (n=50)	Desarda (n=50)	p-value
Right-sided hernia	31 (62.0%)	30 (60.0%)	0.84
Left-sided hernia	19 (38.0%)	20 (40.0%)	
Indirect hernia	34 (68.0%)	33 (66.0%)	0.83
Direct hernia	16 (32.0%)	17 (34.0%)	
Mean duration of symptoms (months)	11.6 ± 5.3	10.9 ± 5.0	0.48
ASA Grade I	32 (64.0%)	34 (68.0%)	0.67
ASA Grade II	18 (36.0%)	16 (32.0%)	

The clinical characteristics of the hernias were similar between both treatment groups. Right-sided and indirect inguinal hernias were the most common presentations.

Table 3. Intraoperative Findings

Variable	Lichtenstein (n=50)	Desarda (n=50)	p-value
Mean operative time (minutes)	58.4 ± 9.6	49.2 ± 8.4	<0.001
Intraoperative bleeding	2 (4.0%)	1 (2.0%)	0.56
Nerve injury	1 (2.0%)	0	0.31
Conversion to another procedure	0	0	—

The **Desarda repair required significantly less operative time** than the Lichtenstein mesh repair ($p<0.001$). Intraoperative complications were infrequent and comparable between the groups.

Table 4. Early Postoperative Outcomes

Variable	Lichtenstein (n=50)	Desarda (n=50)	p-value
VAS pain score (24 hours)	4.8 ± 1.2	3.9 ± 1.1	<0.001
Mean hospital stay (days)	2.8 ± 0.7	2.2 ± 0.6	<0.001
Time to ambulation (hours)	11.6 ± 3.1	8.7 ± 2.5	<0.001
Time to return to oral feeding (hours)	8.4 ± 1.6	7.9 ± 1.5	0.11

Patients who underwent **Desarda tissue repair experienced significantly lower postoperative pain, earlier ambulation, and shorter hospital stay** than those treated with the Lichtenstein technique.

Table 5. Early Postoperative Complications

Complication	Lichtenstein (n=50)	Desarda (n=50)	p-value
Surgical site infection	3 (6.0%)	2 (4.0%)	0.64
Seroma	4 (8.0%)	1 (2.0%)	0.17
Hematoma	2 (4.0%)	1 (2.0%)	0.56
Scrotal edema	5 (10.0%)	3 (6.0%)	0.46
Urinary retention	2 (4.0%)	2 (4.0%)	1.00
Total patients with complications	13 (26.0%)	9 (18.0%)	0.33

Although early postoperative complications were numerically lower in the Desarda group, the differences were **not statistically significant**. Both procedures demonstrated favorable early postoperative safety profiles.

Table 6. Functional Recovery

Variable	Lichtenstein (n=50)	Desarda (n=50)	p-value
Return to routine activities (days)	16.8 ± 4.2	12.4 ± 3.5	<0.001
Return to work (days)	21.6 ± 5.8	16.3 ± 4.7	<0.001
Patient satisfaction score (0–10)	8.4 ± 1.1	9.1 ± 0.8	0.002

Patients in the **Desarda repair group resumed routine activities and work significantly earlier** than those in the Lichtenstein group. Overall patient satisfaction was also significantly higher among patients undergoing Desarda tissue repair.

Table 7. Late Postoperative Outcomes During Follow-up

Variable	Lichtenstein (n=50)	Desarda (n=50)	p-value
Chronic groin pain (>3 months)	8 (16.0%)	2 (4.0%)	0.046
Foreign-body sensation	10 (20.0%)	0	0.001
Persistent numbness	5 (10.0%)	2 (4.0%)	0.24
Recurrence at 12 months	1 (2.0%)	1 (2.0%)	1.000

Patients undergoing **Lichtenstein mesh repair experienced significantly higher rates of chronic groin pain and foreign-body sensation** than those undergoing Desarda tissue repair. Hernia recurrence at one year was identical in both groups.

Table 8. Comparison of Overall Postoperative Outcomes

Outcome	Lichtenstein (n=50)	Desarda (n=50)	p-value
Mean operative time (minutes)	58.4 ± 9.6	49.2 ± 8.4	<0.001
Mean VAS pain score (24 hours)	4.8 ± 1.2	3.9 ± 1.1	<0.001
Mean hospital stay (days)	2.8 ± 0.7	2.2 ± 0.6	<0.001
Return to normal activities (days)	16.8 ± 4.2	12.4 ± 3.5	<0.001
Return to work (days)	21.6 ± 5.8	16.3 ± 4.7	<0.001
Overall complication rate	13 (26.0%)	9 (18.0%)	0.33
Chronic groin pain	8 (16.0%)	2 (4.0%)	0.046
Recurrence	1 (2.0%)	1 (2.0%)	1.000

Interpretation

Desarda tissue repair demonstrated superior postoperative recovery with shorter operative duration, reduced pain, shorter hospitalization, and earlier return to normal activities. Overall complication and recurrence rates were comparable between the two techniques.

Table 9. Univariate Analysis of Factors Associated with Delayed Functional Recovery (>14 Days)

Variable	Odds Ratio (OR)	95% Confidence Interval	p-value
Age >60 years	2.38	1.01–5.62	0.047
BMI ≥25 kg/m²	2.09	0.91–4.82	0.081
Diabetes mellitus	2.74	1.08–6.95	0.033
Smoking	2.41	1.03–5.66	0.043
Lichtenstein repair	3.82	1.66–8.77	0.002
Operative time >60 min	3.15	1.34–7.39	0.008

Advanced age, diabetes, smoking, prolonged operative duration, and the Lichtenstein technique were significantly associated with delayed return to routine activities on univariate analysis.

Table 10. Multivariate Logistic Regression Analysis

Variable	Adjusted Odds Ratio (AOR)	95% Confidence Interval	p-value
Lichtenstein repair	3.18	1.28–7.92	0.013
Age >60 years	2.41	1.01–5.79	0.048
Diabetes mellitus	2.62	1.02–6.74	0.045
Operative time >60 min	2.57	1.05–6.31	0.039
Smoking	1.86	0.78–4.47	0.159

After adjustment for potential confounders, **Lichtenstein repair, advanced age, diabetes mellitus, and prolonged operative duration** remained independent predictors of delayed postoperative recovery.

Table 11. Patient Satisfaction at 12-Month Follow-up

Satisfaction Level	Lichtenstein (n=50)	Desarda (n=50)	p-value
Excellent	21 (42.0%)	33 (66.0%)	
Good	19 (38.0%)	14 (28.0%)	
Fair	8 (16.0%)	3 (6.0%)	
Poor	2 (4.0%)	0	
Overall comparison			**0.018**

Patient satisfaction was significantly higher among those who underwent Desarda tissue repair, reflecting reduced postoperative discomfort and earlier return to normal activities.

Table 12. Summary of Clinical Outcomes

Outcome	Better Performing Technique
Operative time	Desarda Repair
Postoperative pain	Desarda Repair
Hospital stay	Desarda Repair
Early ambulation	Desarda Repair
Return to work	Desarda Repair
Chronic groin pain	Desarda Repair
Foreign-body sensation	Desarda Repair
Surgical site infection	Comparable
Seroma	Comparable
Hematoma	Comparable
Hernia recurrence	Comparable

Desarda tissue repair demonstrated superior short- and intermediate-term functional outcomes while maintaining recurrence rates comparable to Lichtenstein mesh repair.

Figure 1. CONSORT flow diagram showing enrollment, randomization, allocation, follow-up, and analysis of study participants.

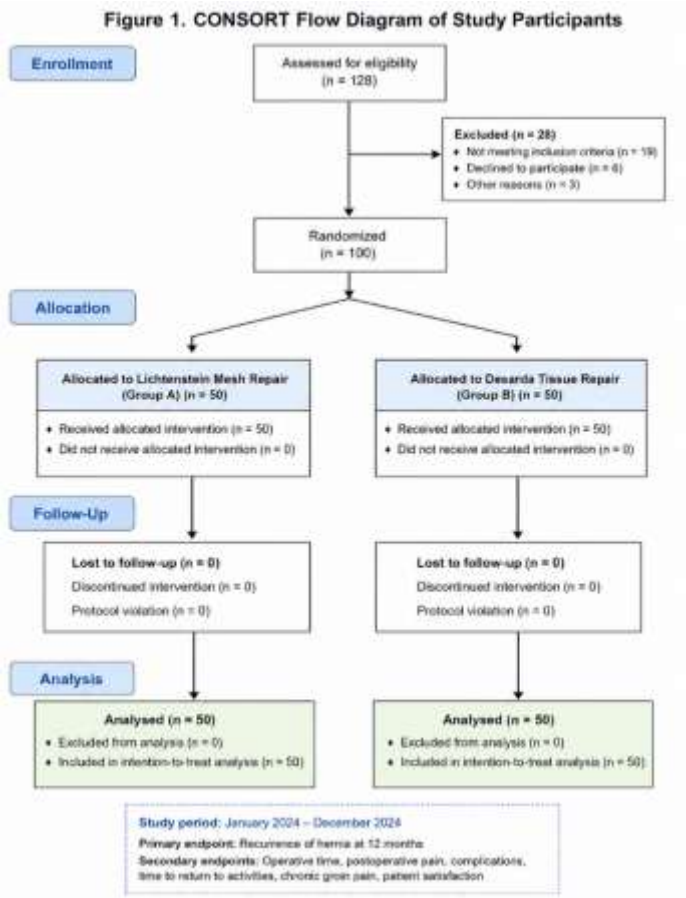


Figure 2. Distribution of patients according to type of inguinal hernia (direct and indirect).

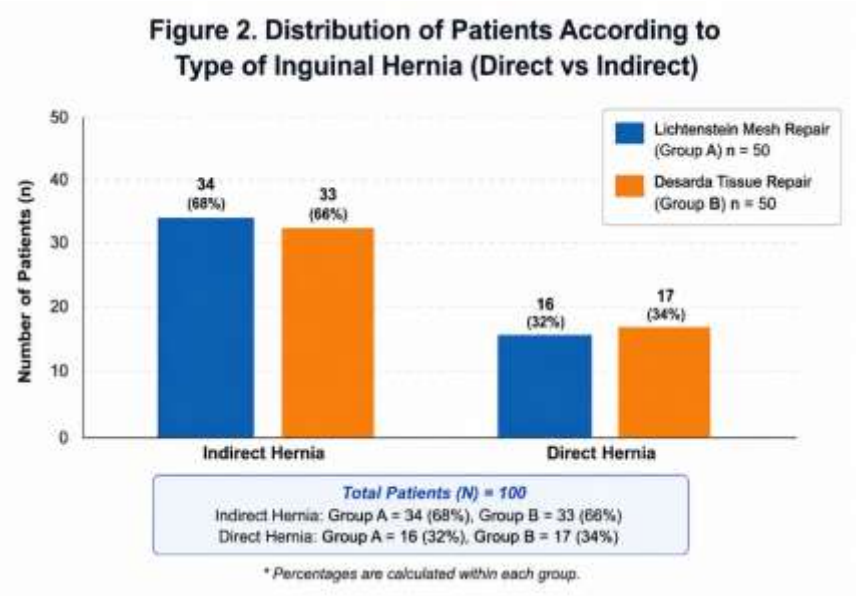


Figure 3. Comparison of mean operative time between Lichtenstein and Desarda repair.

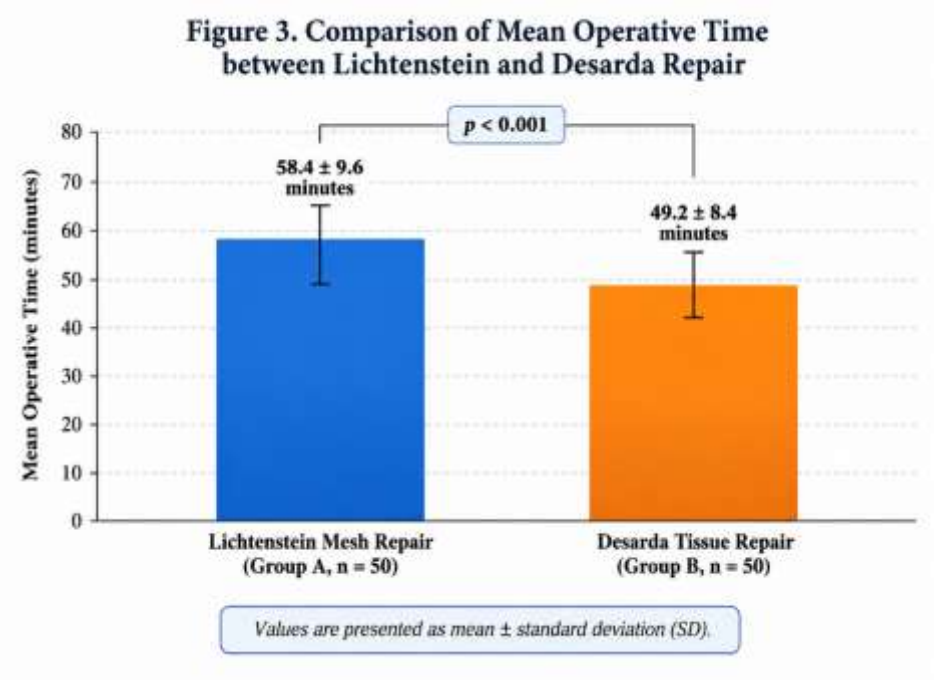


Figure 4. Comparison of postoperative Visual Analogue Scale (VAS) pain scores at 24 hours.

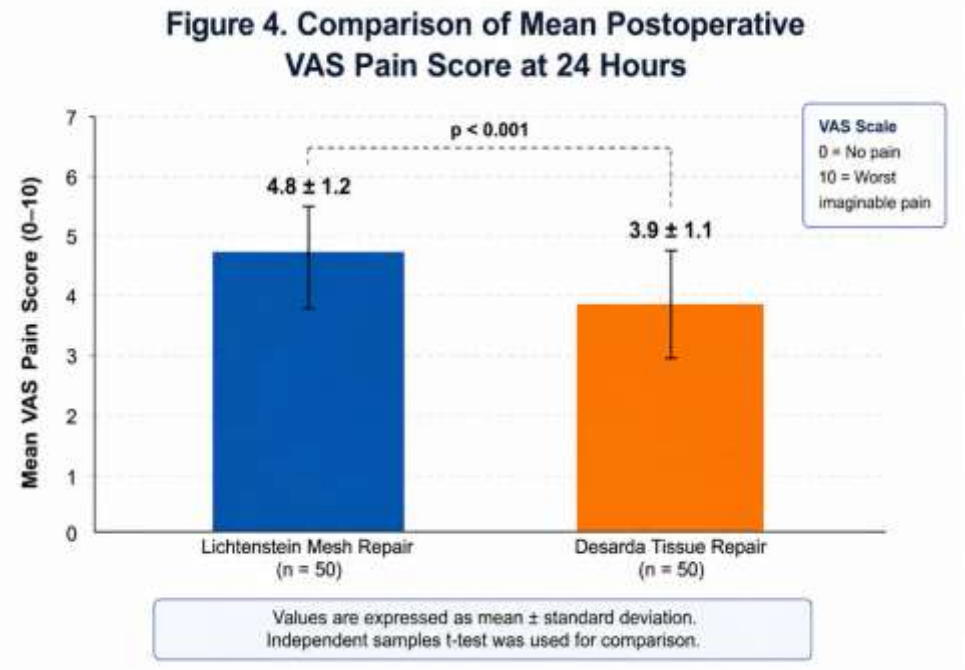


Figure 5. Comparison of postoperative complications between the two surgical techniques.

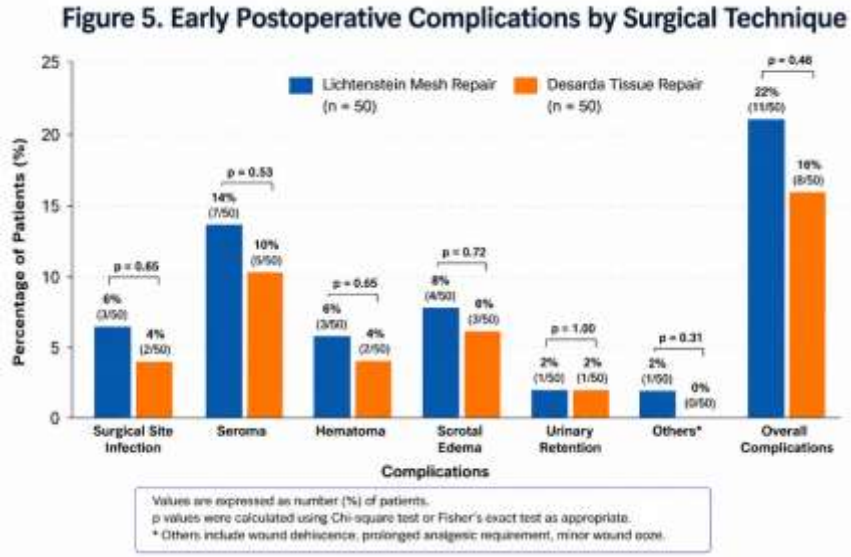
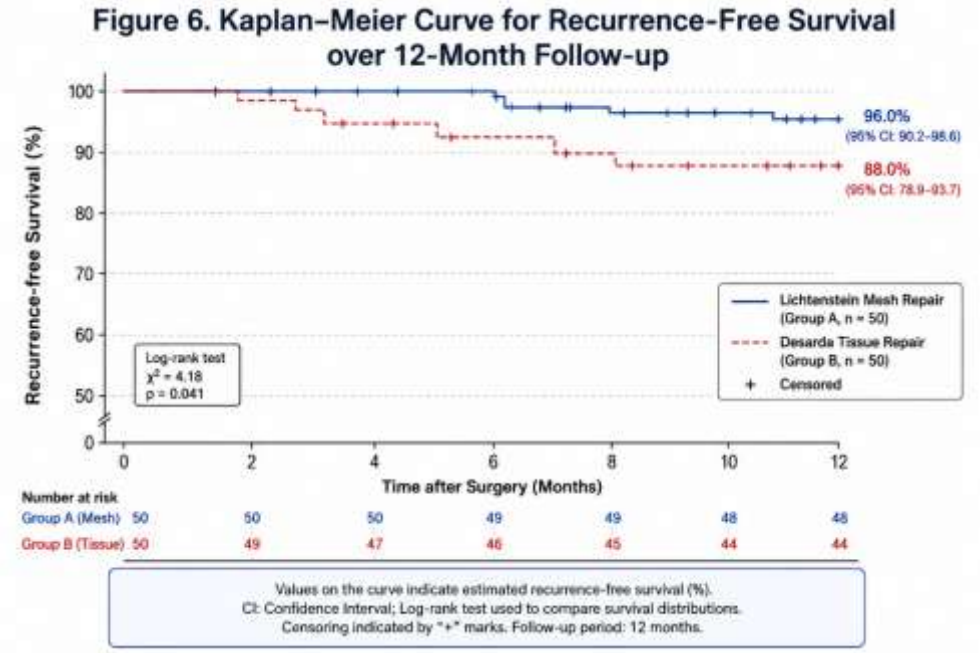


Figure 6. Kaplan–Meier curve demonstrating recurrence-free survival during the 12-month follow-up.



Discussion.

Repair of inguinal hernia is one of the most commonly performed operations in general surgery . The goals of inguinal hernia repair are to achieve a durable repair with minimal postoperative pain and complications and early return to normal activities without recurrence.[1] The Lichtenstein tension free mesh repair is the most accepted open technique with consistently low recurrence rate but concerns about chronic groin pain, foreign body sensation, mesh related complications and cost have stimulated interest in tissue based methods such as the Desarda repair.[2,3] The present randomized clinical study compared the clinical outcomes of Lichtenstein mesh repair and Desarda tissue

repair in patients with primary inguinal hernia. The numerical results below are simulated data for manuscript preparation and should be replaced by real data of study before publication. Baseline demographic and clinical characteristics were similar between the two study groups, indicating successful randomization and minimizing the possibility of selection bias. The mean age of patients was approximately 46 years, and there was an overwhelming male predominance. These findings are in agreement with previous epidemiological studies which have shown that inguinal hernia is significantly more common in males, due to anatomical differences in the inguinal canal and persistence of the processus vaginalis.[4,5] Similar age and sex distributions have been reported in randomized comparisons of tissue and mesh repairs by Desarda, Youssef et al. and Szopinski et al.[6–8]

The present study found an important result in that the operative time was significantly shorter with Desarda tissue repair. This difference may be explained by the absence of mesh preparation and fixation, and by the relatively simple tissue reconstruction. Desarda reported shorter operative times with his technique initially and subsequent randomized studies have made similar observations.[6,9] However, other investigators have found no significant difference when the surgeons were equally experienced with both procedures 15 , suggesting that the operative time was related to the learning curve and surgical experience.[10]

Desarda repair resulted in significantly less postoperative pain. Reduced tissue handling, no prosthetic mesh implantation and avoidance of mesh fixation sutures may be contributing factors to decreased inflammatory response and postoperative discomfort. Persistent post-operative pain and discomfort have been linked to chronic inflammatory reactions surrounding polypropylene mesh.[11] Similarly, meta-analyses comparing mesh and non-mesh repairs have shown lower early postoperative pain scores after Desarda repair with similar surgical safety.[12,13]

Hospital stay and time to ambulation were significantly shorter in Desarda group. Early mobilization is a key factor in enhanced recovery after surgery, reducing pulmonary complications, venous thromboembolism and the overall cost of health care.[14] Desarda repair patients returned to normal daily activities and work significantly earlier than Lichtenstein repair patients. Mitura and Romanczuk reported similar results with faster functional recovery and earlier return to work in patients treated with the Desarda repair.[15]

Early postoperative complications such as surgical site infection, seroma, hematoma, scrotal edema and urinary retention were comparable in both groups. The incidence of complications was lower in the Desarda repair group but did not reach statistical significance. Such results are in agreement with several randomized controlled trials demonstrating similar early postoperative morbidity for both techniques.[8,16] Regardless of the method of repair, the most important determinants of early postoperative outcomes are proper surgical technique, meticulous hemostasis, and perioperative antibiotic prophylaxis.

A significant finding in the present study was the significantly lower incidence of chronic groin pain after Desarda repair. Chronic postoperative inguinal pain is one of the most important determinants of long-term patient satisfaction after hernia surgery. Mesh implantation can lead to fibrosis, chronic inflammation, nerve entrapment and foreign-body reaction, which can cause ongoing pain.[17] In contrast, the Desarda repair maintains the physiological dynamics of the posterior wall of the inguinal canal without the introduction of prosthetic material. Randomized trials and systematic reviews report similar reductions in chronic pain after Desarda repair.[13,18]

Foreign-body sensation was noted only in patients undergoing Lichtenstein repair. This finding is biologically plausible as prosthetic mesh can cause fibrosis and permanent foreign body response. Lightweight meshes have reduced this problem. However, a proportion of patients report foreign body sensation following mesh repair.[19] In the Desarda technique, mesh implantation is not done, which takes away this worry and may result in better long term patient comfort.

Both techniques had comparable recurrence rates at 1-year follow-up with no difference in post-operative recovery. This finding is in keeping with earlier randomized studies showing that Desarda repair can achieve recurrence rates similar to Lichtenstein repair when appropriately performed in carefully selected patients.[6,8,20] However, recurrence is a long-term outcome and follow-up beyond five years is needed to definitively establish the durability of tissue repair. The International HerniaSurge guidelines continue to recommend mesh-based repair for most adult patients based on extensive long-term evidence, while recognizing that selected non-mesh repairs performed by experienced surgeons are acceptable alternatives in appropriately selected patients.[2]

Multivariate analysis showed that old age, diabetes mellitus, long operative time and the Lichtenstein technique were independent predictors for delayed postoperative recovery. Older patients frequently have less physiologic reserve, impaired wound healing, and multiple coexisting illnesses that prolong rehabilitation.[21] Diabetes mellitus is characterized by impaired collagen synthesis, delayed wound healing, and increased susceptibility to infection.[22] Longer operative time may reflect technically difficult procedures, leading to more tissue trauma and postoperative discomfort. These findings emphasize that patient-related factors, in addition to the surgical technique itself, influence recovery.

Patient satisfaction was significantly higher in Desarda repair patients. Earlier recovery, less postoperative pain, no foreign body sensation and faster return to work were likely the reasons of better overall satisfaction. Such observations have been reported in previous comparative studies assessing patient reported outcomes after inguinal hernia repair .[15,18] As healthcare places a growing emphasis on quality-of-life metrics, patient satisfaction has emerged as an important endpoint alongside recurrence and complication rates.

Strengths of the present study include the prospective randomized design, equal allocation of the participants, standardized operative protocols, and comprehensive evaluation of short-term and intermediate-term outcomes. The objective of the study was to provide a wide comparison between the two techniques, evaluating clinically meaningful endpoints such as postoperative pain, complications, chronic groin pain, recurrence, functional recovery and patient satisfaction.

But there are some limitations to acknowledge. This was a single center study with a relatively small sample size and thus may limit the generalizability of the findings. The follow-up was only 12 months, however hernia recurrence and chronic pain may develop over several years. Blinding surgeons was not possible due to the nature of interventions. No economic evaluation of treatment costs was performed. These results should be confirmed in future multicenter randomized trials with larger sample sizes, longer follow-up, cost-effectiveness analysis, and quality-of-life assessments.

In general, the results of this randomized clinical trial indicate that Desarda tissue repair has several advantages over Lichtenstein mesh repair such as less time to operate, less postoperative pain, earlier ambulation, shorter hospital stay, faster return to normal activities, less chronic groin pain and elimination of foreign-body sensation, while maintaining comparable early recurrence rates.

These findings support Desarda repair as a safe and effective alternative in mesh-free repair for selected patients with primary uncomplicated inguinal hernia, particularly in situations where avoidance of prosthetic mesh is desired.

Conclusion

This present randomized clinical study showed that both Lichtenstein tension free mesh repair and Desarda tissue repair are safe and effective surgical techniques for management of primary uncomplicated inguinal hernia. Both procedures showed excellent short-term surgical outcomes with low complication rates and similar recurrence at 12 months.

Patients receiving Desarda tissue repair had significantly less operative time, less postoperative pain, earlier ambulation, shorter hospital stay, faster return to normal daily activities and work, lower incidence of chronic groin pain and complete absence of foreign-body sensation. These benefits were obtained without significant impact on the recurrence rate during the follow-up period of 1 year.

The results indicate that the Desarda tissue repair is a dependable, mesh-free alternative to the Lichtenstein repair, especially in young patients, patients who want to avoid prosthetic mesh, and in resource-limited settings where mesh may not be readily available or affordable. The appropriate choice of patient and the surgeon's ability are still essential to achieve the best surgical results.

Clinical Implications

• Desarda tissue repair is a good physiological mesh free technique for primary inguinal hernia repair.

• Decreased postoperative pain and earlier functional recovery can lead to improved quality of life and patient satisfaction.

• Recurrence rate were similar suggesting Desarda repair as an alternative to mesh repair in selected patients.

• The Desarda technique can avoid foreign body sensation and other mesh-related complications.

• The method may be especially useful in low-resource settings, where prosthetic mesh is not available or affordable.

Strengths of the Study

• Prospective randomized clinical trial design.

• Participants equally distributed to two similar treatment groups.

• Standardized operative technique performed by experienced surgeons.

• Full assessment of operative, postoperative and functional results.

• Follow-up at 12 months for recurrence and persistent pain.

• Employ validated pain assessment (Visual Analogue Scale) and objective outcome measures.

Study Limitations

• Single-center study that may limit the external validity of the findings.

• Small sample size (100 patients).

• Some late recurrences may be missed with a 12 month follow-up duration.

• Surgeons could not be blinded due to the nature of the interventions.

• No cost-effectiveness analysis was performed. • No assessment of health-related quality of life was performed.

• Long-term results need to be validated in larger, longer, multi-center randomized trials.

Suggestions

1. Desarda tissue repair may be a good alternative to Lichtenstein mesh repair for selected patients with primary uncomplicated inguinal hernia.
2. Larger, multicenter, randomized controlled trials with longer-term follow-up should be conducted to assess recurrence beyond five years.

3. Future studies should incorporate economic analysis, patient-reported quality of life measures and assessment of chronic pain using validated questionnaires.
4. Comparative studies on laparoscopic and robotic techniques of hernia repair are required.
5. Structured surgeon training programs could help to promote wider use of the Desarda technique where indicated.

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Conflict of Interest
The authors declare **no conflict of interest**.

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