

## A COMPARATIVE STUDY OF DESARDA REPAIR AND LICHTENSTEINS (MESH) REPAIR FOR INGUINAL HERNIA

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### Abstract

**Background:** Inguinal hernia is a prevalent issue, and Lichtenstein's repair is the most frequently performed operation for this condition. However, primary tissue repairs are under development. Our study focuses on the short-term outcomes of Desarda repair versus Lichtenstein's repair (mesh repair) for primary inguinal hernia. We aim to compare the immediate outcomes of the Desarda technique with those of the Lichtenstein technique, focusing on average operating time, post-operative scrotal hematoma occurrence, surgical site infection, and duration until resuming physical activity. Study Design of Prospective study. Surgery Department, Rajkiya Medical College, Jalaun. 09 months from 06-07-2023 to 31-03-2024. **Materials and Methods:** During the study period, our department performed surgeries on 100 patients randomly assigned to Group A (Desarda) and Group B (Lichtenstein), each consisting of 50 patients. The primary outcome measures included operating time, post-operative scrotal hematoma, surgical site infection, and the time in days for patients to return to normal activity. **Result:** During the follow-up period, the mean operating time in the Desarda group was 40.45 minutes, while it was 48.15 minutes in the Lichtenstein group (p-value 0.01). In the Desarda group, 80 % of patients resumed routine activities on the 1st post-operative day, compared to 90% in the Lichtenstein group (p-value 0.02). The scrotal hematoma was observed in 4.8% of patients in Group A and in 4% of patients in Group B (p-value 0.02). Additionally, surgical site infection occurred in 6% of patients in Group A and 1.31% of patients in Group B (p value 0.02). **Conclusion:** Our research findings indicate that the Desarda repair technique outperforms Mesh repair in terms of operating time. Additionally, the differences in postoperative complications between the two techniques are statistically insignificant.

## INTRODUCTION

A hernia is the protrusion of abdominal cavity contents through a weakened abdominal wall.<sup>[1]</sup> The most prevalent type of groin hernia, accounting for 75% of cases in both males and females, is the inguinal hernia.<sup>[2,3]</sup>

The lifetime incidence of inguinal hernia is around 27% in males and 3% in females.<sup>[2-4]</sup>

The majority of inguinal hernias require surgical repair, making hernia repair one of the most frequently performed surgical procedures worldwide.<sup>[3,4]</sup> Inguinal hernias occur when there is a weakness in the posterior wall of the inguinal canal, which is normally covered by the fascia transversalis. When this fascia fails, it leads to the formation of a hernia.<sup>1,3</sup> Moreover, Structures like the spermatic

cord and round ligament traverse this region, potentially causing weakness.<sup>[1-4]</sup>

Factors such as smoking, collagen defects, and increased intra-abdominal pressure from activities like coughing, constipation, and heavy lifting have been linked to the development of inguinal hernias.<sup>[1]</sup>

Given that it is a prevalent issue, numerous surgeons have worked to address this condition since ancient times. Bassini (1844-1924) pioneered a tissue-based repair technique for inguinal hernias, which has shown positive outcomes. Variations of this technique, such as the McVay and Shouldice repairs, are still in use. Nevertheless, the primary inguinal hernia recurrence rate remains high at 5-10%.<sup>[2,4]</sup>

In the early 1980s, Lichtenstein introduced his tension-free mesh repair technique for inguinal floor reconstruction. This approach has since established

itself as the gold standard due to its consistently low recurrence rates and reproducibility.<sup>[2]</sup>

The traditional method for repairing inguinal hernias has drawbacks, including chronic pain, testicular atrophy, and the formation of seromas. As a result, there is a continuous quest for an optimal hernia operation. The ideal hernia repair should be tension-free, based on tissue, and should not damage vital structures or lead to long-term complications such as pain and recurrence.

In 2006, Dr. M. P. Desarda introduced a new technique in his study involving 860 patients, which was published in the World Journal of Surgery. This technique involves using an undetached strip of external oblique aponeurosis, which is sutured below the inguinal ligament and above the conjoined tendon, behind the spermatic cord. This approach aims to provide a physiologically dynamic posterior wall. Notably, the study reported no instances of recurrence with a median follow-up period.<sup>[5]</sup>

Numerous surgeons worldwide have been working to implement this technique, particularly in areas with limited resources. So far, outstanding outcomes have been achieved, with a low recurrence rate of about 1% and minimal short-term complications. Despite this, hernia repair using a mesh remains the most common procedure. Additionally, there is a new technique for adult inguinal hernia repair known as total extra-peritoneal laparoscopy.<sup>[6]</sup>

Our study aims to compare the short-term outcomes of the Desarda technique with the Lichtenstein technique in terms of average operating time, post-operative scrotal hematoma formation, surgical site infection, and time to resume physical activity.

## MATERIALS AND METHODS

**Study Design:** Prospective study.

**Settings:** Surgery Department, Rajkiya Medical College, Jalaun

**Duration:** 06 months from 06-10-2023 to 31-03-2024.

**Sample Size:** The study includes 100 patients.

### Inclusion Criteria

Adult male patients with primary unilateral inguinal hernia.

### Exclusion Criteria

Female patients, and those with recurrent, bilateral, strangulated, or obstructed hernias and those with significant co-morbid diseases.

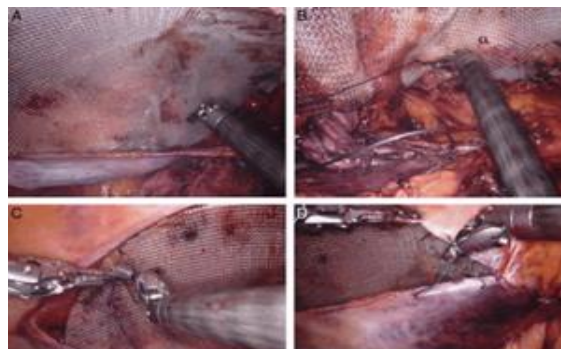
**Methods:** Fifty patients underwent Desarda repair, while another fifty underwent Lichtenstein repair for elective hernia repair after being admitted through the outpatient department. The patients were thoroughly assessed in the inpatient department for their fitness status, and detailed history and examination were conducted. Informed consent was obtained from all patients, and they were randomly assigned to either the Desarda group or the Lichtenstein group. Each patient's chart was accompanied by a protocol proforma, and data related to variables was recorded. Follow-up visits were conducted to monitor the

patients, and any complications were documented in the proforma. Statistical analysis was performed using IBM SPSS Statistics Version 23.

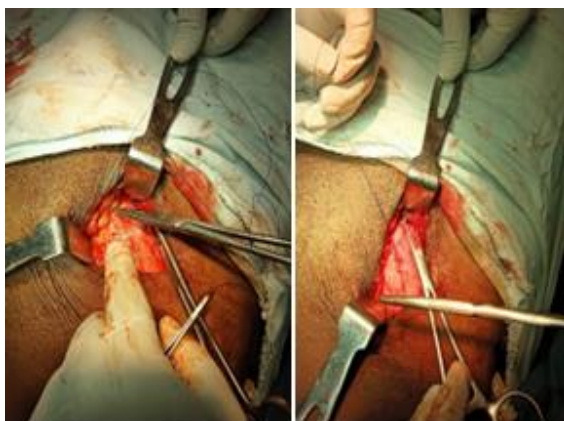
**Surgical Technique:** The surgical procedure was carried out by experienced specialists, including consultants and senior residents. An oblique or transverse incision was made approximately 1.5-2 cm above the inguinal ligament. The inguinal canal was accessed by dividing the external oblique aponeurosis. The spermatic cord was elevated, and its contents were separated from the hernia sac. The sac was then opened, its contents returned to the abdominal cavity, and then securely tied off and removed.



In the Lichtenstein technique, a 6x11 cm mesh was positioned over the posterior wall, behind the spermatic cord. It was then divided to encircle the spermatic cord at the deep inguinal ring and secured in place using non-absorbable-polypropylene 2-0 sutures, with fixation above the conjoined tendon and below the inguinal ligament.



In the Desarda technique, the edge of the medial leaf of the external oblique aponeurosis was sutured to the inguinal ligament with a running 2-0 polypropylene suture up to the deep inguinal ring.



The external oblique was again incised about 1.5-2.0 cm above the suture line, thus creating a strip that was attached medially and laterally with original aponeurosis.



The upper margin of this strip was sutured with conjoined muscle/tenon using running 2/0 polypropylene suture.



The spermatic cord was placed on this strip and the edges of external oblique aponeurosis were approximated in front of the spermatic cord. Wound

closed in standard manner using interrupted non-absorbable nylon 2-0 suture.

**Operating Time:** this was calculated in minutes from the time of making an incision to the placement of the last suture for skin wound closure.

**Surgical Site Infection:** the presence of swelling, redness, warmth at surgical site with or without pus discharge and systemic features like fever and leucocytosis.

**Post-operative Scrotal Hematoma:** was diagnosed clinically by the presence of scrotal swelling and bluish discoloration (bruise)

**Time to Resume Physical Activity:** This is calculated in days, and physical activity here means walking or going to the toilet rather than strenuous physical activity.

## RESULTS

The study included 100 patients. The Mean age of the patients in the Desarda group was 37.48 years (16-65 years), whereas that in the Lichtenstein group was 40.19 years (16-65 years).

Sixty-four patients (64%) had right-sided inguinal hernia, and thirty-six patients (36%) had left-sided inguinal hernia. Eighty-four patients (84%) had indirect, and sixteen patients (16%) had direct inguinal hernia. Postoperative scrotal hematoma was noted in four patients (8%) in the Desarda group and in one (01) patient in the Lichtenstein group (2%), with a p-value of 0.01.

Only three patients in the Desard group had a surgical site infection: 6% in the Desarda group and 2 patients in the Lichtenstein group having a site of infection 4% % in the Lichtenstein group (p-value 0.02).

In the Desarda group, 93.5% of patients were able to resume physical activity (like walking and going to the washroom independently) on the first postoperative day and 6.5% on the second day.

Whereas in the Lichtenstein group, 90% of patients were able to resume physical activity (like walking and going to the washroom independently) on the first postoperative day and 10% on the second day (p-value 0.02). The mean Operating time was 40.1 min (20-90 min) and 48.45 min (30-140 min) in the Desarda and Lichtenstein groups.

**Table 1: Age distribution of patients.**

	Desarda Group	Lichtenstein Group
N	50	50
Minimum	16	16
Maximum	65	65
Mean	37.48	40.19
SD	10.48	12.15

**Table 2: Post-operative hematoma formation**

	Desarda Group	Lichtenstein Group
N	50	50
Yes	05 (10%)	02 (4%)
No	45(90%)	48 (96%)
P Value	0.02	

**Table 3: Surgical site infection**

	Desarda Group	Lichtenstein Group
N	50	50
Yes	3 (6%)	02 (4%)
No	47 (94%)	48 (96%)
P Value	0.02	

**Table 4: Time in days to return to normal activities**

	Desarda Group	Lichtenstein Group
N	50	50
1ST Day	40 (80%)	45 (90%)
2ND Day	10 (20%)	5 (10%)
P Value	0.02	

**Table 5: Operation time in minutes**

	Desarda Group	Lichtenstein Group
N	50	50
Minimum	20	30
Maximum	90	140
Mean	40.45	48.15
SD	9.14	16.48
P Value	0.01	

## DISCUSSION

Inguinal hernia is a common issue with a global prevalence of 7%. The clinical course is often complicated by obstruction and strangulation. Mesh repair has revolutionized hernia treatment by providing tension-free repairs, replacing traditional tissue repairs like the Bassini and Shouldice methods, which involved tissue tension and complex tissue dissection, especially the Shouldice method. Due to its low recurrence rate, hernia repair using mesh is widely considered the gold standard operation.<sup>[9]</sup>

M.P. Desarda developed a novel hernia repair technique involving the use of a strip of external oblique aponeurosis, which is sutured in a tension-free manner to the inguinal ligament below and the conjoined tendon above. This creates a physiologically active posterior wall. Although this procedure is still being evaluated, initial comparative studies with mesh repair have yielded promising results. In a large study of 1382 patients, P. R. I. Rodriguez et al found that the operative time for the Desarda technique was significantly longer than that for the Lichtenstein technique (p-value <0.05). However, the rates of wound infection and postoperative hematoma formation were similar between the two groups.<sup>[10]</sup>

In a study conducted by W. Manyilirah et al., it was found that the Desarda repair procedure takes significantly less time to perform compared to the Lichtenstein procedure. Similar findings were reported by A.E. Ahmed et al. and T. Siva Kumar et al., indicating that Desarda repair is associated with a shorter hospital stay and quicker return to work. B.S. Gedam et al. also observed shorter operating times and earlier return to normal activity in patients treated with the Desarda technique. However, a systematic review by H. Ge et al. concluded that there is no significant difference between the Desarda and Lichtenstein techniques in terms of operating time, wound infection, and hematoma formation.<sup>[11]</sup>

Our study revealed that the mean operating time for the Desarda group was 40.45 minutes, compared to 48.15 minutes for the Lichtenstein group, with a statistically significant difference (p-value 0.01). This aligns with the findings of other researchers. The two groups had statistically insignificant differences in wound infection, time to return to normal activities, and postoperative scrotal hematoma formation.<sup>[12]</sup>

Furthermore, Desarda repair offers a cost advantage over mesh repairs. A study by Ameer Afzal et al. reported operation costs of 250 rupees and 2500 rupees for the Desarda and Lichtenstein groups, respectively (p-value 0.05).

## CONCLUSION

The Desarda repair technique is a valuable addition to the tools available to hernia surgeons. It offers the advantage of being a tension-free repair method that is simple, cost-effective, and relatively quick to perform. Additionally, it avoids the use of foreign prosthetic materials, which is particularly beneficial in cases where there are concerns about infection and impact on sexual activity.

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