

“A Comparative Study of Desarda’s Technique with Lichtenstein Repair in Treatment of Inguinal Hernia”

Nath Hemendra Ch.¹, Das Nayan J², Bora Pritom³, Baro Atul Chandra⁴

¹Associate Professor,

²Assistant Professor,

³Post Graduate Trainee,

⁴Professor and HOD,

Department of Surgery, Jorhat Medical College and Hospital, Jorhat, Assam

Abstract

Background: Inguinal hernia is defined as an abnormal protrusion of the contents of the abdominal cavity or preperitoneal fat through a defect in the inguinal area. The tissue-based techniques are still acceptable for primary inguinal hernia repair according to the European Hernia Society guidelines. In 2001, Desarda described a new method which is a tissue-based hernia repair using an undetached strip of external oblique aponeurosis to build up strength of the posterior wall of the inguinal canal. **Objective:** To compare the early clinical outcomes of the tissue-based Desarda Technique with Lichtenstein mesh-based repair. **Methods:** A total of 60 patients were randomly allocated into two groups i.e., Desarda and Lichtenstein (30 in each group). The primary outcomes measured were postoperative pain scores on day 1, 2, 3, 7 using visual analogue scale, time taken to return to basic activities, duration of hospital stay. Complications like seroma, fever, surgical site infection, orchitis, recurrence etc were evaluated. **Results:** During 6 month follow up, no recurrence was detected in each group. Duration of hospital stay and return to non-strenuous work was significantly less in Desarda as compared to Lichtenstein group. Postoperative complications were also less in Desarda as compared to Lichtenstein. **Conclusions:** Successful primary inguinal hernia treatment without mesh implantation can be achieved using the Desarda’s repair as it is effective as the standard Lichtenstein repair. Early return to non-strenuous activity, lower cost, less foreign body sensation are potential benefits of Desarda repair and can be preferred for inguinal hernia repair

Keywords: Desarda repair, Inguinal hernia, Lichtenstein repair, Recurrence

Date of Submission: 28-03-2022

Date of Acceptance: 09-04-2022

I. Introduction

The word “hernia” is derived from a Latin term meaning “a rupture”¹. An inguinal hernia is a protrusion of the contents of the abdominal cavity or preperitoneal fat through a defect in the inguinal area². Inguinal hernia is one of the most common surgical problems that accounts for about 10-15% of all surgical procedures worldwide and is considered second to appendectomy³. It encompasses almost 75% of all abdominal wall hernias⁴. Inguinal hernia repair is considered to be one of the most common general surgical operations worldwide. Globally, it was estimated that over 20 million repairs of inguinal hernia were carried out every year and the specific operation rate varied amid countries from around 100 to 300/100,000 population per year⁵. In the United Kingdom, approximately 100,000 inguinal hernias are repaired each year and in the United States nearly 750,000 inguinal hernias are repaired each year. In India, the estimated annual incidence of inguinal hernias was 1,957,850⁶. The ideal method of hernia surgery should be simple, safe, cost effective, tension free, permanent with no possible damage to vital structures and no long-standing pain or complications⁷. The lifetime risk for inguinal hernia is almost 27% for men and 3% for women⁸. In 2009, European Hernia Society (EHS) had published guidelines for hernia repair based on evaluation of literatures and the result of clinical trials. Lichtenstein or laparoscopic methods was suggested by EHS for repair of primary inguinal hernia in adult males. At present, Lichtenstein method is considered to be the most popular open mesh repair technique with recurrence rates of about 4% in long term follow up⁹. However, Lichtenstein mesh repair have some disadvantages such as foreign body sensation in the groin, discomfort and abdominal wall stiffness, surgical site infections which indirectly hinders the patient’s day-to-day activities¹⁰. In 2001, Desarda described a new method which was a tissue-based hernia repair using an undetached strip of external oblique aponeurosis to build up strength of the posterior wall of the inguinal canal. This method was based on the idea of providing a strong, mobile and physiologically active posterior wall. As a result of minimal or no fibrosis, mobility was not

affected⁸. In comparison with Lichtenstein, Desarda technique does not require foreign body like a mesh had recurrence rate of less than 1-2% and does not produce major complications during or after surgery. The Desarda’s operation is cost-effective as synthetic prosthesis is not required. In developing countries, the price of composite meshes or even heavy polypropylene meshes as well as their accessibility is the important issues¹¹. A strip of external oblique aponeurosis in place of mesh prosthesis is used in Desarda technique and also have adopt importance as the technique can be performed by any general surgeon without proficiency in hernia surgery. The operating technique is very simple and safe and is easy to understand and at the same time had shown excellent result¹¹. Keeping this in mind, the present study is focussed to compare the early clinical outcomes of the tissue-based Desarda Technique with Lichtenstein mesh-based repair among patients admitted in Surgery ward.

II. Materials and Methods

A hospital based observational study was conducted from May, 2020-October, 2021 among the patients admitted in surgery ward with inguinal hernia and underwent surgery in Jorhat Medical College and Hospital, Jorhat, Assam. A total of 60 patients having inguinal hernia diagnosed clinically or by radiological examination aged above 21 years and below 60 years who gave consent were included in the study. The patients were divided by Simple Random Sampling (SRS) into two equal groups: **Group I (Control Group)** were subjected to Lichtenstein mesh repair and **Group II (Study Group)** were subjected to Desarda non-mesh tissue repair.

III. Results and Observations

Demographic profile of patients

In our study a total number of 60 patients were randomly divided into two equal groups i.e., the Desarda’s group (30 patients) and Lichtenstein’s group (30 patients). It was observed that 10 (33%) patients in Desarda group and 14 (47%) patients in Lichtenstein group belonged to the age group 21-40 years followed by 20 (67%) patients in Desarda group and 16 (53%) patients in Lichtenstein group belonged to the age group 41-60 years. All the patients in the study were male (100%). The mean age of the patients in the Lichtenstein’s group was 44.73±10.59 years while in the Desarda’s group was 39.86±9.20 years. With regard to occupation, it was observed that 12 (40%) and 14 (47%) patients were moderate workers in Desarda and Lichtenstein group respectively followed by 10 (33%) heavy workers in each group. In Desarda group, 8 (27%) were sedentary workers while in Lichtenstein group, 6(20%) were sedentary workers.

Distribution of patients according to the types of hernia

On observing the distribution of patients according to the types of hernia, it was found that in Desarda group 13 (43%) had direct hernia, 16 (54%) had indirect hernia and 1 (3%) had pantaloons hernia whereas in Lichtenstein group, 15 (50%) had direct hernia, 13 (43%) had indirect hernia and 2 (7%) had pantaloons hernia (Table 1)

Table 1: Distribution of patients according to the types of hernia

Types of hernia	Desarda (n=30) (%)	Lichtenstein (n=30) (%)
Direct	13 (43%)	15 (50%)
Indirect	16 (54%)	13 (43%)
Pantaloons	1 (3%)	2 (7%)
Total (n=60) (%)	30 (100%)	30 (100%)

Distribution of patients according to NYHUS classification

It was found that according to NYHUS classification, in Desarda group 8 (27%) belonged to Class I, 4 (13%) belonged to Class II, 10 (33%) belonged to Class IIIA and 8 (27%) belonged to Class IIIB while in Lichtenstein group 6 (20%) belonged to Class I, 6 (20%) belonged to Class II, 10 (33%) belonged to Class IIIA and 8 (27%) belonged to Class IIIB.

Distribution of the patients according to location of hernia

Among the total patients, 42(70%) had right sided hernia, 16 (27%) had left sided hernia and 2 (3%) had bilateral hernia.

Table 2: Distribution of patients according to duration of hospital stay

Duration	Desarda (n=30) (%)	Lichtenstein (n=30) (%)	Chi-square test and p-value
≤3days	24(80%)	12(40%)	$\chi^2 = 10$, p-value = 0.001 Significant (p value <0.05)
>3days	6(20%)	18(60%)	

Analysis of Post-operative pain (mild to moderate) according to Visual Analogue Scale (VAS)

It was observed that in Post-operative day 1, 22 (73%) patients in Desarda group and 26 (87%) in Lichtenstein group had mild to moderate pain. With regard to Post-operative day 2, it was found that 24 (80%) patients in Desarda group and 28 (93%) patients in Lichtenstein group had mild to moderate pain. In Post-operative day 3, it was observed that 18 (60%) patients in Desarda group and 24 (80%) patients in Lichtenstein group had experienced pain. Perception of post operative pain reduced by 7th Post-operative day with only 4 (13%) patients in Desarda group when compared to 10 (33%) patients in Lichtenstein group.

Return to normal non strenuous work

On assessing distribution of patients according to return to normal non strenuous work, it was observed that in Desarda technique, 20 (67%) patients had returned to non-strenuous work within 7 days, 8 (27%) had returned within 15 days and 2 (6%) within 30 days while in Lichtenstein repair, 6 (20%) had returned to non-strenuous work within 7 days, 20 (67%) had returned within 15 days and 4 (13%) within 30 days. This was found to be statistically significant ($p=0.001$).

Post-operative complications of the patients

On observing the post-operative complications, it was observed that among the patients operated by Desarda technique, 4 (13%) had fever but none had history of foreign body sensation, seroma etc whereas among the participants operated by Lichtenstein repair, 6 (20%) had fever, 4 (13%) had seroma, 4 (13%) had chronic groin pain and 6 (20%) had foreign body sensation. There was no history of recurrence, SSI, testicular atrophy and orchitis among the patients in both the operative methods.

IV. Discussion

In the present study, it was found that 67% (Desarda) and 53% (Lichtenstein) belonged to the age group 41-60 years and all were males (100%). Similarly, **Bansod A et al.**⁷ and **Sharma G et al.**¹¹ also found that majority belonged to the age group 51-60 years and 100% were male in both groups.

It was observed that 70% had right sided hernia, 27% had left sided hernia and 3% bilateral hernia. This was similar to findings reported by **Bansod A et al.** (69%)⁷ and **T Siva Kumar et al.** (65%)¹²

It was found that 80% patients operated by Desarda technique had hospital stay ≤ 3 days and 60% patients operated by Lichtenstein repair had hospital stay > 3 days and was found to be statistically significant ($p=0.001$). This was similar to findings reported by **Akhtar MS et al.** ($p=0.0001$)¹³ and **Shah R et al.** ($p=0.006$)¹⁴ which were also statistically significant. Hence, this suggested that patients operated with Desarda technique gets early discharge compared to Lichtenstein repair

It was observed that 67% operated by Desarda technique returned to non-strenuous work within 1 week whereas 67% operated by Lichtenstein repair returned to non-strenuous activity within 2 weeks and was found to be **statistically significant ($p=0.001$)**. This was similar to findings reported by **Gedam BS et al.** ($p=0.001$)¹⁵ and **Shah R et al.** ($p=0.0001$)¹⁴ which were statistically significant. Hence, this suggested that patients operated with Desarda technique get ambulatory sooner and return to the non-strenuous work compared to Lichtenstein repair.

There was no recurrence, SSI, testicular atrophy and orchitis in both the operative methods which was similar to finding reported by **Akhtar MS et al.**¹³. Postoperative pain experienced by the included patients in the two study groups was similar at the five time points assessed (1st, 2nd, 3rd and 7th days postoperatively). Although lower pain scores were reported among patients in the Desarda group, no significant statistical difference could be reached. This is comparable to the scores reported by **Manylirah et al.**¹⁶ and **Situma et al.**¹⁷ The insignificant difference in the early post-operative pain scores in both study groups assured that the Desarda technique involves no tension on the tissues involved in the repair. In the present study, a peak of pain scores was recorded at 48 hr postoperatively, followed by a marked decline on the 7th postoperative day. This is unlike to **Manylirah et al.**¹⁶ and **Situma et al.**¹⁷ who reported a peak of pain scores at the 3rd post-operative day and attributed this to the peak of inflammatory process at that time. There may be other contributing factors such as tissue handling, degree of traction, previous stretch of the ilioinguinal nerve by the hernia and manipulation of the nerve intra-operatively. The International Association for the Study of Pain defined **chronic groin pain** as pain lasting >3 months postoperatively, due to the use of synthetic grafts for hernia repair and taking into account that inflammatory response to implanted foreign material may last longer. In our study chronic groin pain was found in 13% of patients operated by Lichtenstein repair which was similar to findings reported by **Shah R et al.**¹⁴ Among the participants operated by Desarda technique and Lichtenstein repair, 13% had fever and no history of foreign body sensation, seroma etc in Desarda where as 20% had fever, 13% had seroma and 20% had foreign body sensation in Lichtenstein which were similar to findings reported by **Bansod A et al.**⁷ The low incidence of **seromas** after Desarda method can be explained by the absence of the effect of synthetic mesh on surrounding tissues. After Desarda operation, **foreign body sensation** was also minimal. Other results,

published by Desarda MP and his colleagues, were based on a comparison of his original technique and Lichtenstein method. They reported no recurrence in the 269 patients of Desarda group and 1.97% recurrence in the 225 patients of mesh group. No patients in the Desarda group reported chronic pain but 6.49% of patients from the mesh group reported pain after 1 year of surgery. Desarda's technique is simple and easy to do. There is no tension in suture line. It does not use mesh prosthesis so it is more economical and also avoid morbidity associated with foreign body like rejection, infection, chronic groin pain. The most evident indication for use is financial constraints or if a patient disagrees with the use of synthetic mesh.

V. Conclusion

The present study was done to compare the operative procedures for inguinal hernia repair namely Lichtenstein repair and Desarda's tissue repair. In our study, it was observed that the patients operated by Desarda's repair returned to normal non-strenuous work sooner, got discharged early and less post-operative complications compared to Lichtenstein tension free meshplasty. The technique of Desarda's repair has the potential to enlarge the number of tissue based methods available to treat groin hernias. However, further studies, larger sample size and longer follow-up is required to comment on recurrences and to assess accurate efficacy of this technique.

Funding: No funding sources

Conflict of interest: None declared

Ethical clearance was approved by institutional ethics committee JMCH

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