

## Original Research Article

# Desarda technique versus Lichtenstein repair for inguinal hernia in tertiary care centre: a prospective study

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### ABSTRACT

**Background:** Various techniques for treatment of inguinal hernia have been studied. The use of a mesh is costly and has its own complications. In Desarda's technique- external oblique muscle aponeurosis is placed in the form of an undetached strip for inguinal hernia repair. The objective of this study is to compare the outcomes of Lichtenstein's repair versus Desarda's technique.

**Methods:** In this prospective study, 50 patients with inguinal hernia were enrolled at A. J. Institute of Medical Sciences and Research centre. 25 patients each were divided into two groups by randomization and were operated using Lichtenstein's hernioplasty and Desarda's technique. Patients were assessed for cost effectiveness, operation time, postoperative pain, hospital stay, foreign body sensation, return to non-strenuous activity, complications and recurrence rate in the postoperative period on day 1, 3, 5, 1 month and 6 months.

**Results:** With regards to pain, foreign body sensation and duration of surgery Desarda's repair was better than Lichtenstein's repair ( $p < 0.05$ ). Mean hospital stay in Desarda's group was comparable to the Lichtenstein group ( $p = 0.16$ ). Return to normal non-strenuous activity after 7-15 days in Desarda was 80% and 64% in Lichtenstein. No case of recurrence or chronic groin pain in either group was found.

**Conclusions:** Based on the result, reduced cost of treatment, lesser post-operative pain and no mesh related complications authors can conclude that Desarda's technique is equally effective as Lichtenstein's repair for inguinal hernia and can consider it as the method of choice in treating inguinal hernia.

**Keywords:** Desarda, Hernia, Inguinal, Lichtenstein

### INTRODUCTION

Inguinal hernia is a public health problem. They are as a result of raised intra-abdominal pressure due to chronic constipation, chronic cough or due to straining while micturition. Several techniques have been employed in the treatment of inguinal hernias since Bassini first described his method in 1887. The techniques range from tissue-repairs such as modified Bassini or Shouldice, to tension-free hernioplasty that involve the use of a mesh implant. Over the past 20 years hernia surgery has become increasingly more complex not only due to the

introduction of novel endoscopic but also conventional techniques.<sup>1</sup>

Desarda technique for inguinal hernia repair is a new tissue-based method where application of the external oblique muscle aponeurosis over the posterior wall of the inguinal canal in the form of an undetached strip in order to make it stronger has been considered as a new method in tissue based hernia repair.<sup>2</sup> Desarda's technique assumes importance because it can be performed by any general surgeon and it reduces the cost incurred in the use of a mesh.<sup>3</sup>

The availability of mesh prostheses in smaller towns in underdeveloped countries is also a major problem. Further, this operative technique is very simple, safe, easy to understand and at the same time it has shown excellent results with a virtually zero recurrence rate.

Objective of the study was to compare the outcomes of Lichtenstein's repair versus Desarda's technique.

## METHODS

A prospective randomized trial was carried out in 50 patients having inguinal hernia (comorbidities were not taken into consideration). It included patients who were admitted to the surgery department at A. J. Institute of Medical Sciences for inguinal hernia repair from July 2018 to January 2019.

The ethics committee approved of this study. All participants were given a written informed consent to participate, after receiving an explanation of the study protocol, including the methods of randomization and blinding.

### Inclusion criteria

Patients aged more than 18 years and less than 80 years, patients with primary uncomplicated inguinal hernia and American Society of Anesthesiologists (ASA) scale less than III were included.

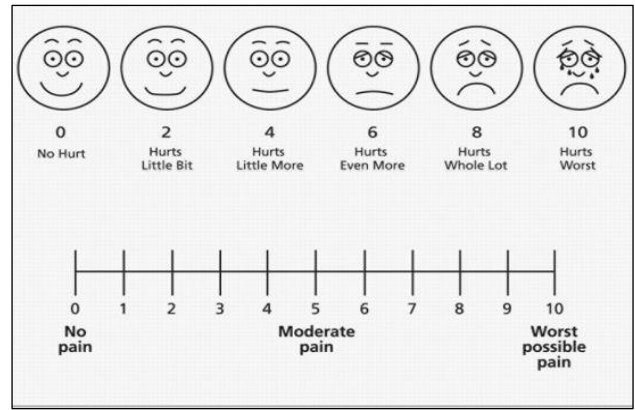
### Exclusion criteria

Patients unable to interpret visual analogue scale (VAS) or give consent, patients with recurrent, irreducible or strangulated inguinal hernias, patients with infection in the inguinal region or epididymo-orchitis and patients with connective tissue disorders

Patients were thoroughly evaluated preoperatively-detailed history, clinical examination and baseline investigations. Patients were divided into two groups each comprising of 25 members. Group 1 included patients who underwent Lichtenstein repair and Group 2 included patients who underwent Desarda repair. The randomization was performed using a consecutively numbered, sealed envelope, which was opened in theater and all the patient having an even number were operated by mesh repair and odd number by the Desarda technique. Only operating surgeons and operating room staff were aware of the procedure performed.

### Outcome measure

Outcomes measured were operative time, severity of pain after surgery, postoperative complications (seroma, hematoma, orchitis, wound infection, recurrence and chronic pain), hospital stay, and number of days taken for return to non-strenuous activity. Pain was reported using visual analogue scales (Figure 1).<sup>4</sup>



**Figure 1: Visual analogue scale used to denote the severity of pain.**

### Surgical procedure

All patients were given one dose of antimicrobial prophylaxis 30 minutes before surgery. All operations were carried out under regional anesthesia.

Lichtenstein tension-free mesh repair was performed using polypropylene mesh.<sup>5</sup>

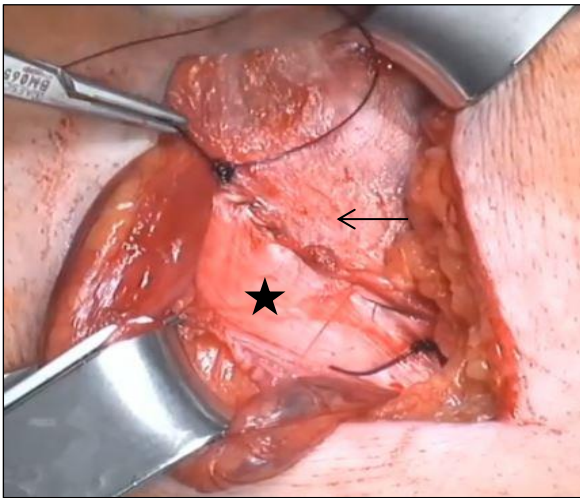
### Desarda technique

Skin and fascia are incised through a regular oblique inguinal incision to expose the external oblique aponeurosis. The external oblique is cut in line with the upper crux of the superficial ring. Upper and lower leaves are freed from surrounding tissue by proper undermining. The sac is excised.

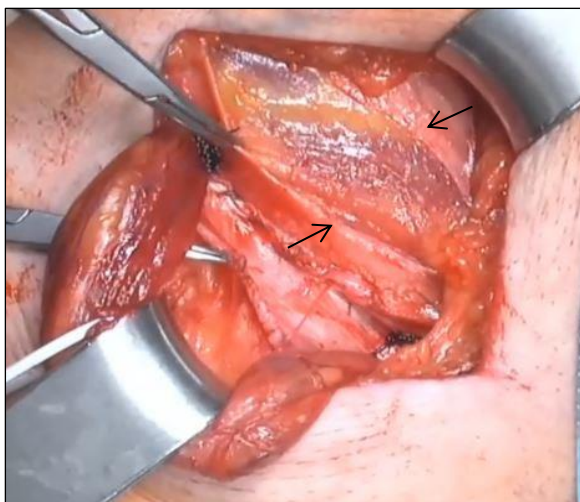
The upper leaf of the external oblique aponeurosis (EOA) is sutured to the inguinal ligament from the pubic tubercle to the internal ring using PDSII no.1 continuous sutures posterior to the spermatic cord. The first suture is taken in the anterior rectus sheath part of the external oblique aponeurosis upper leaf above and the medial most part of the inguinal ligament below near the pubic tubercle. The last suture is taken so as to sufficiently narrow the new internal ring without constricting the spermatic cord by pushing the cord against the arching muscle fibers to its maximum extent.

A splitting incision is made in this sutured upper leaf, partially separating a strip OF 1-2 cm width. This splitting incision is extended medially up to the pubic symphysis and laterally 2-3 cms beyond the internal ring. A strip of the external oblique is now available, the lower border of which is already sutured to the inguinal ligament. The upper free border of the strip is now sutured to the internal oblique or conjoined muscle lying close to it with PDSII no.1 continuous sutures throughout its length. This will result in the strip of the external oblique being placed behind the cord to form a new posterior wall of the inguinal canal. The increased

strength given by the external oblique muscle is the essence of this operation.



**Figure 2: External oblique aponeurosis pointed with arrow and inguinal ligament marked with star.**



**Figure 3: Raising new flaps in external oblique aponeurosis as marked by arrows.**

The spermatic cord is placed in the inguinal canal and the lower leaf of the external oblique is sutured to the newly formed upper leaf of the external oblique in front of the cord, as usual, again using PDSII no.1 continuous sutures. Undermining of the newly formed upper leaf on both of its surfaces facilitate its approximation to the lower leaf. The first stitch is taken between the lateral corner of the splitting incision and lower leaf of the external oblique. This is followed by closure of the superficial fascia and the skin as usual (Figure 2 and 3).<sup>6</sup>

**Statistical analysis**

Descriptive statistics was done for all data and suitable statistical tests of comparison were done. Variables were compared using Student T-test and Chi-square test.

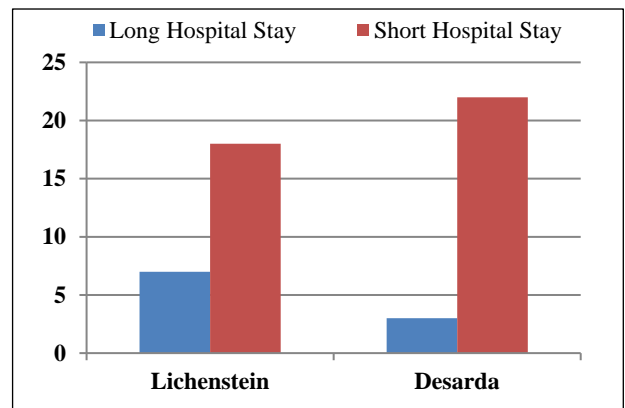
Statistical significance was taken as  $p < 0.05$ . The data was analyzed using SPSS Version 16. Microsoft Excel 2010 was used to generate charts.

**RESULTS**

Total of 50 patients were analyzed. Patients were divided into 2 groups by randomization; each group comprised of 25 patients. There was no significant difference with regards to age, sex of the patient and location of hernia.

Operative time in Desarda was an average of 30 minutes whereas 45 minutes in case of Lichtenstein’s mesh hernioplasty. The difference in operative time could be explained due to the non-requirement of mesh and the continuous suturing technique practiced in the Desarda’s repair. With regards to cost, Desarda’s technique was more cost effective compared to the Lichtenstein’s method.

The mean hospital stay in Desarda’s group was comparable to the Lichtenstein group ( $p=0.16$ ). With 72% of Desarda’s group and 88% of Lichtenstein’s group having short hospitalization (<3 days) and 28% of Desarda’s group and 12% of Lichtenstein’s group having long hospitalization (>3 days) (Figure 4).



**Figure 4: Hospital stay in both the groups.**

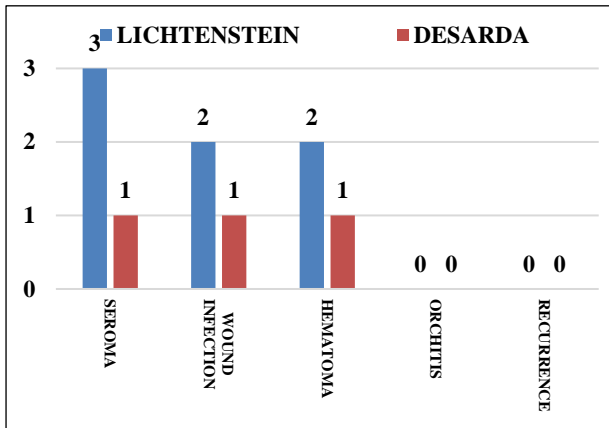
Analysis on pain score (mild to moderate) on post-operative day 1 was not significant while comparing the two groups. On post-operative day 3 and 5 pain was significantly less in Desarda as compared to Lichtenstein ( $p=0.02$  and  $p=0.007$  respectively) (Table 1).

Post-operative complications looked for were seroma, hematoma, wound infection, orchitis, chronic groins pain and recurrence. Authors found that 12% of people developed post-operative complication in Desarda and 28% in Lichtenstein group ( $p=0.2$ ) (Figure 5). There were no cases of orchitis, recurrence or chronic groin pain in either group.

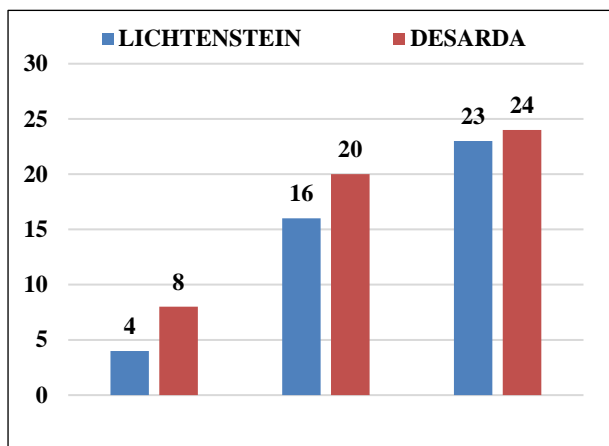
Return to normal non-strenuous activity after 7-15 days in Desarda was 80% and 64% in Lichtenstein ( $p>0.05$ ) (Figure 6).

**Table 1: Comparison of mild to moderate pain between Desarda and Lichtenstein group.**

Pain (mild to moderate)	Lichtenstein	Desarda	P value
First POD	24	20	0.082
Third POD	22	15	0.024
Fifth POD	21	12	0.007



**Figure 5: Number of patients who had post-operative complications.**



**Figure 6: Number of patients who returned to non-strenuous activity.**

**DISCUSSION**

Mesh repair is now widely used and is often referred to as the gold standard despite a relative paucity of clinical trial comparing mesh with suture repair.<sup>7</sup> The cost of surgery and post-operative morbidity affecting the quality of life are important consideration in the inguinal hernia surgery.<sup>8</sup>

There are advantages and disadvantages associated with all type of open inguinal hernia surgery. Existing mesh repair is blamed for causing complication of foreign body. While other types of tissue repair like Shouldice is being blamed for tension repair. Here, Desarda’s

technique resulted in a tension free repair without the use of any foreign body and being simple to perform.<sup>9</sup>

To quote few studies with notable results like that of Mitura et al noticed mild to moderate pain on 1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup> post-operative days was significantly less in Desarda’s group as compare to Lichtenstein group.<sup>10</sup> Desarda et al found return to normal non-strenuous activity after 7-15 days in Desarda group was 84 % while only 48% of patient in Lichtenstein repair (p<0.0001).<sup>3</sup> Szopinski et al stated in their Randomized controlled trial that the Desarda’s technique had the potential to enlarge the number of tissue based method available to treat groin hernias.<sup>11</sup> The author of the original technique postulated that the aging process is minimal in the tendons and aponeurosis, therefore the use of a strip of EOA, which is tendoaponeurotic in nature, is the best alternative to a mesh or shouldice.<sup>12</sup>

The results of this study show that comparatively Desarda had shorter surgical time, lesser post-operative pain, shorter hospital stay, early return to basic and work activity compared to Lichtenstein group.

**CONCLUSION**

The result of this study supports the use of Desarda’s technique for inguinal hernia repair as the method of choice for most of the patients due to low cost, no mesh related complications and simplicity of repair. Therefore, it is a good alternative to mesh repair considering the patient’s affordability. However, this study requires longer follow up in order to conclude regarding the recurrence rate.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

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