

## DESARDA'S NO MESH REPAIR VERSUS LICHTENSTEIN'S OPEN MESH REPAIR OF INGUINAL HERNIA: A COMPARATIVE STUDY

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**ABSTRACT: BACKGROUND:** The tissue-based techniques are still acceptable for primary inguinal hernia repair according to the European Hernia Society guidelines. Desarda's no mesh technique, introduced in 2001, is a hernia repair method using an undetached strip of external oblique Apo neurosis. This study compared outcomes after hernia repair with Desarda (D) and mesh-based Lichtenstein (L) techniques. **METHODS:** A total of 100 patients were randomly assigned to the D or L group (50 each). The primary outcomes measured were post-operative pain (Day1 and day 7), mean hospital stay (in days), return to basic activity (in days) and recurrence. **RESULTS:** During the follow-up, no recurrences were observed in each group ( $p = 1.000$ ). Average duration of the Desarda's repair was 65.64 minutes, while the Lichtenstein repair lasted for 65.76 minutes. Mean VAS on 1<sup>st</sup> post-operative day was significantly less in Desarda's repair (2.86) than Lichtenstein's repair (3.50), ( $p=0.0004$ ). Mean hospital stay was less in Desarda's repair (2.58 days) versus Lichtenstein's repair (3.90 days)  $p=0.0001$ . Return to basic physical activity was earlier in Desarda's repair (7.04 days) than Lichtenstein's repair (11.30 days), ( $p<0.0001$ ). However there was no recurrence in either group in 18 months follow up. **CONCLUSIONS:** The Desarda's and Lichtenstein's methods of primary inguinal hernia repair do not differ in the means of procedure complexity, surgery time and complication profile. However the return to basic physical activity was earlier in Desarda's repair. Desarda's no mesh repair is equally safe and more cost effective than Lichtenstein's repair. The technique may potentially increase the number of tissue-based methods available for treating inguinal hernias.

**KEYWORDS:** Hernia, Desarda, Lichtenstein, VAS.

**INTRODUCTION:** A hernia is an abnormal protrusion of a viscus or a part of viscus through an opening in the wall of cavity containing it. Because of their frequency, inguinal hernias remain an important medical problem. The estimated lifetime risk for inguinal hernia is 27% for men and 3% for women.<sup>[1]</sup> Annual morbidity rates in various countries vary from 100 to 300 per 100,000 citizens.<sup>[2]</sup> The synthetic prostheses most often used in the inguinal area can cause foreign body sensation in the groin, discomfort, and abdominal wall stiffness.<sup>[3]</sup> Surgical-site infections are more frequent after hernia treatment using mesh.<sup>[4,5]</sup> Migration of the mesh from the primary site of implantation in the abdominal cavity is one of the most dangerous complications.<sup>[6-8]</sup> Intense chronic foreign body reactions around the mesh prosthesis may produce meshoma /plugoma treatment of which becomes a new surgical challenge.<sup>[9-11]</sup> The observed complication rate, postoperative dysfunction and high cost composite meshes have urged surgeons to look for new hernia repair techniques or to modify old ones. An example of such efforts is the Desarda's method, introduced in 2001 and became a new surgical option for tissue-based inguinal hernia repair.<sup>[12,13]</sup>

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**MATERIALS AND METHODS:** The present study was conducted from January 2014 to June 2015 in Postgraduate Department of Surgery, Government Medical College Jammu. Hundred patients (18-60 years) were admitted for inguinal hernia surgery. Informed consent was taken and surgery was conducted under spinal anaesthesia. Patients with bilateral hernia were also included and operated on both sides. Patients with bleeding disorders, obstructed inguinal hernia, or any scar in inguinal area were excluded from the study. The Lichtenstein tension-free mesh repair was performed as described by amid.<sup>[14]</sup> A 7.5x15cm polypropylene mesh was trimmed to a foot-like shape to fit the inguinal floor. The mesh was sutured to the ligament of Poupart using a non-absorbable continuous 2/0 suture (Prolene; Ethicon) and secured cranially using same suture. The Desarda's repair was performed as it was originally described in 2001.<sup>[12,13]</sup>

Interrupted non-absorbable suture (2/0 Prolene; Ethicon) was used to secure the aponeurotic strip to the inguinal ligament laterally, and the strip was secured to the internal oblique muscle medially with same suture. Particular attention was paid to identify and preserve the nerves of the inguinal area; whenever this was not possible, the nerves were excised. All intraoperative variables were recorded and compared. Patients were encouraged to resume normal activities as soon as possible. Recurrences and other complications were recorded. Pain was measured using a visual analog scale (VAS), which ranged from 0 (No pain) to 10 (Maximum, unbearable pain). Return to normal activity was described as the patient's ability to perform elementary activities [i.e., dressing, walking, bathing (Basic activity)]; usual activities at home [i.e., preparing food, cleaning house (Home activity)]; and returning to all previously performed activities (Work activity). The aim of the present study was to test the hypothesis that the Desarda repair is as effective as the standard Lichtenstein procedure, allowing successful hernia repair without mesh. The outcomes measured were post-operative pain (Day 1 and day 7) mean hospital stay (In days), return to basic activity (In days) and recurrence.

### RESULTS:

Sl. No.	Variables	Desarda's (n=50)	Lichenstein's (n=50)	P value
1.	Age(years)	39.84±10.97	39.26±10.58	0.446
2.	Co-morbidity			
	• Hypertension	10(20%)	9(18%)	1.0000
	• Diabetes	3(6%)	3(6%)	1.0000
	• COPD	4(8%)	3(6%)	1.0000
	• Smoking	12(24%)	10(20%)	0.8097
	• Chronic renal isease	3(6%)	2(4%)	1.0000
3.	BMI > 30 kg/m <sup>2</sup>	4(8%)	5(10%)	1.0000
4.	Duration of Surgery(minutes)	65.64±7.89	65.76±6.97	0.8202
5.	VAS			
	Day 1	2.86±0.70	3.50±0.97	0.0004
	Day 7	1.46±0.65	1.52±0.68	0.6441

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6.	Complications			
	• Testicular edema	1(2%)	1(2%)	1.0000
	• Inguinal hematoma	2(4%)	3(6%)	1.0000
	• Seroma	2(4%)	6(12%)	0.2687
	• Wound infection	Nil	Nil	1.0000
7.	Mean stay in hospital (days)	2.58±0.70	3.90±0.86	0.0001
8.	Return to basic physical activity (days)	7.04±0.78	11.30±1.62	<0.0001
9.	Recurrence	0	0	1.0000

Table 1

There were a total of 50 patients each in the Desarda's and Lichenstein's group. The mean age of the patients in the Lichenstein's group was 39.26±10.58 years while in the Desarda's it was 39.84±10.97 years. There was no significant difference in the age and the co morbid condition in both the groups ( $p>0.05$ ). There was no statistically significant difference in duration of surgery and complication rate between the two groups ( $p>0.05$ ).

Mean VAS score on 1<sup>st</sup> post-operative day was 2.86±0.70 in Desarda's group while it was 3.50±0.97 in Lichenstein's group. The difference was extremely statistically significant (0.0004). However on 7<sup>th</sup> post-operative day the difference in mean VAS was not statistically significant ( $p=0.6441$ ). The mean hospital stay in Desarda's technique was 2.58±0.70 days while it was 3.90±0.86 days in Lichenstein's group. This difference is extremely significant ( $p=0.0001$ ). The mean time to return to basic physical activity in the Desarda's technique was 7.04±0.78 days while it was 11.30±1.62 days in the Lichenstein's group. This difference is also extremely significant ( $p<0.0001$ ). There were no recurrences in either group.

**DISCUSSION:** Inguinal hernia is a very common condition afflicting mankind. Newer techniques are developed as the complication rate of older ones become unacceptable. The use of mesh prosthesis for inguinal hernia repair has increased in popularity. The operation described by Lichtenstein is simple, safe and achieves all the goals of modern hernia surgery. The mesh prosthesis is expensive and not available all over the world especially in developing countries. Also when infected, the mesh has to be removed which further increases the morbidity and adds to the cost of the procedure. Lichtenstein's technique and its modifications are widely practiced in the world but their complication rates and failures are more in the hands of non-consultant staff. Mesh repair, plug repair, plug and mesh repair have all confused what is best and what to follow in the minds of such surgeons, who are not expert in hernia surgery.

The Desarda technique for inguinal hernia repair is a new tissue-based method. Despite the objections presented by some authors,<sup>[15,16]</sup> application of the external oblique muscle aponeurosis in the form of an undetached strip (which makes the posterior wall of the inguinal canal stronger) has been established as a new concept in tissue based hernia repair. The technique is original, new, and satisfies the principles of "no tension" presented by Lichtenstein, and is different from the historical methods using the external oblique aponeurosis, proposed initially by McArthur,<sup>[17]</sup> and Andrews or Zimmermann.<sup>[18]</sup>

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Desarda's technique of inguinal hernia repair is easy to learn and does not require complicated dissection. As the steps in this surgery are fixed there is very less scope for modification by individual surgeon. This new technique of hernia repair does not need any costly mesh or laparoscopic instruments. This makes this repair highly cost effective. That is why many published articles recently demonstrated an interest in the technique.<sup>[19,20,21]</sup>

In our study, there were no statistically significant differences between the patients enrolled to the Desarda and Lichtenstein groups. The percentage of other early and late complications was comparable. The higher ratio of seromas after use of the Lichtenstein method can be explained by the influence of the synthetic mesh on surrounding tissues. This is consistent with other studies and the known influence of polypropylene on tissue.<sup>[22,23]</sup> There was no recurrence in either group. Similar findings were reported by Desarda MP (2006),<sup>[24]</sup> on 860 patients over a follow up period of more than seven years. Mean VAS score on 1<sup>st</sup> post-operative day was 2.86 in Desarda's technique and 3.50 in Lichtenstein's technique. Similar study by Mitura K and Romanczuk M(2008),<sup>[25]</sup> compared Desarda's and Lichtenstein's technique and reported mean VAS score on 1<sup>st</sup> post-operative day to be 3.3 and 3.8 in Desarda's and Lichtenstein's technique respectively. In our study the mean hospital stay was 2.58 days and 3.90 days in Desarda and Lichtenstein group respectively. Similar study by Mitura K and Romanczuk M (2008),<sup>[25]</sup> reported that patients operated by Desarda's technique were discharged on 4<sup>th</sup> day and those operated by Lichtenstein's technique were discharged on 5<sup>th</sup> post-operative day.). The mean time to return to basic physical activity in was 7.04 and 11.30 days in Desarda's and Lichtenstein's group respectively. Similarly study conducted by Desarda MP and Ghosh A (2006),<sup>[26]</sup> reported that the mean time to return to work in the Desarda's technique was 8.48 days while it was 12.46 days in the Lichtenstein's group.

**CONCLUSIONS:** The Desarda's and Lichtenstein's methods of primary inguinal hernia repair do not differ in the means of procedure complexity, surgery time and complication profile. However the return to basic physical activity was earlier in Desarda's repair. Desarda's no mesh repair is equally safe and more cost effective than Lichtenstein's repair. The technique may potentially increase the number of tissue-based methods available for treating inguinal hernias.

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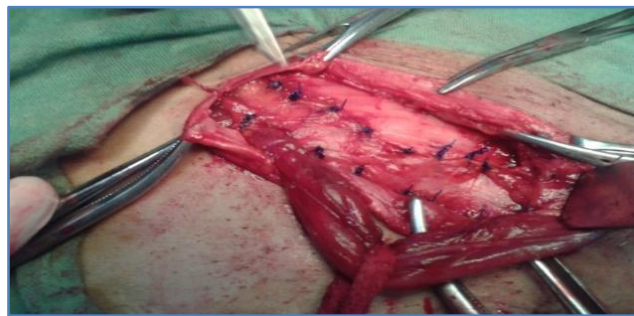
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**Fig. 1:** Strip of external oblique aponeurosis mobilized and the medial leaf of strip is sutured to the inguinal ligament Desarda's repair.



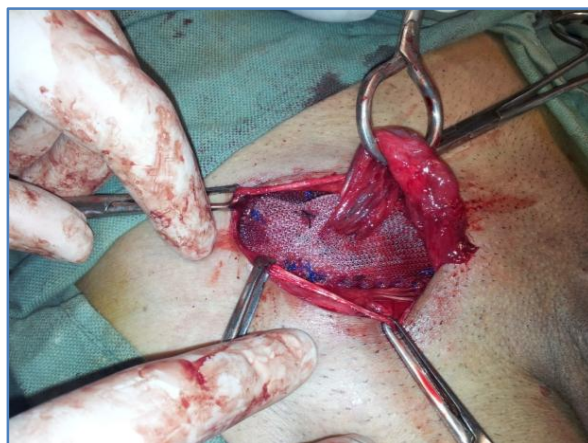
**Fig. 1**

**Fig. 2:** Undetached strip of external oblique aponeurosis forming the posterior wall of inguinal canal.



**Fig. 2**

**Fig. 3:** Polypropylene mesh sutured with inguinal ligament in Lichtenstein's technique.



**Fig. 3**

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