



## DESARDA'S VERSUS LICHTENSTEIN'S MESH REPAIR FOR INGUINAL HERNIA: A LONGITUDINAL STUDY.

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**Article received on:**

01/11/2019

**Accepted for publication:**

25/02/2020

**ABSTRACT... Objectives:** To compare the tissue based Desarda repair with Lichtenstein mesh technique for inguinal hernia in terms of operation time, hospital stay, return to normal activities, cost and post-operative complications such as seroma formation, surgical site infection and recurrence. **Study Design:** Randomized Controlled trial. **Setting:** Department of General Surgery Hayatabad Medical Complex, Peshawar, Pakistan. **Period:** June 2017 to June 2019. **Material & Methods:** Total of 150 male patients were selected using Non probability consecutive sampling technique. Patients were randomized into two groups using lottery method. 75 patients in group A underwent hernia repair with Desarda no mesh technique and 75 patients in group B underwent hernia repair by performing Lichtenstein mesh technique. Patients were followed up after 2 weeks, 1 month, 3 months, 6 months and 1 year. **Results:** The mean age of Desarda group was  $44.59 \pm 10.58$  years while it was  $44.44 \pm 10.30$  years in the Lichtenstein group ( $P=0.932$ ). Mean Operative time was less for Desarda repair ( $42.08 \pm 3.42$  min) when compared to Lichtenstein repair ( $49.01 \pm 4.77$  min) ( $p=0.000$ ). The average hospital stay after Desarda repair was  $2.08 \pm 0.27$  days and after Lichtenstein repair it was  $3.00 \pm 0.40$  days ( $p=0.000$ ). After Desarda procedure the average duration to return to work was  $11.10 \pm 2.32$  days while it was  $13.92 \pm 2.24$  days in Lichtenstein procedure ( $p < 0.0001$ ). The total cost of the operation was (Rs  $3893 \pm 293$ ) in Desarda group and (Rs  $7844 \pm 175$ ) in the Lichtenstein group ( $p=0.000$ ). When compared for observed postoperative complications like seroma, wound infection and recurrence in both groups all the p-values were  $> 0.05$  and were non-significant statistically. **Conclusion:** In comparison to Lichtenstein mesh repair, Desarda technique is cost effective, easy to learn, patients have less hospital stay, less chances of post-operative complications and early return to basic physical activities.

**Key words:** Desarda, Inguinal Hernia, Lichtenstein, Mesh, Recurrence, Seroma.

**Article Citation:** Ahmad U, Anwar A, Imran M, Aman Z. Desarda's versus Lichtenstein's mesh repair for inguinal hernia: A longitudinal study. Professional Med J 2020; 27(8):1621-1625. DOI: 10.29309/TPMJ/2020.27.08.4313

### INTRODUCTION

The term "hernia" is a Latin word which means "a rupture".<sup>1</sup> A hernia is an abnormal protrusion of an organ or part of an organ through an opening in the wall of cavity containing it.<sup>2</sup> In whole life average risk of inguinal hernia is approximately 27% in males and 3% in females.<sup>3</sup> Inguinal hernia repair comprises of 10-15% of all surgical procedures.<sup>4</sup> Inguinal hernia can only be repaired surgically and its repair prevents many upcoming complications.<sup>5</sup>

Inguinal hernia repair may be done by open techniques, which comprises of tissue repair (Shouldice repair, Mcvay repair, Bassini's Repair) and Prosthetic repairs (Lichtenstein's tension free repair, plug and patch technique, prolene

hernia system, Stoppa's technique). It can also be performed by laparoscopic approach (Trans Abdominal Pre-Peritoneal repair, Totally Extra Peritoneal Repair).<sup>6</sup> According to European hernia society (EHS) 2009 guidelines, Lichtenstein mesh repair is treatment of choice for primary inguinal hernia in adults.<sup>7</sup> Depending on the experience, Shouldice method has a recurrence rate ranging from 0.7 to 1.7% and in some studies up to 15%.<sup>1</sup> The Lichtenstein mesh repair, introduced in 1984, offers a recurrence rate of around 4%. In 2001, a new method of tissue-based hernia repair was introduced by Desarda which according to him has zero% recurrence rate.<sup>8</sup>

The ideal technique for inguinal hernia

repair should be; easy to learn, cheap, safe, early return to normal activities and without tension. The Lichtenstein repair almost covers these characteristics, although it has many complications.<sup>9,10</sup> Foreign body sensations, pain, abdominal wall tightness, surgical-site infection, mesh migration and sexual dysfunction are some of the complications of Lichtenstein repair.<sup>2</sup> The observed complications rate and high price of mesh have compelled surgeons to search for newer methods or to make alterations in the older techniques. Desarda's method of tissue-based hernia repair is one of the examples of such struggle; introduced in 2001.<sup>9</sup> The basic concept of Desarda repair for inguinal hernia is to provide a strong, mobile and physiologically active posterior wall. Weak posterior wall of the inguinal canal is replaced by a band of aponeurosis of external oblique muscle and additionally it is strengthened by external oblique muscle itself.<sup>11</sup>

The aim of this study was to compare the tissue based Desarda repair with Lichtenstein technique for inguinal hernia in terms of operation time, hospital stay, return to normal activities, cost and post-operative complications such as seroma formation, surgical site infection and recurrence.

## MATERIAL & METHODS

It was a Randomized controlled trial carried out from June 2017 to June 2019 in Department of General Surgery Hayatabad Medical Complex; Peshawar, Pakistan. Approval from the hospital's ethical committee was taken. Total of 150 male patients were selected using Non probability consecutive sampling technique. Patients between 18 to 60 years of age, with unilateral, primary, reducible inguinal hernia were included in the study. Patients with uncontrolled diabetes and hypertension, significant bladder outlet obstruction, chronic obstructive pulmonary disease, bleeding disorders, obstructed/ bilateral/ complicated and recurrent inguinal hernia were excluded from the study. Patients having thin or divided external oblique aponeurosis during operation were also excluded from the study. Informed consent was taken from patients. Patients were randomized into two groups using lottery method. 75 patients in group A underwent

hernia repair with Desarda no mesh technique and 75 patients in group B underwent hernia repair by performing Lichtenstein mesh technique. For data collection specially designed Performa was used. The operations were performed under spinal or general anesthesia. An oblique inguinal incision was given approximately 1.5cm above the medial two thirds of the inguinal ligament. The standard procedure of herniotomy was performed in all patients. Subsequent repair of the defect was the only difference in both groups. As demonstrated by amid Lichtenstein tension free repair was performed with mesh.<sup>12</sup> 6x11cm polypropylene mesh was cut according to the posterior wall of inguinal canal. The mesh was anchored laterally to inguinal ligament and medially to posterior wall of inguinal canal with 2/0 polypropylene suture. As demonstrated in 2001 the Desarda's technique was performed.<sup>13,14</sup> A band of external oblique aponeurosis was approximated laterally to inguinal ligament and medially to internal oblique muscle with 2/0 polypropylene suture. Patients were followed after 2 weeks, 1 month, 3 months, 6 months and 1 year. Data was evaluated using version 22 of SPSS and expressed as a standard deviation, mean. Independent-sample T test was used to compare continuous variables. Categorical variables were compared using Fischer's exact test. P value of less than 0.05 was considered as statistically significant.

## RESULTS

In total, the research included 150 cases of inguinal hernia meeting the selection criteria and operated during the length of the research. 75 patients underwent herniorrhaphy by Desarda technique and 75 patients had Lichtenstein mesh repair. There was no statistical difference in average age of both groups ( $P=0.932$ ). Average age of the Desarda group patients was  $44.59 \pm 10.58$  year while it was  $44.44 \pm 10.30$  years in the Lichtenstein group. All patients were followed up for any complication or recurrence.

Mean Operative time was less for Desarda repair ( $42.08 \pm 3.42$  min) when compared to Lichtenstein repair ( $49.01 \pm 4.77$ min), ( $p=0.000$ ). The average hospital stay after Desarda repair was  $2.08 \pm 0.27$  days and after Lichtenstein repair

it was  $3.00 \pm 0.40$  days ( $p=0.000$ ). After Desarda procedure the average duration to return to work was  $11.10 \pm 2.32$  days while it was  $13.92 \pm 2.24$  days in Lichtenstein procedure ( $p<0.0001$ ). The total cost of the procedure was (Rs  $3893 \pm 293$ ) in Desarda group and (Rs  $7844 \pm 175$ ) in the Lichtenstein group and this difference was also significant statistically ( $p=0.000$ ). (Table-I)

When compared for observed postoperative complications all the p-values were  $> 0.05$  and were non-significant statistically. In Desarda group 1 patient developed seroma and non-developed wound infection in post-operative period while in the Lichtenstein group 3 patient developed seroma and 1 had wound infection. None of the patient in both groups had hernia recurrence. This shows that both Desarda and Lichtenstein have comparable complication rates. (Table-II)

Variables	Procedure		P-Value
	Desarda Repair	Lichtenstein Repair	
Age	44.59	44.44	0.932
Duration Of Procedure	42.01	49.01	0.000
Hospital Stay	2.08	3	0.000
Return To Work	11.11	13.92	0.000
Cost Of Procedure	3893	7844	0.000

**Table-I. Comparison of different variables between desarda and lichtenstein repair.**

Complications	Desarda Repair	Lichtenstien Repair	P-Value
Recurrence	0	0	
Seroma	1	3	0.62
Surgical Site Infection	0	1	1

**Table-II. Comparison of post-operative complications in both groups.**

## DISCUSSION

Inguinal hernia repair is one of the most common procedures performed by the general surgeons.<sup>15</sup> A number of groin hernia repairs procedures have been developed over time to achieve a tension-free repair with but debate remains which method is the Gold Standard.<sup>8</sup> Lichtenstein repair is the

most widely practiced procedure for inguinal hernia.<sup>2</sup> Although Mesh Repair fulfills most of the qualities for ideal hernia repair, complications related to mesh are also described.<sup>16,17</sup> Hernia repair by using natural tissue i.e. external oblique aponeurosis to reinforce the posterior wall was described by Desarda in 2001. Despite the objection by some researchers, its result is comparable with mesh repair though research evaluating the effectiveness of Desarda is still scanty.<sup>8,18,19</sup> The current study compared the Desarda technique for clinical outcomes and postoperative complications after repair of primary inguinal hernia with standard Lichtenstein technique.

In our study, mean age of both groups was comparable and there was no statistically considerable difference in the average age of subjects included in both groups ( $p=0.932$ ).

Mean operative time for Desarda repair was shorter ( $42.08 \pm 3.42$  min) compared to Lichtenstein repair ( $49.01 \pm 4.77$ min). These findings were in accordance with those reported by Ameer Afzal et al<sup>5</sup>, Gupta A et al<sup>7</sup> and Youssef et al.<sup>8</sup> The longer operating time for mesh can be attributed to the extra time needed to cut and fashion the mesh to fill the hernia gap and position the mesh around the cord. Abbas et al reported the mean operative time similar for both groups in his study as opposed to our study.<sup>2</sup>

Our result shows that the difference in average hospital stay after repair by the two techniques is significant statistically ( $p=0.000$ ). Average hospital stay after Desarda's repair is shorter as compared to Lichtenstein's repair. Like our result, Abbas et al<sup>2</sup> reported lower mean hospital stay after the Desarda procedure (2.58 days) compared to Lichtenstein procedure (3.90 days). Prakash et al<sup>6</sup> and Gupta A et al<sup>7</sup> also reported shorter hospital stay for the Desarda group.

The mean time taken after the Desarda procedure to return to work is shorter when compared to Lichtenstein procedure. A study by Abbas et al<sup>2</sup> shows that return to work was sooner in Desarda's technique (7.04 days) as compared

to Lichtenstein's method (11.30 days). Similarly, Desarda's MP and Ghosh A research revealed that the average time for returning to work was lower for Desarda's method compared to the Lichtenstein group.<sup>20</sup>

Cost of any operation has vital importance and in our study the total cost of the procedure for Desarda technique is lower (Rs 3893±293) than Lichtenstein technique (Rs 7844±175). The difference is because of the cost of polypropylene mesh used in Lichtenstein repair. This difference is highly significant in developing countries where matters cost of the procedure and hence Desarda repair can be a preferred option for surgeons over Lichtenstein repair. Reports published by Youssef et al<sup>8</sup> and Gupta A et al<sup>7</sup> also support our research.

The percentage of postoperative complications is comparable in both groups and there is no statistically significant difference between Desarda and Lichtenstein group. 1 patient in the Desarda and 3 in the Lichtenstein group developed seroma and this difference was non-significant ( $p=0.620$ ). The higher incidence of seroma after using synthetic mesh may be due to the affect of mesh on tissues around it.<sup>21</sup> Two patients in the Lichtenstein group and one of the patient in the Desarda group developed infection ( $p$  value=1.0). Studies carried out by Prakash et al<sup>6</sup>, Gupta A et al<sup>7</sup> and Youssef et al<sup>8</sup> also report lower wound infection rate after Desarda Procedure. There was no hernia recurrence at one year follow up in both groups. Other studies carried by Gedam et al<sup>1</sup> had 1.08%, Abbas et al<sup>2</sup> had 0%, Desarda et al<sup>20</sup> had 0% and Rodriguez et al<sup>22</sup> had 0.5% recurrence rate.

Our duration for follow up was short and long-term follow-up is needed for assessment of hernia recurrence rate especially after the new tissue based technique.

## CONCLUSION

In comparison to Lichtenstein mesh repair, Desarda technique is cost effective, easy to learn, patients have less hospital stay, less chances of post-operative complications and early return

to basic physical activities. However Desarda technique is not possible in patients having thin external oblique aponeurosis with divided fibers and here Lichtenstein technique is better option. Further long term randomized control trials are required on large-scale to evaluate this technique further.




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2	Asif Anwar	Concept, writing manuscript.	
3	Muhammad Imran	Concept, writing manuscript, Data collection, Analysis.	
4	Zahid Aman	Final proof reading.	