

## " Comparative Study Between The Conventional Lichtenstein Repair Vs Desarda Repair In Inguinal Hernia In Semi Urban Population. "

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### Abstract

**Background:** Inguinal hernia is one of the most commonly encountered conditions in surgical practice with an estimated incidence of around 15% of the adult population [2]. 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. Annual morbidity rates in various countries vary from 100 to 300 per 100,000 citizens [2]. Desarda technique is originally a tissue based hernia repair using an undetached strip of external oblique aponeurosis to strengthen the posterior wall of the inguinal canal. In the EHS guidelines, mesh-based techniques—the Lichtenstein technique in particular and endoscopic methods are recommended for treatment of symptomatic primary inguinal hernia in adult men.

**Material and methods :** A total of 50 patients with primary unilateral inguinal hernia were subjected either to Desarda herniorrhaphy or Lichtenstein hernioplasty. The patients were followed in terms of recurrence rate, post-operative complications, convalescence, chronic pain and cost effectiveness.

**Results:** Results of inguinal hernia treatment with the Desarda technique are nearly similar to the results with Lichtenstein over a 3-year time period.

**Conclusion :** Looking at the advantages and drawbacks of each procedure, Desarda procedure can be a valid alternative to Lichtenstein repair.

**Keywords:** Desarda vs Lichtenstein, Inguinal Hernia, Mesh versus No-Mesh. .

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### I. Introduction

Inguinal hernia is defined as a protrusion of the contents of the abdominal cavity or pre-peritoneal fat through a hernia defect in the inguinal area, irrespective of whether this is performed [1]. The estimated lifetime risk for inguinal hernia is 27% for men and 3% for women [3]. Classically done operations today are tension repairs like Bassini, Shouldice or MacVay's repairs and tension free repairs like repairs done with mesh, plug and mesh or PHS (Prolene Hernia System). All tension repairs have a high rate of recurrences and post-operative pain. Reports on the outcome of inguinal hernia surgery show that recurrence rate in 5 years after operation can vary from 0.1 to over 20%. Sutures are under tension even at rest and get aggravated during contractions and scar shrinkage in the healing process. Therefore, tension free repairs using mesh prosthesis are being preferred. But then there are many associated complications of a foreign body. Laparoscopic hernia surgery reduces pain and duration of stay, but associated with its own complications associated with general anesthesia and instrumentations in addition to the mesh placed inside the abdomen, cost of procedure and the learning curve.

### II. Material & Methods

This comparative study of Lichtenstein versus Desarda repair for Inguinal hernia was conducted from the patients admitted with the diagnosis of unilateral primary inguinal hernia in SVS Medical College & Hospital from June 2017 to June 2020. The patients were subjected to either Lichtenstein or Desarda method of hernia repair.

**Inclusion Criteria**

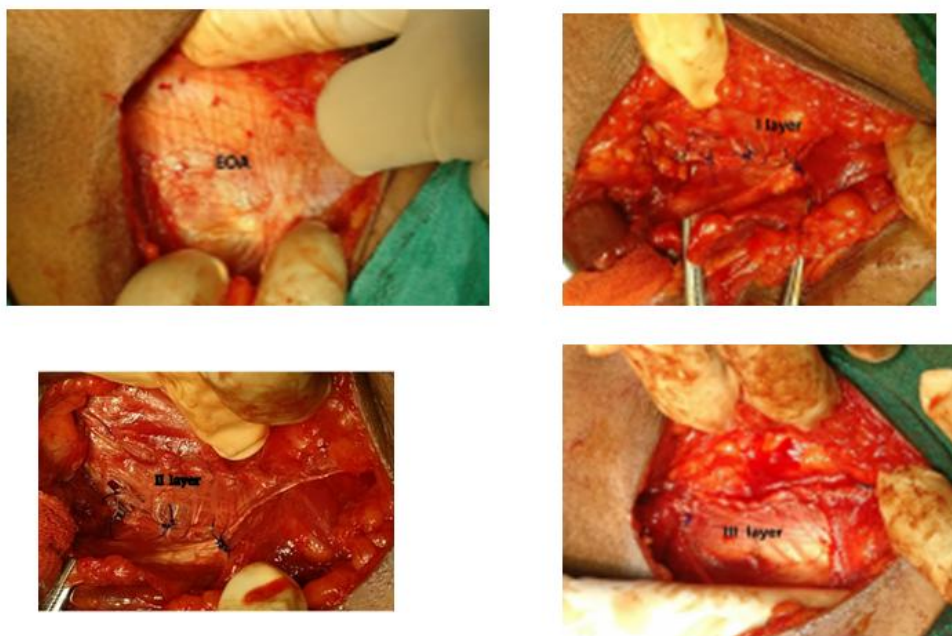
Men 25 years of age or older with primary unilateral inguinal hernia.

**Exclusion Criteria**

1. Women.
2. Bilateral inguinal hernia.
3. Recurrent inguinal hernia.

All procedures were done under Spinal anesthesia. For Lichtenstein hernioplasty, a 10\*15cm polypropylene mesh was used. The mesh is about 0.5 mm thick and has burst strength of approximately 14 kg/cm<sup>2</sup>. It is sterilized by Ethylene oxide gas by the manufacturer. Polypropylene 2-0 was used to suture the mesh in place. For Desarda repair, an un-detached strip of the External Oblique Aponeurosis (EOA) is sutured to the inguinal ligament below and the muscle arch above, behind the cord to form a new posterior wall using 1/0 polypropylene interrupted sutures.

A splitting incision was taken in EOA, partially separating and creating a 2 cm strip whose medial leaf is sutured to the inguinal ligament laterally from the pubic tubercle to the deep inguinal ring by a continuous non absorbable suture (2/0 Prolene). The upper free border of the EOA strip was sutured to internal oblique or conjoint muscles with Prolene 2/0. The resultant strip of EOA placed behind the cord formed a new posterior wall of the inguinal canal. The spermatic cord placed in the inguinal canal and the lateral leaf of EOA is sutured to the newly formed medial leaf of EOA in front of the cord using Prolene 2/0 sutures. Particular attention was paid to identify and preserve the nerves of the inguinal area. Unlike mesh repairs, the strip of EOA that replaces the mesh is more physiological and when put under tension when straining by abdominal wall muscular contraction creates lateral tension while contraction of the internal oblique/conjoined muscle creates tension above and laterally, making the EOA strip a shield to prevent any herniation. This fascial strip also gives additional strength to the weakened internal oblique and transverse abdominal muscle. For both techniques, the skin was closed with continuous non absorbable sutures. All intraoperative variables were recorded and compared.



Images show the steps during Desarda procedure.

The patients were followed up for postoperative pain, which was evaluated using Visual Analogue Scale, wound hematoma, wound seroma, wound infection. Patients were assessed for postoperative pain using Visual Analogue Scale. Visual Analogue Scale consists of a 10 cm line anchored at one end by a label as no pain and at the other end by a label as severe pain. We translated this for documentation as 1-3 mild pain, 3-7 moderate pain, and 7-10 severe pain. Sutures were removed on the 7th postoperative day and the patients discharged if there was no wound infection, were ambulatory, were taking oral and felt comfortable.

Patients were called to the Outpatient Department and follow-up was done for complications like

chronic groin pain (Inguinodynia), time taken to resume normal activity and recurrence. Cost effectiveness of the two procedures was compared.

### III. Discussion

According to EHS guidelines, mesh-based techniques the Lichtenstein technique in particular and endoscopic methods are recommended for treatment of symptomatic primary inguinal hernia in adult men and Shouldice method has been acknowledged to be acceptable as well. The Lichtenstein method of hernia repair is simple and safe. But the mesh prosthesis has its drawbacks. Mesh works as a mechanical barrier. It does not give a mobile and physiologically dynamic posterior wall. Disadvantages of the LT include the cost of the mesh and the problems associated with implantation of prosthetic material in the groin as the risk of seroma formation, surgical site infection, chronic groin pain or foreign body sensation, mesh migration, and impairment of testicular or sexual functions [4]. Furthermore, the placement of a synthetic mesh in the inguinal canal was thought to make it lose its dynamic nature, turning it into a static entity [5].

Migration of the mesh from the primary site of implantation in the abdominal cavity is one of the most dangerous complications. Surgical site infections are more frequent after hernia treatment using mesh. Intense chronic inflammatory process typically associated with foreign body reactions around the mesh prosthesis may produce meshoma or plugoma tumors, the treatment of which becomes a new surgical challenge. Additionally, procreation and sexual function are partly seriously affected after surgical hernia treatment with mesh. Desarda repair has removed all drawbacks of both types of repairs. There is no tension on suture lines as seen in tension repairs and there is no foreign body used like mesh repairs.

Desarda repair for inguinal hernia is based on the concept of providing a strong, mobile and physiologically active posterior wall. In 1887, Edoardo Bassini [7] first proposed repairing the inguinal canal with silk stitches suturing the conjoined transversus abdominis and internal oblique with the transversalis fascia to the inguinal ligament, which is the first sound technique for the repair of inguinal hernia. Since that time, more than 70 derivations of tissue-based repairs are described in the literature [8]. An undetached strip of the external oblique aponeurosis gives replacement to the absent aponeurotic element in the posterior wall and the additional muscle strength is given by the external oblique muscle to keep it physiologically active. Mobility is not affected because there is minimal or no fibrosis and posterior wall remains mobile.

Although the Shouldice method has been considered the best tissue-based repair with recurrence rates of less than 1%, its technically demanding nature can potentially increase the incidence of recurrence of up to 15% with the less experienced and less trained hands [9]. In 2001, Desarda proposed a solution that using part of the external oblique aponeurosis (EOA) as a patch for repair, which may reduce the complications compared with meshes. Moreover, the technique requires no complicated dissection or suturing, and is easy to learn as its developer claimed [10]. It does not require any foreign material and does not use weakened muscles or transversalis fascia for repair. The results are superior to those previously published in the field of hernia surgery [11].

### IV. Results

50 cases of unilateral primary inguinal hernia were included in the study after taking their consent. They were subjected to either Lichtenstein or Desarda method of hernia repair. Evaluation of all the patients included in the study was done regarding the history, physical findings, operative findings and postoperative complications. 25 patients underwent Lichtenstein repair and 25 patients underwent Desarda herniorrhaphy.

The patients were followed up at 12 months, 24 months and 36 months interval for any complication or recurrence.

**Associated comorbidities are shown in the following tables:**

CRITERIA (N=50)	DESARDA	LICHTENSTEIN	P- VALUE
AGE	40.16 ± 10.57	49.24 ± 10.05	0.0031*

**\*p<0.05 is statistically significant**

CRITERIA (N=50)	DESARDA		LICHTENSTEIN		P-VALUE
	Frequency	Percentage	Frequency	Percentage	
LEFT	14	56.0	11	44.0	0.396
RIGHT	11	44.0	14	56.0	

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Total	25	100.0	25	100.0
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**\*p<0.05 is statistically significant**

CRITERIA (N=50)	DESARDA		LICHTENSTEIN		P- VALUE
	Frequency	Percentage	Frequency	Percentage	
Recurrence					0.097
No	24	96.0	22	88.0	
Yes	0	0.0	3	12.0	
Total	25	100.0	25	100.0	

**\*p<0.05 is statistically significant**

CRITERIA (N=50)	DESARDA		LICHTENSTEIN		P- VALUE
	Frequency	Percentage	Frequency	Percentage	
SEROMA					0.082
Negative	24	96.0	20	80.0	
Positive	1	4.0	5	20.0	
Total	25	100.0	25	100.0	

**\*p<0.05 is statistically significant**



Post-operative scar after right inguinal hernia repair.

**Patients' subjective assessment of the operated area at the 12-, 24-, and 36-month follow-ups are shown in the following tables:**

**12 months follow-up**

	DESARDA	LICHTENSTEIN	p-value
Foreign body sensation	3(12%)	11(44%)	0.38
Abdominal wall stiffness	5(20%)	9(36%)	0.27
Altered sensation in operated areas	12(48%)	21(84%)	0.08

**24 months follow-up**

	DESARDA	LICHTENSTEIN	p-value
Foreign body sensation	5(20%)	15(60%)	0.24

Abdominal wall stiffness	2(8%)	12(48%)	0.50
Altered sensation in operated areas	11(44%)	23(92%)	0.09

36 months follow-up

	DESARDA	LICHTENSTEIN	p-value
Foreign body sensation	4(16%)	9(36%)	0.31
Abdominal wall stiffness	6(24%)	16(64%)	0.20
Altered sensation in operated areas	10(40%)	21(84%)	0.10

All patients (100%) had mild pain, but the pain intensity was reduced which was more in Lichtenstein repair (7%) compared to Desarda repair. However, the difference was not statistically significant. More complications were observed in Lichtenstein repair with 5 (20%) cases having seroma and 2(8%) cases having infection of the wound. In Desarda repair, 2 (8%) patients had complications, one (4%) having seroma and infection of the wound. However, it was not statistically significant.

During the follow up period, at one month and six months, 7(35%) cases and 4(20%) cases persisted to have mild pain respectively in Lichtenstein repair, whereas none of the patients in Desarda repair had any kind of pain which is statistically significant. Two (10%) patients continued to have chronic pain at the end of 1 year in the Lichtenstein group. Time to return to daily activities was 92% in case of desarda repair and 76% in Lichtenstein repair. Time taken to resume normal activities in case of Desarda herniorrhaphy was 88% as compared to Lichtenstein hernioplasty, which is 67%. There was no recurrence observed in both the groups during the follow-up period.

## V. Conclusion

Our randomized controlled trial confirmed that the results of inguinal hernia treatment with the Desarda technique are nearly similar to the results with Lichtenstein over a 3-year time period. Looking at the advantages and drawbacks of each procedure, Desarda procedure can become a valid alternative to Lichtenstein especially in cases of gross contamination, in the presence of financial constraints, or if a patient disagrees with the use of mesh. This technique has the potential to enlarge the number of tissue-based methods available to treat groin hernia.

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