



A COMPARATIVE STUDY OF DESARDA'S VERSUS LICHTENSTEIN'S TECHNIQUE FOR UNCOMPLICATED INGUINAL HERNIA IN TERTIARY CARE CENTRE.

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ABSTRACT **Introduction** Since mesh-related long-term morbidity in patients with an inguinal hernia is a concern, tissue-based repairs should be considered. There are few prospective studies comparing the outcomes of Lichtenstein's technique and Desarda's technique for the repair of uncomplicated inguinal hernias. So, we conducted this prospective study comparing the two techniques. **Methodology** This is a single-center prospective observational study conducted for a period of one year (2021). The patients who underwent surgery for uncomplicated inguinal hernia either by Lichtenstein's technique or Desarda's technique were included in the study. The two techniques were compared with respect to recurrence rates, immediate postoperative pain, chronic groin pain, and the time taken to return to activities of daily living (ADL). **Results** There was no significant difference in the recurrence rates, chronic groin pain or return to ADL between Lichtenstein's technique and Desarda's technique of inguinal hernia repair. The mean duration to return to ADL was lesser when patients underwent Desarda's repair though this difference was not significant. **Conclusion** Desarda's tissue repair was found comparable to Lichtenstein's mesh repair in terms of recurrence and postoperative morbidity, immediate postoperative pain, chronic groin pain, and the time taken to return to ADL. Desarda's technique may be considered as an alternative to mesh-based repairs to avoid long-term mesh-related morbidity for uncomplicated indirect hernias in the younger population.

KEYWORDS : Inguinal Hernia, Desarda's Repair, Lichtensteins Repair, Prospective.

INTRODUCTION

Inguinal hernias, because of their frequency remain an important surgical problem. The estimated lifetime risk for inguinal hernia is 27% for males and 3% for females. The annual mortality ranges from 100- to 300 per 100,000 inguinal hernia patients [1].

In the European Hernia Society Guidelines (EHS), mesh-based techniques, Lichtenstein's technique, in particular, are recommended for the treatment of symptomatic primary inguinal hernia [2]. Mesh works as a mechanical barrier, but it does not provide a mobile posterior wall. The synthetic prostheses can create new clinical problems, such as foreign body sensation in the groin, discomfort, and abdominal wall stiffness which may affect the patient's daily activities. An intense chronic inflammatory process typically associated with a foreign body reaction around the mesh prosthesis may produce meshoma or plugoma tumors, the treatment of which becomes a new surgical challenge [3]. Additionally, chronic scarring may lead to vas deferens obstruction, resulting in decreased fertility rates and a dysjaculation syndrome [4].

Desarda's technique, presented in 2001, is a novel hernia repair, based on the concept of providing a strong, mobile, physiologically active and dynamic posterior wall [5]. Desarda argued that since the aging process is minimal in tendons and aponeurosis, the use of a strip of external oblique aponeurosis (EOA) is the best alternative to either mesh or the Shouldice repair. The author demonstrated that his repair was dynamic in nature due to the contractions of the external and internal oblique muscles, thereby converting the strip of EOA into a 'shield' to prevent re-herniation. He also showed that the strip of EOA supported the transversalis fascia and that chances of herniation behind the strip were also reduced [5].

Since the original publication, few prospective studies have compared the outcomes of Lichtenstein's and Desarda's techniques for repairing uncomplicated inguinal hernias. So, we conducted this prospective observational study to compare the recurrence rates and the postoperative morbidity in terms of immediate postoperative pain, chronic groin pain and the time taken to return to activities of daily living (ADL) between Desarda's technique and Lichtenstein's technique for uncomplicated inguinal hernia.

MATERIALS & METHODOLOGY

Study design

This is a tertiary care centre based observational prospective study done for a period of one year (2021) on patients admitted in the department of general surgery with uncomplicated inguinal hernia. Approval of the Institutional Ethics Committee was obtained.

Participants

After taking informed consent, patients who underwent surgery for uncomplicated inguinal hernia either by Lichtenstein's or Desarda's technique were included in the study. Individuals who underwent surgery for complicated inguinal hernia, irreducible, obstructed, strangulated inguinal hernia were excluded from the study. These patients were followed up at definite interval i.e. postoperative day (POD) 1, POD 10, and six months post-surgery. From now on, patients who have undergone inguinal hernia repair by Lichtenstein's technique will be referred to as the LR group and by Desarda's repair will be referred to as the DR group.

Data collection

Patient records and operative notes were evaluated for demographic information and the type of procedure performed. Other data was collected using clinical evaluation at various follow-up intervals using validated scoring systems.

The outcome variables used to compare the two groups were hernia recurrence, postoperative pain and time to return to activities of daily living (ADL). The ADL were defined as walking, bathing, dressing, household activities, and returning to work. The pain was measured using the visual analogue scale (VAS) postoperatively at the follow-up visits (on POD 1 and POD 10). Chronic groin pain was measured by VAS at six months. Postoperative recurrence of hernia was assessed clinically at the six-month follow-up.

Statistical analysis

Data was analyzed by SPSS for Windows (version 26.0; IBM Inc., Armonk, USA). A chi-square test was used to determine statistical significance for categorical data and the unpaired t-test was used for continuous variables. Statistical significance was set at 0.05.

Operative technique

Pre-operative hair removal was performed and a single dose of intravenous antibiotic, ceftriaxone 500 mg was administered prior to surgery. Lichtenstein's hernia repair was performed as described in the literature [6].

In Desarda's technique, operative steps up to herniotomy were carried out as usual. Then, the upper leaf of external oblique aponeurosis was sutured to the upturned part of the inguinal ligament using polypropylene interrupted sutures. The medial most sutures were taken on the anterior rectus sheath, where the EOA is fused with it. After this, a strip of EOA was created by making an incision parallel to the inguinal ligament on the EOA. This incision was then extended from the pubic symphysis medially to just beyond the deep ring laterally. The upper border of this newly created strip was sutured to the inferior edge of the conjoint tendon using polypropylene sutures. This placed the strip of EOA posterior to the cord, giving replacement to the absent aponeurotic element in the posterior wall of the inguinal canal. The newly created upper leaf of the EOA was then sutured to the lower leaf. Subcutaneous tissue and skin were closed with simple interrupted sutures using nylon.

RESULTS

A total of 50 patients were included in this study. Each arm of the study had 25 patients and the demographic characteristics of the two groups were comparable. The mean age of patients in group 1 was 22 years and in group 2 was 26 years. Two patients in the DR group had a history of previous hernia repair. One underwent a right-sided herniotomy while the other patient had a left-sided open hernioplasty done. No patients in either group had a history of a chronic medical illness (Table 1).

The postoperative discomfort/pain was assessed by VAS score. At POD 1, 17 patients in group 1 and 16 patients in group 2 had VAS scores of 0-3, while three patients in both groups had VAS scores of 4-7. None of the patients in group 1 had a VAS score of 8-10, while one patient in group 2 had a VAS score of 8-10. At POD 10 and at six months, all patients in group 1 and group 2 had VAS scores of 0-3, and the mean VAS score was comparable between the groups (1.30±0.66 vs. 1.20±0.52). There was no significant difference between the groups (p>0.05; see Table 1).

Table 1: Assessment of postoperative pain using the visual analogue scale (VAS)

	LR group (n=25)	DR group (n=25)	p-value
POD 1			0.296
0-3	17 (68%)	16 (64%)	
4-7	8 (32%)	7 (28%)	
8-10	-	2 (8%)	
Mean	2.55 (±0.89)	2.65 (±1.81)	
POD 10			-
0-3	25 (100%)	25 (100%)	
4-7	-	-	
8-10	-	-	
Mean	1.3 (±0.66)	1.2 (±0.52)	
At six months			-
0-3	25 (100%)	25 (100%)	
4-7	-	-	
8-10	-	-	
Mean	0.8 (±0.84)	1 (±0.7)	

Categorical variables are written as count (percentage) or mean (±standard deviation).

POD - postoperative day; LR - Lichtenstein's repair; DR - Desarda's repair The mean time taken to return to ADL was 1.90±1.02 days in group 1 and 1.53±0.84 days in group 2. There was no significant difference between the groups (p>0.05). There were no observed recurrences in either group during the follow-up period (Table 2).

Table 2: Postoperative outcomes

	LR group (n=25)	DR group (n=25)	p-value
Duration of stay, days	1.12 (±0.33)	1.08 (±0.27)	0.988
Time to return to ADL, days	1.9 (±1.01)	1.52 (±0.84)	0.712

Recurrence	0	0	-
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Categorical variables are written as count (percentage) or mean (±standard deviation).

ADL - activities of daily living; LR - Lichtenstein's repair; DR - Desarda's repair

DISCUSSION

In our study, there was no significant difference in the recurrence rates, chronic groin pain, or return to ADL between Lichtenstein's and Desarda's inguinal hernia repair techniques. The mean duration to return to ADL was lesser when patients underwent Desarda's repair though this difference was not significant.

The aim of a hernia repair surgery is to provide a strong, mobile and physiologically dynamic posterior wall. The technique described by Dr. Desarda is a tissue-based repair where an undetached, movable aponeurotic strip of external oblique muscle is used that physiologically enforces the posterior wall of the inguinal canal [5]. Contraction of the external oblique muscle creates lateral tension in this strip, while contraction of the conjoint muscle pulls this strip upwards, creating tension superiorly, making the strip a 'shield' to prevent any herniation. This additional strength given by the aponeurotic strip to the posterior wall of the inguinal canal prevents herniation and is the essence of this operation. The tension created in this strip is graded as per the force of muscle contractions. Stronger intra-abdominal pressure, such as during coughing, results in stronger abdominal muscle contractions which result in increased tension in this strip. Thus, a strong and physiologically dynamic posterior wall is prepared in this operation [7]. This could be one of the reasons for a reduced rate of hernia recurrence seen in this repair. This finding is supported by studies conducted by other authors, which also demonstrated that recurrence rates in Desarda's repair were similar to those of Lichtenstein's repair [7-9].

In our study, time taken to return to ADL was also comparable between the two techniques. In a randomized controlled trial by Szopinski et al., there was no significant difference in the clinical outcomes observed during a three-year follow-up of adult male patients with a primary inguinal hernia operated by Desarda's or Lichtenstein's technique. In a study conducted by Dr. Desarda in 2008 comparing this technique with mesh-based repairs, he reported that patients in whom the author's technique was performed had a shorter hospital stay, less time to return to work, and fewer complications [8].

Postoperative assessment in our study showed comparable postoperative pain scores in both the techniques. In a study conducted by Youssef et al., there was no significant difference in mean postoperative VAS scores for pain, foreign body sensation, and chronic groin pain [9].

CONCLUSION

In our study, we conclude that, Desarda's repair for uncomplicated inguinal hernias gave almost equivalent results as Lichtenstein's repair. The robustness of this repair for larger direct hernias with a lax posterior wall is yet to be evaluated.

Desarda's technique may be considered as an alternative to mesh-based repair to avoid mesh-related complications, particularly for uncomplicated inguinal hernias in the younger population. This technique might be useful in cases with an infected field where the placement of mesh is hazardous.

Limitations

Our study is limited by small sample size and a short follow-up period. The efficacy of this technique for cases of complicated or recurrent hernia repairs was not evaluated. Post operative wound infection was not assessed in our study.

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