

## Original Research Article

# Desarda versus Lichtenstein repair for inguinal hernia: a randomized, multi-center controlled trial with promising results

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### ABSTRACT

**Background:** The techniques for treatment of an inguinal hernia range from the tissue-repairs to the tension-free hernioplasty. The use of a mesh for repair not free of complications and had higher costs. The Desarda technique for inguinal hernia repair is a new tissue-based method application of the external oblique muscle aponeurosis in the form of an undetached strip has been introduced as a new concept in tissue based hernia repair. The aim of the present study was to compare the standard mesh-based Lichtenstein technique with the tissue-based Desarda technique.

**Methods:** In this prospective study, patients with an Inguinal hernia who were referred and enrolled in the study for elective Desarda or Lichtenstein repair between May 2012 and November 2016 at Sohag and Assiut university hospitals, Egypt; Operation, anaesthesia, rescue analgesia and postoperative care were standardized. Patients were assessed for operation time, postoperative pain, hospital stay, foreign body sensation, complications and recurrence rate in the postoperative period on day 1, 1 week, 1, 12 and 24 months, postoperatively.

**Results:** Of 130 patients were included in the study, 65 underwent Desarda (D) versus 65 underwent Lichtenstein repair (L) between May 2012 and November 2016 at Sohag and Assiut university hospital in Egypt. In Desarda group (D) 64 of 65 patients were male and in Lichtenstein repair group (L) 65 of 65 were male. The patient's age for (L) Group was  $40 \pm 11.69$  and for (D) group was  $38 \pm 11.55$ . As regards operative time, hospital stay, return to activity and work for or post-operative pain 24 hours and 7 days after the operation. D group was significantly lower than (L). No difference between groups regarding intraoperative, postoperative complication, mortality rate, recurrence rate, or post-operative pain six months after operation.

**Conclusions:** Desarda repair had lower operative time, early return to basic and work activity, shorter hospital stay and less post-operative pain than Lichtenstein repair. The result of our study supports the use of Desarda repair in our hospitals as the method of choice for most of the patients due to low cost, low recurrence rate, and simplicity of repair.

**Keywords:** Desarda repair, Hernia repair complications, Lichtenstein repair

### INTRODUCTION

An inguinal hernia is a public health problem, with an estimated prevalence of 7%.<sup>1</sup> 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, Shouldice, Nylon-Darn, Halsted-Tanner, and McVay, to the 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>2</sup> Desarda technique for inguinal hernia repair is a new tissue-based method with 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 considered as a new method in tissue based hernia repair.<sup>3</sup>

The aim of the present study was to compare the standard mesh-based Lichtenstein technique with the tissue-based Desarda technique.

## METHODS

The study was designed as a randomized patient- and evaluator-blinded clinical trial at Sohag and Assiut university hospitals University Hospital. 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.

It included patients who were admitted to the surgical department at Sohag University and Assiut university hospitals Hospital for inguinal hernia repair over 42 months period starting from May 2012.

### Inclusion criteria

- Aged 18 and above
- with a primary, reducible inguinal or an inguino-scrotal hernia
- who consented to participate in the study.

### Exclusion criteria

- contraindications to elective hernia repair American Society of Anaesthesiologists (ASA) grade IV or V
- a recurrent hernia with disturbed anatomy
- Impaired mental state unable to consent and give an accurate assessment of the outcomes.

Patients were divided into two groups according to the surgical technique for inguinal hernia repair. Group 1 included patients who had a Desarda repair, and group 2 included patients who received a Lichtenstein repair.

The Ethics Committee of Sohag University Hospital approved this study, and informed consent was obtained from each patient prior to surgery.

### Outcome measure

Primary outcomes measured were recurrence and chronic pain. Secondary endpoints were the severity of pain after surgery, operative time, intraoperative complications, postoperative complications and hospital stay. Pain was reported using visual analog scales

### Randomization

Randomization was done with the permuted block method, using blocks of 10. Envelopes were drawn and opened by an operating room nurse that was not engaged in the study. Randomization was done just before surgery. Only operating surgeons and operating room staff were aware of the procedure performed. Wounds were dressed with identical opaque dressings regardless of surgical procedure. Records of operation were saved in a sealed envelope during the patient's hospital stay to keep the patient and ward personnel blind to the surgical procedure done.

### Surgical procedures

All patients were given one shot of antimicrobial prophylaxis (1.0 g 1st generation cephalosporin IV 30 min before surgery). All operations were carried out under regional anesthesia The Lichtenstein tension-free mesh repair was performed as described by Amid.<sup>4</sup> An 8×12 cm polypropylene mesh (Prolene; Ethicon, Somerville, NJ, USA) was trimmed to fit the inguinal floor.



**Figure 1: Surgical procedures.**

The mesh was sutured to the ligament of Poupart using a non-absorbable continuous 2/0 suture (Prolene; Ethicon) and secured cranially using an absorbable 2/0 suture (Maxon; Covidien, Mansfield, MA, USA). The Desarda

repair was performed as it was originally described in 2001.<sup>5</sup> Continuous nonabsorbable suture (2/0 Prolene; Ethicon) was used to suture the aponeurotic strip to the inguinal ligament laterally, and the strip was sutured

medially to the internal oblique muscle with interrupted, absorbable sutures (2/0 Maxon; Covidien).

### Follow-up

Patients were examined by a surgical resident not involved in the study until discharge and seen during follow-up appointments at 7, 30 days, and 3, 6, 12, 24 and 36 months after surgery.

Recurrences and other complications were recorded. The Pain was measured using a visual analog scale (VAS), which ranged from 0 (no pain) to 10 (maximum, unbearable pain).

### Definitions

Return to normal activity was defined as the patient's ability to do elementary activities (i.e., dressing, walking, bathing (basic activity) and returning to all previously performed activities (work activity).

### Statistical analysis

Data were summarized as mean±standard deviation (SD) for numerical variables and number (percentage) for non-parametric variables. Student's t-test and Chi-square test were used to compare variables. A p value of <0.05 was considered significant. Authors used the Statistical Package for Social Sciences (SPSS Inc., version 16, Chicago, US), for statistical analysis.

## RESULTS

Between May 2012 and November 2016, 130 patients with inguinal hernia fulfilled our inclusion criteria were admitted to General surgery department at Sohag and Assuit university hospitals, 65 underwent Desarda (D) and 65 underwent Lichtenstein repair (L).

In Desarda group (D) 61 OF 65 patients were male and in Lichtenstein repair group (L) 65 of 65 were male. The patient's age for (L) Group was 40±11.69 and for (D) group was 38±11.55. Table 1 represent patient's demographic data and hernias characteristic and revealed that the age, sex, body mass index, and hernia characteristic were not significantly different in both groups.

No operative or post-operative mortality was detected in this study. Table 2 represents the intraoperative and post-operative finding. As regard intraoperative or post-operative complication there were no significant differences between both groups.

The operative time and hospital stay were significantly shorter in Desarda group. Return to basic activity and work activity were also significantly faster in Desarda than Lichtenstein group.

Post-operative pain was measured using visual analogue score at post-operative day1, 7, and six months after operation.

**Table 1: Patients' demographic and hernias characteristic.**

	Total	Desarda	Lichtenstein
No. of patients	130	65	65
Median age	39±43	38. ±11.55	40±11.69
Male	126	61	65
female	4	4	0
<b>Body mass index</b>			
Normal	120	60	60
Overweight	8	4	4
Obese	2	1	1
Super-obese	0	0	0
<b>Hernia site</b>			
Right	80	39	41
Left	39	21	18
Bilateral	11	5	6
<b>Nyhus classification</b>			
I	80	42	38
II	35	14	21
III_a	10	5	5
III_b	5	4	1

The assessment of postoperative pain at day 1 and day7 showed that Desarda group had significantly lower pain score than Lichtenstein group however there were no significant pain difference between both groups after 6 months.

The mean follow-up time was 33 months for Desarda group and 32.5 months for Lichtenstein group. During follow up time there was one recurrence in Lichtenstein group during the 3-years follow up period no recurrence was detected in Desarda group however there was no statistically detected difference in both group.

**Table 2: Intraoperative and post-operative finding.**

	Desarda	Lichtenstein	p
No. of patients	65	65	NS
Operative time	29	40	0.000
Post-operative complications	6	12	NS
Hospital Stay	1.15	1.60	0.003
Return to basic activity	1.15	1.50	0.005
Return to work	11	15	0.000
<b>Pain score</b>			
24 hours	5	6	0.000
7 days	2	3	0.000
6 months	1	1	NS
Recurrence	0	1	NS

## DISCUSSION

The results of this study this prospective randomized trial show significant advantages of Desarda repair as it had significant shorter surgical time and shorter hospital stay than Lichtenstein repair. It also reported that Desarda repair had faster return to basic and work activity compared to Lichtenstein group. To the best of authors' knowledge there are few randomized controlled studies comparing Desarda and Lichtenstein repair.

Youssef et al report that Desarda repair had Shorter operating time, early return to normal gait compared to Lichtenstein repair.<sup>5</sup>

Szopinski et al suggest that no significant differences in clinical outcomes between Desarda and Lichtenstein repair were observed during a 3-year follow-up.<sup>6</sup>

As regard recurrence rate there was one recurrence in Lichtenstein group versus no recurrence in Desarda group however, no significant recurrences between both groups was detected in present study this was comparable to the previous studies.<sup>5,6</sup>

Desarda, in a clinical trial comparing his technique to Lichtenstein repair reports no recurrence in his technique versus 4 recurrences in the mesh group.<sup>7</sup>

The early post-operative pain (day 1 and day 7) was significantly lower in Desarda group but no significant difference between both groups after 6 months. Other studies reported lower early post-operative pain in Desarda group however, it not reach significant level.<sup>6-8</sup> In contrast to Szopinski et al who reported higher early post-operative pain in Desarda group however in another publication by them they reported no significant difference.<sup>9</sup>

Desarda repair not use meshes this decrease the cost, he postulates that his repair is physiological natural and dynamic using undetached strip of external oblique aponeurosis.<sup>10</sup>

The main limitation of the present study was relatively small number of patients this because this type of repair is uncommon in Egypt in the future we hope to publish another study on a large number of patients.

## CONCLUSION

Desarda repair had lower operative time, early return to basic and work activity, shorter hospital stays and less post-operative pain than Lichtenstein repair. The result of our study supports the use of Desarda repair in our

hospitals as the method of choice for most of the patients due to low cost and recurrence rate, Simple repair as well as our limited resources.

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