

Original Research Article

Desarda versus Lichtenstein technique for primary inguinal hernia treatment: one year results of a randomised clinical trial

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ABSTRACT

Background: The ideal operation to treat inguinal hernia is still far to define. The Shouldice method and other tissue-based techniques are still acknowledged to be acceptable for primary inguinal hernia repair according to European Hernia Society guidelines. Desarda's technique, presented in 2001, is an original hernia repair method using an undetached strip of external oblique aponeurosis. This randomized trial compared outcomes after hernia repair with Desarda and mesh-based Lichtenstein techniques.

Methods: A total of 42 participants (40 males and 2 females) were randomly assigned to the Desarda (group 1) and Lichtenstein (group 2), 19 vs 23 respectively. The primary outcomes measured were recurrence (for maximum follow up of 1 year and minimum of 5 months) and chronic pain. Additionally, operative time, early and late complications, foreign body sensation, and return to everyday activity were examined in hospital and at 7, 30 days, and 6, 12 months after surgery.

Results: During the follow-up, one recurrence was observed in Desarda group after 10 months of surgery. Chronic pain was experienced by 10.5% and 8.7% of patients from groups Desarda and Lichtenstein respectively. Foreign body sensation and return to activity were comparable between the two groups. Operative time was less in Desarda group. There was significantly less seroma production in the Desarda group.

Conclusions: The results of primary inguinal hernia repair with the Desarda and Lichtenstein techniques are comparable at the 1 year follow up. The technique may potentially increase the number of tissue-based methods available for treating groin hernias.

Keywords: Desarda technique, Lichtenstein's repair, Inguinal hernia

INTRODUCTION

Inguinal hernias remain a surgical problem due to its increased frequency and complications accounting for 27% incidence in males and 3% incidence in females.¹ Until 2009, there were no guidelines for hernia management when European Hernia Society (EHS) published its recommendation based on analysis of literature and several clinical trials. In the EHS guideline, mesh-based techniques Lichtenstein's was particularly recommended for the treatment of symptomatic inguinal hernia.² Shouldice method of tissue repair has also been

accepted. Considering the amount of advancement and several techniques involved in the treatment of inguinal hernia repair, several questions can be asked as; is Shouldice technique the only method of non-mesh method of repair that yields good results and is any other tissue-based repair of hernia effective if done correctly?

In course of time, several problems of mesh repair have been reported like foreign body sensation, scrotal edema, increased chances of infection further complicating the hospital stay. Complications like mesh migration, intense inflammatory response around the mesh leading to infection can further complicate subsequent operations.^{3,4}

In addition to this, sexual function is also been reported to have been affected in mesh inguinal hernia repair.

Keeping in view of the above complications involved intra-operative/post-operative, it is observed to assert of techniques having less foreign body reactions like tissue repair. It was until 2001 when Desarda technique was initially done leading to same results in surgical outcome and hence forth the search for tissue repair for inguinal hernia has become popular. This current study compares the clinical outcome of mesh based (Lichtenstein's) repair to tissue (Desarda) repair in a randomised clinical trial.

There have been several studies earlier which compared the efficacy of both the surgical techniques i.e., Desarda's tissue repair and Lichtenstein's mesh repair and the outcomes were equable in terms of post-operative and long-term outcomes of the patient. The objective of the current study is to test the hypothesis that the Desarda repair is as effective as the standard Lichtenstein procedure, allowing successful hernia repair without mesh in terms of wound site infection, seroma formation, foreign body sensation, disturbances in sexual activity, return to daily activity, office work and recurrence in the long run.

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.

METHODS

It was a prospective randomised case control study done for a period of one year (1st October 2015 to 2016). It was conducted in the Department of General Surgery, Silchar Medical College and Hospital, Assam. A total of 42 participants (40 males and 2 females) were included in this study and were divided into two groups - Desarda's tissue repair comprising of 19 participants in group 1 and Lichtenstein's mesh repair comprising of 23 participants in group 2.

Inclusion criteria included male and female participants above 25 years of age, assessment of proper condition of the external oblique aponeurosis and the presence of bilateral inguinal hernia operated on a single side by same group of surgeons. Presence of divided, tiny and weak external oblique aponeurosis, recurrent and complicated hernia, age <20 years, presence of scar in inguinal region and ASA score >3 in participants were excluded from the study. Informed consent was taken from the patient and their party and surgery was performed under spinal anaesthesia.

A 7.5×15 cm polypropylene mesh was used as per the dimension of the patient's inguinal floor. The mesh was sutured to the ligament of Poupart using a non-absorbable continuous 2/0 suture (prolene) and secured cranially

using same suture (Figure 1). The Desarda's repair was performed as it was originally described in 2001.^{5,6}

Interrupted non-absorbable suture (2/0 prolene) 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 (Figure 2). 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 like walking, bathing etc, usual activities at home i.e., preparing food, cleaning house (home activity); and returning to all previously performing work activity.



Figure 1: Polypropylene mesh sutured with inguinal ligament in Lichtenstein's technique.



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

Patients were followed up and the outcomes were compared on 7th, 30th day and at 6th and 12th months with a minimum follow up of 12 months after the surgery. They were discharged on the 3rd post-operative day when they were fit and comfortable.

Statistical analysis was conducted with the help of microsoft excel and SPSS software for windows. Variables were presented as mean and standard deviation for quantitative and percentages for qualitative or as deemed appropriate.

RESULTS

A total of 42 participants for both Desarda’s and Lichenstein’s group were included, of which 19 participants comprised Desarda's (group 1) and 23 participants comprised the Lichenstein's (group 2) (Table 1 and 2). Mean age was 37.32±7.2 years in Desarda’s and 35.42±8.7 years in Lichenstein’s. There was no significant difference in age and comorbid conditions in both the groups (p>0.05).

Table 1: Gender distribution.

Gender	Total number
Male	40
Female	2

Table 2: Type of hernia.

Type	Total number
Direct	15
Indirect	28

There was no statistical difference in duration of surgery between the two groups (p>0.05). Mean VAS score was 1.32±0.70 in Desarda’s and 4.52±0.97 in Lichenstein’s. The difference was significant (p<0.02). The mean incidence of seroma formation was 1.28±0.50 days in Desarda’s and was 4.72±0.79 days in Lichenstein’s. The difference was extremely significant (p<0.03) (Table 3).

Table 3: Assessment of variables in Desarda's and Lichenstein's technique of repair.

Variables	Desarda	Lichenstein	P value
With recurrence	1	0	0.265
Vas (pain)	1	4	0.025
With seroma	1	4	0.035
With SSI	0	2	0.203
With scrotal edema	3	4	0.890

The mean duration of return to basic activity was 16.74±6.40 days in Desarda’s and 14.34±5.33 days in Lichenstein’s. This difference was significant (p<0.195). The mean duration of return to activity was 4.74±1.24 days in Desarda’s and 7.00±3.90 days in Lichenstein’s (Table 4). This difference was significant (p<0.020).

The mean cost involved in Desarda was Rs 711.05±2.67 in Desarda’s and was Rs. 2420.65±4.83 in Lichenstein’s. It was extremely significant (p<0.001) (Table 6). The

mean duration of hospital stay was 2.21±0.53 days in Desarda’s and 2.65±1.46 days in Lichenstein (p<0.220) (Table 7).

Table 4: Assessment of returning activities following repair of inguinal hernia by Desarda's and Lichenstein's repair,

Variables	Desarda	Lichenstein	P value
Return to basic activity	16.74 (6.402)	14.34 (5.339)	0.195
Return to home activity	4.74 (1.240)	7.00 (3.920)	0.020
Return to work activity	10.05 (1.649)	11.01 (6.243)	0.298

Table 5: Assessment sensation by Desarda's and Lichenstein's technique.

Variables	Desarda	Lichenstein	P value
With loss of sensation	8	9	0.845
Foreign body sensation	2	2	0.841

Table 6: Mean number of days at hospital stay following repair of inguinal hernia by Desarda's and Lichenstein technique.

Technique	Mean stay in days (SD)	P value
Desarda	2.21 (0.535)	0.220
Lichenstein	2.65 (1.465)	0.220

Table 7: Mean cost in rupees in both the surgeries.

Technique	Mean cost in rupees (SD)	P value
Desarda	711.05 (2.677)	0.001
Lichenstein	2420.65 (4.839)	0.001

DISCUSSION

Inguinal hernia is one of the commonly encountered surgically treated condition. Several techniques have been developed for its repair. Although Desarda’s repair is a tissue based inguinal hernia repair technique, several objections have already been raised.^{5,6} It has been established as one of the successful methods of repair of inguinal hernia by using undetached strip of external oblique aponeurois muscle. This technique is original and satisfies the principles of ‘no-tension’ presented by Lichenstein’s and is different from the historical explanation given by McArthur and Andrewson Zimmerman.^{7,8}

Lichenstein remains one of the modern methods of mesh repair of inguinal hernia and is widely used. Apart from

the mesh being costly, other complications like SSI, mesh displacement, foreign body sensation, seroma formation is often seen more in hands of unexperienced surgeons.

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.^{9,10} There was a single recurrence seen in Desarda's group. Similar findings were reported by Desarda on 860 patients over a follow up period of more than seven years.¹¹

Mean VAS score on 3rd post-operative day was 1.32 in Desarda's technique and 4.52 in Lichtenstein's technique. Similar study by Mitura et al compared Desarda's and Lichtenstein's technique and reported mean VAS score on 3rd post-operative day to be 3.3 and 3.8 in Desarda's and Lichtenstein's technique respectively.¹² In our study the mean hospital stay was 2.21 days and 2.65 days in Desarda and Lichtenstein group respectively. Similar study by Mitura et al reported that patients operated by Desarda's technique were discharged on 4th day and those operated by Lichtenstein's technique were discharged on 5th post-operative day.¹² The mean time to return to basic physical activity in was 4.74 and 7.00 days in Desarda's and Lichtenstein's group respectively. Similarly, study conducted by Desarda et al 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.¹³

CONCLUSION

There was no significant difference in the clinical outcome of both the techniques. Frequency of complication was almost similar in both the groups. The cost of treatment was significantly high in Lichtenstein's technique when compared to Desarda's repair. Desarda is an economical, indigenous and innovative technique with equivalent results to Lichtenstein's demanding less technicality.

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