

ORIGINAL ARTICLE

A Comparative Study of Desarda's Technique with Lichtenstein Mesh Repair in Treatment of Inguinal Hernia

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Introduction: European hernia society (EHS) published a guideline that recommended Lichtenstein method for inguinal hernia repair. Currently Lichtenstein method is considered the most popular method. Desarda repair technique was used for the first time in 2001 which is still not considered as a standard tissue-based technique for inguinal hernia repair. We compared Desarda's technique with Lichtenstein mesh repair technique in treatment of inguinal hernia repair.

Objectives: To compare the outcome of standard mesh-based Lichtenstein technique with the tissue based Desarda technique in terms of pain.

Materials and Methods: After taken approval from hospital ethical committee, 250 patients were enrolled in the study. Enrolled patients were divided into two group. Group A underwent hernia repair through Desarda technique & group B will undergo hernia repair through Lichtenstein technique. Post-operative pain was assessed on day 7 and 30 by using visual analogue scale. All information was recorded on a pre-designed Proforma. The collected data from the patients through Proforma's was entered in SPSS.

Results: 250 patients were included in our study with mean age distribution 42.18+10.34 year. 82.8% patients were males while 17.2% were females. Mean SD of operative time for both groups (Desarda Group vs Lichtenstein Technique) were 23.41+ 0.17 vs 24.18 + 0.66. 111 patients (89%) 92 felt mild post-operative pain who were subjected to Group A while 14 (11%) patients suffered moderate post-operative pain with Mean SD 2.46+0.30. 88% patients felt post-operative pain who were subjected to Group B while 15 patients (12%) felt moderate post-operative pain with Mean SD 2.46+0.18 thus giving us almost same results as found in Group A.

Conclusion: The results of inguinal hernia treatment with both Desarda and Lichtenstein technique are similar. So, we conclude the Desarda repair is as effective as the standard Lichtenstein procedure, allowing successful hernia repair without mesh in terms of pain.

Keywords: Desarda's technique, Lichtenstein mesh, inguinal hernia

INTRODUCTION

The "hernia" is a Latin term meaning "a rupture"⁽¹⁾. An inguinal hernia is a protrusion of parietal peritoneum, 'the peritoneal sac', through a preformed or secondarily established defect in the inguinal area of the abdominal wall. Inguinal hernias have first been described by the ancient Egyptians in the Papyrus of Ebers. Globally, inguinal hernia is the most common complication, comprising of approximately 75% of all abdominal wall hernias. Inguinal hernia is characterized by flange of the contents of the belly⁽²⁾. Men are more affected than women. The risk of inguinal hernia is highest in males and increases with age reaching 22.8% in persons aged 60-74 year. Throughout the world every 2nd man will need an inguinal hernia repair in his lifespan. The exact incidence of inguinal hernia is unknown but annually approximately 20 million cases has been reported worldwide⁽³⁾. The only therapy for inguinal hernia is surgical repair, which is one of the most common performed surgical procedures in the world. In the United States, inguinal herniorrhaphy accounts for approximately 800,000 cases yearly. It is estimated that worldwide each year over 20 million surgical procedures for inguinal hernias are performed. Since 2009, European hernia society (EHS) published a guidelines that recommended Lichtenstein method for inguinal hernia repair especially in adult male. Currently Lichtenstein method is considered as the most popular method with recurrence rates of around 4%⁽⁴⁾. Desarda repair technique was used for the first time in 2001 which is still not considered as a standard tissue based technique for inguinal hernia repair⁽⁴⁾.

European hernia society published guidelines in 2009 for hernia repair. They recommended Lichtenstein or laparoscopic methods for repair of primary inguinal hernia in adult males. The Shouldice repair technique is considered best among the non-mesh repair techniques with strength of recommendation level 1A.

The Shouldice technique offers a recurrence rate ranging from 0.7 to 1.7% up to 15% depending on experience⁽⁵⁻⁷⁾. The

Lichtenstein method is currently the most popular open mesh repair technique with recurrence rates of around 4% in long term follow up⁽⁷⁾. Lichtenstein method uses mesh implantation which has shortcomings like chronic groin pain, foreign body sensations, abdominal wall stiffness, surgical site infection etc. which interferes with daily patient activities^(8,9).

This main aim of this study was to compare standard mesh-based Lichtenstein technique with the tissue based Desarda technique in term of pain in Pakistani population. The hypothesis of this study was that the Desarda repair is as effective as the standard Lichtenstein procedure, allowing successful hernia repair without mesh in terms of pain.

Objective: To compare the outcome of standard mesh-based Lichtenstein technique with the tissue based Desarda technique in terms of pain.

MATERIALS AND METHODS

Study Design & Sample Size: In this Randomized Controlled Trial, a total of 250 cases were studied at the department of general Surgery, Saidu Teaching Hospital, Swat.

Sample size was calculated by using the WHO software for sample size calculation using the formula of hypothesis tests for two populations (one sided test) with the following assumption:

Level of significance = 5%

Anticipated population proportion = 4.8% (10)
(Desarda group)

Anticipated population proportion = 2.9% (10)
(Lichtenstein group)

Statistical power = 90%

Sample size was 250 (125 in each group).

Sampling technique: Nonprobability Consecutive sampling.

Inclusion Criteria:

- All patients with inguinal hernia.
- All patients with 20-60 years of age.
- Either gender.

Exclusion Criteria:

- Patients with other co-morbid condition e.g. diabetes, anemia and malnourishments. These are confounding factors.
- Patients with an external oblique aponeurosis that is divided, tiny, and/or weak.
- Recurrent or strangulated hernias or mental disorders, those participating in other clinical trials.
- Patients with a history of a forced hernia reduction with subsequent hospitalization, a history of infection, or the presence of any scar in the inguinal area.

METHODS

All patients fulfilling the inclusion and exclusion criteria were enrolled in the study. Patient's Demographic data were collected on a predesigned questionnaire. Patients were divided into two groups by blocked randomization. Group A patients underwent hernia repair through Desarda technique & group B patients was underwent hernia repair through Lichtenstein technique. All the patients were followed after 7 days and one month, on which time pain was graded by a different surgeon.

Statistical Analysis: By using the SPSS version 21.0, all the collected data were analyzed. Mean ± SD was calculated for continuous variables like age and duration of symptoms and disease and stay in hospital. Frequencies and percentages were calculated for categorical variables like gender, and outcomes like recurrence, return to normal and pain. Chi-square test was used to compare the outcome of both the techniques while keeping p value of < 0.05 as significant.

RESULTS

A total of 250 patients were enrolled in our study. 43(17.2%) were females and 207(82.8%) were males with mean age of 42.18+10.34. half of the patients were undergone through Desarda Technique while the remaining half were undergone through Lichtenstein technique. Age wise distribution of patients were shown in which most of the patients 132 (52.8%) were fall in the age group of 51-60 years followed by 71 (28.4%) patients in the age group of 41-50 years (Table 1). Seventy-five (75) patients (60%) have less than three years of this disease in the patients subjected to Desarda's technique while 50 (40%) patients operated by the same technique have this disease more than three years. Sixty-seven (67) patients (54%) have less than three years of this disease in the patients subjected to Lichtenstein's technique while 58 (46%) patients operated by the same technique have this disease more than three years (Table 4). One hundred eleven (111) patients (89%) felt mild post-operative pain who were subjected to Group A while 14 (11%) patients suffered moderate post-operative pain with Mean SD 2.46+0.30. One hundred ten (110) patients (88%) felt post-operative pain who were subjected to Group B while 15 patients (12%) felt moderate post-operative pain with Mean SD 2.46+0.18 thus giving us almost same results as found in Group A (Table 5). patients were followed up on the seventh day and after one month and recurrence of 8 (6.4%) was found in males' patients of Group A whereas in the same group 2 (1.6%) females showed recurrence. In Group B, 7 (5.6%) male patients showed recurrence while 3 (2.4%) female patients in the same group also showed recurrence (Table 3). Patients in both group returns to their normal gait in sixteen days (Table 3). The efficacy of both groups gave us striking resemblance as 115 (92%) patients in the Group A operated by Desarda's technique were successfully operated while 10 (8%) resulted in complications and were not effective. When cross tabulated with the Group B, the results showed exactly the same trend with P value 1.00 (Table 6).

Table 1: Distribution of Patients on The Basis of Age Group Among Both Group

Age	Group A	Group B	Total
20-30 years	9 (3.6%)	7 (2.8%)	16 (6.4%)
31-40 years	15 (6%)	16 (6.4%)	31 (12.4%)
41-50 years	35 (14%)	36 (14.4%)	71 (28.4%)

51-60 years	66 (26.4%)	66 (26.4%)	132 (52.8%)
Total	125 (50%)	125 (50%)	250 (100%)
Mean and SD	42.04+10.45	42.33+10.2	42.18+10.34

Chi Square test was applied in which P value was 0.296.

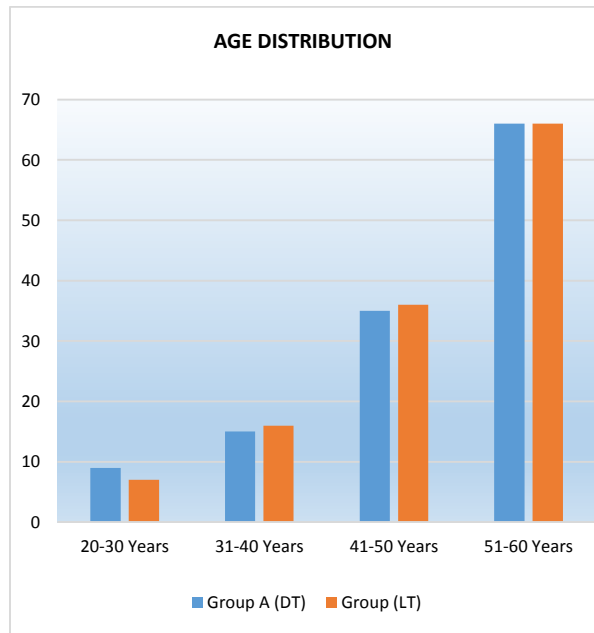


Fig 1: Graphical presentation of age distribution

Table 2: Distribution of Patients on The Basis Of Gender

Gender	Group A (DT)	Group B (LT)	Total
Male	106 (42.4%)	101 (40.4%)	207 (82.8%)
Female	19 (7.6%)	24 (9.6%)	43 (17.2%)
Total	125 (50%)	125 (50%)	250 (100%)

Table 3: Stratification of Recurrence on The Basis of Gender Among Both Group

Gender	Group A (DT)		Group B (LT)	
	Recurrence %	Return to Normal (days)	Recurrence %	Return to Normal (days)
Male	8 (6.4%)	16	7 (5.6%)	16
Female	2 (1.6%)	16	3 (2.4%)	15

Chi Square test was applied in which P Value for recurrence and return to normal days was 0.605 and 0.898 respectively.

Table 4: Distribution of Patients on The Basis Of Duration

Duration	Group A	Group B	P value
<3 years	75 (60%)	67 (54%)	
> 3 years	50 (40%)	58 (46%)	
Total	125 (100%)	125 (100%)	
Mean and SD	2.63+0.23	2.38+0.26	0.307

Table 5: Distribution of Patients on The Basis of Pain

Pain	Group A	Group B	P value
Grade 1 1 - 3 (mild pain)	111 (89%)	110 (88%)	
Grade 2 4-7 (Moderate pain)	14 (11%)	15 (12%)	
Grade 3 8 - 10 (Severe pain)	0	0	
Total	125 (100%)	125 (100%)	
Mean and SD	2.46+0.30	2.46+0.18	0.843

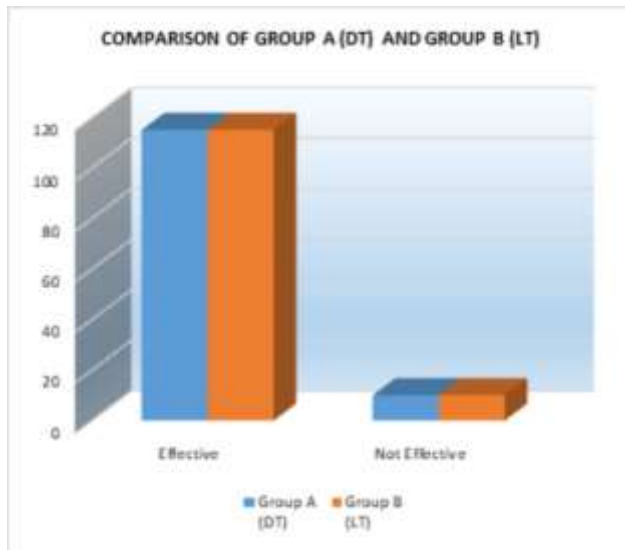


Fig 2: Graphical presentation of comparison of efficacies of Group A and Group B

Table 6: Distribution of Patients on The Basis Of Efficacy

Efficacy	Group A	Group B	P value
Effective	115 (92%)	115 (92%)	1.00
Not effective	10 (8%)	10 (8%)	
Total	125 (100%)	125 (100%)	

DISCUSSION

Surgical repair of the inguinal hernia is the most common general surgery procedure performed today⁽¹¹⁾. The successful surgical repair of inguinal hernia depends on a tension free closure of hernia defect to attain the lowest possible recurrence rate⁽¹²⁾. For years together Bassini's repair and its modifications were standard treatment for inguinal hernia till Lichtenstein tension free repair came. After that there was limited scope for tissue based repairs like Bassini's repair, Shouldice repair etc. In a large multicentre controlled trial, recurrence rates of 8.6%, and 11% were reported after Bassini and McVay repairs respectively⁽¹³⁾.

In this randomized control study, 250 patients were enrolled with mean age distribution of 42.18±10.34 ranged from 20 to 60 years. No significant differences in clinical outcomes were observed during a one-month follow-up of with a primary inguinal hernia operated on with either the Desarda or the Lichtenstein technique. The Desarda technique for inguinal hernia repair is a new tissue-based method. Despite the objections presented by some authors^(14, 15) 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 established as a new concept in tissue based hernia repair. The technique is original, new, and different from the historical methods using the external oblique aponeurosis, proposed initially by McArthur⁽¹⁶⁾ and Andrews or Zimmermann⁽¹⁷⁾. Overall duration of procedure in 167 patients (66.8%) was less than 25 minutes in which 87 patients were from Desarda Group and the remaining 80 patients were from Group B whereas in 103 patients (41.2%) duration of procedure was either twenty-five (25) minutes or more in which 48 patients were from Desarda Group while remaining 55 patients were from Group B (Lichtenstein Technique). Mean SD of operative time for both groups were 23.41± 0.17 vs 24.18 ± 0.66. Both Group A (Desarda Technique) and Group B (Lichtenstein Technique) almost followed the same trend. Results were non-significant (p=0.112) for Desarda Group whereas for Group B (Lichtenstein Technique) P Value was 0.373. Both the results were statistically non-significant. In another study (18) a significant difference was recorded in regard to operative time- with the Desarda's repair taking a remarkably shorter duration (15.9±3.52

minutes for Lichtenstein repair and 10.02±2.93 minutes for Desarda's repair, effect size (95% CI): 5.92 (4.62–7.20), P=0.0001]. Previously, Mitura and Romanczuk have published the results of a 6-month follow-up study of the Desarda and Lichtenstein approaches 146. They observed no recurrence, and pain after 6 months was comparable in the two groups (VAS scores were 8 vs. 11 in the Desarda and Lichtenstein groups, respectively; p = 0.691). Situma et al. 147 presented their short-term results of Desarda versus modified Bassini inguinal hernia repair, concluding that there was no difference between these two techniques in regard to pain and return to normal activity. Other results, published by Desarda and his group, were based on a comparison of his technique and the Lichtenstein technique 148. They reported no recurrence among the 269 Desarda group patients and 1.97% recurrence among the 225 mesh group patients; 6.49% of patients from the mesh group and no patients in the Desarda group reported chronic pain at 1 year after surgery. In our opinion, despite some methodological inadequacies in the presented articles, the Desarda method merits more attention and further investigation by other authors. In our study, there was no significant difference on the outcomes of recurrence patients when followed up on the seventh day and after one month, recurrence of 8 (6.4%) was found in males' patients of Group A whereas in the same group 2 (1.6%) females showed recurrence. In Group B, 7 (5.6%) male patients showed recurrence while 3 (2.4%) female patients in the same group also showed recurrence (Table 3). They return to normal gait (16 days vs 16 days) and postoperative pain 2.46±0.30 vs 2.46±0.18 (P=0.843). in a study conducted by B.S. Gedam⁽¹⁹⁾ one patient in Lichtenstein group and one in Desarda group had recurrence within one year of operative repair (P = 1). In Lichtenstein group the recurrence was near the pubic tubercle and in the Desarda group it was near the deep ring. Desarda, in a clinical trial, comparing his technique to Lichtenstein repair reported no recurrence in his technique versus 1.9%recurrences in the mesh group⁽²⁰⁾. Szopinski et al.⁽²¹⁾ had 1.9% recurrence in Lichtenstein and 1.94% in Desarda group. Similar P values were obtained in studies by Youssef et al.⁽²²⁾, Z Abbas et al.⁽²³⁾, and Rodriguez et al.⁽²⁴⁾.

Mean duration of procedure for Group A was 23.41± 0.17 vs 24.18±0.66 in Group B. There was no effect of smoking, obesity and gender on operative time. The duration of operation is a surgeon dependent variable and reflects the ease of operation. In the present study, operating time was calculated from time needed to repair is considered. In some studies operating time was calculated from skin incision to skin closure. The results of inguinal hernia treatment with the Desarda technique are similar to the results after standard Lichtenstein operations. Desarda technique does not use a mesh. Patients after Desarda's operative procedure get ambulatory sooner as compared to the standard Lichtenstein mesh repair. Less Postoperative pain, complications similar to standardised technique.

CONCLUSION

It is concluded that there is no difference in frequency of outcomes like recurrence, pain, and return to normal gait in Desarda's or Lichtenstein's technique of hernia repair. So, we conclude the Desarda repair is as effective as the standard Lichtenstein procedure, allowing successful hernia repair without mesh in terms of pain.

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