

Outcomes of Desarda Vs Lichtenstein Repair for Inguinal Hernia in Terms of Operative Time, Seroma Formation, Return to Normal Activity and Cost

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ABSTRACT

Background: Inguinal hernia is very common problem on surgical floor. Surgical intervention is the current definite approach, whereas asymptomatic or minimally symptomatic hernias may be good candidate for watchful waiting. Numerous repair methods have been described to date.

Aim: To compare the outcome of Desarda versus Lichtenstein.

Methods: This study was conducted at East Surgical Unit, Mayo Hospital, Lahore Pakistan total 70 patients were included in the study. In 35 patients Lichtenstein Hernia Repair was done and in 25 patients Desarda repair was done. The demographic information was noted. Outcome in the form of duration of operation, Posterior wall repair time, seroma formation, return to normal activity and cost was recorded. All this information was collected through a designed proforma which is attached here.

Results: Mean age in group with standard deviation is 42.86 ± 16.881 . Mean age in group A is 41.94 ± 17.526 and mean age in group B is 40.71 ± 16.614 . Mean operative time in group A and group B was 60.20 ± 12.338 and 72.29 ± 13.008 respectively. Statistically significant difference was present in treatment group in term of operative time i.e., (P-value $\square .05$). Mean operative time in posterior wall repair in group A and group B was 14.31 ± 2.483 and 17.74 ± 3.023 respectively and it is significant P value $\square .05$. Mean time to require to start normal activity in A and B was 9.26 ± 1.771 and 11 ± 2.485 and it is statistically significant (P value = .001). Seroma formation in both treatment group was not statistically significant (P value = .310).

Conclusion: there was no difference in seroma formation in between both treatment group (p value = .310) but all other variable like operative time, posterior wall repair time, return to normal activity and cost were statistically significant. Patients treated with Desarda technique required less operative time and posterior wall repair time than Lichtenstein (p value $\square .05$ & p value $\square .05$) respectively. Time required to resume normal activity was also significant (p value = .001). Statistically significant difference was also observed in cost between two treatment groups (p value $\square .05$).

Keywords: Lichtenstein repair, inguinal hernia, seroma formation, desarda repair

INTRODUCTION

Inguinal hernia is very common illness and its incidence rises with age and more common in male sex. Its incidence is 368 for men and 44 for female per 100,000 population and increase from 194 to 648 for men and 28 to 108 for women in age group 30 to 70 years¹. This occurrence of inguinal hernia is due to progressive weakness in abdominal musculature and due to raised intra-abdominal pressure required for defecation and urination. This disease results in hideous swelling and aching distress².

Inguinal hernia can only be repaired surgically and its repair not only prevents upcoming complications like intestinal obstruction, strangulation and infarction but also change the class of life and psychological illness³.

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Worldwide, multiple techniques are used for repair of inguinal hernia i.e., TEPP, TAPP, Shouldice and Mesh Hernioplasty⁴. Mesh Hernioplasty is still most trusted technique but it is associated with complication like surgical site infection, foreign body sensation, wall stiffness and migration of mesh in abdominal wall as one of most dangerous complication⁵.

These complications lets surgeon to evolve different and safe technique like "DESARDA".

Desarda is type of inguinal hernia repair in which upper medial leaf of external oblique aponeurosis is sutured with inguinal ligament then splitting incision is made in sutured leaf separating leaf of width 1.5 to 2cm and suture to internal oblique and free medial leaf is then sutured with free lateral leaf over inguinal canal whereas in Lichtenstein polypropylene mesh is used to strengthen posterior inguinal wall^{5,6}.

W. Manyilrah et.al proved that Desarda takes shorter operative time than Lichtenstein (Desarda

10.02±2.93 min vs Lichtenstein 15.9±3.52 min) and it is statistically significant (P=.0001) while P.R.I Rodriguez et al. proved that difference in operative time in both techniques was also statistically significant (Desarda 48 min and Lichtenstein 39 min- P<0.05). Early return to normal activity was seen in Desarda (8.26 days) vs (12.58 days) in Lichtenstein^{6,7}. Jacek Szopinski et al. found that frequency of seroma formation was less in Desarda as compared to Lichtenstein in 30 days (0% Desarda and 7.8% Lichtenstein --- P<0.004). Youssef T et al found it to be cost effective⁸.

To resolve this controversy, we would like to access its outcomes to estimate its feasibility and applicability in our health care system.

The objective of the study was to compare the outcomes of Desarda vs Lichtenstein for inguinal hernia repair in terms of operation time, seroma formation, return to normal activity and cost.

Hypothesis: Desarda in comparison to lichtenstein repair for inguinal hernia decreases operative time, seroma formation, cost and also encourages early return to normal activity.

MATERIALS AND METHODS

This randomized controlled trial was conducted in the Department Surgery, King Edward Medical University/Mayo Hospital, Lahore during a period of 6 months. Simple Random sampling technique using computer generated random number table. Sample size of 70 patients (35 in each group) is established by using 90% power of test, 5% level of significance with expected percentage of return to normal activity for Desarda group as 89% and Lichtenstein as 59%.

$$n = \left\{ Z_{1-\alpha} \sqrt{2P(1-P)} + Z_{1-\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)} \right\}^2 / (P_1 - P_2)^2$$

Type equation here.

Z_{1-α} = confidence level 95% = 1.96

Z_{1-β} = power of test 90%

P₁ = population proportion = 89%

P₂ = population proportion = 59%

Inclusion criteria:

- Symptomatic primary inguinal hernia diagnosed on history and examination
- Male with age >13 and <70

Exclusion criteria:

- Patient with recurrent inguinal hernia
- Patients with urinary bladder outlet obstruction diagnosed on history and examination.
- Patients who are unfit for General anesthesia ASA grade III and IV

Data collection procedure: In 6 month after approval of synopsis, patients will be admitted in ward through out-patient department of General Surgery unit II, at Mayo Hospital Lahore. An informed written consent will be taken. Clinical data with

respect to their demographic profile (age and sex) will be recorded. Patients would be selected after screening with respect to inclusion and exclusion criteria. Selected patients would be divided in two groups [Group D (Desarda) and Group L (Lichtenstein)] by computer generated random number table.

Prophylactic antibiotic (ceftriaxone sodium 1 Gm I/V) will be administered before skin incision. All patients will be operated by single consultant himself. Operative time will be calculated in minutes from time of skin incision made till closure of skin as single blinded. Seroma formation will be recorded on 7th, 14th, 30th post-operative day and return to normal activity will be recorded by single blinded method. Cost will also be measured. Outcomes will be recorded on pretested, self-administered Performa.

RESULTS

Total number of patient in study was 70 with 35 patient in each group. Mean age in group with standard deviation is 42.86±16.881. Mean age in group A is 41.94±17.526 and mean age in group B is 40.71±16.614. Minimum age is 18 and maximum age is 80 in study group.

Mean operative time in group A and group B was 60.20±12.338 and 72.29±13.008 respectively. Statistically significant difference was present in treatment group in term of operative time i.e., (P-value = <0.05).

Mean operative time in posterior wall repair in group A and group B was 14.31±2.483 and 17.74±3.023 respectively. Statistically significant difference was present in treatment group in term of posterior wall repair time i.e. (P-value = <0.05)

In both treatment group, mean time to require to start normal activity in A and B was 9.26±1.771 and 11±2.485 and it is statistically significant (P value = .001)

Seroma formation in both treatment group was not statistically significant (P – value = .310). Total of 72.4% patient in both treatment group didn't developed seroma formation with 25.6 in group A and 20.4 in group B(36.7% vs 29.14%). 7 patient in group A and 6 patient in group B developed seroma formation on 1st day (10% vs 8.5%). On 7th day, 1 patient developed seroma formation in group A versus 4 patient in group B (1.4% vs 5.7%). No patient developed seroma in group A and 4 patient developed seroma on 14th day (0% vs 5.7%) while seroma formation was same on 30th day. Cost for surgical material used in group A was 800 pk Rs and in group B was 2950 pk Rs and there was statistically significant difference in term of cost in both group (P value <0.05)

Table 1: Age distribution of patients

	Group – A	Group - B
N	35	35
Mean	41.94	40.17
SD	17.526	16.614
Minimum	18	21
Maximum	80	76

Group A: Desarda repair Group B: Lichtenstein repair

Table 2: Operation time in minutes

	Desarda repair	Lichtenstein repair
N	35	35
Time in minutes	60.20	72.29
SD	12.338	13.008
P Value	P < .05	

Table 3: Posterior wall repair time in minutes

	Desarda repair	Lichtenstein repair
N	35	35
Time in minutes	14.31	17.74
SD	2.483	3.023
P Value	P < .05	

Table 4: Return to normal activity in days

	Desarda repair	Lichtenstein repair
N	35	35
Time in minutes	9.26	11
SD	1.771	2.485
P Value	P=0.001	

Table 5: Seroma formation

Days	Desarda repair	Lichtenstein repair
1 st day	7	6
7 th day	1	4
14 th day	0	4
30 th day	1	1

P value=.310

Table 6: Cost of operation

Cost	Desarda repair	Lichtenstein repair
Pak Rs.	250	2500

P value < .05

DISCUSSION

Most frequent performed procedure in surgical floor is inguinal hernia repair and Edoardo Bassini described 1st time true inguinal hernia repair⁹. These days, Mesh tension free repair (Lichtenstein repair) has gained more acceptance because of its simplicity, better results and decrease in complication¹³¹ but use of mesh in young patient was always a hot debate and conflict for having no data about long term effect of mesh and for decreasing male sexual activity. This made surgeon to give preference to

desarda for not only in primary but also in strangulated hernia⁵.

There was always debate about the gold standard technique for inguinal hernia repair. Apart from laparoscopic repair, comparison was always between Lichtenstein and non-mesh repair (Desarda) but surgical site infection, foreign body sensation and migration of mesh were serious problems^{10,11,12}.

Repair of inguinal hernia by natural tissue repair technique (Desarda) in novel technique and it uses external oblique to strengthen posterior abdominal wall. In start, some researchers made objection that this technique is a change in old tissue repair^{13,14}.

Desarda describe another open non mesh hernia repair whose results are comparable with Lichtenstein repair¹⁵. Technique of Desarda repair is suturing of external oblique with inguinal ligament starting from pubic tubercle. Another incision is made 2cm above spermatic cord and superior leaf of external oblique aponeurosis is sutured again with lower leaf over spermatic cord to restore normal anatomy of inguinal canal¹⁶.

P.R.I Rodriguez et.al. Proved in his study that Desarda take more time than Lichtenstein (48 vs 39 min) and it was statistically significant P < .05⁷. Iftikhar Ahmed Bhatti reported that there was no statistically significant difference in both treatment group (28.90±5.57 vs 28.80±5.77 P=.88)¹⁷. Zaheer abbas also concluded in his study that this is no statistically significant difference in mean operative time between two techniques¹⁴⁰. In our study mean operative time in Desarda vs Lichtenstein was 60.20±12.338 and 72.29±13.008 and it is statistically significant (p value < .05).

W. Manyilirah et.al proved that Desarda take shorter operative time for posterior wall repair than Lichtenstein repair that was statistically significant (p value = .001)⁶ and in our study it was also statistically significant with mean operative time for Desarda and Lichtenstein repair was 14.31±2.483 vs 17.74±3.023 P value < .05.

Jacek Szopinski et al reported in his study that no statically difference was present in term of return to normal activity⁵ but Mohan P Desarda showed in his study that Desarda has reduced time for return to normal activity from 3 / 4 weeks to 1 / 2 week¹⁶. S M Situma also reported in his study that time for resumption of normal gait in Desarda was approximately 6 days¹⁹. Mohammad al Fataz stated in his study that 92% patients started normal routine work in 3 weeks²⁰. Zaheer Abbas concluded in research that there was significant difference in time required for resumption of routine activity (7.04 days for Desarda vs 11.30 days for Lichtenstein P value < .0001)¹⁸. In our study data showed that Desarda has significantly reduce time for post-operative normal

activity resumption in comparison to Lichtenstein that is (9.26±1.771 vs 11±2.485 P value = .001).

Decrease in seroma formation is due to absence of mesh effect on surrounding tissue and this also correlate with other research and known effect of prolene on tissue. And Mohammad al Fatah reported that only 1 patient develop seroma formation in 180 patients¹⁷. Dasari reported 1.1% seroma formation in Lichtenstein repair and Dogru O no seroma formation was seen in Lichtenstein group. Iftikhar Ahmed Bhatti proved no statistically significant difference was seen in Desarda and Lichtenstein (P value=.297)¹⁷. Zaheer Abbas also stated that there was no significant difference in both technique (P value= .2687)¹⁸. Result of our study also correlated with results of literature (p value =.310)

Cost of any operation has vital importance. Cost of hernia may be insignificant but it is highly significant in developing countries; that's why surgeons prefer Desarda repair over Lichtenstein repair¹⁹. Mohan P Desarda showed that national expenditure on mesh was almost 2-2.5 million pounds and Desarda repair had reduced it to nothing¹⁶. Youssef T et al proved Desarda repair to be cost effective with reference to Lichtenstein repair⁸. Our study also correlated with result of other studied done internationally and statistically significant P – value □ .05.

CONCLUSION

Desarda repair is far superior than Lichtenstein repair in terms of operative time, posterior wall repair time, return to normal activity and cost however seroma formation was almost equal in both treatment group. Results of this study proved that there is significant difference in term of operative time, posterior wall repair time, return to normal activity and cost in both group but no statistically significant difference was seen in seroma formation.

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