

Desarda versus Lichtenstein mesh for inguinal hernia repair: a randomized trial

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ABSTRACT

Background: Surgical repair of inguinal hernia is done to repair hernia in groin. Tension-free Desarda method for inguinal hernia has been introduced. This is applied in few cases in surgical centers all over the world. But Lichtenstein is most commonly applied method.

Aim: To compare the outcome of Desarda versus Lichtenstein mesh for surgical repair of inguinal hernia.

Methods:

Study Design: Randomized controlled trial.

Setting: Central Park Teaching Hospital, Lahore.

Duration of study: 6 months.

Data collection: 60 males of age 18-70years with diagnosis of inguinal hernia were included and were randomly divided in 2 groups. In group 1, Lichtenstein mesh repair was done. In group 2, Desarda non-mesh repair was done. Duration of surgery was noted. After 72 hours, patients were assessed for pain using a VAS. Patients were observed for seroma and infection within 7 days of surgery while for recurrence and resumption of normal gait after 6months. All this information was recorded on proforma and was entered and analyzed into SPSS V_r 21.

Results: Mean age of the patients was 52.13±12.55years in Lichtenstein group and 50.24±100.89years in desarda group. The mean duration of surgery was 44.57±3.95min with Lichtenstein while 35.96±2.76min with desarda. The mean pain score was 2.47±1.21 after 72 hours with Lichtenstein while 1.92±0.34 with desarda ($p < 0.05$). Seroma was developed in 2(6.7%) patients, infection in 3 (10%) patients and recurrence occurred in 1(3.3%) patients with Lichtenstein while 0 with desarda and resumption of normal gait in 6months was observed in 27(90%) patients with Lichtenstein while in 30(100%) with desarda method ($p > 0.05$).

Conclusion: The desarda had less complication and less pain and operative time as compared to Lichtenstein for management of inguinal hernia.

Keywords: Inguinal hernia, Desarda non-mesh repair, Lichtenstein mesh repair, recurrence, seroma, infection

INTRODUCTION

Surgical repair of inguinal hernia is done to restore hernia in the groin. It occurs when an intestine bulges out via abdominal wall, which initially become weak.¹ But surgical repair of inguinal hernia is most frequently conducted surgery all over the world, which is the best method to repair inguinal hernia is under debate. An ideal method should be safe, easy to perform, simple and requires marginal dissection which offers adequate exploration, preserve comfort of the patient in early stage. The method should be cost & time-effective, which includes operative and labor loss, hospital stay and also reduces recurrence after surgery and re-do surgeries².

During hernia repair, use of synthetic meshes were first described by Usher and his colleagues. They used synthetic mesh especially in recurrent cases during 1984. Lichtenstein & Shore presented their method in 1974 and showed their findings on 1,000 cases of inguinal during 1989. Henceforward, Lichtenstein's method using synthetic mesh was accepted as ideal technique for surgical repair of primary inguinal hernia². But recently, tension-free Desarda method has been introduced for surgical repair of inguinal hernia. All over the world, this method is relatively less

done in a surgical setting. Evidence regarding efficiency of Desarda method for surgical repair of inguinal hernia lacks because in many surgical centers conventional method like Lichtenstein's repair is used³.

Aim of the trial is to compare Desarda and Lichtenstein mesh for inguinal hernia repair. It was observed that desarda is more effective in reducing postoperative complications than Lichtenstein. But local evidence was missing. So we conducted this study to confirm whether we can rely on desarda method for inguinal hernia repair. So that in future, we can implement the more appropriate with less complications in local setting.

The objective of the study was to compare the outcome of Desarda versus Lichtenstein mesh for surgical repair of inguinal hernia.

MATERIALS AND METHODS

This randomized controlled trial was conducted in the Department of Surgery, Central Park Teaching Hospital, Lahore from January 2017 to June 2017. Sixty cases (30 each) were included using 95% confidence level, 80% power of study and magnitude of mean operative time i.e. 15.9±3.52min with Lichtenstein method and 10.02±2.93min with Desarda method. Non-probability, consecutive sampling technique was used.

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Inclusion: Males aged 18-70years having inguinal hernia (when fatty or intestinal tissues push through the inguinal canal in the groin area for >3months, diagnosed on clinical examination and ultrasonography) planned to undergo surgery under general anesthesia

Exclusion: Patients with recurrent or complicated inguinal hernia, diabetes (BSR>186mg/dl) or history of prior abdominal surgery, ASA III & IV

Data Collection: 60 cases fulfilled selection criteria were enrolled from operation theatre of Department of Surgery, Central Park Teaching Hospital, Lahore. A written informed consent was taken. Demographic information was noted. All the patients were randomly divided in 2 groups by using lottery method. In 1st group, Lichtenstein mesh repair was done. In 2nd group, Desarda non-mesh repair was done. All surgeries were performed by a consultant surgeon having at least 4 years residency experience with assistance of researcher. All surgeries were performed under general anesthesia. Duration of surgery was noted from time of incision till stitching of skin. Then patients were shifted in post-surgical ward and were followed-up there for 72 hours. After 72hours, patients were assessed for pain using a VAS. Then patients were discharged and followed-up in OPD for 6months. Patients were observed for seroma (there was discharge of serous fluid from operative site within 7 days of surgery) and infection at wound site on 7th postoperative day (if there was pus discharge from wound site, redness, fever >100°F, bacterium present on culture of pus). After 6months, recurrence (if inguinal hernia again develops within 6 months follow-up detected on clinical examination and scrotal ultrasound) and resumption of normal gait were evaluated (days required by patient to resume normal gait without support and <4 pain on VAS). All the above information was collected in proforma.

Data was entered and analyzed by SPSS version 21. Both groups were compared for duration of surgery and pain score by using independent sample t-test. Both groups were compared for recurrence, infection, seroma and resumption of normal gait by using chi-square test.

RESULTS

Mean age of the patients was 52.13±12.55years in Lichtenstein group and 50.24±100.89years in desarda group. The mean duration of hernia was 5.23±1.11years in Lichtenstein group and 4.66±2.04years in desarda group. There were 21(70%) patients who had ASA I while 9(30%) had ASA II in Lichtenstein group while were 20(66.7%) patients who had ASA I while 10(33.3%) had ASA II in desarda group (Table 1).

The mean duration of surgery was 44.57±3.95min with Lichtenstein while 35.96±2.76min with desarda with significant difference ($p<0.05$). The mean pain score was 2.47±1.21 after 72 hours with Lichtenstein while 1.92±0.34 with desarda. The difference was significant ($p<0.05$). Seroma was developed in 2(6.7%) patients with Lichtenstein while in 0% with desarda, infection was developed in 3(10%) patients with Lichtenstein while in 0(0%) with desarda, recurrence occurred in 1(3.3%) patients with Lichtenstein while in 0% with desarda while resumption of normal gait in 6months was observed in 27(90%) patients with Lichtenstein while in 30(100%) with desarda method with insignificant difference ($p>0.05$) (Table 2).

Table 1: Demographics of patients

	Group	
	Lichtenstein mesh	Desarda non-mesh
n	30	30
Age (years)	52.13±12.55	50.24±10.89
Duration of hernia (years)	5.23±1.11	4.66±2.04
ASA		
I	21 (70%)	20 (66.7%)
II	9 (30%)	10 (33.3%)

Table 2: Comparison of outcome in both groups

	Group		p-value
	Lichtenstein mesh	Desarda non-mesh	
Duration of surgery (min)	44.57±3.95	35.96±2.76	<0.001
Pain after 72 hours (VAS)	2.47±1.21	1.92±0.34	0.020
Seroma in 7days	2 (6.7%)	0 (0%)	0.150
Infection in 7days	3 (10%)	0 (0%)	0.076
Recurrence in 6 months	1 (3.3%)	0 (0%)	0.315
Resumption of normal gait in 6 months	27 (90%)	30 (100%)	0.076

DISCUSSION

Inguinal hernias develop in 3-8% people all over the world. It is most commonly detected type i.e., in 80-83% out of all hernia types. About 50% inguinal hernias are indirect, while 25% direct, & 5% femoral⁴. Mostly inguinal hernia occur in males (86%) while femoral hernias occurred in 84% in females^{5,6}. Mostly, indirect inguinal hernia occurs and equal in both genders. The incidence increases with age⁷. There are numerous techniques introduced for surgical repair of inguinal hernia with updates. However, the findings of inguinal hernia surgeries mostly depend on surgeon, but significant difference in success of various methods has not been detected². Desarda repair method is significantly better than Lichtenstein repair method. Morbidities including complications and re-do surgeries due to sepsis were found to be significantly high with mesh. Time to return to routine life is also reported to be significantly less with Desarda. Desarda method without mesh is better option than Lichtenstein method with mesh⁸.

Desarda's method has been updated and recently tissue based repair is introduced which covers physiology of inguinal canal and its anatomy. Tissue-based repair method like Bassini and Desarda deliberate the advantage of less usage of prosthetic material. Desarda method, like Lichtenstein method, is tension-free repair method in which there are less chances of recurrence than Lichtenstein method while also has shorter surgical time. Although it has more advantages, but it is applied less than other methods all over the world.⁹ In our trial, the mean duration of surgery was 44.57±3.95min with Lichtenstein while 35.96±2.76min with desarda. The difference was significant ($p<0.05$). The mean pain score was 2.47±1.21 after 72 hours with Lichtenstein while 1.92±0.34 with desarda ($p<0.05$). Seroma was developed in 2(6.7%) patients with Lichtenstein while in 0 with desarda, infection was developed in 3 (10%) patients with Lichtenstein while in 0 with desarda, recurrence occurred in 1(3.3%) patients with Lichtenstein while in 0% with desarda while resumption of

normal gait in 6 months was observed in 27(90%) patients with Lichtenstein while in 30(100%) with Desarda method ($p>0.05$).

Manylirah et al conducted a trial and found that there was insignificant difference in mean pain score: 3.33 ± 1.75 with Lichtenstein & 2.73 ± 1.64 with Desarda ($P>0.05$), mean days of resumption of normal gait [2.44 ± 1.62 days with Lichtenstein vs. 2.06 ± 1.13 days with Desarda]. But for operative time, significant difference was observed i.e. 15.9 ± 3.52 min with Lichtenstein repair and 10.02 ± 2.93 min with Desarda's repair, $P=0.0001$ ¹⁰. Kotb et al., showed that mean operative time was 44.21 ± 4.54 min with Lichtenstein while 33.54 ± 2.78 with Desarda ($P=0.0001$), but mean pain score was 1.42 ± 0.959 with Lichtenstein while 1.12 ± 0.946 with Desarda ($P=0.258$)¹¹. Rodríguez et al., found that the mean operative time was significantly less i.e., 48 min with Desarda and 39 min with Lichtenstein ($p<0.05$). Recurrence was 0.5% with Desarda method and 0.4% with Lichtenstein method⁸. Desarda method showed less complications as there is no mesh involved in this technique while mesh have high complication rate. Another randomized trial with prolonged follow-up must be done to examine the wider suitability of Desarda's repair method¹².

Gedam et al observed recurrence in 1 case after 1.5 year follow-up in both methods ($P>0.05$). Mean operative time was 73.89 ± 12.63 min with Lichtenstein method and 72.60 ± 13.89 min with Desarda method ($P=0.508$). Post-operative pain was also significantly less with Desarda method ($P=0.09$) than Lichtenstein method during 1st week postoperatively. Time taken to return normal daily life activities was significantly less with Desarda ($P=0.001$). There was insignificant difference between both methods regarding post-operative complications¹³.

Mitura et al found that there is no significant difference in Desarda & Lichtenstein techniques for surgical repair of primary inguinal hernias for operative time and procedure complexity. The frequency of postoperative complications and pain severity, both were similar as reported in literature. The patient's satisfaction was equal for both methods. Thus according to results of trial, Desarda's repair method was reported to be as effective as Lichtenstein repair method and results are similar with both methods after 6 months postoperatively¹⁴. With Lichtenstein repair method, recurrence is less than other repair methods¹⁵. The average recurrence rate is about 1% with Lichtenstein method in a private surgical center while it was much higher than observed in data from public community hospitals (~4%), while it can reach to 18% in other researches¹⁶. The data available for various other mesh methods varies from 0-4.2% recurrences with Prolene Hernia System, 1.6-19% with Transabdominal Pre-Peritoneal inguinal hernia repair and 0-4% with Rutkow¹⁶⁻¹⁸

CONCLUSION

The Desarda had less complication and less pain and operative time as compared to Lichtenstein for management of inguinal hernia. Now in future, we can apply Desarda non-mesh method for management of inguinal hernia. This would cause fewer complications ultimately less hospital stay and redo surgeries and reduce burden of hospital and surgeons and cost of procedure.

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