

Original Article

COMPARISON OF DESARDA & LICHTENSTEIN REPAIR FOR THE TREATMENT OF INGUINAL HERNIA

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Objective: To compare the outcomes of Desarda repair and Lichtenstein mesh repair of inguinal hernia with respect to operative time, Post operative pain, hematoma and seroma formation, surgical site infection, early and late recurrence and chronic pain.

Methods: 100 patients were admitted through out patient department and divided into Group D (Desarda repair) and Group L (Lichtenstein repair) with 50 patients in each group. Same surgical team performed the procedure. Early out measures were recorded while patients were admitted in the ward and OPD follow up. Late outcome measures were recorded by telephonic follow up.

Results: Mean Operative time was calculated to be 57.84 ± 13.07 min in Group D and 60.52 ± 14.62 min in Group L with a p-value of 0.3362 which is insignificant. No significant difference was found in Post operative pain in both groups having mean score of 2.11 ± 0.73 in Group D and 2.10 ± 0.73 in Group L with a p-value of 0.9458. One patient (2%) developed hematoma in Group D and two patients (4%) in Group L suffered from surgical site infection. Seroam formation, early or late recurrence was not reported in any case. 4 patients (8%) complaint of chronic pain in Group L.

Conclusion: This study showed that the desarda repair is comparable to Lichtenstein repair for inguinal hernia in respect of post operative outcomes. Desarda repair is an effective method to replace the use of mesh for the repair of inguinal hernia. This new repair has the potential to become the gold standard of hernia repair in years to come.

Keywords: Desarda, Inguinal Hrnia, Lichtenstein

Introduction

Inguinal hernia repair is one of the cornerstones of a General surgery practice and is one of the most commonly performed procedures. Inguinal hernia repair has been evolving for the past 130 years and the pace of evolution accelerated in the last decade with the introduction of the Tension-free repair. In Pakistan, open anterior approach of inguinal hernia repair is widely used because it is easy to perform, less time consuming and the early results of Lichtenstein repair are encouraging with regards of safety and effectiveness.¹ Foreign body reaction, infection, chronic pain, fistula formation, mesh migration, shrinkage, and recurrence are the main drawback of the Lichtenstein procedure of inguinal hernia repair.

M.P. Desarda described a new physiologic non-mesh^{2,3} technique of hernia repair in which the posterior wall of the inguinal canal is strengthened with an undetached strip of the external oblique aponeurosis (EOA) to give physiologically active and strong posterior wall. This repair is done by simple tissue based method which is easy to perform, require less dissection, shorter operative time and

superior and recurrence-free as compared to the Bassini and Shouldice procedures of physiological hernia repairs.^{2,4} Postoperative outcome of both Desarda and tension-free repair (Lichtenstein's hernia repair) are similar and comparable.^{4,5,6}

In this study we will compare the two techniques (Desarda's repair & Lichtenstein repair) for the treatment of inguinal hernia in respect of post op outcomes.

Method

After approval from hospital ethical committee 100 patients with inguinal hernia were admitted through the out patient department between January 2012 to December 2012. After taking informed consent regarding procedure and demographic history, patients were divided in two groups using random number tables. Group D: Desarda Repair. Group L: Lichtenstein tension free mesh repair. Single surgical team performed the procedure. All cases were done under spinal anesthesia. Patients with weak external oblique aponeurosis was not included in the study. Per-operatively operative time was recorded in minutes from the first skin incision to skin closure.

Postoperatively pain was assessed 6, 12, & 24 hours after surgery according to VAS. Non-narcotic analgesics was used on 12 hourly basis. Patients were encouraged to walk in the post operative period and kept admitted for 4 days post operatively to observe closely for development of any heamatoma, seroma or surgical site infection. An ultrasound was performed on 4th post operative day to check heamatoma or seroma formation. In post operative period patients were examined by an investigator until discharge and seen during follow-up appointments at 7, 30 days, and 6 months after surgery and later on telephonic follow up was carried out for 3 years on yearly basis to record chronic pain & late recurrence if any.

Operative Technique

Skin and fascia are incised through a regular oblique inguinal incision to expose the external oblique aponeurosis. The external oblique is cut in line with the upper crux of the superficial ring, which leaves the thinned out portion in the lower leaf so a good strip can be taken from the upper leaf. The medial leaf of the external oblique aponeurosis is sutured with the inguinal ligament from the pubic tubercle to the abdominal ring using 2/0 monofilament polypropylene (Prolene) interrupted sutures. The first two sutures are taken in the anterior rectus sheath where it joins the external oblique aponeurosis. The last suture is taken so as to narrow the abdominal ring sufficiently without constricting the spermatic cord. **(Fig-1)** Each suture is passed first through the inguinal ligament, then the transversalis fascia and then the external oblique.

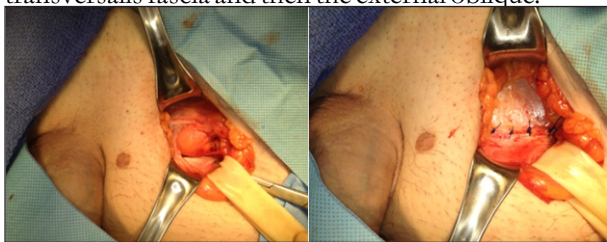


Fig-1: Desarda's repair: Strip of external oblique aponeurosis created and displaced to posterior inguinal wall with interrupted sutures.

A splitting incision is made in this sutured medial leaf, partially separating a strip with a width equivalent to the gap between the muscle arch and the inguinal ligament. This splitting incision is extended medially up to the pubic symphysis and laterally 1-2 cms beyond the abdominal ring. The medial insertion and lateral continuation of this strip is kept intact. A strip of the external oblique, is now

available, the lower border of which is already sutured to the inguinal ligament. The upper free border of the strip is now sutured to the conjoined tendon lying close to it with 2/0 monofilament polypropylene interrupted sutures throughout its length. **(Fig-2)**

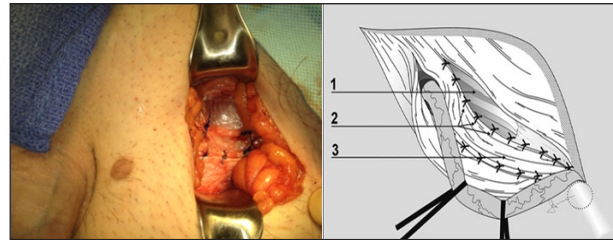


Fig-2: Desarda's method: The undetached aponeurotic strip (3) is created and displaced from the anterior to the posterior wall of the inguinal canal. It was then secured to the abdominal internal oblique muscle (1) with interrupted sutures (2) and to the inguinal ligament

This will result in the strip of the external oblique being placed behind the cord to form a new posterior wall of the inguinal canal. At this stage the patient is asked to cough and the increased tension on the strip exerted by the external oblique to support the weakened internal oblique and transversus abdominis is clearly visible. The increased tension exerted by the external oblique muscle is the essence of this operation. The spermatic cord is placed in the inguinal canal and the lateral leaf of the external oblique is sutured to the newly-formed medial leaf of the external oblique in front of the cord, as usual, again using 2/0 monofilament polypropylene continuous sutures. The first stitch is taken between the lateral corner of the splitting incision and lateral leaf of the external oblique. This is followed by closure of the superficial fascia and the skin as usual.

Results

In this study, a total of 100 patients were recruited to assess the outcome in terms of operative time (in minutes), post-operative pain (visual analogue score), hematoma & seroma formation, Surgical Site infection, early & late recurrence and chronic pain in patients undergoing repair of inguinal hernia.

Age distribution of the patients is computed and presented in **Table 1**. Mean and SD was calculated as 45.0 ± 14.76 & 45.5 ± 13.94 for Group D & Group L respectively **(Graph 1)**. 62 patients (62%) were having right sided inguinal hernias while 38 patients (38%) having left sided inguinal hernias **Table 2**. 50 patients had undergone Desarda's repair and procedure were performed by consultant surgeons

according to the technique described by M.P. Desarda.(2) The other 50 patients underwent Lichtenstein repair. Distribution of right & left hernia in each group is shown in table 02. Mean Operative time was calculated to be 57.84±13.07 min in Group D and 60.52±14.62 min in Group L with a p-value of 0.3362 which is insignificant. **(Graph 2)** No significant difference was found in Post operative pain in Group D as compared to Group L at 06, 12 & 24 hrs after surgery. **(Graph 3)** Mean Post Operative Pain was calculated to be 2.11±0.73 in Group D and 2.10± 0.73 in Group L with a p-value of 0.9458 which is highly insignificant. **(Graph 4)** Hematoma formation was seen in one (02%) patient in Group D on post operative day 1 which surgically drained. No hematoma was seen in Group L **(Table 03)**. Ultrasounography confirmed no seroma formation in either group. Regarding Seroma formation & early recurrence, no such happening was noted in either group.

Table-1: Distribution by Age group.

Age Group (Years)	Desarda	Lichtenstein	Total
21 - 30	08	08	16
31 - 40	13	10	23
41 - 50	10	10	20
51 - 60	09	14	23
61 - 70	10	08	18
Total	50	50	100

Table-2: Side of Hernia.

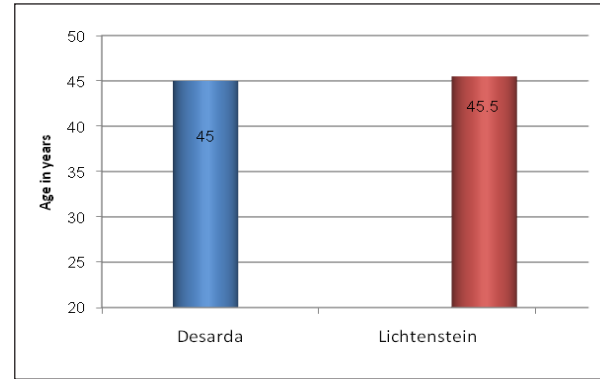
Side	Desarda	Lichtenstein	Total
Right	33	29	62
Left	17	21	38
Total	50	50	100

Table-3: Frequency of complications.

Complication	Frequency	
	Desarda (%)	Lichtenstein (%)
Heamatoma	01 (2)	01 (2)
Seroma	Nil	Nil
Surgical site infection	Nil	02 (4)
Early Recurrence	Nil	Nil
Late Recurrence (After 6 months)	Nil	Nil
Chronic Pain (after 6 months)	Nil	04 (8)

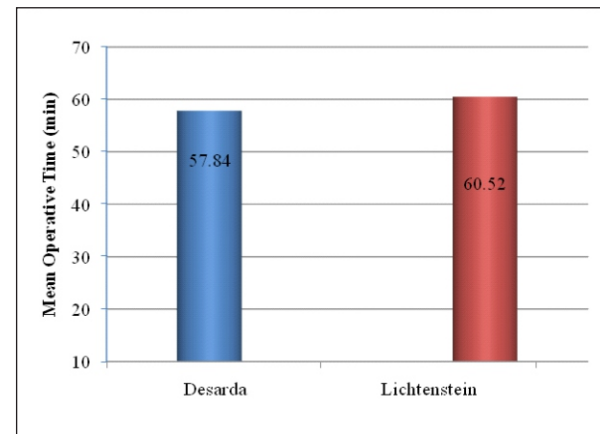
In group L 2 patients (4%) suffered from surgical site infection. One patients had watery discharge from wound & the other had just superficial wound erythema. Both patients settled with I/V antibiotics. No case of surgical site infection was reported in Group D **(Table 03)**.

Graph-1: Mean age of patient.



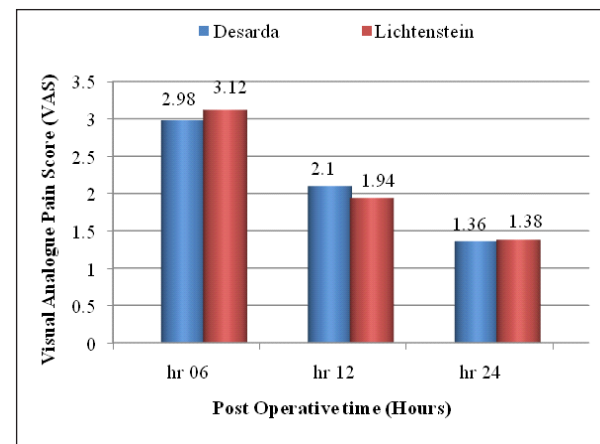
Standard Deviation: - Desarda+ 14.76Lichtenstein + 13.94: p value : 0.3362

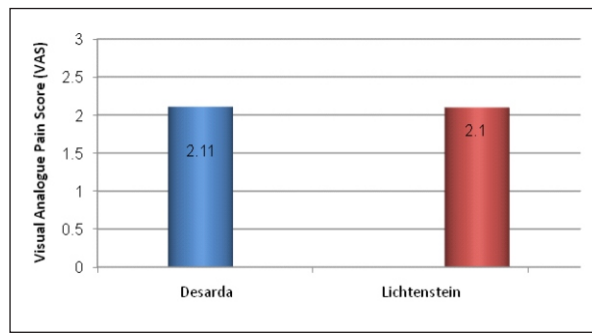
Graph-2: Mean Operative Time



Standard Deviation: - Desarda+ 13.07Lichtenstein + 14.62: p value : 0.3362

Graph-3: Post operative pain (VAS)



Graph-4: Mean Post operative pain (VAS)

(Table 03). On telephonic follow up on yearly basis no late recurrence reported till 3 years in both groups but in Group L 4 patients (8%) complaint of chronic pain but no such complaint was reported from group D **(Table 03)**.

Discussion

Inguinal hernia is a very common condition afflicting mankind. Newer techniques are developed as the complication rates of older ones become unacceptable. The Lichtenstein technique and its modifications are widely practiced in the world but their complication rates and failures are more in the hands of non consultant staff. There is high incidence of chronic groin pain following hernia repair reportedly in the range of 28.7% - 43.3%.^{7,8} Many studies have determined that this technique has a recurrence rate of approximately 3%.^{9,10,11} Chronic groin sepsis after mesh repair requires complete removal of mesh for treatment of sepsis.¹² Laparoscopic hernia repairs increase the cost, are technically complex and have long learning curve.^{13,14} Open no-mesh techniques also have their limitations. A recent study shows recurrence rates of at least 8% after non-mesh repair using Bassini's technique.¹⁵ The Shouldice technique, which is still considered gold standard among no-mesh techniques has a recurrence rate of 1-4% in specialized centers.¹⁶ However, long learning curve, risky dissection of inguinal floor and lack of experience make these figures unattainable for general surgeons working outside these specialized centers.¹⁷ To date, there has been no comparison study on the aponeurotic tissue and the transversalis fascia. This necessitates the introduction of a new technique of hernia repair with reduced complication rates in the hands of such general surgeons or the non consultant staff operating at smaller level general hospitals. In this study we tried to compare the outcomes of Desarda's repair and Lichtenstein repair in terms of post operative pain,

early recurrence, hematoma formation, seroma formation, surgical site infection, chronic pain and late recurrence. In our study at the early postoperative time (post op. day 1) the mean VAS score was 2.11 SD ± 0.73 for Desarda's Repair and 2.10 SD ± 0.73 for Lichtenstein repair which means most patients had mild pain after any one procedure. This pain score is comparable to the results of the study of Mohan P. Desarda in which most of the patients (92.6%) had mild and tolerable pain on first post operative day and these patients complained of slight discomfort rather than pain on 3rd post operative day.⁶ The next complication that was observed was hematoma formation. One (02%) patient in each group had hematoma in early post operative period. In both cases surgical drainage was done. None of the patients had infection of hematoma. In a study published by Jacek Szopinski et al. 7.7% hematoma were noted and 0.9% required surgical drainage of the hematoma.⁵ No case of early or late recurrences was noted in any group. In the study of Jacek Szopinski et al. 1.9% recurrences were noted in 3 years follow up but no early recurrence (<1 year) was noted.⁵ Similarly in the study of Mohan P. Desarda no recurrence was noted during a mean follow up of 24.28 months. No patients developed seroma formation by day 07 which was confirmed on ultrasonography. These results are better than the study of Jacek Szopinski et al. in which 3.8% seroma formation were noted on post operative day 7 and no seroma formation (0%) on post operative day 30.⁵ Two (04%) patients developed surgical site infection in Lichtenstein group but no such happening was noted in Desarda group. One patient had erythema of the wound edges and watery discharge from the wound the other patient had superficial surgical site infection. I/V antibiotics were given and surgical site infection resolved in both of the patients. No patient had frank pus formation or required reopening of the wound. In the study of Jacek Szopinski et al. 0.9% surgical site infection rate was noted.⁵ In the study of Mohan P. Desarda 2/229 patients (0.87%) had surgical site infection which needed treatment one of them settled with antibiotics and other needed surgical drainage of pus.⁶ No chronic recurrence occurred in Desarda or Lichtenstein group & this is comparable to the study done by Desarda. But 4 (8%) patient with Lichtenstein repair had complaint of chronic pain which is slightly higher frequency rate as compared to the result of study done by Desarda. Desarda and his group published results based on a comparison of his technique and the Lichtenstein technique. They reported no recurrence among the 269 patients in

Desarda group 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.¹⁸ Paradoxically, in the modern world the cost of the medical treatment becomes the real issue. The cost of inguinal hernia treatment, a tiny fraction of all health expenses, is not insignificant, however, especially in developing countries of Asia & Africa. One indisputable advantage of Desarda technique is its low cost. That is why many published articles recently demonstrated an interest in the technique.^{18,19,20} The cost of the Desarda operation is low because a synthetic prosthesis is not needed. The price of composite meshes or even heavy polypropylene meshes, as well as their accessibility, could be important issues in developing countries. Economic issues are not the only considerations. The use of synthetic material is still controversial in young patients. The effect of polypropylene placement or other synthetic mesh inside human

organism for a lifetime is still unknown. Also, data are appearing about sexual impairment after mesh implantation; and as a result, many surgeons try to avoid mesh prostheses for hernia treatment in young patients. Also, the Desarda method, a tissue-based technique, can be used in a contaminated surgical field, usually seen during operations for strangulated and obstructed hernias where use of mesh is not suitable due to risk of infection.

Conclusion

The Desarda's repair satisfies all the criteria of modern hernia surgery. This repair is easy to learn with minimal complications or recurrence which is comparable to lichtenstein mesh repair. This new repair has the potential to replace lichtenstein repair especially in emergency settings where using mesh is more risky.

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