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ORIGINAL ARTICLE

Comparative analysis of Desarda and Lichtenstein Inguinal hernia Repair Techniques

Muhammad Hamza Rana[1], Ahmed Shafiq[2], Muhammad Sarim Khan[3], Zakariya Rashid[4], Sardar Ashraf [5], Sarwat Bibi[6]

Department of Surgery, Aziz Fatimah Hospital, Faisalabad, Pakistan [1]
Department of Surgery, Aziz Fatimah Hospital, Faisalabad, Pakistan [2]
Department of Surgery, Aziz Fatimah Hospital, Faisalabad, Pakistan [3]
Department of Surgery, Aziz Fatimah Hospital, Faisalabad, Pakistan [4]
Department of Surgery, Aziz Fatimah Hospital, Faisalabad, Pakistan [5]
Department of Surgery, Aziz Fatimah Hospital, Faisalabad, Pakistan [6]

ABSTRACT

Background: Inguinal hernia repair is the most commonly done procedure on the surgical floor these days.
Objective: The study aims to evaluate and compare two different inguinal hernia repair techniques in terms of preoperative and postoperative measures.
Methods: A comparative cross-sectional study was conducted in the department of Surgery, Aziz Fatimah Hospital from June 27, 2021, to March 02, 2022, using a consecutive sampling non-probability sampling technique. The demographic profile and characteristics of the hernia along with per operative and post-operative variables were collected and analyzed in SPSS 25 using the independent t-test.
Results: The patients admitted for the elective inguinal hernia procedure in the ward underwent two routinely done surgical procedures. The mean age of the study population was 37±11 years. The mean age and standard deviation of patients in Group A (Desarda repair) were 36.43±11.01 years and 37.43±11.05 years of patients in Group B (Lichtenstein repair). Less mean operative time and days to return to daily life activities were seen in Group A (Desarda repair) patients compared to Group B (Lichtenstein repair) patients. Moreover, the estimated cost of the Desarda operative procedure was also much less compared to the Lichtenstein repair.
Conclusion: The inguinal hernia repair technique Desarda is considered to be more effective and economical than the Lichtenstein repair in terms of per-operative and post-operative measures with less mean operative time, early return to normal activities, and cost-effectiveness.

Key Words: Inguinal hernia, Desarda repair, Lichtenstein repair
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Corresponding Author:
Muhammad Hamza Rana
Medical Officer
Department of Surgery
Aziz Fatimah Hospital, Faisalabad
Email address: thehamzacity@gmail.com
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INTRODUCTION

Inguinal hernia repair is one of the most commonly done surgical procedures these days, reporting an incidence of approximately 15% across the globe in the adult population. Out pouching of the abdominal content through the abdominal cavity or pre-peritoneal fat is termed hernia.[1]

The defect can obstruct the abdominal viscera leading to life-threatening complications if not treated. Several techniques are implied to close

the defect depending upon the defect size, the physiology of the patient, and many other factors. However, all these factors should be addressed by repair techniques which should be cost-effective, tension-free, simple, and permanent. The most popular technique used in the past was the use of Lichtenstein Inguinal repair technique. European Hernia Society advocates the use of mesh for inguinal hernia repair as the optimum treatment for the inguinal region.[2]

Lichtenstein technique was considered as the gold standard technique due to tension-free repair, and lesser recurrence rate. Tension-free repairs are nevertheless associated with complications such as foreign body reaction, pain, fistula formation, and recurrence. Literature and clinical evidence report the increased risk of seroma formation, groin pain, sensation of foreign body, post-surgical site infection, and some testicular or sexual dysfunction cases associated with mesh placement.[3]

Synthetic mesh used in the Lichtenstein technique is also expensive. In 2001, Desarda[4] devised a solution to use external oblique aponeurosis to reduce the risk of postoperative complications. This newer technique is becoming more popular and the choice of surgery among surgeons globally as it is reported with zero recurrences. In addition, this technique works on the principles of repairing hernia without mesh, which eliminates the risk of foreign body sensation and infection. Desarda may be a better choice for hernia repair in the inguinal region for surgeons.[5]

A set of newer techniques are now implied to treat the inguinal hernia with every procedure having its drawbacks. However, surgeons prefer and practice techniques that carry a very low risk of recurrence and complications keeping in view the safety of the patient.

Hence the study was conducted to compare the clinical outcomes of two surgical interventions in terms of mean operative time, return to daily life activities, and operative cost.

METHODS

This study was conducting, after obtaining **Ethical approval** (Ref. No: IEC/1266-21, issued on 30.06.2021) from the institutional review committee of Aziz Fatimah Medical & Dental College, Faisalabad.

It was a comparative cross-sectional study conducted at the Department of Surgery, Aziz Fatimah Hospital, Faisalabad from June 27, 2021, to March 02, 2022. The study included 114 patients of 17 to 55 years of age with primary inguinal hernia of either side, direct or indirect of either gender. The patients were enrolled from the Outpatient department (OPD) for the elective surgery of two routinely done surgical procedures in the hospital according to inclusion and exclusion criteria using the consecutive non-probability sampling technique. Patients with recurrent hernia, signs and symptoms of bladder outlet obstruction, and severely uncontrolled diabetes mellitus, hypertension, and ischemic heart disease were not included in the study. Informed consent was taken from the patients before enrolling them in the study and the patients were explained about the details of the study and operation. A total sample of 114 patients included 57 patients for whom the Desarda technique was used for hernia repair (Group 1) and 57 patients for whom the Lichtenstein repair was used for hernia repair (Group 1I). Demographic data and clinical examination findings were recorded on a Performa designed for the study.

The patients were observed during the surgery and in the ward after surgery and data was recorded. In Desarda repair, external oblique aponeurosis was incised, and the sac was inverted back after identification of the defect. A 2 cm strip was created after incising the external oblique aponeurosis sutured in an interrupted manner. The upper free border of external oblique aponeurosis was sutured interruptedly to the internal oblique and conjoined muscle. The spermatic cord and external oblique aponeurosis were sutured to a newly formed medial leaf of

external oblique aponeurosis. The skin and fascia were closed in a usual manner. (Figure 1 & 2). On the other hand, in Lichtenstein repair, a propylene mesh was placed in the posterior abdominal wall. The patients in both groups were administered prophylactic antibiotics (Ceftriaxone 2gram) before incision to prevent surgical site infections. Mean operative time was calculated in minutes and a return to normal activities was noted in days while keeping the patient on follow-up.

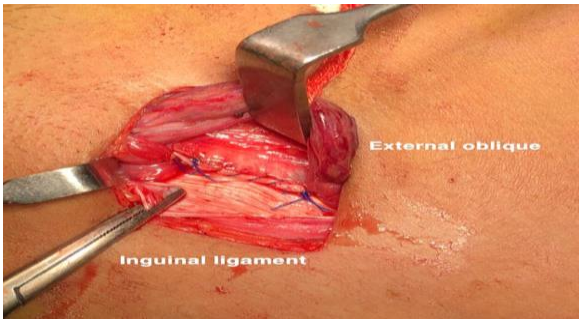

Figure 1: External oblique Sutured with Inguinal ligament

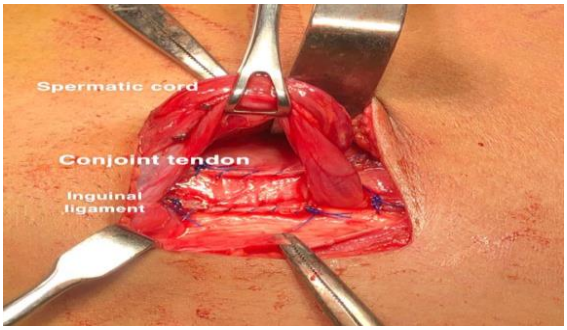

Figure 2: Visualization of spermatic cord, conjoint tendon and inguinal ligament after suturing

Statistical Analysis

The data recorded was analyzed in SPSS version 25. Frequencies and percentages were calculated for categorical variables and independent sample t-test was applied to compare means. p value less than 0.05 was taken as statistically significant statistically significant.

RESULTS

A total of 114 patients were included, with 57 patients in each group of hernia repair. The mean age was 37±11 years. The participants with minimum age was 17 years and a maximum age was 55 years of age.

The mean age calculated in Group A (Desarda repair) with was 36.43±11.01 and 37.43±11.05 in group B (Lichtenstein group).

Majority of the patients were male (n=101) compared to females (n=13) shows that inguinal hernia is more common among male population. Figure 3, elaborates the percentage of male and female participants in each group of hernia repair in the study.

The characteristics of hernia type and the side of body being affected shown in Table 1. In 85 (75%) patients hernia was reported on left side of body. The hernia on right side of the body was reported in 29 (25%) patients who underwent hernia repair.

Majority of the patients (59%) operated for hernia repair had indirect inguinal hernia whereas 41% had direct inguinal hernia. (Table 1).

Table 2 shows intraoperative and postoperative variables. Statistically significant (p value< 0.05) less intraoperative time was reported in Desarda repair technique compared to Lichtenstein repair technique. A statistically significantly early return to normal activities is reported with less recovery time in patients with Desarda hernia repair.

Post operatively, only three patients from group A and five patients from group B reported surgical site infection. Four patients from group B reported with seroma formation. No patient from either group documented and reported with hematoma and testicular edema.

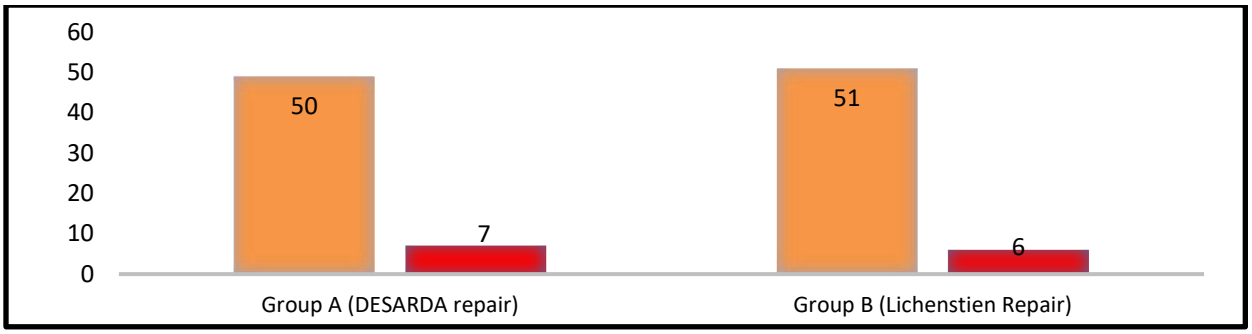

Figure 3: Gender distribution among groups (Male, Female)

Table 1: Characteristics of inguinal hernia

Parameter	Group A (Desarda Repair)	Group B (Lichtenstein Repair)
Hernia type		
Indirect	34 (29.8%)	38 (33%)
Direct	23 (20.7%)	19 (16.6%)
Side of the body		
Left	41 (35.9 %)	44 (38.5%)
Right	16 (14%)	13 (11.4%)

Data expressed as frequencies and percentages. P-value <0.05 considered as statistically significant

Table 2: Intraoperative & postoperative variables

	Group A (Desarda Repair) mean± SD	Group B (Lichtenstein Repair) mean± SD	P-value
Mean operative time (min)	48.1 ± 7.52	62.16 ±12.05	<0.05
Return to daily activities (days)	17 + 2.39	25.4 + 6.75	<0.05

Independent t-test was applied and a P-value <0.05 considered as statistically significant

DISCUSSION

One of the most commonly done procedure globally on the surgical floor is the inguinal hernia repair. From years different surgical techniques have been implied to correct the defect. Basini and Shouldice repair is also one of the surgical treatment options for inguinal hernia. The benchmark of a successful inguinal hernia repair is appraised based on recurrence rate, complications rate, mean operative time, cost-effectiveness, and the time taken to return to daily life activities.[6] Lichtenstein hernia repair or mesh hernioplasty was considered the ideal operative technique for inguinal hernia repair.[7] Literature evidence suggests the most commonly occurring type of hernia is indirect hernia among young individuals and indirect type is more prevalent in older individuals. However, both can exist at either age.[8]

In this study, the mean operative time in group A patients undergoing Desarda repair was 48.1 ±7.52 minutes, and in group B patients with Lichtenstein repair was 62.16 ± 12.05 minutes. Both the values were compared and a statistically significant result was obtained as the P value <0.05 was interpreted as highly significant. In addition to that, a study reports a remarkable mean operative time difference between the two groups with patients undergoing mesh was recorded with a P=0.0001].[9] Another study, reports a statistically significant mean operative time with a significant P value < 0.05.[10] Another

study, advocated the efficacy of the Desarda repair technique with a less mean operative time of 38.29 minutes as compared to the Lichtenstein repair of 44.30 minutes. The study also reported a minimal surgical site infection among patients undergoing the Desarda technique.[11]

Our study reports a shorter span of return to normal day activities in the patients undergoing Desarda repair with a mean SD of 17 + 2.39 as compared to Lichtenstein group patients with a mean SD of 25.4 + 6.75. A statistically significant P-value < 0.05 has been reported. Another study stated a shorter time taken by the patients to enjoy normal daily life activities. The time taken to return to normal activities and basic was statistically significant with a P value = 0.013 and P= 0.001 respectively.[3] The study concluded an early ambulatory movement in the patients undergoing Desarda repair. The early return might be attributed to less tissue handling and less post-operative pain. Many other studies conducted advocated an early return to normal daily activities.[12.13] A statistically significant difference was noted in a study on the comparison of two different inguinal hernia repair techniques (Desarda and Lichtenstein) advocating the superiority of Desarda repair.[14]

Post-operative complications were also assessed in our study and a very low percentage of seroma, hematoma, and surgical site infection was reported. Only 2 patients out of 57 in group A undergoing Desarda repair presented with surgical site infection and one with hematoma. Contrary to that, 6 patients reported with surgical site infection 4 patients with seroma, 2 with hematoma and 1 with testicular edema were presented in patients undergoing Lichtenstein repair. A study reported very low and non-significant post-operative complications.[3] A systemic review and Meta-analysis revealed a very low recurrence and postoperative complication rate for the Desarda repair technique.[15]

Inguinal hernia repair without Mesh (Desarda repair) has proven to be more efficacious than Lichtenstein inguinal hernia repair. Desarda repair is cost-effective as it is done without placing mesh in the inguinal canal. The cost of mesh can be proven to be a significant burden on patients belonging to low to medium-resource countries. Desarda presumed the aponeurotic strip would act as a protective covering against the weakened muscles. Desarda repair provides a lesser duration of hospital admission and operative time than the mesh hernia repair technique.[16,17]

CONCLUSION

Desarda repair is surely one of the latest and optimum methods of hernia repair in the inguinal region. There is a significant difference in the duration of surgery, return to normal activities, and post-operative infection rate between Lichtenstein repair and Desarda repair. Desarda repair is safe and cost-effective with minimal reported recurrence rate.

Limitations of Study

Small sample size, loss of patient follow-up, and unwillingness to participate in the study are the key limitations of the study.

REFERENCES

1. Arafa AS, Saad HA, Fayek F. Desarda vs lichtenstein technique for the treatment of primary inguinal hernia. Egypt. J. Surg. 2020; 39(1): 157-165. doi:10.1016/j.ijsu.2017.11.05 5

2. Poojary HS, Prasanna PG, Mulki S. Desarda technique versus Lichtenstein repair for inguinal hernia in tertiary care centre: a prospective study. Int. Surg. J. 2020; 7(3): 680-684. doi:10.18203/23492902. isj20200543

3. Gedam BS, Bansod PY, Kale VB, Shah Y, Akhtar M. A comparative study of desarda's technique with lichtenstein mesh repair in treatment of inguinal hernia: A prospective cohort study. Int J Surg. 2017; 39: 150-155. doi:10.1016/j.ijsu.2017.01.083

4. Ge H, Liang C, Xu Y, Ren S, Wu J. desarda versus Lichtenstein technique for the treatment of primary inguinal hernia: a systematic review. Int J Surg. 2018; 50: 22-27. doi:10.1016/j.ijsu.2017.11.055

5. Gurgenidze M, Datuashvili G. Desarda technique for inguinal hernia repair. Georgian Med News. 2018; 7-10.

6. Desarda MP. No-mesh inguinal hernia repair with continuous absorbable sutures: a dream or reality? (A

study of 229 patients). Saudi J Gastroenterol. 2008; 14(3): 122-127. doi: 10.4103/1319-3767.41730
7. Mitura K, Garnysz K, Michałek I. Long-term follow-up of a randomized controlled trial of lichtenstein repair vs the valenti technique for inguinal hernia. Hernia. 2019; 23: 547-554. doi:10.1007/s10029-019-01879-y
8. Hammoud M, Gerken J. Inguinal Hernia. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024.
9. Manyilirah W, Kijjambu S, Upoki A, Kiryabwire J. Comparison of non-mesh (Desarda) and mesh (Lichtenstein) methods for inguinal hernia repair among black African patients: a short-term double-blind RCT. Hernia. 2012; 16: 133-144. doi:10.1007/s10029-011-0883-0.
10. Afzal AM, Ali RA, Yousaf SH. Outcomes of desarda vs lichtenstein repair for inguinal hernia in terms of operative time, seroma formation, return to normal activity and cost. Pak J Med Health Sci. 2017; 11(1): 93-96.
11. Gulzar MR. A comparative study of desarda repair and lichtenstein (mesh) repair for inguinal hernia. APMC. 2019; 13(2): 153-156. doi:10.29054/apmc/2019.78
12. Youssef T, El-Alfy K, Farid M. Randomized clinical trial of desarda versus lichtenstein repair for treatment of primary inguinal hernia. Int. Surg. J. 2015; 20: 28-34. doi: 10.1016/j.ijsu.2015.05.055
13. Rodríguez P, Herrera PP, Gonzalez OL, Alonso JR, Blanco HS. A randomized trial comparing lichtenstein repair and no mesh desarda repair for inguinal hernia: a study of 1382 patients. East Cent. Afr. J. surg. 2013; 18(2): 18-25. doi:10.4103/ejs.Ejs_165_19
14. Jain SK, Bhatia S, Hameed T, Khan R, Dua A. A randomised controlled trial of lichtenstein repair with desarda repair in the management of inguinal hernias. Ann. med. surg. 2021; 67:102486.doi:10.1016/j.amsu.2021.102486
15. Mohamedahmed AYY, Ahmad H, Abdelmabod AAN, Sillah AK. Non-mesh desarda technique versus standard mesh-based lichtenstein technique for inguinal hernia repair: A systematic review and meta-analysis. World J Surg. 2020; 44(10): 3312-3321. doi: 10.1007/s00268-020-05587-y.
16. Desarda MP, Ghosh A. Comparative study of open mesh repair and desarda's no-mesh repair in a district hospital in india. East Cent. Afr. J. surg. 2006; 11(2): 28-34.
17. Zahra SH, Murtaza M, Aslam MA. Comparison of outcomes of Desarda versus Lichtenstein repair for inguinal hernia in terms of operative time, postoperative pain and return to normal activity. Professional Med J. 2020; 27(07): 1465-1469.doi:10.29309/TPMJ/2020.27.07.4298

AUTHORS'S CONTRIBUTIONS:

MHR: Conception of study, drafted the work, and reviewed it critically for important intellectual content

AS: Designed the study, drafted the manuscript, participated in interpretation of data

MSK: Designed the study, drafted the work

ZR: Reviewed it critically, analyzed data, participated in interpretation of the results

SA: Drafted the manuscript, analyzed data, proof read

SB: Acquisition, interpretation of results, drafted the manuscript

All authors approved the final version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST:

All authors declared no conflict of interest.

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The data are available from the corresponding author upon reasonable request.