Comparison of Lichtenstein with Desarda Repair in Patients with Inguinal Hernia

Muhammad Nadeem[1], Fazli Akbar[1], Shah Abbas[1], Sajjad Ali[2], Fayaz Ur Rehman[2]

ABSTRACT

Background: Chronic groin pain is a common complaint after repair of inguinal hernia. Its frequently due to iatrogenic damage or entrapment of the nerves, in and around the inguinal canal, the most important of which is the ilioinguinal nerve. This study will help us give local evidence successful inguinal hernia treatment without mesh implantation if our study support it and we will come to know about the potential benefits of both these procedures and its suitability in our local population which needs further evaluation.
Objective: To compare Lichtenstein repair with Desarda repair in Inguinal hernia in term of post-operative pain.
Material and Methods: This Randomized control trial study over 186 patients, having inguinal hernia presenting to the Outpatients department/Emergency Response using convenience sampling. Patients were randomly divided into two groups. The post-operative pain was assessed at 7th day after surgery, using visual analogue scale.
Results: The study was carried out on 186 patients, divided into two surgical groups. At 7th day interval, patients having mild, moderate and severe pain were 71 (76.3%), 20(21.5%) and 2 (2.2%) respectively for Desarda Group while 65(69.9%), 20(21.5%) and 5(5.4%) respectively for Lichtenstein repair. But this was statistically insignificant with p-value=0.415.
Conclusion: Desarda inguinal hernia repair is effective in decreasing the incidence of chronic groin pain in comparison with Lichtenstein mesh hernioplasty but have no significant difference.
Key words: Inguinal Hernia, Desarda, Lichtenstein Repair, Pain.

This article may be cited as: Nadeem M, Akbar F, Abbas S, Ali S, Rehman F. Comparison of Lichtenstein with Desarda Repair in Patients with Inguinal Hernia. J Saidu Med Coll Swat. 2022;12(1):47-52.DOI:https://doi.org/10.52206/jsmc.2022.12.1.705

INTRODUCTION

Widely found inguinal hernia is one the problems encountered by general surgeons and can lead to major complications. Inguinal hernia repairs in Liechtenstein, although it is likely to yield superior results in terms of recurrence rate. [1] The simple design Desarda repair avoids the use of Lichtenstein and it produces the meaningful outcome. This restoration is due to the concept of a physically dynamic and strong posterior wall of the inguinal canal. The continuous muscle of aneurysm from the external oblique changes the aneurysm element that is not present in the posterior wall and receives additional force from the external oblique muscle, causing physical damage to the injured joint muscle.[2]

The gold standard technique to treat an inguinal hernia is still far from being defined. Desarda tissue repair compared to the ideal Lichtenstein technique in the treatment of primary inguinal hernia.[3]

Another study enrolling an 51 patients in Lichtenstein's group and 50 in Desarda's group. The study was conducted in one center, double-blind, controlled trial. Results were estimated from 1 to 2 hours, 3, 7 and 14 days. There was insignificant difference in the mean pain score which was measure through visual analog scale 010 between the study group [Postoperative Day 3 (POD): 3.33 ± 1.75 for Lichtenstein and 2.73 ± 1, 64 for Desarda. This study showed that the effectiveness of the Desarda group in influencing the early clinical outcomes of hernia repair is similar to the effect of the Lichtenstein technique. while the author of this study confirm that Desarda repair have advantage of taking short duration of surgery.[4]

The methods of Desarda and Lichtenstein for primary groin hernia repair do not differ in the complexity of the procedure and in the time of surgery. The number of local complications and the severity of pain were comparable and corresponded to the literature data. Patients after Desarda and Lichtenstein's bridge repair were satisfied with the results of the surgery. Desarda primary bridge repair is as effective as Lichtenstein surgery, and six months after surgery, treatment outcomes are similar in both groups.[5]

After 15 months of average follow-up, 1 repetition is given in each hand (P = 1). The intervention time was 73.89 ± 12.63 minutes in Lichtenstein and 72.60 ± 13.89 minutes in desardar repair (P = 0.508). Significantly less postoperative pain was observed in the first 7 postoperative days in the Desarda group (P = 0.09) as that of Lichtenstein group. Similarly significantly less time was noted in desarda group to come back to home and basic activities. (P = 0.001). Postoperative complications were insignificant in both the groups.[6]

1. Saidu Teaching Hospital, Swat.
2. Khyber Teaching Hospital, Peshawar.

Correspondence: Dr. Shah Abbas (Senior Registrar)
Surgical B Unit, Saidu Teaching Hospital, Swat.
Email: drshahabbas@yahoo.com

Received: November 12th 2020 Accepted: February 14th 2022

During the 2-year follow-up, a relapse was recorded in each group (p = 0.99). 5.6% and 4.2% of patients in the Desarda and Lichtenstein groups had chronic groin pain, respectively (p = 0.68). Mean postoperative VAS pain scores at the five time points between the two study groups was insignificant. Uptime was much shorter and an earlier return to normal sharpness in favor of Desarda repair. Detection of foreign bodies was not different between the two groups.[7]

In another study, a total of 1,014 patients in eight primary studies, of whom 500 and 514 underwent Desarda herniorrhaphia and Lichtenstein herniorrhaphia, respectively. There was insignificant difference in duration of surgery, back to normal life activities, pain score, wound infection, hematoma, previous body detection, seroma, and recurrence.[8]

The purpose of this study is to compare Lichtenstein repair with Desarda repair in Inguinal hernia in term of post operative pain. This study will help us give local evidence successful inguinal hernia treatment without mesh implantation that can be achieved using Desarda repair, and the standard Lichtenstein procedure and we will come to know about the potential benefits of both these procedures and its suitability in our local population which needs further evaluation.

MATERIAL AND METHODS

This Randomized control trial study over 186 patients(93 in each group) keeping 25%[9] proportion of patients experienced post op pain from desarda repair and 4.2%[7] patients from Lichtenstein repair with 95% confidence interval and 99% power of test calculated on WHO formula for sample size determination, having inguinal hernia(symptoms of pain, bulging in the groin confirmed on medical imaging and physical examination) presenting to the outpatients department/emergency response(OPD/ER)of department of General Surgery Saidu Teaching Hospital, Swat from Sep 4, 2019 to Sep 3, 2020. First of all approval was sought out from hospital Ethical and research committee. After which patients with inguinal hernia for $\geq$ 6 months were inducted in the study through OPD/ER department at Saidu Teaching Hospital, Swat. clinical examination was used to diagnosis inguinal hernia. The objective, merits and demerits of the study were explained to all studies population, they were assured that the study is purely conducted for research and data publication and informed consent were obtained from all included patients.

Total patients were randomly distributed in two groups using lottery method. Patients in group A were go through to Desarda repair group and patients in group B were subjected to Lichtenstein repair procedure for inguinal hernia repair without being informed about the type of procedure.

Brief history followed by complete physical examination and pre-operative baseline investigations were performed. All patients were placed on the list of operation next following day including patients presenting to ER. Surgical repair procedures were performed on patients of the affected group under the supervision of a general surgeon with 3 years of post fellowship experience.

All patients were kept under monitoring postoperatively for 2-4 days in ward and observed for any complication by an expert general surgeon having FCPS with two years post fellowship experience, who were unaware about the type of procedure performed on the patient. All patients were observed at regular visits and finally results were noted at the end of 7th day. The degree of post-operative pain was assessed at 7th day after surgery (because after 7 days there is very rare chance of having postoperative pain)[6], using visual analogue scale (0-10) and were categorized as nil(0-1 score), moderate(2-5 score) and severe(6-10). A standard post operative analgesic regimen of same type were administered to all patients experiencing pain.

Patients with less than 4 cm of hernial defect, recurrent and obstructed/strangulated hernias, incapacitating diseases like chronic obstructive pulmonary disease(COPD)and chronic liver, renal or cardiac impairment (labeled on the basis of medical records and history) were excluded as these were act as confounder and lead to make the study results biased.

All the information including name, age, gender, operative time, duration of disease, address contacts and post-operative pain were recorded on a pre-designed proforma. Statistical analyses were carried over statistical package for social sciences (version 16) and MS excel. To compare the pain in both the groups we applied Chi square test and considered p-value$\leq$0.05 as significant.

RESULTS

The study was carried out in Saidu Teaching hospital Swat, which is a tertiary care hospital. A total of 186(93 in each Group) subjects were taken for study and were distributed into both the groups. Group A was subjected to Desarda repair group and patients in group B was subjected to Lichtenstein repair procedure for inguinal hernia repair.

Gender wise patients in both the groups were statistically insignificant with p-value=0.842. which shows that gender is distributed uniformly in both the groups. There were 79(84.9%) were male and 14(15.1%) were female in Group A while 80(86%) were male and 13(14%) were female in Group B. over male to female ratio was 5.89:1.

Patients selected were of different age groups, with minimum age being 18 years and maximum age of 60 years. Mean age for group A was 45.76 years±11.03SD and that for group B was 47.25 years±12.3SD. Majority of the patients were having in the age range of 31-50 years. Age was also insignificant when compared in both the group with p-value=0.835.

Height of the patients varied between 140 cm (minimum) and 185 cm (maximum).Mean height for first surgical group was 160.77 cm and for the second surgical group it was 159.86 cm. Weight of the patients was ranging between 50 kg to 80 kg. Most of the patients (60.2%) were ranging between 61-70kg. while majority of the patients have BMI of less than 25kg/m^2. Table 1

All of the patients operated were given anesthesia. Pain occurrence was recorded through VAS score in two groups after 7th day, by categorizing it as mild, moderate and severe. Post-operative pain was compared in two groups using chi square test. The pain was nil in 76.3% of patient in Group A while this was 69.9% in group B. but statistically the difference in both the group was insignificant with p-value=0.415. Fig 1 The mean VAS score on the first postoperative day was 2.43 in the Desarda technique and 2.53 in the Lichtenstein technique while on 7th post-operative day 1.37 and 1.58 in desarda and Lichtenstein respectively.

Stratification of post-operative pain in both the groups over age, gender, diabetic mellitus, hypertension duration of disease and BMI is given in Table 2.

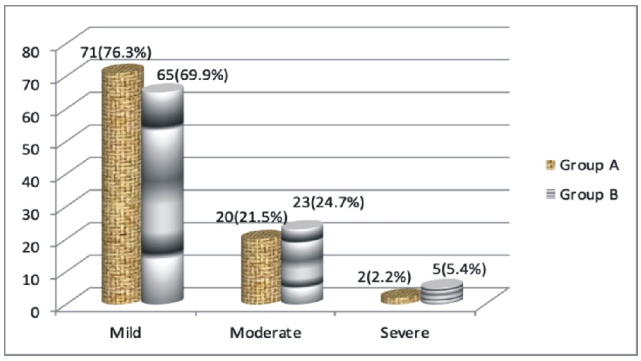

Fig 1. Post Operative Pain

Table 1: Demographic and Comorbidities

		Group				p-value
		A		B		
		Count	%	Count	%	
Age (in years)	<= 30.00	12	6.5%	15	8.1%	0.119
	31.00 - 50.00	52	28.0%	38	20.4%	
	More than 51	29	15.6%	40	21.5%	
Gender	Male	79	42.5%	80	43.0%	0.835
	Female	14	7.5%	13	7.0%	
Diabetic Mellitus	Yes	30	16.1%	23	12.4%	0.256
	No	63	33.9%	70	37.6%	
Hypertension	Yes	35	18.8%	25	13.4%	0.117
	No	58	31.2%	68	36.6%	
BMI	<25	53	28.5%	60	32.3%	0.293
	>=25	40	21.5%	33	17.7%	

Table: Stratification of Postop Pain

		Group						p-value
		A			B			
		Post Operative Pain			Post Operative Pain			
		Nil	Moderate	Severe	Nil	Moderate	Severe	
Age (in years)	<= 30.00	11	1	0	12	3	0	0.697
		91.7%	8.3%	.0%	80.0%	20.0%	.0%	
	31.00 - 50.00	38	13	1	26	9	3	0.771
		73.1%	25.0%	1.9%	68.4%	23.7%	7.9%	
	51.00+	22	6	1	27	11	2	0.730
		75.9%	20.7%	3.4%	67.5%	27.5%	5.0%	
Gender	Male	59	18	2	57	19	4	0.624
		74.7%	22.8%	2.5%	71.2%	23.8%	5.0%	
	Female	12	2	0	8	4	1	0.769
		85.7%	14.3%	.0%	61.5%	30.8%	7.7%	
Duration of Disease (in months)	<= 5.00	60	17	1	52	18	3	0.420
		76.9%	21.8%	1.3%	71.2%	24.7%	4.1%	
	6.00+	11	3	1	13	5	2	0.577
		73.3%	20.0%	6.7%	65.0%	25.0%	10.0%	
BMI	<25	40	12	1	41	14	5	0.939
		75.5%	22.6%	1.9%	68.3%	23.3%	8.3%	
	>=25	31	8	1	24	9	0	0.230
		77.5%	20.0%	2.5%	72.7%	27.3%	.0%	
Diabetic Mellitus	Yes	23	6	1	17	4	2	0.846
		76.7%	20.0%	3.3%	73.9%	17.4%	8.7%	
	No	48	14	1	48	19	3	0.506
		76.2%	22.2%	1.6%	68.6%	27.1%	4.3%	
Hypertension	Yes	28	5	2	17	6	2	0.092
		80.0%	14.3%	5.7%	68.0%	24.0%	8.0%	
	No	43	15	0	48	17	3	0.893
		74.1%	25.9%	.0%	70.6%	25.0%	4.4%	

DISCUSSION

Widely known surgical procedure as Inguinal hernia repair with a rate of 2,800 per million per years population in Europe and the United States[1]. The incidence of pain after inguinal hernia repair is about 10%.[2] Factors predicting the risk of chronic pain after surgical procedure include before surgery pain, recurrent surgery, psychological trauma and compensation of workers, surgical approaches to the threat of nerve harm. Includes pain and treatment. Radiation therapy, chemotherapy, chemotherapy, Neurosis and anxiety.[3,4] keeping in view these factors, there may arise a vast difference in the perception and description of pain. Pain after laparoscopic and mesh repair was studied by a lot of studies.

Tension at the suture lines and the tight suturing of fibroconnective tissue leads stimulation of the myelinated (type A) fibers and unmyelinated (type C) fibers are the caused of pain after surgery [5]. Thus occurrence of pain after different kinds of hernia repairs is minimized if they are modified to avoid sutures under tension or force. Both the Lichtenstein and laparoscopic hernia repairs are thus suitable procedures in this regard.

The mean VAS score on the first postoperative day was 2.43 in the Desarda technique and 2.53 in the Lichtenstein technique. A matching study conducted by Mitura K and Romanczuk M compared the Desarda and Lichtenstein technique and reported a mean day 1 postoperative VAS score at 3.3 and 3.8, respectively, in Desarda and Lichtenstein techniques. A similar study conducted by Mitura K and Romanczuk M reported that patients operated on with the Desarda technique were discharged on day 4, and patients operated on with the Lichtenstein technique were discharged on the postoperative day 5).[9]

Results of this study have shown that there are insignificant differences between the two groups for pain on the first to seven day after surgery. Analgesic requirements between the techniques was also insignificant, which are consistent to the rates described in other study.[10]

Manyilirah[11] concluded in their RCT that the efficacy of the Desarda technique in respect of the early clinical outcomes of hernia repair is similar to that of Lichtenstein method. However the operator in this study showed that the Desarda repair takes a significantly shorter operative time[12,13]. The authors therefore conclude that the Desarda repair for inguinal hernia gives the same or better results when compared with the Lichtenstein Mesh repair with shorter hospital stay, more rapid recovery and avoidance of specific mesh related complications whilst also reducing the cost of surgery. It is technically simpler than the Shouldice repair and we recommend that surgeons become acquainted with this technique[14,15].

A study show that 168 patients were randomly distributed into two groups, in which 85 were in Desarda while Lichtenstein 83 patients. Recurrence was the main outcome of the inguinal hernia and chronic pain in the groin. Subsequent outcomes included duration of surgery, postoperative pain, duration of return to normal life and work, groin foreign body detection, and postoperative complications. Chronic groin pain was experienced by 5.6% in the Desarda and 4.2% of patients in Lichtenstein groups which was statistically insignificant with p value = 0.68. The intervention time was much shorter and the return to normal speed was advanced in favor of repairing Desarda. Perception of the foreign body was also insignificant in two groups.[3]

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[14]. Shouldice repair, is sophisticated technique, requiring long learning curve. It has recurrence rates of less than 1% at Shouldice hospital and up to 15% in general surgical practice[15-21]. This rate of recurrence in non-specialist centres shows that Shouldice repair is not a universal repair technique for hernia repair. Use of prosthetic material for inducing fibrosis thereby strengthening the posterior wall of inguinal canal was principle behind Lichtenstein mesh repair technique. It achieves most of the requirements of an ideal hernia surgery, but the complications related to the mesh are described[22,23].

Many newer prosthetic materials (Biomaterials) have come to light,[6] but their use in treatment of inguinal hernia is still a question. Thus the search for ideal operative technique for inguinal hernia with low costs, low complication and recurrence rates, operability by consultants, surgeons in training at smaller and district hospitals, ease of learning and enabling early return to day to day activities. The Desarda technique satisfies most of the criteria of an ideal technique.[6]

CONCLUSIONS

Inguinal hernia repair with Desarda compared to Lichtenstein lattice repair on inguinal hernia resulted in fewer reports of chronic groin pain after surgery, although this was not significant. The best, however, due to the long-term efficacy, more prospective double-blind, randomized follow-up studies with large sample size should be investigated. So there is no “best” form of hernia repair; it should be adapted to the nature of the hernia, the characteristics of the patient and the preferences of the surgeon and the patient.

REFERENCES

1. Rutkow MI. Epidemiologic, economic and sociologic aspects of hernia surgery in the United States in the 1900s. Surg. North Am 2013;78:941 -51.
2. Desarda MP. Inguinal herniorrhaphy with an undetached strip of external oblique aponeurosis: a new approach used in 400 patients. Eur J. Surg. 2014;167:01-06.
3. Ansari FM, Hameed T, Jain SK, Dua A, Nizam A. Comparison of outcome of Desarda versus Bassini repair in management of complicated inguinal hernia. *Int. Surg. J.* 2019;6:3889-3896.
4. Kumar JS, Tariq H, Dhruv J, Mohak S, Adiba N. The role of antibiotic prophylaxis in lichtenstein repair of primary inguinal hernia: A prospective double-blind randomized placebo-controlled trial. *Niger. J. Surg.* 2021;27(1):58-63.
5. Mitura K, Romańczuk M. Comparison between two methods of inguinal hernia surgery--Lichtenstein and Desarda. Pol Merkur Lekarski. 2008 May;24 (143):392-5.
6. Gedam BS, Bansod PY, Kale VB. A comparative study of Desarda's technique with Lichtenstein Lichtenstein repair in treatment of inguinal hernia: a prospective cohort study. Int J Surg. 2017 Mar;39:150-155.
7. Youssef T, El-Alfy K, Farid M. Randomized clinical trial of desarda versus lichtenstein repair for treatment of primary inguinal hernia. Int J Surg. 2015Aug;20:28-34.
8. Ge H, Liang C, Xu Y. Desarda versus lichtenstein technique for the treatment of primary inguinal hernia: a systematic review. Int J Surg. 2018 Feb;50:22-27.
9. Sowmya GR, Deepak G. Comparative study of Lichtenstein versus Desarda repair for inguinal hernia. J Evol Med Dental Sci. 2015;4(97):16261-5.
10. Neogi P, Gupta V, Tripathi N. A comparative study of outcomes of Lichtenstein repair and Desarda tissue repair in patients of inguinal hernia. Int Surg J 2017;4:2693-9.
11. 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 (Lond). 2021 Jul; 67: 1024-86.
12. Ahmed S. Arafa, Hassan A. Saad, Fayek F. Desarda vs lichtenstein technique for the treatment of primary inguinal hernia. The Egyp J Surg. 2020;39(1):157-65
13. Dieng M, Cisse M, Seek M, Diallo FK, Tourè AD. Cure des hernies inguinales simples de L' adulte pastie avec L' aponèurose du grand oblique: Technique de Desarda. e-mèmoires de L'Acadèmie Nationale de Chirurgie. 2012;11(2): 069-74.
14. Jianxin Z, Dong JW, Zhiyong Z. Desarda inguinal hernia repair and synthetic patch (open VS TEP) hernia repair comparative study. J Chinese Her and abdominal Surg. 2013;7(6):559-63.
15. Simons MP, Kleijnen J, Van Geldere D, Hoitsma HF, Obertop H. Role of the Should ice technique in inguinal hernia repair: a systematic review of controlled trials and a meta-analysis. Br J Surg. 1996 Jun 1;83(6):734-8.
16. Beets GL, Oosterhuis KJ, Go PM, Baeten CG, Kootstra G. Longterm followup (12e15 years) of a randomized controlled trial comparing Bassini-Stetten, Shouldice, and high ligation with narrowing of the internal ring for primary inguinal hernia repair, J. Am. Coll. Surg. 1997 Oct 1;185(4):352-7
17. Lòpez Roduìguez PR, Pol Herrera PG, Lèon Gonzàlez OC, Cruz Alonso JR, Rodrìguez 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;652-8
18. Rutkow IM. Demographic and socioeconomic aspects of hernia repair in the United States in 2003. Surg Clin N Am. 2003 Oct 31;83(5):1045-51.
19. Hay JM, Boudet MJ, Fingerhut A, Poucher J, Hennet H, Habib E, et al. Flamant, Shouldice inguinal hernia repair in the male adult: the gold standard? A multicenter controlled trial in 1578 patients, Ann. Surg. 1995 Dec;222 (6):719-26.
20. Klinge U, Zheng H, Si ZY, Schumpelick V, Bhardwaj R, Klosterhalfen B. Synthesis of type I and III collagen, expression of fibronectin and matrix metalloproteinases-1 and-13 in hernial sac of patients with inguinal hernia, Int J Surg Investig. 1998 Dec ;1(3):219-27.
21. Rahman AT, Biswas SK, Saha RK, Rahman AZ, Ahmed T, Rahman MM. Desarda Versus Lichtenstein Repair for Primary Inguinal Hernia in Men: Results of A Randomized Control Trial. Faridpur Med Coll J, 2020;14(1):206-11.
22. D'Amore L, Gossetti F, Vermeil V, Negro P. Long-term discomfort after plug and patch hernioplasty, Hernia. 2008 Aug 1;12(4):445-6.
23. 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;39:150-5

DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

CONFLICT OF INTEREST: Authors declared no conflict of interest.
GRANTED SUPPORT AND FINANCIAL DISCLOSURE: Nil

AUTHOR'S CONTRIBUTION
The following authors full fill authorship criteria as per ICMJE guidelines;

Nadeem M, Akbar F:	Idea conception, drafting the work, final approval, agreed to be accountable for ll the work.
Abbas S:	Design of the work, data acquisition, critical rivision, final approval, agreed to be accountable for all the work.
Ali S:	Data analysis, drafting of the work, final approval, agreed to be accountable for all the work.
Rehman F:	Data interpretation, critical rivision, final approval, agreed to be accountable for all the work.