

ORIGINAL RESEARCH

A study to compare the post operative outcomes of inguinal hernia repair by lichtenstein mesh versus non-mesh desarda techniques

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ABSTRACT

Introduction: Inguinal hernia is a common surgical diagnosis worldwide for which Lichtenstein mesh repair is considered gold standard but this surgery also has some limitations like post operative pain, wound infection, mesh migration, etc. To overcome these problems, Desarda proposed a tension free tissue repair without mesh placement. The main advantages proposed by Desarda technique are similar results in respect of recurrence rate, less post operative pain, less wound infection as with Lichtenstein mesh repair technique. The aim of the study was to compare Desarda tissue repair technique with Lichtenstein mesh repair for treatment of inguinal hernia. **Methods:** 70 patients of inguinal hernia were included in the study and randomly allocated on alternate basis into 2 groups of 35 patients each in Desarda group and Lichtenstein group. Post operative pain on POD 1 was assessed using Visual Analogue Scale. Ambulation time, day of discharge, seroma formation, wound infection and recurrence within 3 months of follow up were analysed. **Results:** During the follow up of 3 months, the mean post op pain as per VAS on POD 1 was 2.20+/-0.4058 in Desarda group and 4.9143+/- 0.5621 in Lichtenstein group. Post op pain on POD 1 was significantly less in Desarda group (p<0.0001). Ambulation time was significantly less in Desarda group as compared to Lichtenstein group (p=0.0026). Patients in Desarda group were discharged from hospital earlier than patients in Lichtenstein group which was statistically significant (p<0.0001). On 3 months of follow up there were no recurrence in either group. Seroma formation and wound infection were observed in Lichtenstein group but these post operative complications were absent in Desarda group. **Conclusion:** Our study concludes that Desarda Non Mesh Tissue repair technique is superior to Lichtenstein Mesh Repair technique as there was less post operative pain, early ambulation time, patients were discharged earlier in Desarda group and post operative complications like seroma formation and wound infection were less in Desarda group as compared to Lichtenstein group.

Keywords: Desarda Repair, Lichtenstein Repair, Inguinal Hernia, Recurrence, Seroma.

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INTRODUCTION

Inguinal hernia is a common surgical diagnosis worldwide. Average lifetime risk of inguinal hernia is 27% for men and 3% for women^[1]. Hence surgery for inguinal hernia is one of the most commonly performed surgery worldwide^[1,2,3]. Over the decades many modifications of surgical techniques have occurred (like open techniques : Shouldice Repair, Bassini's Repair, etc and prosthetic repairs like Lichtenstein, Plug and Patch, Stoppa's Technique, Proline Hernia System and Laparoscopic Methods).

Currently for open hernia surgery, most of the surgeons prefer Lichtenstein Tension Free Repair. This surgery has excellent results like very low recurrence rate (4%)^[4,5]. But this surgery also has some limitations (like post operative pain, mesh migration, foreign body sensation, mesh infection)^[6]. Moreover mesh placement is not indicated when there is strangulated hernia with gangrenous gut or infection due to any other cause. To overcome these problems Desarda proposed a tension free tissue repair without mesh placement. The main advantages proposed by

Desarda Technique have similar results with respect to recurrence rate as with Lichtenstein Mesh Repair Technique and without limitations of Mesh Repair Technique. Also this technique does not involve use of weak posterior abdominal wall muscle. Previous few studies have been done to compare the Desarda's No Mesh Repair with Lichtenstein Tension free Mesh Repair but there is no consensus regarding which technique is superior. This study is an attempt to compare these two techniques in terms of efficacy and complications.

AIM

Aim of the study is to compare Desarda tissue repair with Lichtenstein mesh repair for treatment of inguinal hernia.

OBJECTIVES

1. To evaluate the post-operative pain.
2. To find out the ambulation time.
3. To watch for the formation of seroma at the surgical site.
4. To find out the post op wound infection rate.
5. To determine the hospital discharge time.
6. To find out the recurrence of the hernia.

MATERIAL AND METHODS

Setting and Place: The present study was a hospital based study, conducted in the Department of General Surgery, of a tertiary care university hospital in Northern India

Study design: A observational, comparative study.

Time frame: Study was carried for a period of 18 months after getting approval from the Institutional Research committee (/AIMSR/MC/Estt/12/2K20/1890), and Ethics Committee of University (AU/EC/FM/2021/116).

Population/ Participants: All cases in the Department of General Surgery, AIMSR, Bathinda in the period of 18 months as diagnosed cases of inguinal hernia. and applying inclusion and exclusion criteria after obtaining their informed written consent.

Sample size: Sample size was calculated using sample size calculator method^[8] with confidence level 95% and margin of error 5%. Sample size was found to be 70 (35 per group).

Inclusion criteria

All patients who present in surgical outpatient department with inguinal hernia.

- Above 15 years of age
- Below 65 years of age

Exclusion criteria

- Associated surgical pathologies where the patient was getting operated for both conditions at the same time
- Laparoscopic repairs
- Old age above 65 years of age with thinned out external oblique aponeurosis

- Pregnancy
- Children below 15 years of age
- Co-morbid conditions
- Bilateral/ recurrent/ complicated inguinal hernia

METHODS

All the patients were investigated and pre anaesthetic checkup was done. All the patients were operated by same surgeon having experience of more than 20 years. All the patients were operated under spinal anaesthesia. At the time of surgery. Inj. Ceftriaxone 1000 mg i.v was given after sensitivity test to all the patients. Post operatively all the patients were kept nil per oral till first 4 hours and maintained with i.v fluids NS/RL at 100 ml /hour for first 4 hours. Patients were given a course of Injection ceftriaxone 1 gram I/V 12 hourly, injection Pantoprazole 40 mg i.v 24 hourly and injection Voveran 75 mg i.v.sos. For pain assessment Visual Analogue Scale was used. Dressing was done on POD 1. Ambulation time, any sign of wound infection, hospital discharge time of every patient was noted. After discharge recurrence of hernia was checked by cough impulse and USG inguino-scrotal region on follow up till 3 months.

STATISTICAL ANALYSIS

For statistical analysis data were entered into a Microsoft excel spreadsheet and then analysed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Two-sample t-tests for a difference in mean involved independent samples or unpaired samples. Paired t-tests were a form of blocking and had greater power than unpaired tests. A chi-squared test (χ^2 test) was any statistical hypothesis test wherein the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Without other qualification, 'chi-squared test' often is used as short for Pearson's chi-squared test. Unpaired proportions were compared by Chi-square test or Fischer's exact test, as appropriate. Once a t value is determined, a p-value can be found using a table of values from Student's t-distribution .If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favour of the alternative hypothesis.

P-value \leq 0.05 was considered statistically significant.

RESULTS AND ANALYSIS

A total of 70 patients presented in OPD of General Surgery with diagnosis of inguinal hernia during study period were taken up in this study. These patients were randomly divided into Desarda no mesh repair technique and Lichtenstein repair technique alternatively. Results of study were as follows:

Table 1: Association between Age in years: Operative Procedure

		Number	Mean	SD	Minimum	Maximum	Median	p-value
Age	Desarda Hernia Repair	35	48.5429	8.1180	32.0000	63.0000	49.0000	0.8817
	Lichtenstein Mesh Hernioplasty	35	48.9143	12.2651	20.0000	64.0000	53.0000	

Association of mean age with operative procedures was not statistically significant (p=0.8817)

Table 2: Association between Sex: Operative Procedure

Operative Procedure			
Sex	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty	p-value
Female	1	2	0.5551
Male	34	33	
Total	35	35	

Association of Sex with Operative Procedure was not statistically significant (p=0.5551).

Table 3: Association between Type: Operative Procedure

Operative Procedure			
Type	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty	p-value
Left Inguinal Hernia	14	13	0.8060
Right Inguinal Hernia	21	22	
Total	35	35	

Association of Type with Operative Procedure was not statistically significant (p=0.8060).

Table 4: Association of mean Post Op Pain as Per Visual Analog Scale on Pod 1: Operative Procedure

		Number	Mean	SD	Minimum	Maximum	Median	p-value
PostOp PainAs Per Visual Analog ScaleOn Pod1	Desarda HerniaRepair	35	2.2000	.4058	2.0000	3.0000	2.0000	<0.0001
	Lichtenstein Mesh Hernioplasty	35	4.9143	.5621	4.0000	6.0000	5.0000	

Association of meanPostOpPainasPerVisualAnalogScaleonPod1 with Operative Procedure was statistically significant (p<0.0001)

Table 5: Association between Ambulation Time: Operative Procedure

Operative Procedure			
Ambulation Time	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty	p-value
Pod1	35	27	0.0026
Pod2	0	8	
Total	35	35	

Association of Ambulation Time with Operative Procedure was statistically significant (p=0.0026).

Table 6: Association between Seroma Formation: Operative Procedure

Operative Procedure			
Seroma Formation	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty	Total
Absent	35	34	69
Present	0	1	1
Total	35	35	70

Association of Seroma Formation with Operative Procedure was not statistically significant (p=0.3138).

Table7: Association between Wound Infection: Operative Procedure

Operative Procedure			
Wound Infection	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty	p-value
Absent	35	34	0.3138
Present	0	1	
Total	35	35	

Association of Wound Infection with Operative Procedure was not statistically significant (p=0.3138).

Table 8: Association between Day of Discharge: Operative Procedure

Operative Procedure			
Day Of Discharge	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty	p-value
POD3	35	5	<0.0001
POD4	0	24	
POD5	0	6	
TOTAL	35	35	

Association of Day of Discharge with Operative Procedure was statistically significant(p<0.0001).

Table 9: Association between Recurrence/Readmission within 3 Months Of Follow Up: Operative Procedure

Operative Procedure		
Recurrence/ Readmission Within 3Months Of Follow Up	Desarda Hernia Repair	Lichtenstein Mesh Hernioplasty
No	35	35
Total	35	35

DISCUSSION

Parameter	Present study		Rahman Asmt et al (2019)		Gulzar mr et al (2019)		Kamat ta et al (2020)	
	D	L	D	L	D	L	D	L
MEAN AGE (Mean +/- SD)	48.54+/- 8.11	48.91+/- 12.26	50.33+/-5.12	56.17+/-6.34	38.10+/- 12.60	41.43+/- 15.01		
GENDER (MALE/FEMALE)	97.1% / 2.9%	94.3% / 5.7%	100%/0%	100%/0%			100%/0%	100%/0%
TYPE (RIGHT/LEFT)	60% / 40%	62.9% / 37.1%	64.81%/35.19%	65.21%/34.79%			40%/40%	44%/36%
MEAN POST OP PAIN BY VAS ON POD - 1	2.20+/- 0.40	4.91+/- 0.56	2.81+/-1.21	4.08+/-1.42				
AMBULATION TIME POD 1 POD 2	100%	77.1% / 22.9%	74.07% / 25.93%	69.57% / 30.43%	93.5% / 6.5%	92.1% / 7.9%		
SEROMA FORMATION	absent	2.9%	5.56%	8.6%			4%	absent
WOUND INFECTION	absent	2.9%	1.85%	4.35%	1.61%	1.31%		
DAY OF DISCHARGE POD 3 POD 4 POD 5	100%	14.3% / 68.6% / 17.1%	90.74% / 9.26%	80.43% / 19.57%			94% / 6%	86% / 14%

RECURRENCE WITHIN 3 MONTHS OF FOLLOW UP	absent	absent	absent	absent			2%	2%
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PARAMETER	SZOPINSKI J et al (2012)		RODRIGUEZ P et al (2013)		GEDAM BS et al (2017)	
	D	L	D	L	D	L
MEAN AGE (Mean +/- SD)	50.2+/-17.5	54.1+/-15.3	58.3	57.5	49.75+/-18.02	47.32+/-14.06
GENDER (MALE/FEMALE)			92.2%/7.8%	91.7%/8.3%	98.9%/1.1%	100%/0%
TYPE (RIGHT/LEFT)	58.1%/41.9%	56.3%/43.7%	48.7%/47.6%	46.8%/45.5%	66.3%/33.7%	66.3%/33.7%
MEAN POST OP PAIN BY VAS ON POD - 1					2.43+/-0.61	2.72+/-0.44
AMBULATION TIME POD 1 POD 2						
SEROMA FORMATION	3.8%	7.8%	0.7%	1.7%	3.26%	2.1%
WOUND INFECTION	0.9%	1.9%	0.8%	1.3%		
DAY OF DISCHARGE POD 3 POD 4 POD 5						
RECURRENCE WITHIN 3 MONTHS OF FOLLOW UP	1.9%	1.94%	0.5%	0.4%	1.08%	1.05%

The present study was an observational, comparative study which was conducted for 18 months at the Department of General Surgery, Adesh Institute of Medical Sciences & Research, Bathinda, Punjab. Total 70 patients were included in this study.

In the present study the incidence of inguinal hernia was more in 41-60 years with mean age of 48 years and was comparable in both the groups. Other studies like Szopinski J et al (2012)^[7], Gedam BS et al (2017)^[8], Rahman ASMT et al (2019)^[9] and Gulzar MR et al (2019)^[10] observed the similar results indicating that inguinal hernia is more common in 4th to 5th decade.

In present study, Inguinal hernia was found more commonly in male population than female and was comparable in both the groups. Other studies like Rodriguez P et al (2013)^[11], Gedam BS et al (2017)^[8], Rahman ASMT et al (2019)^[9] and Kamat TA et al (2020)^[12] showed that inguinal hernia is more common in men than women.

Our study showed that, most of the patients had right inguinal hernias compared to left inguinal hernia in both the groups but this was not statistically significant and was comparable in both the groups. There are some other studies having similar observation.

In present study, the mean post operative pain as per visual analogue scale on POD 1 was 2.20+/- 0.40 in

Desarda group and 4.91+/-0.56 in Lichtenstein group which was statistically significant ($p < 0.0001$). Many other studies showed that mean post operative pain by visual analogue scale on POD 1 was significantly more in Lichtenstein group than Desarda group.

In present study, ambulation time was earlier in Desarda hernia repair group as compared to Lichtenstein Mesh Hernioplasty group. In Desarda Hernia Repair group, patients were ambulated on POD 1 whereas in Lichtenstein Mesh Hernioplasty group 77.1% patients were ambulated on POD 1 and 22.9% patients were ambulated on POD 2 which was statistically significant ($p = 0.0026$). Other studies also showed that patients of Desarda group were ambulated earlier than patients of Lichtenstein group.

In present study, there was no seroma formation in Desarda group but 2.9% patient had seroma formation in Lichtenstein group. Association of seroma formation was not statistically significant ($p = 0.3138$) and was comparable for both groups. In studies like Szopinski J et al (2012)^[7], Rodriguez P et al (2013)^[11] and Rahman ASMT et al (2019)^[9] the number of seroma formation was higher in Lichtenstein group but in studies like Gedam BS et al (2013)^[8] and Kamat TA et al (2020)^[12] the number of seroma formation was higher in Desarda Repair group.

In present study, there was no wound infection in Desarda group whereas 2.9% patients had wound infection in like Lichtenstein group. Association of wound infection with operative procedure was not statistically significant ($p=0.3138$). Other studies like Szopinski J et al (2012)^[7], Rodriguez P et al (2013)^[11] and Rahman ASMT et al (2019)^[9] observed that wound infection rate were more common in Lichtenstein Mesh Hernioplasty group but Gulzar MR et al (2019)^[10] observed more wound infection after Desarda hernia repair.

In Desarda Hernia Repair group all patients were discharged on POD 3 while in Lichtenstein Mesh Hernioplasty group most of the patients were discharged on POD 4. Association of day of discharge with operative procedure was statistically significant ($p<0.0001$). Other studies like Rahman ASMT et al (2019)^[9] and Kamat TA et al (2020)^[12] also showed that majority of patients were discharged earlier in Desarda Hernia Repair group than in Lichtenstein group.

In present study, there were no recurrence of inguinal hernia within 3 months of follow-up. Some studies like Rahman ASMT et al (2019)^[9] showed similar results while some studies like Rodriguez P et al (2013)^[11] and Gedam BS et al (2017)^[8] observed more recurrence rate in Desarda group.

CONCLUSION

This study was done to compare the post operative outcomes of inguinal hernia repair by Lichtenstein mesh hernioplasty and by Desarda non mesh technique. Our study concludes that Desarda Non Mesh tissue repair technique is superior to standard Lichtenstein Mesh Hernioplasty as patients were ambulated earlier in Desarda Hernia Repair group as compared to Lichtenstein Mesh Hernioplasty group and post operative complications like seroma formation and wound infection were higher in Lichtenstein Mesh Hernioplasty group. Mean post operative pain was significantly less in Desarda Hernia Repair group and patients were discharged earlier in Desarda group as compared to Lichtenstein Mesh Hernioplasty group. There was no recurrence in either group. Large scale and long term follow up for further confirmation of results is required.

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