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Desarda's Repair as an Alternative Procedure: A Physiological Approach to Complicated Inguinal hernia

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Abstract

Background: Complicated inguinal hernia is one of the most common conditions encountered in a surgical emergency. Of various surgical procedures available we are comparing Desarda's and Modified Bassini's repair in our study.

Aims & Objectives: To compare Desarda's repair with Modified Bassini's repair in complicated inguinal hernia concerning the duration of the procedure and various post-operative complications.

Methods: We have included 52 patients with complicated inguinal hernias presenting to the emergency department after taking informed consent and ethical committee clearance. Patients were randomly divided into two groups using computer software Group A and Group B.

Group A: Consists of 26 patients and underwent Modified Bassini's repair.

Group B: Consists of 26 patients and underwent Desarda's repair.

Various intraoperative and post-operative complications were studied. The patient was followed up for a 3 years period for recurrence of an inguinal hernia.

Results: Desarda's repair had less post-operative pain score. Complications such as seroma formation and recurrence in the follow-up period were less compared to Modified Bassini's repair.

Conclusion: Desarda's repair was found to be a better alternative for a complicated inguinal hernia when compared to Modified Bassini's repair.

Keywords: Desarda's repair; Bassini's repair; Complicated inguinal hernia.

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INTRODUCTION

An inguinal hernia is defined as the protrusion of the contents of the abdominal cavity or preperitoneal fat through a hernia defect in the inguinal area.[1] Inguinal hernia accounts for 75% of abdominal wall hernias with a risk of 27% in men and 3% in women.[2] At certain times these inguinal hernias can get complicated and present in the emergency department with sudden onset of pain,

vomiting and obstipation requiring emergency surgical intervention.

Although Lichenstein mesh repair is been carried out in most of the world certain factors like non availability of mesh and higher cost restricts carrying out the popular procedure. Further use of mesh in potentially contaminated cases is not advisable.[3] The World Society of Emergency Surgery recommends a direct suture based repair for contaminated emergency hernia fields.[4]

Modified Bassini's repair described by Edorado Bassini in 1887[5] is been employed by most of the surgeons for managing complicated inguinal hernia for many years. This is an anatomical repair that involves the approximation of conjoint tendon and inguinal ligament.

In 2001, Dr. Mohan Phulchand Desarda from Pune described a physiological repair in the treatment of inguinal hernia known as Desarda's repair.[6,7] This technique uses an undetached strip of External oblique aponeurosis and suturing it to internal oblique muscle[8] (Fig. 1a and 1b).





Fig. 1a and **1b:** Desarda's Repair

Various surgeries have been described in the treatment of complicated inguinal hernias. In our study, we aim to compare modified Bassini's repair with Desarda's repair in complicated inguinal hernia.

AIMS & OBJECTIVES

To compare Desarda's repair with modified Bassini's repair in complicated inguinal hernia concerning the duration of the procedure and various post-operative complications.

MATERIAL & METHODS

A randomized control trial was conducted on 52 patients from March 2017 to December 2019 after obtaining informed consent and institutional ethical committee clearance

Inclusion Criteria

All male patients between 18 years to 65 years presenting to the emergency department with unilateral irreducible inguinal hernia were included in the study

Exclusion Criteria

- Female patients
- Age <18 years and >65 years
- Bilateral inguinal hernia
- Recurrent inguinal hernia
- Irreducible inguinal hernia with local skin changes
- Patients requiring laparotomy

Sampling Method

Patients were allocated randomly into 2 groups using computer software.

Group A – Consists of 26 patients who underwent Modified Bassini's repair.

Group B – Consists of 26 patients who underwent Desarda's repair.

All patients underwent routine hematological investigations and ultrasonography of the inguinoscrotal region to confirm complicated inguinal hernia.

Patients in both groups underwent the respective procedures under spinal anaesthesia. Injection Ceftriaxone 1gm was given just before the skin incision. The time duration from the start of the skin incision to the end of the last skin suture was noted in minutes. Definitive procedures were carried out for both groups respectively. PDS 2-0 was used over external oblique aponeurosis, inguinal ligament and conjoint tendon in both procedures. Vicryl 2-0 was used for subcutaneous tissue and ethilon 2-0 was used for skin approximation in both procedures. Post-operatively patient was assessed for post-operative pain at 6 hours, 24 hours, 1 week, 3 weeks and 2 months using visual analogue scale (VAS), seroma formation, length of stay in the hospital and recurrence in follow-up period of 3-years.

Parameters Observed

1. Duration of the procedure in minutes
2. Post-operative pain score using VAS at 6 hours, 24 hours, 1 week, 3 weeks and 2 months postoperatively
3. Seroma formation
4. Length of stay in the hospital in days
5. Recurrence during the follow-up period of 3 years.

Statistical Analysis

Data analysis was done using descriptive statistics such as mean and standard deviation. Unpaired t test was used to compare the quantitative variables between the two groups. Chi-square test was used to compare the qualitative variables between the two groups. Level of significance was set at 5%. Data were analysed using Epi Info software.

RESULTS

52 patients were included in the study with 26 patients in each group undergoing Modified Bassini's repair and Desarda's repair respectively. Of 52 patients 3 patients lost to follow up i.e. 2 from Group A and 1 from Group B. Hence 49 patients were included in the data analysis and were followed up for 3 years to look for any recurrence. The following observations were made during the study period.

Duration of Procedure

Mean duration of procedure was higher in Desarda group-150 $\pm$ 32.71 as compared to Bassini group- 147.69 $\pm$ 31.06. Unpaired t test showed no statistically significant difference between the groups (p=0.79) (Table 1).

Table 1: Comparison of the duration of the Procedure (in minutes) between the groups Usin G Unpaired T Test

-	Groups	Minimum	Maximum	Mean	Std. Deviation	Mean diff	P-value
Duration of Procedure (min)	Bassini	105	190	147.69	31.06	2.31	0.79
	Desarda	105	200	150	32.71		

Post-operative pain Score

Post-operative pain was assessed using Visual analogue scale (VAS) at intervals of 6 hours, 24 hours, 1 week, 3 week, 2 months post-operatively. Both the groups showed decrease with VAS scores from post op 6 hrs to post-op 2 months. Mean VAS scores of Desarda group was 0 at post op 3 weeks whereas Bassini group VAS scores were 0 at post-op 2 months. Unpaired t test showed statistically significant difference between the 2 groups at 6 hrs (p=0.00), 24 hrs (p=0.00) and 1 week (p=0.00)(Fig. 2).

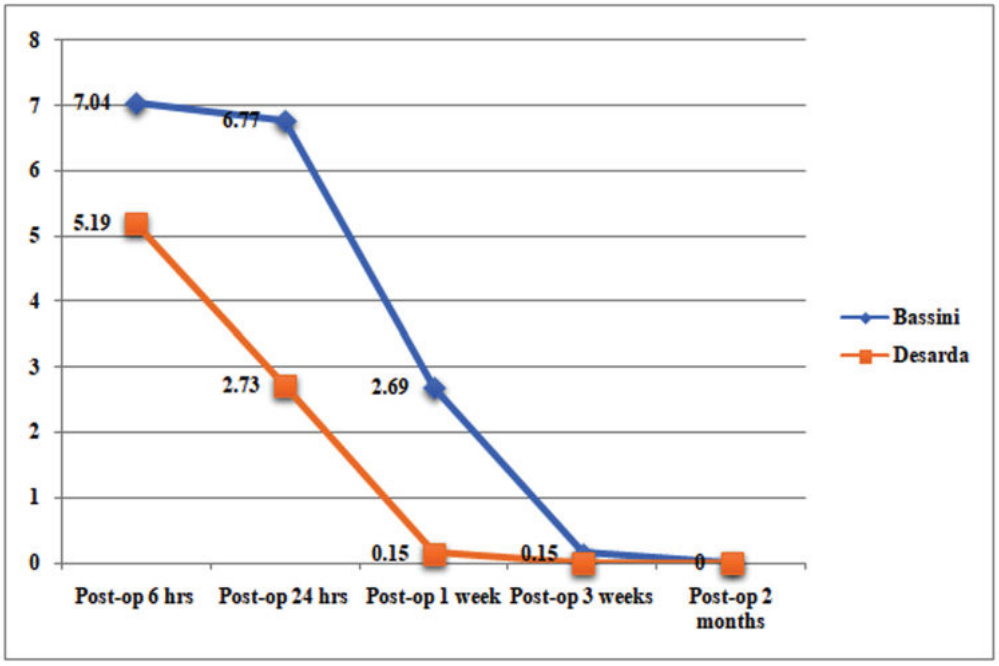

Fig. 2: Comparison of the Vas Scores between the Groups at Different time intervals.

Length of stay in Hospital

Patients were discharged post-procedure once the patient were able to tolerate orally and were comfortable with oral analgesics. Mean stay in hospital (in days) was higher for Bassini group 5.19 ± 0.895 as compared to Desarda group – 4.88 ± 0.816.Unpaired t-test showed no statistically significant difference between the groups (p=0.20) (Table 2).

Table 2: Comparison of the stay in Hospital (in days) between the Groups using Unpaired T-Test

-	Groups	Minimum	Maximum	Mean	Std. Deviation	Mean diff	p value
Stay in hospital in days	Bassini	3	7	5.19	0.895	0.30	0.20
	Desarda	4	7	4.88	0.816		

Seroma Formation

Seroma formation was present in 19 (36.5%) subjects, out of which 15 (57.6%) were in Bassini group and 4 (15.3%) were in Desarda group. Chi-square test showed significant association between the groups (p=0.0015) (Table 3).

Table 3: Cross-Tabulation of Scrotal Edema, Seroma Formation and Recurrence with Groups

-			Groups		Total	Chi-square value	p value
			Bassini	Desarda			
Seroma formation	Absent	Count	11	22	33	10.03	0.002
		%	42.30%	84.60%	63.40%		
	present	Count	15	4	19		
		%	57.60%	15.30%	36.50%		
Recurrence in 3 year follow up period	Absent	Count	18	24	42	4.41	0.036
		%	69.20%	92.30%	80.70%		
	Loss to follow up	Count	2	1	3		
		%	7.70%	3.80%	5.80%		
	present	Count	6	1	7		
		%	23%	3.80%	13.40%		

Recurrence

Patient were followed for 3 year duration to look for any recurrence. Recurrence was present in 7(13.4%) subjects, out of which 6 (23%) were in Bassini group and 1(3.8%) was in Desarda group. Chi-square test showed significant association between the groups (p=0.0357) (Table 3) (Fig. 3).

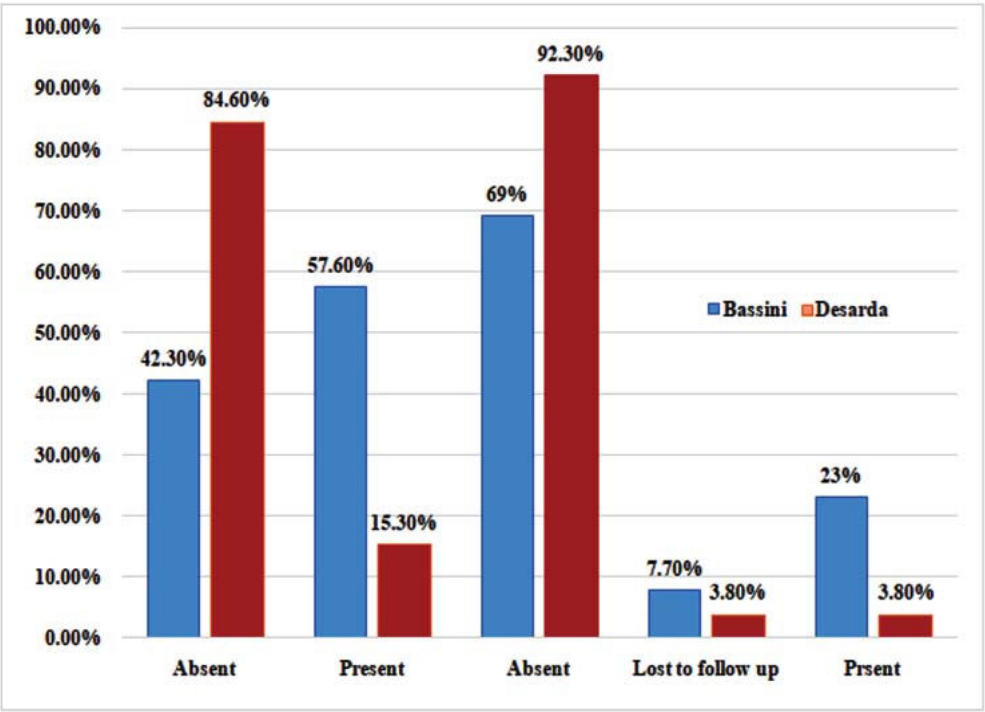

Fig. 3: Cross-Tabulation of Seroma formation and Recurrence with groups

DISCUSSION

Desarda's repair is based on Dr. Desarda's theory of hernia formation. According to this theory, transversalis fascia doesn't give protection against hernia formation.[8] Dr. Desarda took biopsies from multiple patients and proved that the posterior wall of the inguinal canal is made of aponeurotic extensions of Transversus abdominus muscle present in front of transversalis fascia.[8] And this transversus abdominus aponeurosis was absent or deficient in patients with inguinal hernia proving that it is this structure which prevents hernia formation. Further, Dr. Desarda argues that the hernia formation is caused by abnormal physiological mechanisms taking place at the inguinal canal which requires not only the anatomical correction but also restoring the normal physiological mechanism that is impaired.

Desarda's repair is a no mesh tension free physiological repair. Unlike Modified Bassini's repair which is an anatomical repair with lots of tension over the structures.

Our study showed that Desarda's repair required slightly more time than Modified Bassini's repair with a mean duration of the Desarda group - 150 ±32.71. The mean duration for Desarda's repair was 64.43 min in the study conducted by Dr. Rushabh Shah *et al*[9] and it was 60min in study conducted by Atish Naresh *et al*.[10] However, all these studies involved non complicated inguinal hernias. Whereas our study was on complicated inguinal hernia requiring a longer duration for the procedure.

The VAS score was 0 at 2 months for the Bassini group and at 3 weeks for the Desarda group. The pain score was lesser in the Desarda group compared to Bassini and was found to be statistically significant at 6 hrs, 24 hrs, 1 week post-operative period. Study conducted by Situma *et. al*[11] showed lower VAS scores for Desarda's repair compared with Bassini's repair. Similarly, few studies by Lau *et. al*[12] and Kyamanywa *et al*[13] showed higher pain scores for modified Bassini's group compared to other procedures.

The mean duration of stay in the hospital was higher for Bassini group. However, this data was not statistically significant.

Seroma formation was found in 15 patients undergoing Bassini repair and 4 patients undergoing Desarda repair and was found to be statistically significant.

During the follow-up duration of 3 years, 7 patients came with recurrence of inguinal hernia of which 6 patients had undergone Bassini repair and 1 patient had undergone Desarda repair. However, in a study conducted by Dr Desarda involving 860 patients, there were no recurrences in Desarda repair during the follow up period of 7 years.[6]

CONCLUSION

Duration for Desarda's repair in complicated inguinal hernia was found to be slightly more compared to Modified Bassini's repair. However, Desarda's repair was found to be superior to Modified Bassini's in terms of lesser post-operative pain score and seroma formation. Recurrence is one of the major concerns in any hernia surgery. This was found to be minimal in Desarda's repair compared to Modified Bassini's repair and was found to be statistically significant.

Hence, from our study, we conclude that Desarda's repair, the physiological hernia repair can be used as an alternative procedure to Modified Bassini's repair in case of a complicated inguinal hernia.

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