A Randomized Trial. Comparing Herniorrafia Modifield Desarda Repair and Hernioplastia Lichtenstaein Repair for Inguinal Hernia. (Study of 1243)

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Received: 15 December 2019 Accepted: 4 January 2020 Published: 15 January 2020

Abstract

Introduction:The objective of this study is to compare the outcomes of Modified Desarda repair no mesh and Lichtenstein repair for inguinal hernia.Patients and Methods: This is a prospective randomized controlled trial study of 1242 patients having 1313 hernias operated from January 2008 to December 2018. 640 patients were operated using Lichtenstein repair and 602 using Desarda repair. The variables like age, sex, location, type of hernia, tolerance to local anesthesia, duration of surgery, pain on the first, third and fifth day, hospital stay, complications, re-explorations, morbidity and time to return to normal activities were analyzed. Follow up period was from 1-10 years (median 6.5 years).Results: There were no significant differences regarding age, sex, location, type of hernia, and pain in both the groups. The operation time was 52 minutes in Modified Desarda group and 42 minutes in the Lichtenstein group that is significant ($p<0.05$).

Index terms— desarda repair; inguinal hernia; lichtenstein repair; randomized trial.

1 Introduction

n 1890, Eduardo Bassini described suture repair for inguinal hernia. This was a massive leap forward and has been the basis of open repair for over 100 years. The surgeon enters the inguinal canal by opening its anterior wall, the external oblique aponeurosis. The spermatic cord is dissected free and the presence of a lateral or a medial hernia is confirmed. The sac of a lateral hernia is separated from the cord, opened and any contents reduced. The sac is then sutured closed at its neck and excess sac removed. If there is a medial hernia, then it is inverted and the transversalis fascia is suture plicated. Sutures, are now placed between the conjoint tendon above and the inguinal ligament below, extending from the pubic tubercle to the deep inguinal ring. The posterior wall of the inguinal canal is thus strengthened.1 Over 150 modifications to the Bassini operation have been described with little or no benefit except for the Should ice modification. In this operation, the transversalis fascia is opened by a central incision from deep inguinal ring to the pubic tubercle and then closed to create a double-thick, two-layered posterior wall (double breasting). The external oblique is closed in similar fashion. Expert centres have reported lifetime failure rates of less than 2 per cent after Should ice repair but it is a technically demanding operation which, in general hands, gives results identical to the Bassini repair. 1, 24.

The surgeons use different techniques in Cuba for inguinal hernia repair like Bassini or Should ice and its modifications or different types of mesh repairs. The standard mesh is not available at many places and it is expensive also. Hernia treatment has become a health problem because of its social, economic and labour implications due to its high incidence in our population [1]. Until recently, the only parameters to be evaluated were recurrence, complication rates etc. Today, other parameters like cost, post-surgery wellbeing and quality of life have gained importance. The demand of general surgeons is to identify operations that are simple to perform without the need for complicated dissection and I with low complication and recurrence rates. Avoidance of use of foreign material where possible is a basic surgical principal. The authors read about the Desarda repair which seems be simple in concept, avoids the use of mesh and gives the desired results. This repair is based on the

concept of providing a strong and physiologically dynamic posterior wall to the inguinal canal. An undetached strip of the aponeurosis of the external oblique muscle replaces the absent aponeurotic element in the posterior wall and the weakened conjoint muscle receives additional strength from the external oblique muscle to keep it physiologically dynamic [2]. There are still many controversies to answer. Which is the best technique for repair? [3] 24. All the patients from both sexes older than 16 years with primary and recurrent inguinal hernias were included. Patients operated on emergency basis were excluded. The diagnosis of inguinalhernia and its type was made by clinical examination. Information was given to the patients as regards the anesthetic procedures. The patient chose type of anaesthesia after discussion with the surgeon. The Randomization was performed using a consecutively numbered, sealed envelope, which was opened, in theatre and all patients having an even number were operated by the Lichtenstein and uneven numbers by the modified Desarda technique. The operating surgeon completed a data sheet. The operating surgeon was at consultant level for all operations.

The evaluator was also a surgeon of consultant level. All patients signed a written informed consent. Approval of the local ethical committee was given prior to the onset of the study. Modified Desarda repair was performed according to the surgical technique described by Dr. Desarda and mesh prosthesis repair was undertaken as described in the textbooks. Prophylactic antibiotic was administered in the operating room before surgery (Cefazoline 1g.) in the Lichtenstein group only. All patients were discharged as soon as their post-surgical recovery allowed, and all patients were instructed to do daily, routine, non-strenuous work after discharge. A non-steroidal anti-inflammatory (Diclofanac) analgesic was prescribed for a period of 5 days and continued if required. The consultants followed all the patients at 8 days, 1 month, 6 months and then yearrequired. The consultants followed all the patients at 8 days, 1 month, 6 months and then yearly thereafter. A data sheet was completed by the operating surgeon including type of hernia (Nyhus classification) [4], anaesthesia, technical details and intra-operative complications. At discharge, further data was added including any early post-operative complications.

Patients were asked to complete a pain score on the first, third and fifth day after surgery using a linear analogue scale [5,6]. At first follow up, one month after surgery, further data were collected including time to return to normal activities. The Student T test was used to compare the independent measures and the Mann Whitney-U test for non-parametric data. The Chisquared test and Fisher's exact test were used to measure the association between quality variables.

2 III.

3 Results

There was no significant difference in relation to sex, age, location and type of inguinal hernia in both the groups. (Table 1). Local anesthesia was used in 279 patients in Lichtenstein group and 379 patients in the Desarda group. All those 658(53.0%) patients were operated on as outpatient basis without hospitalization. In the remainder of 584 patients who were treated as inpatients, the mean hospital stay was 27 hours in Desarda group and 47 hours in the Lichtenstein group ($p<0.05$) (Table 2). Tolerance to local anesthesia was good during surgery in 68% and 67% respectively (NS). The mean duration of surgerywas 42 minutes for Lichtenstein and 52 minutes for Desarda group ($p<0.05$). Analysis of pain scores from day one to day 5 showed no significant difference (Table 3). There was no incidence of severe pain or chronic groin pain in both the groups There was no incidence of severe pain in either group. The recurrence rate was 0.0 % in the Desarda group, and 0.3 % in the Lichtenstein group (NS). Four patients in the Lichtenstein group required re-exploration and mesh removal for the chronic suppuration. These patients had chronic suppuration, motivated by the rejection of the mesh which caused the mesh to be removed. Thus 0.5% of patients in the Lichtenstein group required a further surgical intervention for either recurrence or sepsis which was significantly higher than the Desarda group ($p<0.05$). All the patients were operated by the same surgeon and his helpers. (Table 4). The seroma was the complication that most frequently occurred with 18 patients in both groups (1.4%).45 (7.0%) patients developed post-operative complications in the Lichtenstein group and 22 (3.6%) patients showed complications in the Desarda group ($p<0.05$) (Table 5). There was no case of chronic groin pain lasting for more than 6 months in either of the groups. Follow up was complete in over 97% at 1 year, 92% at 2 years, 89% at 3 years, 83% at 4 years, 80% at 5 years, 80% at 6 years, 76% at 7 years, 73% at 8 years, 72% at 9 years and 70% at 10 years with no significant difference between the two operation groups.

IV.

4 Discussion

Mesh repair is now widely used in the developed world and is often referred to as the gold standard despite a relative paucity of clinical trials comparing mesh with suture repair. The cost of surgery [7] and the post-operative morbidity affecting the quality of life are important considerations in the inguinal hernia surgery. There are no clear scientific evidences to prove that the mesh prosthetic repair is superior to the nonprosthetic repair in this respect [8]. There are advantages and disadvantages associated with all types of open inguinal hernia repairs. Existing non-prosthetic repair (Bassini/Shouldice) is blamed causing tissue tension and mesh prosthetic repair is blamed for known complications of a foreign body. Dr. Desarda sutures an undetached strip of the external oblique aponeurosis between the muscle arch and the inguinal ligament to give a strong and physiologically

dynamic posterior wall [9]. This results in a tension free repair without the use of any foreign body. Being simple to perform it eliminates disadvantage of technical difficulty seen with Should ice repair.

Different studies have tried to give an answer as to which of the existing operation is best for inguinal hernia repair [10,11]. The EU Hernia Trialist collaboration [12] made a systematic revision of the randomized prospective studies and the analysis of the results of these different studies. It showed that the duration of surgery was less in hernioplasty in six studies, longer in three and equal in the remaining six. In our group, there was a significant but slight increase in operating time with the Desarda operation. Post-operative pain after mesh prosthetic repair may be less than after Should ice repair because of reduced tension [12,13]. Our results have shown that there are no significant differences between the two groups for pain on the first to fifth day after surgery. We found no significant difference in analgesic requirements between the techniques. Overall morbidity was 4.5%, which is similar to the rates described in other studies (7-12%) [14]. The morbidity rate was higher after the Lichtenstein repair (34 cases, 6.0% versus 16, 3.0 % in the Modified Desarda group). There were 5 mesh infections after surgery in the Lichtenstein group. Two cases required partial excision of the mesh and in one case, it was associated with recurrence. Modified Desarda technique has lower morbidity as compared to mesh hernioplasty. We believe that the four cases of recurrences seen in Modified Desarda group were due to failure of proper lateralization of the cord and insufficient narrowing of the internal ring as advised by **??**esarda. This was evident at re-exploration in those cases that needed only narrowing of the internal ring with few more stitches. In patients admitted to hospital, post-operative stays and the period required to return to normal work after surgery was also significantly in favour of the Modified Desarda group. 45 patients from Lichtenstein group required more than 3 days in the hospital due to local wound complicationsor for some other reasons compared to only 5 patients from the Modified Desarda group, a significant difference. We noted a marked difference in the type of anaesthetic used, 39% v 72% for local, 54% v 25% for spinal and 7% v 2% for general anaesthetic in Lichtenstein Modified Desarda group. This could affect the statistics of hospital stay of the patients who required hospitalization. The external oblique muscle technique satisfies all criteria of modern hernia surgery. It is simple and easy to do. It does not require risky or complicated dissection. There is minimal tension in the suture line. It does not require any foreign material and it does not use weak muscle or fascia transversalis for repair. It does not use mesh prosthesis so it is more economical. No foreign body is required in the Desarda repair thus avoiding morbidity associated with foreign bodies including rejection, infection and chronic groin pain. Jacek Szopinski, et al. [15] stated in their Randomized Controlled Trial (RCT) that the "Desarda technique" has the potential to enlarge the number of tissue based methods available to treat groin hernias. The most evident indications for use of the Modified Desarda technique include use in young patients, in contaminated surgical fields, in the presence of financial constraints, or if a patient disagrees with the use of mesh." Situma, et al. [16] compared Desarda technique with the modified Bassini technique in their RCT and concluded that there is no difference in short-term outcome between Desarda and modified Bassini inguinal hernia repair as regards resumption of normal gait and patterns of pain. Manyilirah [17] 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 [18,19]. The authors therefore conclude that the Modified 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 [20][21][22][23].

In a net Shell, the newly proposed Modified Desarda's technique (Combined approach of Desarda's & Modified Bassini's technique) is amore resilient repair for indirect inguinal herniain terms of late recurrence in contrast to Desarda's procedure alone [24][25][26].

1

AGE,SEX,LOCALION	SURGICAL TECHNIQUE			
	LICHTENSTEIN GROUP n=640		MODIFIELD DESRDA n=602	
MEDIAN AGE	57,3		58,1	
	No.	%	No.	%
SEX				
MALE	585	91,4	558	92,7
FEMALE	55	8,6	44	7,3
LOCATION				
RIGHT	305	47,6	295	49,0
LEFT	291	45,4	280	46,5
BILATERAL	44		27	4,5

Figure 1: Table 1 :

2

ANESTHESIA AND HOSPITAL-STAY	SURGICAL		TECHNIQUE	
	LICHTENSTEIN GROUP n=640		MODIFIELD DESARDA n=602	
	No.	%	No.	%
	ANESTHESIA			
LOCAL	279	43,6	379	63, 0
SPINAL	315	49,2	203	33,7
GENERAL	46	7,2	20	3,0
	HOSPITALIZATION			
Outdoor surgery without Hospitalization	273	42,6	377	62,6
Short Term Hospitalization (<3days)	310	48,4	211	35,0
Long Term Hospitalization(>3days)	57	9,0	14	2,4

Figure 2: Table 2 :

3

DURATION TOLERANCE AND PAIN	SURGICAL		TECHNIQUE	
	LICHTENSTEIN GROUP N = 640		MODIFIELD DESARDA GROUP N = 602	
	DURATION OF SURGERY			
AVERAGE	42 mts.		52 mts.	
	No.	%	No.	%
	PAIN : MILD TO MODERATE			
First Day	333	52,0	348	57,8
UP To Third Day	230	36,0	194	32,2
Upto Fifth Day	77	12,0	60	10,0

Figure 3: Table 3 :

4

LICHTENSTEIN GROUP n=640	4 Removal sepsis	Mesh for	0,50	2 Recurrence	0,30 %
MODIFIELD DESARDA GROUP n=602	-		-	O Recurrence	0,00 %

Figure 4: Table 4 :

5

MORBIDITY	SURGICAL			TECHNIQUE	
	Lichtenstein Group n=640		Modifield Desarda Group n= 602		Total n=1
	No.	%	No.	%	No.
Seroma	12	1,8	6	1,0	18
Mild Infection	8	1,2	6	1,0	14
Hematoma	7	1,0	4	0,6	11
Orchitis	5	0,7	2	0,3	7
Testicular atrophy	2	0,3	-	-	2
Sepsis without re-exploration	4	0,6	-	-	4
Sepsis with re-explora tion	2	0,3	-	-	2
Bradycardia	4	0,6	4	0,6	8
Recurrence	2	0,3	0	0	2
TotaL	45	7,0	22	3,6	67

70,0 % patients returned to work within 8-15 days in the Desarda group with a mean of 13,4 days while 54,2 % patients returned to work within 8-15 days with a mean of 14.5 days in the Lichtenstein group, that is significant because in the Lichtenstein gr morbidity is higher than in the Desarda gr (Table 6).

PATIENTS RETURNED TO WORK	SURGICAL TECHNIQUE			
	LICHTENSTEIN GROUP n= 640		MODIFIELD DES	
	No.	%	No.	%
1-7 Days	25	4,0	42	7,0
8-15 Days	347	54,2	421	70,0
16-30 days	268	41,8	139	23,0

Lichtenstein Group: Mean: 1-7 days: 6,8 days, 8-15 days: 14,5 days, 16-30 days: 21,3 days. Desarda Group Mean: 1-7 days: 5,7 days, 8-15 days: 13,4 days, 16-30 days: 18,4 days.

Figure 5: Table 5 :

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Figure 6: Table 6 :

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