

## Original Research Article

# Outcome of Desarda repair in incarcerated inguinal hernia repair: experience in university hospital

Avtar Pachauri\*, Awanish Kumar

Department of General Surgery, King George Medical University, Lucknow Uttar Pradesh, India

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**\*Correspondence:**

Dr. Avtar Pachauri,

E-mail: [dr.avtar.pachori@gmail.com](mailto:dr.avtar.pachori@gmail.com)

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### ABSTRACT

**Background:** Synthetic mesh based hernia repair is usually avoided in contaminated and dirty inguinal hernia repair to minimize the risk of infection. Desarda's technique is a tissue based inguinal hernia repair method which avoids the use of prosthetic mesh. So this study was conducted with the aim to observe the outcome of Desarda's technique in incarcerated inguinal hernia repair as an alternative procedure to mesh repair.

**Methods:** This study was conducted in Emergency surgery department KGMU Lucknow. Total 30 patients with incarcerated inguinal hernia were included. Patients with recurrent hernia were excluded. Desarda repair was done in all patients. Patients were followed for 1 year to assess the outcome.

**Results:** The mean age was  $52 \pm 3$  years. Mean operative time was  $55 \pm 5$  mins. Total duration of hospital stay was 4-16 days. Mild to moderate pain observed more frequently on 3<sup>rd</sup> and 7<sup>th</sup> post-operative day. Complication rates were found to be SSI (6%), seroma (3%), and recurrence (3%). Time taken to return to daily basic and work activities was 3 (3-5) and 15 days respectively. Patients' subjective assessment of foreign body sensation done at 6<sup>th</sup> and 12<sup>th</sup> month follow up was found in 16% and 13% cases and that of abdominal wall stiffness in 23% followed by a reduction of upto 16% cases by 12<sup>th</sup> month.

**Conclusions:** Desarda's method is a safe, effective technique and may potentiate the use of tissue based repair for treating incarcerated, contaminated inguinal hernia repair. It has very low rate of recurrence and low cost of treatment.

**Keywords:** Desarda's repair, Incarcerated hernia, Inguinal hernia repair

### INTRODUCTION

Inguinal hernia repair in elective and emergency is the most common surgery performed by general surgeons.<sup>1</sup> Mesh repair is well established as Gold standard procedure for elective inguinal hernia surgery while its use in emergency contaminated inguinal hernia surgery is still a matter of debate due to the risk of prosthetic material related infection and mesh migration.<sup>2-4</sup> Desarda technique of tissue based repair has an advantage of not using prosthetic material in contaminated inguinal hernia surgery, having a less recurrence rate comparable to Lichtenstein, and requires less per-operative time.<sup>5</sup> Despite this, it is relatively less commonly performed

surgery for inguinal hernia repair worldwide so less data is available regarding outcome of this technique. Many surgeons use Darn procedure as sole method of strangulated inguinal hernia repair.<sup>6</sup> The aim of our study was to observe the outcome of Desarda technique in incarcerated inguinal hernia repair as an alternative procedure to mesh repair in emergency settings.

### METHODS

This prospective observational study was conducted in Emergency surgery department, Trauma centre Lucknow KGMU from July 2016 to June 2017. A total 30 patients were included in the study. Patients with uncomplicated

hernia and recurrent hernia were excluded. After optimization, patients were taken up for surgery under antibiotic cover (piperacillin+tazobactam with metronidazole). Desarda repair was done in all patients. The operative wound was classified as 'contaminated' as per CDC criteria.<sup>7</sup> Parenteral antibiotic therapy was continued for 5 days followed by oral cephalosporin till sutures were removed on the 14<sup>th</sup> post-operative day.

Patients were monitored during their hospital stay and during the follow up period up to 1 year for complications involving wound infection/dehiscence, seroma, scrotal edema, testicular atrophy, recurrence of the hernia, and mortality to assess the outcome. The postoperative pain was assessed using visual analogue scale (VAS). Patient was asked to mark the level of his pain on a 100 mm, non-hatched VAS scale marked at one end as "no pain" and at the other end as "worst pain imaginable". Pain severity categories including patient with VAS pain scores between 1-30mm was defined as having mild pain, those having score between 31-70mm moderate pain, whereas scores above 70mm were considered to have severe pain.

Return to basic activity was described as the patient's ability to perform daily routine activities like dressing, walking, bathing; and returning to all previously performed activities (work activity). The first follow-up visit was 1 week after discharge. Subsequently, patients were monitored in out-patient department (OPD) basis at 1 month, 6 months and finally at 1 year. Patients had additional OPD visits whenever required.

### Operative procedure

The Desarda repair for inguinal hernia was done as per the original description.<sup>8</sup> The external oblique aponeurosis (EOA) was opened, hernia sac identified and reduction of content and inversion of the direct sac and herniotomy of the indirect sac was done. A splitting incision was taken in EOA, partially separating and creating a 2 cm strip whose medial leaf sutured to inguinal ligament in interrupted manner. The upper free border of EOA strip was sutured interruptedly to internal oblique or conjoint muscles with Prolene 2/0. The strip extended from symphysis pubis till 1-2cm beyond the internal ring. The resultant strip of EOA placed behind the cord formed a new posterior wall of inguinal canal. The spermatic cord placed in the inguinal canal and the lateral leaf of EOA is sutured to the newly formed medial leaf of EOA in front of the cord using Prolene 2/0 interrupted sutures. The superficial fascia and skin were closed as usual.

## RESULTS

Total 30 cases (men- 30 and women- 0) with incarcerated inguinal hernia underwent hernia repair with Desarda technique. The mean age was 52±3 (35 to 68) years. The study cases (30) comprised of 22 indirect and 8 direct

hernias. Of these cases 21 were right sided and 09 were left sided hernia cases. There was no case of bilateral hernia and 80% patients were of low socioeconomic status. Mean operative time was 55±5 min. Total duration of hospital stay was 4-16 days. Mild to moderate pain observed more frequently on 3<sup>rd</sup> and 7<sup>th</sup> post-operative day.

**Table 1: Gender, hernia type and hernia localization of 30 patients underwent Desarda repair.**

Characteristics	Values
<b>Male</b>	30 (100%)
<b>Female</b>	0 (0%)
<b>Direct</b>	8(26.6%)
<b>Indirect</b>	22(73.3%)
<b>Right side</b>	21(70%)
<b>Left side</b>	09(30%)
<b>Bilateral</b>	0 (0%)
<b>Low socioeconomic status</b>	24(80%)

**Table 2: Outcome of complications of 30 patients underwent Desarda repair.**

Complications	N	
<b>Scrotal edema</b>	7 <sup>th</sup> post of day	16 (53%)
	30 <sup>th</sup> post of day	4 (13%)
	6 month	0
	1 year	0
<b>Testicular atrophy</b>	0	
<b>Haematoma</b>	0	
<b>Seroma</b>	1 (3%)	
<b>Surgical site infection</b>	2 (6%)	
<b>Return to basic activity (in Days)</b>	3 (1-9)	
<b>Return to work activity (in Days)</b>	15 (14-28)	
<b>Hospital stay (in Days)</b>	4 (4-14)	
<b>Recurrence</b>	1 (3%)	
<b>Mortality</b>	0	
<b>Incarcerated hernia containing healthy omentum without bowel</b>	29	
<b>Incarcerated hernia containing bowel with gangrenous changes</b>	01	
<b>Resection and anastomosis of bowel(through same skin incision)</b>	1	
<b>Laprotomy</b>	0	

In our study complication rate by Desarda method was found to be surgical site infection (SSI- 6%), seroma (3%), and recurrence (3%) without any hematoma formation in any case. In our series 29 cases containing non reducible healthy omentum in sac which was reduced without any resection while 1 case containing bowel with gangrenous change required resection of bowel with anastomosis through same inguinal incision. Laprotomy was not performed on any patient. Time taken to return to daily basic and work activities was 3 (3-5) and 15 days respectively. There was no mortality.

Patients' subjective assessment of foreign body sensation done at 6<sup>th</sup> and 12<sup>th</sup> month follow up was found in 16% and 13% cases and that of abdominal wall stiffness in 23% cases followed by a reduction of up to 16% cases by 12<sup>th</sup> month.

**Table 3: Pain assessment in postoperative period after Desarda repair.**

POD- post operative day	Mild pain N (%)	Moderate pain N (%)
3 <sup>rd</sup>	7 (23)	23 (76.6)
7 <sup>th</sup>	22 (73)	08 (26.6)
30 <sup>th</sup>	27 (90)	03 (10)

**Table 4: Patients subjective assessment of operated area at 6 and 12 months of follow up.**

Follow up	Subjective finding	N (%)
6 month	Foreign body sensation	5 (16)
	Abdominal wall stiffness	7 (23)
12 month follow up	Foreign body sensation	4 (13)
	Abdominal wall stiffness	5 (16)

**Table 5: Outcome of Desarda repair of strangulated hernia in other studies.**

Study	Number of patients operated by Desarda method	Surgical site infection	Recurrence	Hematoma	Seroma
Szopinski J <sup>11</sup>	105	-	1.9%	-	0%
Hussain A <sup>12</sup>	93	19.4%	7.4%	-	-
Bashir <sup>13</sup>	50	14%	0%	14%	5%

**Table 6: Outcome of mesh based repair of incarcerated hernia in literature.**

Study	No of hernia cases operated	No of contaminated cases	SSI in contaminated cases	No of cases in which mesh removed
Pandey <sup>14</sup>	30	30	26% (8/30)	0
Slater <sup>15</sup>	137	47	25.5%	7
Carbonell <sup>16</sup>	100	58	34%	4
Zafar <sup>17</sup>	60	60	28.3%	1
Ambrosio D <sup>18</sup>	23	23	8.6%	0

In our series complication rate by Desarda method was Surgical site infection (6%), seroma (3%), and recurrence (3%), without any hematoma or mortality were comparable to results reported by Desarda method in other recently published studies (Table 5).

Also in our study surgical site infection rate after Desarda repair was found to be lower as compared to literature of mesh based repair in incarcerated hernia (Table 6).

In our study, mild to moderate pain was higher in early postop period (3<sup>rd</sup> and 7<sup>th</sup> day) while it became milder on 30<sup>th</sup> POD, a similar trend observed in other study.<sup>11</sup> In our study we observed that time taken to return to basic activities and work activities was early (3 and 15 days respectively) as seen in various other studies.<sup>11,19-21</sup> In our

## DISCUSSION

Incarcerated inguinal hernia is a surgical emergency and it's one of the commonest operations performed by general surgeons all over the world. Prosthetic material based repair associated with postoperative dysfunction have influenced many surgeons to look for new hernia repair techniques or to modify old ones. An example of such efforts is the Desarda method, which was first introduced in 2001 and became a new surgical option for tissue-based groin hernia repair.<sup>9,10</sup> The cost of hernia repair is influenced by the use of prosthetic mesh and further increases if complication related to mesh occurs, which might be an insignificant issue in developed countries but it definitely puts a significant economic burden on patients in developing countries and there comes the beneficial role of Desarda technique. Contaminated operative field as encountered during surgery for incarcerated hernias also promotes the use of tissue-based technique, such as Desarda, to be used frequently.<sup>11</sup> The mean operative time of Desarda technique in our study is 55±5min which is comparable to time seen in other studies.<sup>12</sup>

series foreign body sensation and abdominal wall stiffness at 12 month follow up in 13% and 16% cases was similar to observations in other study also.<sup>11</sup>

## CONCLUSION

Desarda's method is a safe, effective technique and may potentiate the use of tissue based repair for managing incarcerated, contaminated inguinal hernia. It has very low rate of recurrence and low cost of treatment because of no requirement of mesh in surgery.

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