

Repair of Inguinal Hernia by Desarda Technique in both Elective and Emergency Settings

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Abstract

Background: Inguinal hernia is a common problem and its repair is one of the most commonly performed procedures in general surgical practice. Several methods have been developed including Lichtenstein's repair. Among these Lichtenstein's repair has been standard technique for last few decades. In recent time a new procedure "no mesh Desarda hernia repair" has emerged as a recognized operative method for inguinal hernia repair.

Objectives: This study was conducted to evaluate the outcome of Desarda technique in repairing inguinal hernia.

Methods: This was a single centered descriptive study to see the outcome of inguinal hernia repair by Desarda technique in both elective and emergency surgery carried out in the Dept. of Surgery, Sher-E-Bangla Medical College Hospital, Barisal from August, 2015 to July, 2016.

Results: A total of 100 patients underwent Desarda repair for inguinal hernia including primary/recurrent and elective/ emergency cases. Variables includes age, type of surgery, operating time, post-operative complications, post-operative pain, post-operative hospital stay, cost of the procedure, chronic groin pain and any early recurrence. Mean age of patient was 48.9±9.07 years. Mean operating time was 43.72±9.64mins. Majority (54%) of the patient experienced mild post-operative pain on first day, measured in VAS score. Ten percent of patients developed different post-operative complications like wound infection (2%), seroma formation (1%) and scrotaledema (7%).

Conclusion: In this study, it is revealed that no mesh Desarda repair for inguinal hernia was associated with less operating time, less post-operative pain, less post-operative complications, short hospital stay, zero recurrence rate, no chronic groin pain and performed in emergency cases also. So, it is safe and most reliable technique for all type of inguinal hernia surgery.

Keywords: Desarda hernia repair, Lichtenstein repair, Mesh, Visual analogue scale score.

Introduction

Inguinal hernia is a very common surgical problem throughout the world in all races of population. It is estimated that 7% of the population will develop an inguinal hernia world-wide. As there is risk of obstruction or strangulation, inguinal hernia should always be repaired unless there are specific contraindications.¹

Between 600,000 and 800,000 hernias are repaired annually in the United States, making hernia repair one of the most common operations performed by general surgeons.² Many surgical techniques or methods have been developed in the past. In 1880, Bassini published his original description of inguinal hernia repair. Since then many modern

modifications such as the Shouldice repair, Lichtenstein's tension free mesh repair and the recent innovation laparoscopic mesh repair of inguinal hernia have originated from it.³ But Lichtenstein's repair has been the standard technique in inguinal hernia. But mesh repair has its own limitations. It is unphysiological as mesh is used. Chronic inguinal pain, seroma formation, foreign body sensation, risk of mesh infection are common complications and not recommended in strangulated hernias and extra cost involved by the mesh itself.⁴

In recent times a new procedure has been described by Dr. Mohan Desarda, from Poona hospital and research center, India. It involves use of undetached strip of external oblique aponeurosis to strengthen the posterior wall of the inguinal canal which is based on the physiological principles. Several randomized controlled trials and systemic

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reviews which compared Lichtenstein tension free mesh repair and no mesh Desarda repair and showed that Desarda method have some distinct benefits. This is a physiological repair and is tension free, can be used in strangulated hernia.^{4,5} Recurrence and complication rates equal to or less than Lichtenstein's repair.⁴ It's a simple procedure with equal or less operating time than Lichtenstein's repair, early ambulation and less time of hospital stay, low cost for the patient as mesh is not used and most importantly no question of mesh related complications such as mesh rejection, infection, migration and foreign body sensation and chronic groin pain which is comparatively low in this procedure.^{4,5} Considering these advantages of Desarda repair, the study was done at Sher-e-Bangla Medical College Hospital, Barisal to assess the outcome of Desarda repair.

Materials and Methods

An observational study was done at the Department of Surgery, Sher-E-Bangla Medical College Hospital, Barisal, during August, 2015 to August, 2016. Study population was patients presenting with inguinal hernia at SBMCH. Sample size was 100. Sampling technique was convenient one. Inclusion criteria included the cases of inguinal hernia admitted for surgery with a) age range 18-80 years b) unilateral/bilateral inguinal hernia (direct/ indirect, complete/incomplete, reducible/ irreducible/ obstructed, primary/recurrent) age <18 years and >80 years and very thin external oblique aponeurosis found during operation were excluded from the study. Variables included age, type of surgery-elective/emergency, operating time, wound infection, seroma formation, hospital stay, early recurrence and chronic groin pain: pain was recorded using a visual analog scale (VAS 0-10).

Data were analysed using SPSS (Statistical package for social science).

Operative technique: Skin and fascia were incised through a regular oblique inguinal incision to expose the external oblique aponeurosis.⁵⁻⁷ The external oblique was cut in line with the upper crux of the superficial ring, which left the thinned out portion in the lower leaf, so a good strip can be taken from the upper leaf. The sac was excised in all cases except in small direct hernias where it was inverted. The medial leaf of the external oblique aponeurosis was sutured with the inguinal ligament from the pubic tubercle to the abdominal ring using 1/0 monofilament polyamide (Ethilon) or polypropylene (Prolene) interrupted sutures. The first two sutures were taken

in the anterior rectus sheath where it joined the external oblique aponeurosis. The last suture was taken so as to narrow the abdominal ring sufficiently without constricting the spermatic cord. Each suture was passed first through the inguinal ligament, then the transversalis fascia, and then the external oblique. A splitting incision was made in this sutured medial leaf, partially separating a strip with a width equivalent to the gap between the muscle arch and the inguinal ligament but not more than 2 cm. This splitting incision was extended medially up to the pubic symphysis and laterally 1–2 cm beyond the abdominal ring. The medial insertion and lateral continuation of this strip was kept intact. A strip of the external oblique, was then available, the lower border of which was already sutured to the inguinal ligament. The upper free border of the strip was then sutured to the internal oblique or conjoined muscle lying close to it with 1/0 monofilament polyamide or polypropylene interrupted sutures throughout its length. This would result in the strip of the external oblique being placed behind the cord to form a new posterior wall of the inguinal canal. The spermatic cord was placed in the inguinal canal and the lateral leaf of the external oblique was sutured to the newly formed medial leaf of the external oblique in front of the cord, as usual. The first stitch was taken between the lateral corner of the splitting incision and lateral leaf of the external oblique. This was followed by closure of the superficial fascia and the skin as usual.

Ethical assurance for protection of human rights: Prior to the commencement of the study the research protocol was approved by Institutional Ethical Committee (IEC) of SBMCH, Barisal. Written consent was taken from each patient after informing them the objective of the study, risks and benefits, confidential handling of personal information and the voluntary nature of participation and the rights to withdraw from the study.

Result

A total 100 cases of different types of inguinal hernia underwent both elective and emergency setting. In this study, all the patients were male, age of the patient ranges from 18 to 80 years. Maximum number of patients was in the age group 18-30 years (23, 23.0%). Mean age of patient was 48.9 with SD (\pm 9.07). Indirect inguinal hernia was 58.0%, direct hernia was (32.0%). Primary inguinal hernia was 90.0% and 10.0% was recurrent. 59.0% hernia was occurred in right side and 35.0% was in left and 6.0 % was bilateral. Duration of operation was recorded from the time of skin incision to skin closure. Time ranges from 30 min to 105 min. Mean

duration of operation was 43.72 min with SD (± 9.64). Majorities (47, 47.0%) of patient need 30-40 min. The patients were assessed for perception of post-operative pain, measured by VAS score. On first day (54, 54.0%) experience mild pain in post-operative period, (32, 32.0%) of patient experience moderate pain and (14, 14.0%) of patient experience severe pain (table I).

Post-operative complications were 10.0%. Wound infection was 2 (2.0%), scrotal edema 7 (7.0%), seroma formation 1 (1.0%) and no early recurrence and as no mesh was used there was no foreign body sensation. Most of the patient 85, (85.0%) underwent routine operation out of which 76 (76.0%) hernia content was omentum, 9 (9.0%) was intestine. Fifteen (15%) of patients underwent emergency surgery, of them among this majority 13 (13.0%) of hernia content was intestine and only 2 (2.0%) was omentum. All operations were done under spinal anaesthesia. Hospital stay range from 3 to 12 days. Mean hospital stay was 3.28 ± 2.16 days: (table I). Most of the patients 86 (86.0%) was discharged on 3rd post-operative day, 12 (12.0%) of patient was discharged in 4-7 days and 2 (2.0%) of patient need to stay in hospital more than 7 days, one for superficial wound infection and another for bowel resection. All the different data that were obtained in this series had been analysed to observe the outcome of Desarda repair of inguinal hernia and compared this result with other published results.

Table I: Demographic of operative information of the patients.

Mean Age of patient (year)	48.9 (± 9.07)	
Mean duration of operation (min)	43.72 (± 9.64).	
Mean hospital stay (days)	3.28 (± 2.16)	
<4 days	86	
4-7 days	12	
>7 days	2	
Post-operative completions (no.)	10	
Wound infection	02	
Scrotal edema	07	
Seroma formation	01	
Early Recurrence	00	
Post-operative pain (VAS)	Mild (0-3)	Moderate (4-7)
Day 1	Severe (8-10)	
Day 3	54	32
	14	
	77	15
	8	

Table II: Comparison of Desarda repair with international studies of open mesh repair

Method of repair	Authors	Recurrence rate
Desarda repair	Desarda MP et al (2006)	0%/ 5 years
Mesh repair	Neumayer L et al (2004)	4.9%/ 2 years
Mesh repair	Koukourou A et al (2001)	4%/ 1 year
Mesh repair	Vrijland WW et al (2002)	1%/ 3 years
Mesh repair	Leim MS et al (1997)	6%/ 607 days

Discussion

Open inguinal hernia repair is one of the most common operations that general surgeons perform. The recurrence rate in a number of specialised centres is high, post operative pain and discomfort are common.⁸ In recent times a new procedure has been described for inguinal hernia surgery by Dr. Mohan Desarda, India. It involves use of an undetached strip of external oblique aponeurosis to strengthen the posterior wall of the inguinal canal.

In this study, different types of 100 inguinal hernias patients were operated. Age distribution of the patient ranges from 18 to 80 years. Maximum number of patient was in the age group 18-30 years (23, 23%), followed by age group 61-70 years 21 (21%). Mean age of patient was 48.9 with SD (± 9.07). Age distribution of this study is with comparable other study.⁹ Duration of operation was ranges from 30 to 105 minutes. Majority 47 (47.0%) of patients need 30-40 min for operation. Mean operation time was 43.72 min with SD (± 9.64). The results of this study consistent with other studies.^{4,10-12} Tamer Y et al in randomized clinicaltrial of Desarda versus Lichtenstein repair showed significantly longer operating time in Lichtenstein group (72.36 ± 12.2 min) than in Desarda group (59.4 ± 6.3 min).¹² This finding goes in favour of this study. Perception of post-operative pain was observed and measured by VAS score. On Day-1, 54 (54.0%) were experience mild pain in post-operative period, 32 (32.0%) of patient experience moderate pain and 14 (14.0%) of patient experience severe pain. The result is similar to other studies.^{4,11,12} Desarda in his study showed complication rate in Lichtenstein repair is three times higher than Desarda repair.⁵ Szopinski *et al* showed high incidence of seroma formation in Lichtenstein repair.⁴ Incidence of post-operative complication and mean hospital stay 3.28 days SD (± 2.16) in this study is also similar to the other studies.^{10,11,13,14}

Patients were followed up at 4th weeks, 6th month, 9th month and 1st year. All the patients 100 (100.0%)

turned for follow-up after 4 weeks. Sixty eight (68%) patients came for follow up at 6th month, 38 (38%) patients came for follow up at 9th month and 22 (22%) patients came for follow-up at 1st year. But no patient developed early recurrence or chronic groin pain. This result is similar to other studies.^{5,10,11} But Tamer Y *et al* in randomized clinical trial of Desarda versus Lichtenstein repair showed there was one recurrence within two year follow up in both group.¹² A very recent study by Emile SH *et al* showed in a meta-analysis no significant difference in the incidence of recurrence between both techniques (Lichtenstein vs. Desarda), (OR = 0.946; $p = 0.91$). Although the overall complication rate of LT (Lichtenstein technique) was significantly higher than DT (Desarda technique) (OR = 1.86; $p < 0.001$). LT had significantly higher rates of seroma formation and surgical site infection (OR = 2.17; $p = 0.007$) and (OR = 2.17; $p = 0.029$), respectively. Postoperative pain, operation time, and time to resume normal activities were comparable in both groups.¹⁵ This portion of their findings goes in favour of the present study.

Chronic pain has been defined as pain lasting >3 months by the International Association for the Study of Pain.¹⁶ It is influenced by age, weight, sex, preoperative pain level, operative technique, hernia anatomy, the extent of nerve entrapment or damage of the ilioinguinal, iliohypogastric, and genitofemoral nerves, and other postoperative complications.^{17,18} Some studies reported chronic groin pain following open mesh repair in 28.7 % to 43.3%.⁵ In contrast, this new technique being a pure tissue repair will not cause extensive fibrosis and no patient suffered from chronic groin pain. Chronic groin pain adversely affects daily life for 5-10 percentage of patients.^{5,19} Since quality of life is a very important consideration after any surgery. This new method seems to score over the mesh repair. This new technique of inguinal hernia repair is easy to learn and does not require complicated dissection. Moreover, one indisputable advantage of Desarda technique is its low cost as no mesh was used. Accessibility of mesh could be another important issue in developing countries like Bangladesh. Also, data are appearing about sexual impairment after mesh implantation in young patient. As Desarda is a tissue-based technique, can be used in a contaminated surgical field like strangulated hernias.⁴

Bassini/Shouldice or similar open repairs use muscles for repair even if they are weak leading to failures. In Desarda technique the strip of external oblique aponeurosis provides the aponeurotic element to the transversalis fascia of the posterior wall. Actions like coughing, crying and straining

cause contraction of the abdominal muscles. Contraction of the external oblique muscle creates lateral tension in this strip while contraction of the internal oblique/conjoined muscle pulls this strip upwards and laterally, creating tension above and laterally, making the strip a shield to prevent any herniation. The strip provides a new insertion to the weak and flabby internal oblique and transversus abdominis. This helps to improve the muscle contractions of the internal oblique and the transversus abdominis muscles.^{6,7} The strip or the suture line is without any tension at rest. Thus, a strong and physiologically dynamic posterior wall is prepared in this operation.^{6,7}

The data of this study were compared with other international studies of open mesh repair (table II) and Desarda repair of original author. The recurrence rate in this study for Desarda repair is superior to that of open mesh repair and similar to result of original author and other authors. But the study had some limitations including Sample size was relatively small and the study period was short long term result like late recurrence rate could not be assessed.

Conclusion

The result of the study reveals that Desarda repair of inguinal hernia is safe and reliable for any kind of inguinal hernia surgery with no or less recurrence rate and devoid of mesh related complications. Patient compliance was good with minimum morbidity. It is technically simpler than other repairs like Shouldice repair or Lichtenstein mesh repair. So, at the present time, it could be a gold standard surgical therapy for inguinal hernia.

Conflict of interest: None

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