

# Experience with Mesh Free Tissue Hernioplasty for Primary Inguinal Hernia

Majid B. Mughal<sup>1</sup>, Syed Tahir Mohammad Shah<sup>2</sup>, Mohammad Farooq<sup>3</sup>

Department of General Surgery,

<sup>1</sup>University Hospital Hairmyres, East Kilbride, Glasgow, United Kingdom

<sup>2</sup>Pak Red Crescent medical and Dental College, Dina Nath, Lahore

<sup>3</sup>Hitec-IMS Taxila

## Abstract

**Background:** Mesh-free tissue hernioplasty technique by Desarda has given a new trend in inguinal hernia treatment. Least complication rate simplicity, reproducibility, and cost- effectiveness are major hallmarks.

**Methods:** This longitudinal study was conducted in a peripheral public hospital from December 2016 to December 2017. Eighty-one patients of primary inguinal hernia were included. Post-operative follow-up was done on the 4<sup>th</sup> and 8<sup>th</sup> day, then at one, three, six, twelve and twenty-four months. Post-operative assessment was done and early and late complications were noted.

**Results:** Eighty-one patients of primary inguinal hernia, all men, forty-nine right sided and thirty-two left sided, nine direct and seventy two indirect hernias, mean age was 37.9years. All patients were able to be discharged on first post-operative day. There was no case of surgical site infection. Only one recurrence and no patient had chronic groin pain.

**Conclusion:** This physiological mesh free tissue hernioplasty is a promising technique for primary inguinal hernia repair. It is simple, reproducible and cost effective.

**Key words:** Tissue hernioplasty, Desarda, peripheral public hospital.

## Introduction

The inguinal hernia is one of the most common surgical procedures performed by General Surgeons worldwide. The lifetime incidence of inguinal hernia is 27% in males and 3% in females.<sup>[1]</sup> There are different methods of inguinal hernia repair that can be categorized as either Open and Laparoscopic. Laparoscopic repair is generally performed when the hernia is small with easy accessibility. This method ensures faster recovery and leaves smallscars.<sup>[2]</sup>

Open hernia repair is performed using various techniques including Shouldice repair and open mesh repair, also known as Lichtenstein. The European Hernia Society guidelines recommend Lichtenstein for tension-free mesh repair and Laparoscopic methods for primary inguinal hernia treatment in adult men.<sup>[3]</sup>

Due to some complications like foreign body sensation,

discomfort, abdominal wall stiffness, migration of mesh, surgical site infection and infection to the mesh requiring its removal, open mesh repair for inguinal hernia is being questioned.<sup>[4,5]</sup>

What is needed is an inguinal hernia repair which is simple, easy, cost-effective and reproducible.<sup>[6]</sup>

The criterion against which a successful hernia repair is evaluated are as follows: recurrence rate, early and late complications, low cost and early return to normal activities.<sup>[7]</sup> Desarda's inguinal tissue hernioplasty seems to fulfil the benchmarks against which a successful hernia surgery isevaluated.<sup>[8]</sup>

We are sharing our experience with Desersa's no mesh repair which we stated at King Fahd Hospital Tabuk Saudi Arabia and later on at Tehsil Headquarter Hospital, Pattoki, Punjab, Pakistan.

## Address for Correspondence:

**Dr. Majid B. Mughal,**

Department of General Surgery, University Hospital Hairmyres, Eaglesham Road, East Kilbride.

Glasgow, UK, Post code: G75 8RG

E-mail: drmbm@yahoo.com

## Materials and Methods:

This longitudinal study was carried out at a sixty-bedded peripheral public hospital and 100 bedded District Hospital from December 2011 to December 2017. All primary inguinal hernia patients from age 18 years and above were included in this study. Recurrent hernia patients and those found unfit for anaesthesia were excluded.

The patients were examined and pre-operative workup completed in the outdoor patient department. The patients were admitted one day before surgery and written informed consent for surgery and anaesthesia were taken. The surgical site was marked by the surgeon before the start of the operation list. Inj. Augmentin 1.2gm given intravenously just at the onset of anaesthesia, the second and third dose given after eight and sixteen hours respectively.

The patients were examined during the evening round on the day of surgery. Pain severity was assessed using the Numerical Rating Scale (NRS). Injectable analgesic (Injection Diclofenac Sodium) given for moderate to severe pain while oral analgesic was given for mild pain. All patients were able to be discharged on the first post-operative day. The dressing was changed on 4th postoperative day and stitches removed on 8th postoperative day. The patients were then asked to visit after one month, three months, six months, twelve months and after 24 months for followup. During these follow-up visits, complications like ecchymoses, scrotal oedema, seroma, surgical site infection, chronic pain<sup>[9]</sup> and recurrence were noted.

**Operative Procedure:** Groin skin crease incision made, the inguinal canal opened incising external oblique aponeurosis, hernial sac dealt with as usual. Medial leaf of external oblique aponeurosis mobilized from underlying conjoint tendon and muscle up to five centimetres. Then this medial leaf stitched to lower free border of the inguinal ligament from the pubic tubercle to the deep inguinal ring using continuous Prolene No. 1 suture. Then a 1.5 centimetre to 2 centimetres undetached strip of external oblique aponeurosis is created by incising the stitched medial leaf of external oblique aponeurosis from the level of pubic tubercle to just beyond the deep inguinal ring and upper border of the strip is stitched to conjoint tendon or underlying muscle without any tension with continuous Prolene No. 1 suture. Finally, external oblique is closed using Vicryl 1 continuous suture and the wound is closed in layers skin by 3/0 Prolene subcuticular stitches.

## Results

During this study period, eighty-one patients underwent a no-mesh Desards's technique. Age range was from 18 years to 83 years of age (Table 1). All patients were male. 49 out of 81 (60.49%) had right inguinal hernia 32 (39.51%) had left inguinal hernia, nine (11.11%) had direct type while another twenty-two (88.88%) had an indirect type (Table 2).

**Table 1: Age Slabs**

Age Range	Number of patients
18-30 years	32
31-40 years	19
41-50 years	13
51-60 years	12
61-70 years	4
71-80 years	0
81 and above	1

**Table 2: Demographic Variables**

Variables	Results n=81
Age (mean)	37.9 year
Sex	All male
Type of hernia	Indirect 72 [88.9%], Direct 09 [11.1%]
Side	Right 49 [60.5%] Left 32 [39.5%]
Office worker	21 [25.9%]
Shopkeeper	24 [29.6%]
Farmers & Labourers	36 [44.4%]

Few patients were operated under local anaesthesia 8 (9.9%) and remaining 73 (90.1%) regional anaesthesia (spinal). The operative time was 50-75 minutes (mean 59.5). 70 (86.4%) patients experienced moderate to severe pain (NRS) while 11 (13.6%) had mild pain on the day of surgery, while all had mild pain on the first post-operative day. Seventy (86.4%) patients needed intramuscular diclofenac sodium injection on the day of surgery while 11 (13.6%) needed only an oral analysis. All patients were able to be discharged on the first postoperative day, few patients developed minor complications like seroma formation, ecchymosis, scrotal oedema. There was no case with surgical site infection and groin pain. There was onerecurrence.

**Table 3: Complications**

Complications	No. of patients	Percentage
Seroma	7	8.6
Ecchymosis	4	4.9
Scrotal oedema	3	3.7
Surgical site infection	0	0
Chronic Groin Pain	0	0
Recurrence	1	1.23

**Table 4: Outcomes of different studies.**

Studies	Operative time [minutes]	Post operative pain 1st POD	Time to return basic activity	F.B Sensation	Chronic Pain	Recurrence % age
Bensod et al <sup>[14]</sup>	60	3.3 VAS	24 hors	0%	0%	0.83%
Desarda et al <sup>[8]</sup>	-	-	1.2 days	0%	0%	0%
Szopinski et al <sup>[10]</sup>	-	-	24 hors	14.6%	4%	1.94%
Youssef et al <sup>[11]</sup>	59	2.4 VAS	3.9 days	9.8%	2.8%	1.4%
Gedam et al <sup>[13]</sup>	73	2.4 VAS	2.5 days	-	1.08%	1.08%
Abbab et al <sup>[13]</sup>	66	2.8 VAS	-	-	-	0%
Present study	59.5	2-3 NRS	24 hours	-	0%	1.23%

Desarda's technique is based on physiological principles. The posterior wall of the inguinal canal is made up of fascia transversalis which is strengthened medially by rectus sheath and laterally by the aponeurotic extension of transversus abdominis muscle that makes posterior wall strong. The undetached strip of external oblique aponeurosis created in this technique provides an aponeurotic element to the transversalis fascia of the posterior wall. Actions like cough and straining cause contraction of abdominal muscles. Contraction of external oblique muscle creates lateral tension in the strip while contraction of the internal oblique and conjoint muscle pulls the strips upwards and laterally creating tension above and laterally, making the strip a shield to prevent herniation. Thus, a strong and physiologically dynamic posterior wall is prepared in this operation.<sup>[8]</sup>

In our study, we used prolene No. 1 to stitch external oblique strip to the inguinal ligament and conjoint muscle/tendon. While Dr Desarda initially used prolene No. 1 interrupted sutures but later started absorbable PDS No. 1 continuous suture.<sup>[7]</sup> due to non-availability of PDS suture in our town we used prolene continuous suture.

The minor complications like ecchymosis occur mainly in local anaesthesia group 2/8, seroma was seen in obese patients while scrotal edema was seen in patients where the contents were impacted (irreducible) in the scrotal sac. No case of chronic pain

## Discussion

Although this study was carried out in a small peripheral public hospital and a small District hospital the number of the patients included in this study are not high, the results of this study reflect similar trends shown by the other studies on this subject worldwide<sup>[8,10-14]</sup>.

was seen while there was one recurrence.

The known drawback of Desarda's technique to date is the use of the originally unhealthy tissue for repair. It is postulated that hernia recurs due to decrease in type I and type III collagen ratio due to a defect in matrix metalloproteinase metabolism.<sup>[15]</sup> Our patient in whom recurrence occurred was an ambulance driver, smoker, thin lean, had direct hernia with very thin, weak and splayed external oblique aponeurosis. The recurrence occurred in forth post-operative month.

Due to some complications like foreign body sensation, discomfort, abdominal wall stiffness, migration of mesh, surgical site infection and infection to the mesh requiring its removal. Moreover, non-availability of mesh in peripheral hospitals due to economic reasons in developing countries as well as the general population being unable to afford mesh makes mesh repair a difficult choice. Under such circumstances, where affordability is a major concern, laparoscopic repair is beyond imagination.

One important advantage of Desarda's technique is its low cost.<sup>[7]</sup> The cost is low because a synthetic prosthesis is not used and this cost effectiveness is very important in developing nations.

**Conclusion:** We found Desarda's mesh-free tissue hernioplasty very useful and cost-effective. Low complication rate, least risk of chronic groin pain, low recurrence rate, easy learning curve make this technique, procedure of chronic in most of the

patients.

While choosing a procedure, a tailor-made approach is used. In young fit healthy patients with good strong external oblique aponeurosis, Desarda's repair is very good while in large direct hernias and elderly patients with poor muscle tone and splayed external oblique aponeurosis, a mesh repair is preferred. Dasarda's repair is a very good alternative for those patients who refuse for the mesh repair due to personal reasons (e.g. recent media reports) or for those patients in whom mesh repair is contraindicated such as strangulated hernia and immune-compromised states.

## References

1. Primatesta P, Golacre MJ. Inguinal Hernia repair, incidence of elective and emergency surgery. *Int J Epidemiol.* 1996; 25:835-9.
2. Pietrangelo A. Inguinal Hernia repair; 2017. Available from: <http://www.healthline.com/health/inguinal-hernia-repair>.
3. Simons MP, Anfenacker T, Bay-Nilsen M, Bonlellot JL, Campanelli G, Conze J, et al. European hernia society guidelines on the treatment of inguinal hernia in adult patients. *Hernia* 2009; 13:343-403.
4. D'Amore L, Gossetti F, Vemeil V, Negro P. Long-term discomfort after plug and patch hernioplasty. *Hernia* 2008; 12:445-6.
5. Jeans S, Williams GL, Stephanson BM. Migration after open mesh plug inguinal hernioplasty: A review of the literature. *Am Surg* 2007; 73:207-9.
6. Desarda MP. New method of inguinal hernia repair: A new solution *ANZJSurg* 2001; 71: 241-4.
7. Desarda MP. No-mesh inguinal hernia repair with continuous absorbable suture: A dream or reality? (a study of 229 patients). *Saudi J Gastroenterol.* 2008; 14 (3):122.
8. Desarda MP, Ghosh MSA. Comparative study of open mesh repair and Desarda's No-mesh repair in a District Hospital in India. *East African J Surg.* 2006; 11(2):28-34.
9. Classification of chronic pain, descriptions of chronic pain syndromes and definition of pain terms prepared by the international association for the study of pain, subcommittee on taxonomy. *Pain suppl.* 1998; 3: 51-226.
10. Szopinski J, Dabrowiecki S, Pierscinski S. Desarda versus Lichtenstein technique for primary inguinal hernia treatment: 3 years results of a randomized clinical trial, *World J Surg.* 2012; 36 (5):9840-92.
11. Youssef T, El-Alfy K, Farid M. Randomized clinical trial of Desarda versus Lichtenstein repair for treatment of primary inguinal hernia. *International J Surg.* 2015; 20: 28-34.
12. Gedam BS, Bansod PY, Kale VB, Shah Y, Akhtar M. A comparative study of Desarda's technique with Lichtenstein mesh repair in the treatment of inguinal hernia: A prospective cohort study. *Int J Surg.* 2017; 39:150-5.
13. Abbas Z, Bhat SK, Koul M, Bhat R. Hernia, Desarda, Lichtenstein, VAS. Desarda's no mesh repair versus Lichtenstein's open mesh repair of inguinal hernia a comparative study 2015; 22(9035).
14. Bansod AN, Jantli M, Umalkar R, Ansari A, Tayade PC, Awachar N. Study of non-mesh technique of Desarda for inguinal hernia *Int Surg J* 2019; 6:2178-82.
15. Kling U, Zhe ng H, Si ZY, Schumpilick V, Bhardwaj R, Klosterhalfen B, et al. Synthesis of type I and III collagen, Expression of fibronectin and matrix metallo proteinases -1 and 13 in a hernial sac of patients with inguinal hernia. *Int J Surg Investig* 1999; 1: 219-27

Date received: November 25th 2019

Date accepted: May 19th 2020

**Conflict of interest: Nil**

**Source of funding: Nil**