



ORIGINAL RESEARCH PAPER

General Surgery

COMPARATIVE STUDY BETWEEN DESARDA REPAIR AND LICHTENSTEIN'S TENSION FREE HERNIOPLASTY IN THE MANAGEMENT OF INGUINAL HERNIAS

KEY WORDS: Lichenstein tension free hernioplasty, Desarada repair

Dr. E. Elamaran* MS, General Surgery, Assistant Professor, Department Of General Surgery, Madurai Medical College & Govt Rajaji Hospital, Madurai-625020
*Corresponding Author

Dr. S. Dorian Hannel Terrence MS, General Surgery, Postgraduate, Department Of General Surgery, Madurai Medical College & Govt Rajaji Hospital, Madurai-625020

ABSTRACT

Hernia repair is one of the most commonly performed general surgical procedures worldwide. Mesh based techniques particularly the Lichtenstein's tension free hernioplasty and Laparoscopic repairs were advocated for the treatment of symptomatic inguinal hernias in adults by the European Hernia Society. Lichtenstein's technique is currently the most popular and accepted technique among open mesh-based techniques. Dr.Mohan P. Desarda reported a novel technique of tissue-based repair with less recurrence. It provides a strong and physiologically dynamic posterior wall without the use of any prosthesis. Here, in place of mesh an undetached strip of external oblique is stitched to the posterior wall to strengthen it. The technique requires less complicated dissection or suturing, no mesh is needed, easy to learn and has results similar if not better than Lichtenstein repair[5]. This study was undertaken to compare the results of Desarda repair with Lichtenstein's Tension free Hernioplasty in Govt. Rajaji Hospital, Madurai.

1. INTRODUCTION

A Hernia means 'To bud' or 'To protrude'[Greek] or 'Rupture'[Latin]. Hernia is defined as " an abnormal protrusion of the whole or a part of a viscous through a normal or abnormal opening with the sac covering it". Inguinal Hernia is the most common type of hernia (73%) because the muscular anatomy in the inguinal region is weak and also due to the presence of natural weaknesses like deep ring and cord structures. Indirect hernia is more common than direct type. Other types of hernias are Femoral, Umbilical, Epigastric, Obturator, Spigelian, Lumbar etc. It has been said that the history of groin hernias is the history of surgery itself. Hernia repair is one of the most commonly performed general surgical procedures worldwide. Mesh based techniques particularly the Lichtenstein's tension free hernioplasty and Laparoscopic repairs were advocated for the treatment of symptomatic inguinal hernias in adults by the European Hernia Society. Lichtenstein's technique is currently the most popular and accepted technique among open mesh-based techniques. It has minimal perioperative morbidity and is considered the standard of care. However, problems like foreign body sensation, wound infection, Cord fibrosis, Chronic pain, mesh sepsis⁽⁴⁾ etc are a concern. Also, Prosthetic mesh is somewhat expensive, especially in developing countries like India.

Dr. Mohan P. Desarda reported a novel technique of tissue-based repair with less recurrence. It provides a strong and physiologically dynamic posterior wall without the use of any prosthesis. Here, in place of mesh an undetached strip of external oblique is stitched to the posterior wall to strengthen it. The technique requires less complicated dissection or suturing, no mesh is needed, easy to learn and has results similar if not better than Lichtenstein repair.

This study was undertaken to compare the results of Desarda repair with Lichtenstein's Tension free Hernioplasty in Govt. Rajaji Hospital, Madurai.

2. AIM AND OBJECTIVE

The study was undertaken to compare the Post – operative outcome of Desarda Repair with Lichtenstein's tension free Hernioplasty in Inguinal Hernia patients who are admitted to GRH Madurai.

3. Review Of Literature

Lichtenstein Tension Free Hernioplasty:

Position:Supine

Anaesthesia:Regional or Local.

Technique:

- 1) A 5-6 cm skin incision which starts from the pubic tubercle and extends laterally within the langer line, gives an excellent exposure of the pubic tubercle and the internal ring.
- 2) The external Oblique aponeurosis is opened and it is separated from the cord structures and the internal oblique muscle.
- 3) The cord with its cremaster covering is separated from the floor of the inguinal canal and the pubic bone for a distance of approximately 2 cm beyond the pubic tubercle.
- 4) The internal ring is explored for indirect hernial sacs by incising the cremasteric sheath at the level of the deep ring.
- 5) Indirect sacs are freed from the cord to a point beyond the neck of the sac and are inverted into the preperitoneal space with or without ligation depending on the surgeon's preference.
- 6) The wall of the excess distal sac is excised.
- 7) Findings are confirmed in case of indirect / direct sac.
- 8) A sheet of 8*16 cm mesh is used. Monofilament polypropylene meshes are preferred because their surface texture promotes fibroplasias and their monofilament structure do not perpetuate or harbour infection.
- 9) The mesh is cut in the shape of a footprint, with a lower, sharp angle to fit into the angle between the inguinal ligament and the rectus sheath and an upper, wide angle to spread over the rectus sheath.
- 10) With the cord retracted, the sharper corner is sutured with a non- absorbable suture material to the insertion of the rectus sheath to the pubic bone and overlapping the bone by 1-2 cm. (The periosteum is avoided). The overlapping mesh is sutured to the rectus.
- 11) This is a crucial step to prevent recurrence.
- 12) This suture is continued as a continuous suture attaching the mesh to the inguinal ligament up to a point just lateral to the internal ring. Suturing the mesh beyond this point is unnecessary and may injure the femoral nerve.
- 13) If there is a concurrent femoral hernia, the mesh can be fixed also to the Cooper's ligament 1-2 cm below the suture line with the inguinal ligament in order to close the femoral ring.
- 14) A slit is made in the lateral end of the mesh, creating two tails, a wide one (two-thirds above) and a narrower one

(one-thirds below).

- 15) The wider upper one is crossed and placed over the narrower one and sutured.
- 16) The mesh is further fixed to the internal oblique and the rectus sheath.
- 17) The wound is closed in layers.

Technical Aspects Of Lichtenstein's Repair:

- 1) Use a large sheet of mesh that extends medial to the pubic tubercle, above the Hasselbach's triangle and lateral to the internal ring.
- 2) Cross the tails of the mesh behind the spermatic cord.
- 3) Secure the upper edge of the mesh to the rectus sheath and internal oblique aponeurosis.
- 4) Keep the mesh in a relaxed, tented or sagittal position.
- 5) Visualize and protect the Ilioinguinal, Iliohypogastric and genitofemoral nerves during the operation.

Based on RCTs, tension free hernioplasty with mesh is superior to Bassini's and Shouldice repairs.

Desarda's Pure Tissue Repair

Steps:

- 1) All steps are similar up to splitting of External Oblique aponeurosis and separation of cord structures. (Fig 44)
- 2) The sac is inverted into the peritoneal space. Excess sac is ligated and excised.
- 3) The medial leaf of the External oblique aponeurosis is sutured with the inguinal ligament from the pubic tubercle to the deep ring using 1-0 ethilon or prolene interrupted sutures.
- 4) Each suture is passed through the inguinal ligament, fascia transversalis and the EO aponeurosis.
- 5) A splitting incision is made in this sutured leaf, partially separating a strip. This incision is extended medially up to the pubic symphysis and laterally 1-2 cm beyond the deep ring.
- 6) A strip of the external oblique is now available, the lower border of which is already sutured to the inguinal ligament.
- 7) The upper free border of this strip is sutured to the internal oblique or conjoint muscle with 1-0 prolene or ethilon interrupted sutures.
- 8) This will result in the strip of the external oblique being placed behind the cord to form a new posterior wall of the inguinal canal.
- 9) At this stage, the patient is asked to cough and the increased tension exerted by the external oblique muscle to support the weakened internal oblique and transversus muscle is clearly visible. This increased tension is the essence of this operation.
- 10) The spermatic cord is placed in the inguinal canal and the lateral leaf of the external oblique is sutured to the newly formed medial leaf in the usual manner using 1-0 ethilon or prolene interrupted sutures.
- 11) Wound is closed in layers.
- 12) The role of the external oblique aponeurosis in anterior-posterior compression of the inguinal canal to prevent herniation is restored by providing a strong and physiologically dynamic posterior wall.

4. MATERIALS AND METHODS

Primary Objectives

To derive conclusions about post – operative results and rate of recurrences in Desarda's repair and conventional mesh repair in the management of inguinal hernias.

Eligibility criteria

A. Inclusion criteria:

- Age > 18 years & < 65 years.
- Those presenting with uncomplicated inguinal/inguinoscrotal hernia.
- Patients who consented for inclusion in the study according to designated proforma.

B. Exclusion criteria:

- Age < 18 years and > 65 years.
- Patients with complicated hernias.
- Patients with Bilateral hernias.
- Patients with femoral hernias.
- Patients having hernia with hydrocele.
- Comorbid conditions.
- Immunocompromised states.
- Coagulopathy.
- Patients who did not consent to the procedure.

Methodology

From January 2021 to January 2022, patients presenting with inguinal hernias in GRH Madurai will be recruited in this study.

- The patients were seen in surgical speciality OP in emergency and routine hours and were diagnosed on the basis of history & clinical examination.
- After obtaining consent, patients would be required to fill in a proforma (which is given below). After that patients would be randomly divided into two groups. In the first group hernia repair will be performed by conventional tension free Lichtenstein's hernioplasty using prolene mesh. In the second group , hernia repair will be done by the Desarda's technique.

5. RESULTS

A. Age Distribution:

The mean age group was similar in both groups(43 years). There was no statistical significance.

B. Sex Distribution:

In the Lichtenstein's repair group, 22 patients were males and 3 patients were females and in the Desarda's repair group, 23 patients were males and 2 patients were females.

C. Time Taken For Operation:

The mean time taken for operation in the Lichtenstein's repair group was 90 minutes whereas it was only 45 minutes in the Desarda's repair group, which is statistically significant.

D. Postoperative Pain Compared Using Visual Analog Score:

The mean postoperative pain score was similar in both the groups, when measured at POD -1 and POD – 3. Both groups required NSAID analgesia.

E. Haematoma Formation:

It is defined as localized collection of blood at surgical site, found on aspiration of swelling (if present) on incision site or expressed after removal of staplers. It was observed for upto 30 days. Haematoma formation occurred in 4 cases in Lichtenstein's repair group whereas it occurred only in 2 cases in Desarda's repair group(significant).

F. Seroma Formation:

It is defined as collection of serous fluid pocket at the site of incision as a result of tissue dissection, found on aspiration of fluctuant swelling at wound site or expressed after stapler removal. It was observed for upto 30 days. Seroma formation occurred in 5 cases in Lichtenstein's repair group and in only 2 cases in Desarda's repair group(significant).

G. Wound Infection:

It is identified by the collection of purulent material at the site of incision, associated with tenderness, erythema and edema at the incision site. It was observed for upto 6 months. Wound infection occurred in 5 cases in Lichtenstein's repair group and in 4 cases in desarda's repair group.

H. Scrotal Edema:

It was observed for upto POD – 3. Scrotal edema occurred in 9 patients in Lichtenstein's repair group and in 2 patients in Desarda's repair group(significant). The higher percentage in

Lichtenstein's repair is probably due to the excessive handling of the cord structures during mesh placement.

I. Loss Or Change In Sensation In The Affected Groin:

Touch sensation over the operated groin was compared with the opposite side to look for Hyperaesthesia or allodynia. It was done on POD -1 and POD -3. Loss or change in sensation in the affected groin was reported by 6 patients in the Lichtenstein's repair group and by 1 patient in the Desarda's repair group (significant). It is probably due to injury/ entrapment of any of the nerves of the groin.

J. Foreign Body Sensation:

Patient was asked if any perception of a foreign body being implanted in the operated groin was present. It was studied upto 3 months. Foreign body sensation was reported by 8 patients in the Lichtenstein's repair group and by none of the patients in the Desarda's repair group (significant). It is inevitable since we are introducing a prosthetic material into the patient's body.

K. Return To Normal Activities:

The patient was asked when did he/she return to activities of daily living completely without any discomfort or external help. 19 patients returned to normal activities within 15 days in the Desarda's repair group, whereas only 10 patients returned to normal activities within 15 days in the Lichtenstein's repair group (significant).

L. Early Recurrence:

Recurrence is defined as a palpable bulge on the operated site. Our patients were followed up for 6 months. In 6 months, three patients of the Lichtenstein's repair group developed recurrence whereas only one patient developed recurrence in the Desarda's repair group (significant).

Table 1: Comparison Of Lichtenstein's Repair And Desarda Repair

CRITERIA	LITCHENSTEIN'S REPAIR	DESARADA REPAIR
Operation time more than 95 min	11(44%)	0(0%)
Pain score more than 5	9(36%)	12(48%)
Haematoma	4 (16%)	2(8%)
Seroma	5 (20%)	2(8%)
Wound infection	5 (20%)	4(16%)
Scrotal oedema	9 (36%)	2(8%)
Loss of sensation in groin	6 (24%)	1(4%)
Foreign body sensation	8 (32%)	0(0%)
Return to activities < 15 days	10(40%)	19 (76%)
Early recurrence	3 (12%)	1(4 %)

6. DISCUSSION

- In our study the mean age group of surgery in both groups was 43 years with majority of the cases being males, once again proving that inguinal hernia is common in males.
- The mean time taken for operation is 90 minutes in Lichtenstein's repair whereas it is only 45 minutes in Desarda's repair. This is understandable since excess dissection and mesh fixation is not necessary in Desarda's repair.
- There was no significant difference between the two groups in the magnitude of postoperative pain and the incidence of wound infection, reflecting that these two parameters, at least to some extent do not depend on the surgical technique. NSAID analgesia was sufficient in both groups. Further studies are needed to find out how to avoid postoperative pain and wound infection.
- Desarda's technique was associated with a statistically significant less incidence of Haematoma formation, Seroma formation, Scrotal edema and change in groin sensation. This is because there is less handling of tissues

here when compared with Lichtenstein's repair.

- None of the patients who underwent Desarda's repair complained of foreign body sensation whereas 8 patients who underwent Lichtenstein's repair complained so. This is understandable because we are introducing a foreign prosthetic material (mesh) in Lichtenstein's repair which also causes fibrosis locally.
- Desarda's repair was associated with an earlier return to normal activities than Lichtenstein's repair. This may be due to the shorter operative time.
- In 6 months, three patients of the Lichtenstein's repair group developed recurrence whereas only one patient developed recurrence in the Desarda's repair group. This might be because, Desarda's repair is technically easier to do with shorter learning curve.

7. CONCLUSION

Thus, Desarda's repair is associated With shorter operative time, lesser incidence of Haematoma formation, Seroma formation, scrotal edema, loss of groin sensation, foreign body sensation and recurrence rates. The results are comparable with other studies mentioned above.

Desarda' repair can be used as a safe alternative to Lichtenstein's repair. This study suffers from the limitation that there is no way to measure the pressure increase that occurs in the groin following Desarda's repair during raised intra-abdominal strains. Thus, it requires further evaluation. Also, further studies are needed to validate Desarda's repair in the setting of Complicated hernias, Femoral hernias and Hernia with Hydrocele.

Thus, there is no "best" form of hernia repair. I end my study with the words of Sir. John Bruce of Edinburgh – "The final words on hernia repair will probably never be written".

Conflicts Of Interest :

None to be declared by any of the author

Source Of Funding :

None

REFERENCES

- [1]. Ostow B. Guleph. What is the Most Appropriate Repair for Groin Hernias in Africa?. Surgery in Africa, Canada 2006.
- [2]. Kingsnorth A, Leblanc K(2003). Hernias – Inguinal and Incisional . Lancet 362(9395) 1561- 1571.
- [3]. Simons MP, Aufenacker T, Bay-Nielsen M. European Hernia Society Guidelines on the treatment of inguinal hernia in adult patients. Hernia 2009; 13:343
- [4]. Taylor SC, O' Dwyer PJ. Chronic Groin Sepsis following tension free inguinal hernioplasty.Br J Surg. 1999;86:562-5
- [5]. Desarda MP. New method of inguinal hernia repair – a new solution. ANZ J Syrg.2001;71;241-44
- [6]. Master Techniques In Surgery – HERNIA; Daniel B.Jones Wolters Kluwer; Lippincott, Williams & Wilkins; ISBN 978-1-4511-0716-6; pages 1-24.
- [7]. BD Chaurasia's Human Anatomy ; Seventh Edition; Volume 2; CBS Publishers and Distributors Pvt Ltd; ISBN: 978-93-85915-47-5; pages 216 – 237.
- [8]. Chummy S. Sinnatamby; Las's Anatomy – Regional and Applied; Twelfth Edition; Churchill Livingstone; Elsevier; International ISBN:978 0 7020 3394 0. pages 221 – 232.
- [9]. A Textbook Of Human Anatomy; T.S. Ranganathan; Sixth Edition; S.Chand & Company PVT.LTD; ISBN:978-81 -219-0445-2. pages 261-271.
- [10]. Mastery Of Surgery ; Fifth Edition ; Josef . E. Fischer; Wolters Kluwer; Lippincott ; Williams & Wilkins; ISBN: 978-0-7817-7165-8. Pages 1856 – 1859; 1932 – 1939
- [11]. SRB's Surgical Operations ; Text and Atlas; Sriram Bhat M; First Edition; Jaypee Brothers Medical Publishers (P) LTD; ISBN : 978-93-5025-1218; pages 1121–1189.
- [12]. Griffith CA. Inguinal Hernia: an anatomic-surgical correlation. Surg Cl North Am 1959;39;531
- [13]. Tobin GR, Clark DS, Peacock EE Jr . A neuromuscular basis for development of indirect inguinal hernia. Arch Surg. 1976;111;464.
- [14]. Peacock EE Jr, Madden JW. Studies on the biology and treatment of recurrent inguinal hernia. Ann Surg. 1974; 179;567.
- [15]. Anson BJ, Mcvay CB, Philadelphia WB. Saunders . 5. Vol.1.1.1971. Surgical Anatomy; pp 461-532.
- [16]. Anson BJ, Morgan EH, mcvay CB. Surgical Anatomy of the inguinal region based upon a study of 500 body halves. Surg Gynae col obstet 1960;111;707.
- [17]. Read RC. A review: The role of protease-antiprotease imbalance in the pathogenesis of herniation and abdominal aortic aneurysm in certain smokers. Postgraduate General Surgery. 1992;4;161-165
- [18]. Surgical Physiology of Inguinal hernia repair – a study of 200 cases. BMC Surg 2001;3:2.

- [19]. Ahmed R et al. Int Surg J 2018 Aug;5(8)2723–2726.
- [20]. Youssef T, El Alfyk, Farcid M. Randomized clinical trial of Desarda versus Lichtenstein repair for treatment of primary inguinal hernia. Int J Surg .2015; 20:28-34.
- [21]. Desarda MP, Ghosh DN. Comparative study of open mesh repair and Desarda's no mesh repair in a district hospital in India. East Central Afr.j.Surg.2006;11(2);18e34.
- [22]. Syed O. Int Surg J. 2018. Jan ; 5 (1); 92-97. Desarda's versus Lichtenstein Technique of Inguinal Hernia repair.
- [23]. Mitura K, Romanczuk M. Comparison between two methods of inguinal hernia surgery – Lichtenstein and Desarda. Tol Merkur Lakarski. 2008 May; 24(143);392-5.
- [24]. Gedam BS, Bansol PC, Kale VB. A comparative study of Desarda's technique with Lichtenstein mesh repair in the treatment of inguinal hernia. A cohort study. Int J surg. 2027 May; 39 – 150 – 155.
- [25]. Dr. Rushabh Shah, Dr. Pankaj B Bharadwa – Comparison of Pure Tissue Repair (Desarda) and Prosthetic repair(Lichtenstein) methods for inguinal hernia repair.