

**A Dissertation on**

**A COMPARATIVE STUDY OF LICHTENSTEIN MESH REPAIR  
VS NONMESH TISSUE REPAIR DESARDA'S TECHNIQUE  
FOR INGUINAL HERNIA REPAIR**

*submitted to*

**THE TAMILNADU DR.MGR MEDICAL UNIVERSITY,  
CHENNAI**

with fulfillment of the regulations for the award of

**M.S DEGREE IN GENERAL SURGERY  
BRANCH I**



**GOVERNMENT KILPAUK MEDICAL COLLEGE,  
CHENNAI**

**MAY – 2018**

## **BONAFIDE CERTIFICATE**

This is to certify that the dissertation entitled “**A COMPARATIVE STUDY OF LICHTENSTEIN MESH REPAIR VS NONMESH TISSUE REPAIR DESARDA’S TECHNIQUE FOR INGUINALHERNIA REPAIR**” is a bonafide work of **Dr. K.RASU** submitted to The Tamilnadu Dr. M.G.R Medical University in partial fulfilment of requirements for the award of the degree of M.S. BRANCH I (GENERAL SURGERY) examination to be held in MAY, 2018.

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I hereby declare that this dissertation titled “**A COMPARATIVE STUDY OF LICHTENSTEIN MESH REPAIR VS NONMESH TISSUE REPAIR DESARDA’S TECHNIQUE FOR INGUINALHERNIA REPAIR**”. At Govt. Kilpauk Medical College Hospital., is a bonafide and genuine research work carried out by me in the Department of General Surgery, Government Kilpauk Medical and Hospital, Chennai-10, under the guidance of our Chief **Prof. Dr. P.S.SHANTHI .,MS. DGO**, Government Kilpauk Medical College and Hospital.

This dissertation is submitted to **THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI** in partial fulfillment of the University regulations for the award of M.S degree (General Surgery) Branch I, examination to be held in MAY 2018.

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## **CERTIFICATE BY THE GUIDE**

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I would like to thank God for the things he has bestowed upon me.

I would like to thank my parents for making me who I am today and for supporting me in every deed of mine

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Protocol ID. No.15/2017 Meeting held on 20/01/2017  
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The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "**A Comparative study of Lichenstein Mesh Repair vs Non Mesh Tissue Repair(Desarda Technique)**" submitted by Dr.K.Rasu, Postgraduate in General Surgery, Govt. Royapettah Hospital, Govt. Kilpauk Medical College, Chennai.

The Proposal is APPROVED.

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## **ABBREVIATION**

EOA	-	External Oblique Aponeurosis
ASIS	-	Anterior Superior Iliac Spine
CT	-	Computed Tomogram
MRI	-	Magnetic Resonance Imaging

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# **INTRODUCTION**

## **INTRODUCTION**

In general surgery department routinely doing surgeries for inguinal hernia repair, various procedures still accepted for inguinal hernia repair like bassini's, shouldice, and other tissue based technique. Now commonly used technique is Lichtenstein tension free mesh repair. Desarda's technique is tissue based technique of hernia repair using an undetached strip of external oblique aponeorosis to strengthen the posterior wall of the inguinal canal.

Present study deals with the comparison of outcome of the Lichtenstein repair and Desrada's repair for inguinal hernia

# **AIM OF THE STUDY**

## **AIM OF THE STUDY**

The Aim of Study is to find the Effectiveness of Non Mesh Tissue Repair (Desarda) in compared with mesh repair (lichtensein)

1. Reducing Post-Operative Pain,
2. Recurrence,
3. Complication
4. Duration of Hospital Stay
5. Return To Normal Non Strenuous Activity

# **REVIEW OF LITERATURE**



## REVIEW OF LITERATURE

### HISTORY

The history of hernia is the history of Sur-Josef Patinoheliodorus-surgeon who performed the first hernia operation. Aulus Cornelius Celsus-first writer to write detailed description of hernia surgery in 50 ad. in 18th century great anatomist and surgeons described the age of dissection was done by Paston Cooper, Franz K Henelbach," Don Antonio De Gimbernat, Jean Lou Petit' they described detailed anatomy which lead to modern in hernia repair. Bassini's (1844-1924) described the posterior wall strengthening of the inguinal wall and high ligation of sac with anatomical reconstruction. Later his techniques are modified0 therefore he is rightfully called as father of the modern Herniorrhaphy. Halstead (1852-1922) developed a Bassini's technique modification. A canadian surgeon Shouldice (1960) described Overlapping layers with continuous sutures. Tension free repairs (lichenstein) described strengthening of posterior wall with mesh with very low recurrence rate. mesh introduced by üsher. Laparoscopically Ger did first repair, TAPP in 1991 by Arregui and TEP by Philips, tension free nonmesh tissue repair described by Indian surgeon Desarda

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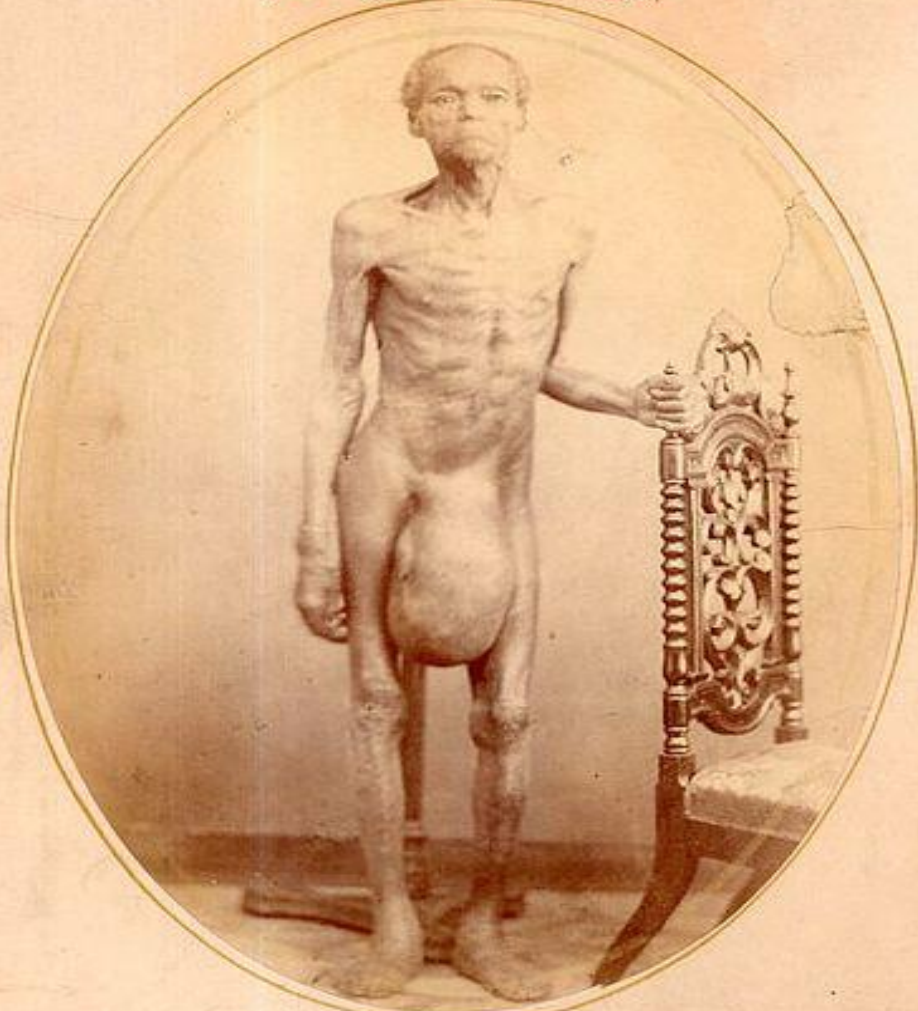
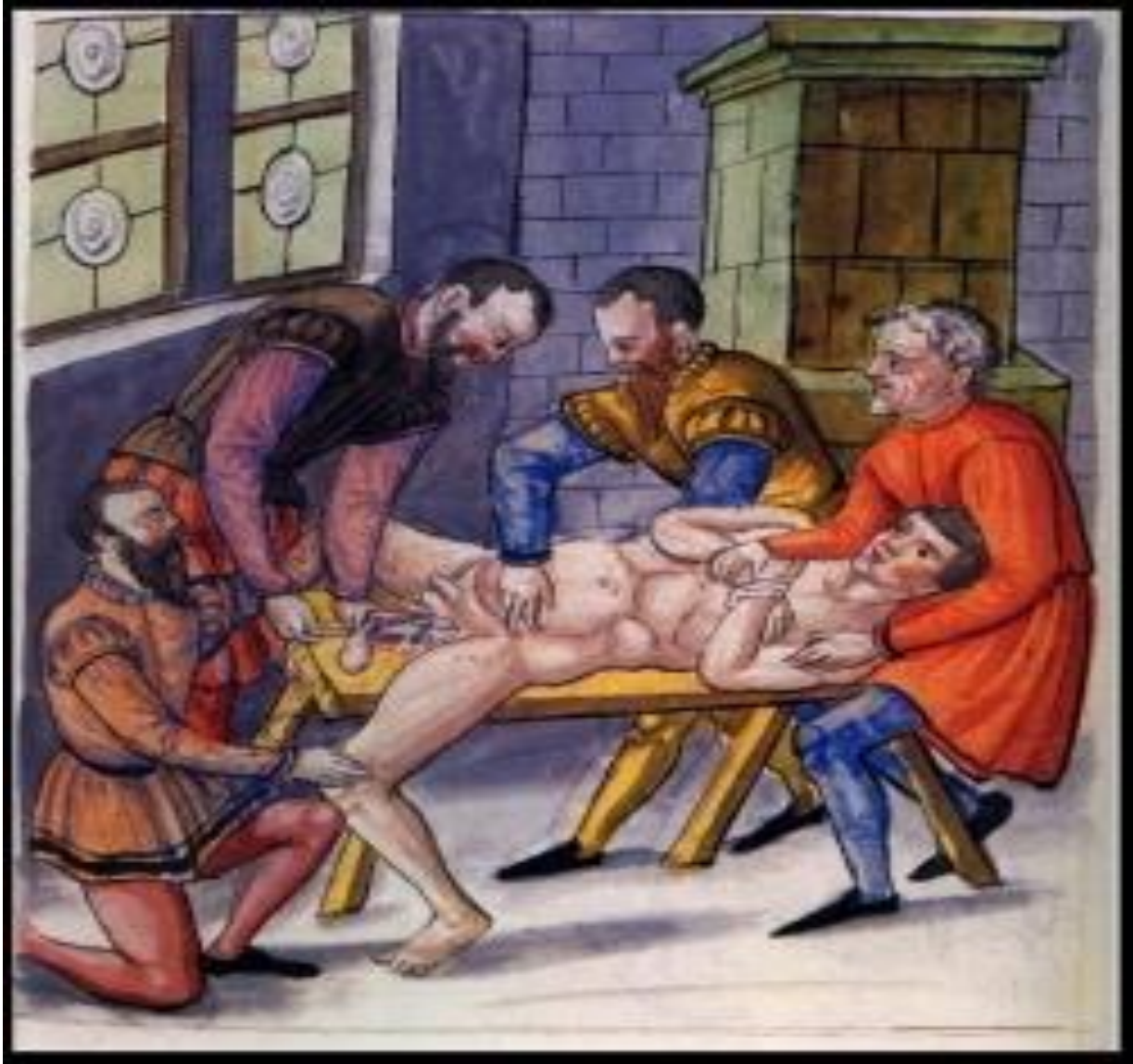


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Frank David (cod) born 1789  
with  
Inguinal - hernia of 65 years standing  
Dated as above: Hosp: W. J. H. for 18 years of  
and 2 years of



Inguinal hernias remains an important surgical problem because of there frequency. Average Life time risk for inguinal hernia is 27% for men, 3% for women (Primatesta and Goldacre, 1996)<sup>1</sup>. Annual morbidity rates in various countries vary from 100 to 300 per 100,000 populations (Bay Nielsen et al, 2001).<sup>2</sup> Until 2009 there were no written surgical guidelines for hernia treatment, when the European hernia society (EHS) published its recommendations based on analysis of the literature and the results of clinical trials. In the EHS guidelines, mesh based techniques-the Lichtenstein technique in particular and endoscopic methods are recommended for treatment of primary inguinal hernia in adult men (strength of recommendation 1A). In a departure from this firm opinion presented by the EHS, the Shouldice method has been acknowledged to be acceptable (Simons et al., 2009)<sup>3</sup>. Some questions can be asked considering these facts; is the Shouldice technique the only nonmesh method that ensures good clinical; results? are any other tissue based techniques effective in inguinal hernia repair performed correctly? The synthetic prostheses most often used in the inguinal hernia can create new clinical problems, such as foreign body sensation in the groin, discomfort, and abdominal wall stiffness, which may affect the every day functioning of the patient (D'Amore et al., 2008)<sup>4</sup>. Surgical site infections often with clinical symptoms delayed for years are more frequent after hernia treatment using mesh (Genc et al., 2010; Scott et al., 2002)<sup>5 6</sup>, migration of the mesh from the primary site of implantation in the abdominal cavity is one of the most dangerous

complications (Jeans et al., 2007; Ott et al., 2005)<sup>7,8</sup> Intense chronic inflammatory process typically associated with foreign body reactions around the mesh may produce Meshoma or Ptumors, the treatment of which becomes a new surgical challenge (Mcroy 2010).<sup>9</sup> Procreation and sexual function are reportedly seriously affected after surgical hernia treatment with mesh (Ott et al., 2005).<sup>8</sup>

The observed complication rates and postoperative dysfunction have influenced many investigations to look for new hernia repair techniques or modify old methods. An example of such efforts is the Desarda method, which was presented in 2001 and become a new surgical method for tension free tissue based inguinal hernia repair (Desarda, 2001a; Desarda 2001b).<sup>10,11</sup> Because the results of our prospective study involving the technique were promising and comparable to results presented by other authors (Mitura and Romanczuk, 2008; Szopinski et al., 2005).<sup>12,13</sup>

## **HERNIA DEFINITION**

Hernia is a general term used to describe a bulge or protrusion of an organ through the structure or muscle that usually contains it

## **TYPES OF HERNIA**

1. Internal hernia
2. External hernia

## **INTERNAL HERNIA**

Protrusion of the gut through the peritoneum, mesentery, or momentum into compartment of abdominal cavity, the hernia orifice is usually a pre-existing foramen, recess, and fossa but can be caused by surgery, ischemia and trauma.

## **EXTERNAL HERNIA (abdominal hernia)**

External or abdominal hernia is the bulging of part of the contents of the abdominal cavity through a weakness in the abdominal wall.

## **CAUSES OF HERNIA**

Basic design weakness

Weakness due to structures entering and leaving abdomen

Developmental failures

Genetic weakness of collagen

Sharp and blunt trauma

Weakness due to ageing and pregnancy

Primary neurological and muscle disease

Excessive intra abdominal pressure

## **COMPOSITION OF HERNIA**

Hernia consists of the three parts-

The sac

The coverings of sac

The contents of the sac

### **Sac**

The sac is a diverticulum of peritoneum, consisting of

Mouth

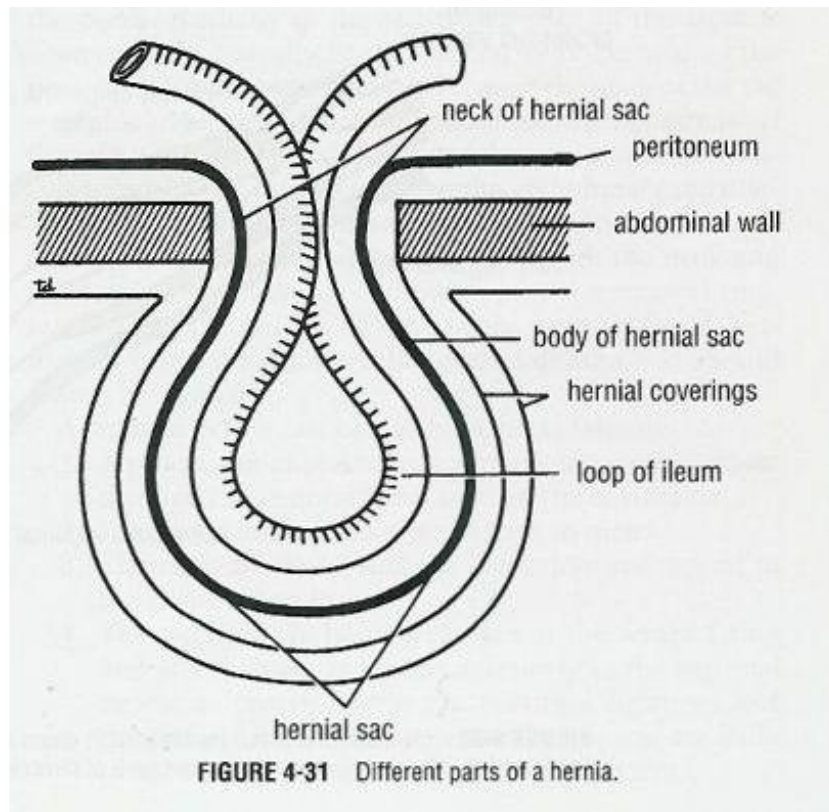
Neck

Body

Fundus

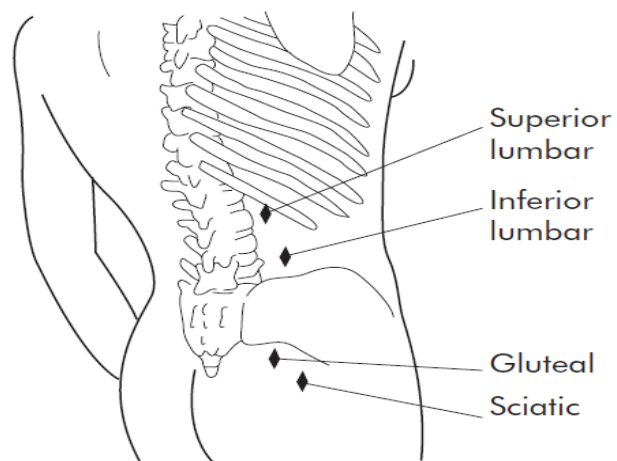
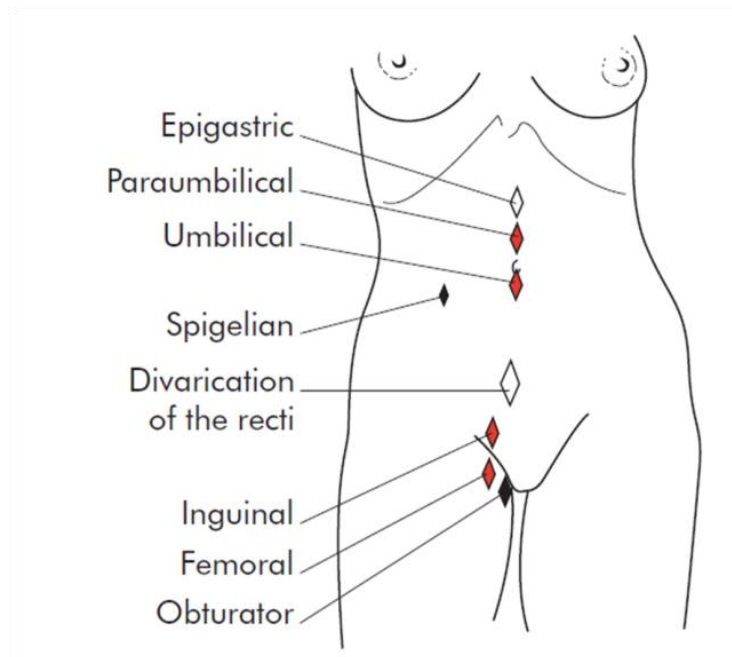
## Coverings

Coverings are derived from the layers of the abdominal wall through which the sac passes





## HERNIA CLASSIFIED DEPEND ON THE SITE



## **INGUINAL HERNIA**

Inguinal hernia means protrusion of abdominal contents through the inguinal canal, its often referred to as a” rupture “by patients, most comment hernia in men and women but much more common in men.

### **ANATOMY OF INGUINAL CANAL**

The inguinal canal in the adult is an oblique rift in the lower part of the anterior abdominal wall. It measures approximately 4 cm length.it is located 2-4 cm above the inguinal ligament, between the opening of the external (superficial) and internal (deep) rings

#### **BOUNDARIES:**

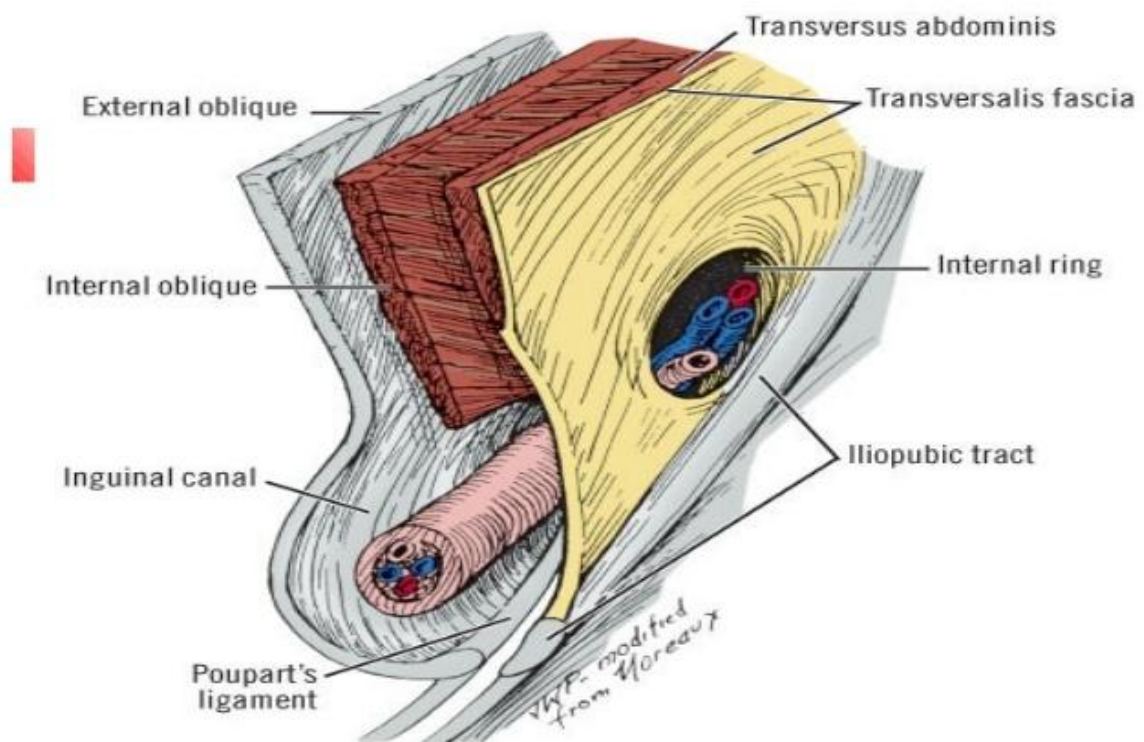
**Anterior** : aponeurosis of the external oblique muscle, more laterally the internal oblique muscles

**Posterior:** posterior wall (floor) is formed laterally by the aponeurosis of the transversus abdominis muscle and the transversalis fascia, 1/4 of the individual transversalis facscia only. Medially the posterior wall is reinforced by the internal oblique aponeurosis

**Superior:** roof of the canal is formed by the arched fibres of the lower edge (roof) of the internal oblique aponeurosis

**Inferior :** the wall of the canal is formed by the inguinal ligament (poupart's) and the lacunar ligament (Gimbernat's)

**Contents:** spermatic cord in males, round ligaments in females



## **SPERMATIC CORD**

The spermatic cord consists of a matrix of connective tissue continuous proximally with extraperitoneal connective tissue. Following are the contents and coverings of spermatic cord

### **Three fasciae:**

External spermatic (from external oblique fascia)

Cremasteric (from internal oblique muscle and fascia)

Internal spermatic (from transversalis fascia)

### **Three arteries:**

Testicular artery

Cremasteric artery

Deferential artery

### **Three veins:**

Pampiniform plexus and testicular vein

Cremasteric vein

Deferential vein

### **Three nerves:**

Genital branch of genitofemoral nerve

Ilioinguinal nerve

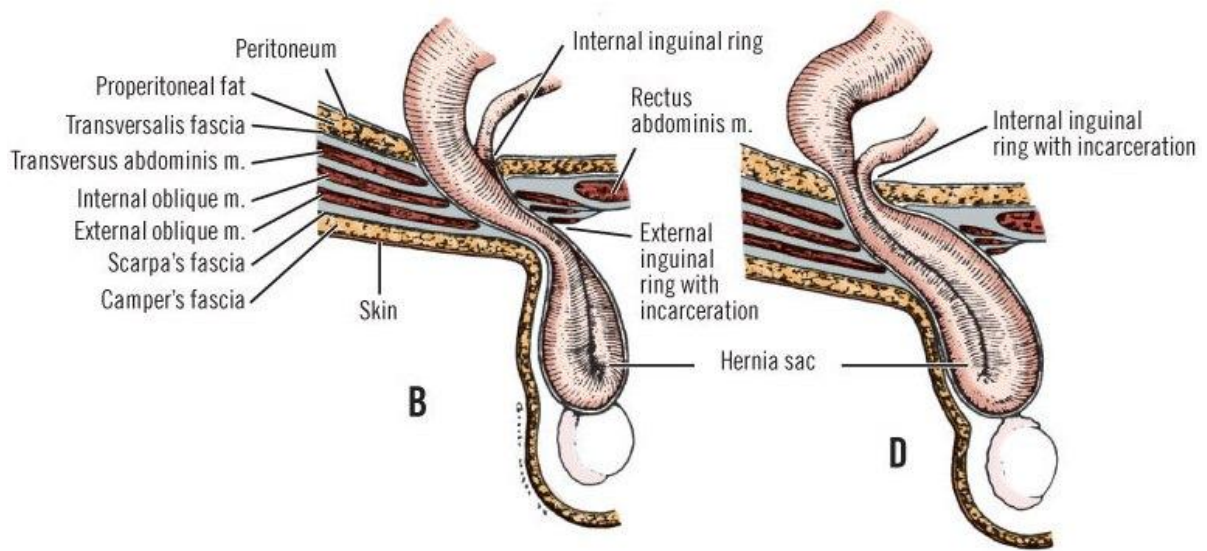
Sympathetic nerves (testicular plexus)

Lymphatics

### **LAYERS OF THE ABDOMINAL WALL IN THE INGUINAL REGION**

1. Skin
2. Subcutaneous fasciae (camper and scarpa) contain fat (superficial fascia)
3. Innominate fascia (Gallaudet)
4. External oblique aponeurosis, including the inguinal, lacunar and reflected inguinal ligaments
5. Spermatic cord
6. Transversus abdominis muscle and aponeurosis, internal oblique muscle, falx inguinalis (Henle) conjoint tendon
7. Anterior lamina of transversalis fascia
8. Posterior lamina of transversalis fascia
9. Preperitoneal connective tissue with fat
10. Peritoneum

## LAYERS OF THE ABDOMINAL WALL IN THE INGUINAL REGION



## **Scarpa's Fascia**

Scarpa's fascia is a homogeneous membranous sheet of areolar tissue that forms a lamina in the depths of the subcutaneous tissues and usually is most prominent in the region of the groin. It is loosely connected to the external oblique muscle, but in the midline it is more intimately adherent to the linea alba and to the pubic symphysis, and is prolonged onto the dorsum of the penis, forming the fundiform ligament (suspensory ligament of the clitoris in females): below and laterally, it blends with the fascia lata of the thigh.

## **External Oblique Muscle and Aponeurosis**

The external oblique muscle is the most superficial of the three flat musculo aponeurotic layers that make up the anterolateral wall of the abdomen. It is directed inferiorly and medially extending from the posterior aspects of the lower eight ribs to the linea alba, the pubis, and the iliac crest. Medially, the tendinous fibers pass anterior to the rectus abdominis muscle, forming the anterior layer of the rectus sheath.

## **Inguinal Ligament**

The inguinal ligament is the lower, thickened portion of the external oblique aponeurosis suspended between the anterior superior iliac spine and the pubic tubercle. The fibers of the external oblique aponeurosis that form the inguinal ligament present a rounded surface toward the thigh and a hollow

surface toward the inguinal canal functioning as supporting shelf for the spermatic cord

### **Lacunar Ligament**

First described by Antonio de Gimbernat in 1793, the lacunar ligament is a triangular extension of the inguinal ligament before its insertion upon the pubic tubercle. It is inserted at the pecten pubis, and its lateral end meets the proximal end of the ligament of Cooper. It is considered the medial border of the femoral canal

### **External Inguinal Ring**

The superficial or external inguinal ring is located above the superior border of the pubis, immediately lateral to the pubic tubercle. It is a triangular opening of the aponeurosis of the external oblique, the base being part of the pubic crest with the margins formed by two crura, medial and lateral. The medial crus is formed by the aponeurosis of the external oblique itself: the lateral crus is formed by the inguinal ligament. To be more specific, the medial crus is attached to the lateral border of the rectus sheath and to the tendon of the rectus abdominis muscle. The lateral crus is attached to the pubic tubercle



## **Internal Oblique Muscle and Aponeurosis**

The internal oblique muscle and aponeurosis represent the middle layer of the three flat musculo aponeurotic layers of the abdominal wall. The internal oblique muscle arises in part from the thoracolumbar fascia and the iliac crest splaying obliquely upward, forward, and medially to insert upon the inferior borders of the lower three or four ribs, the line a alba and the pubis

## **Transversus Abdominis Muscle and Aponeurosis**

The transversus abdominis muscle and aponeurosis are the deepest of the three flat anterior abdominal muscles layers. These layers arise from the fascia along the iliac crest, thoracolumbar fascia, iliopsoas fascia, and from the lower six costal cartilages and ribs. The muscle bundles of the transversus abdominis course horizontally except the inferior border of the transversus abdominis layer that forms a curved line, the transversus abdominis arch an important landmark for the surgeon because it represents the superior border of the direct inguinal hernia space. The area beneath the arch and the number of aponeurotic fibers and strength in this lower portion of the transversus abdominis lamina varies, having a major influence in the development of a direct inguinal hernia.

## **Conjoined Tendon**

The conjoined tendon is, by definition, the fusion of lower fibers of the internal oblique aponeurosis with similar fibers from the aponeurosis of the transversus abdominis where they insert on the pubic tubercle and superior ramus of the pubis.

## **Iliopubic Tract**

The iliopubic tract, described by Alexander Thomson in 1836, is an aponeurotic band within the transversus abdominis lamina that bridges across the external femoral vessels that begin near the anterior superior iliac spine and extend medially to attach to Cooper's ligament at the pubic tubercle. It forms the inferior margin of the deep musculo aponeurotic layer made up of the transversus abdominis muscle and aponeurosis and the transversalis fascia.

## **Cooper's Ligament**

Cooper's ligament or the pectineal ligament is a condensation of the transversalis fascia and periosteum of the superior pubic ramus lateral to the pubic tubercle. It is usually several millimeters thick and densely adherent to the pubic ramus, and joins the iliopubic tract and lacunar ligaments at their medial insertions. Cooper's ligament is considered the posterior margin of the femoral canal.

## **Internal Inguinal Ring**

The deep or internal inguinal ring, formed mainly by aponeurotic fibers of the transversus abdominis layer, is located halfway between the pubic tubercle and the anterior superior iliac spine. At the lateral half of the area between the transversus abdominis arch above and the iliopectineal tract below, the fascia transversalis thickens and forms an incomplete ring in the shape of an inverted "V", with the open end pointing laterally and superiorly (transversalis fascia crura), that supports the spermatic cord structures as they enter the inguinal canal. The inferior border is formed by the iliopectineal tract. The transversus abdominis arch along with the superior crus of the transversalis fascia forms the superior border of the deep inguinal ring

## **Myopectineal Orifice of Fruchaud**

H. Fruchaud, a French surgeon, described in 1956 an oval-shaped area in the groin protected only by the combined lamina of the aponeurosis of the transversus abdominis and the transversalis fascia where all groin hernias originate named myopectineal orifice (MPO). The MPO is bordered:  
Superiorly by the arching fibers of the internal oblique and transversus abdominis muscles  
medially by the lateral border of the rectus abdominis muscle  
Inferiorly by Cooper's Ligament  
Laterally by the iliopsoas muscle

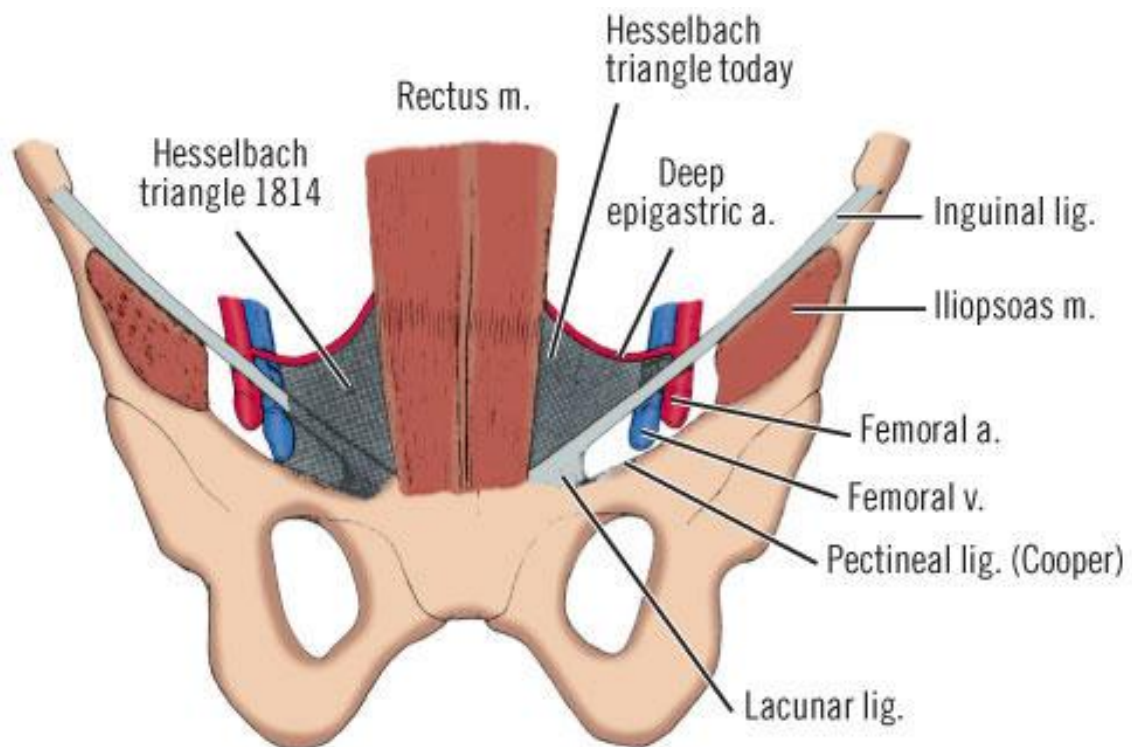
## HESELBACH'S TRIANGLE

Boundaries

**Lateral (superior) border:** inferior (deep) epigastric vessels

**Medial border:** lateral margins of rectus abdominis muscle

**Base (infero lateral):** inguinal ligament



## **TYPES OF INGUINAL HERNIA**

1. Lateral (oblique, indirect)
2. medial (direct)
3. sliding

### By origin

1. Congenital
2. Acquired

### **Types of hernia by complexity**

1. Occult-not detectable clinically, only symptom sever pain
2. Reducible –a swelling which appears and disappears
3. Irreducible-a swelling which cannot be replaced in the abdomen, high risk of complications
4. Strangulated-painful swelling with vascular compromise, requires urgent surgery
5. Infarcted-when contents of the hernia have become gangrenous, high mortality

## **ACCORDING TO EXTENT**

### 1. Bubonocele

Hernia does not come out of the superficial inguinal ring

### 2. Incomplete hernia

Hernia comes out through the external ring but fails to reach the bottom of the scrotum

### 3. Complete hernia

Hernia reaches the bottom of scrotum

## **ACCORDING TO CONTENTS**

### 1. Enterocele

When Intestine is the content it's called as enterocele

### 2. Omentocele (epiplocele)

When omentum as content it's called omentocele

### 3. Cystocele

Urinary bladder is content it's called cytoskeleton

## CLASSIFICATION

Many surgeons over the past hundred years have attempted to classify inguinal hernias, including Casten, Halverson and McVay, Zollinger, Ponka, Gilbert and Nyhus.

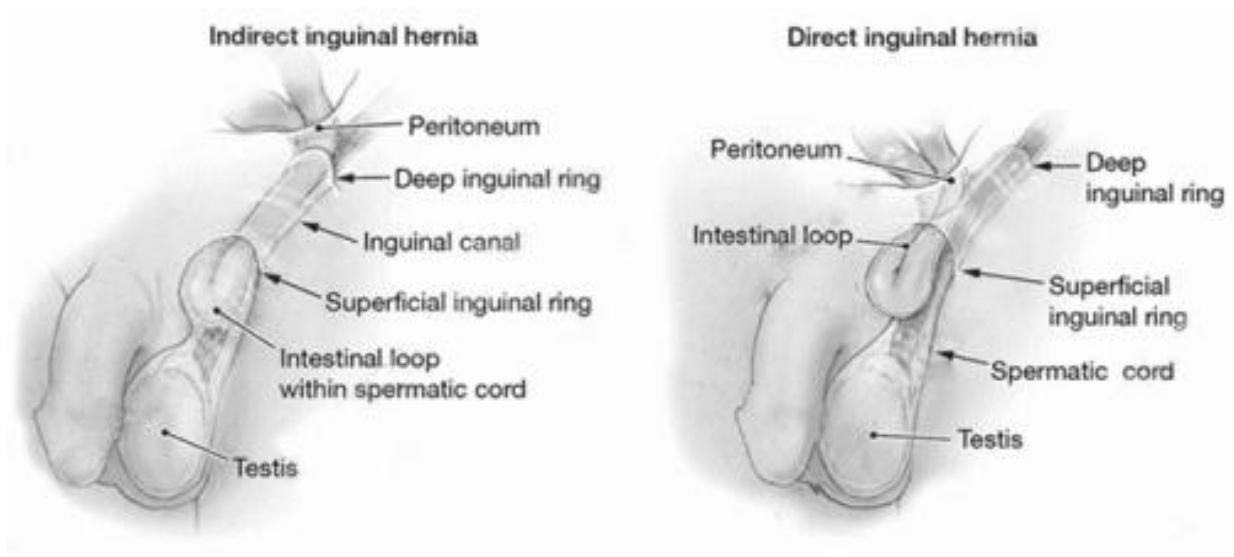
The European Hernia Society has recently suggested a simplified system of

Primary or recurrent (P or R)

Lateral, medial or femoral (L, M or F)

Defect size in finger breadths assumed to be 1.5 cm

A primary, indirect, inguinal hernia with a 3 cm defect size would be PL2



## RARE VARIETIES OF HERNIA

### 1. Sliding hernia or hernia –en- glissando

In this type of hernia a piece of extraperitoneal bowel, slides down the outside of hernial sac forming a parts of its wall being covered by the peritoneum on the hernia aspect only.

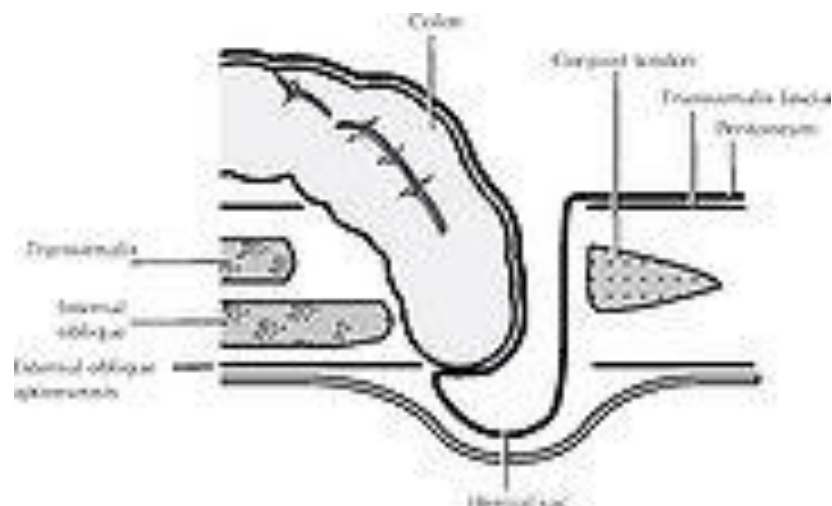
Usually,

Right side- caecum

Left side-sigmoid colon

Either side- Urinary bladder

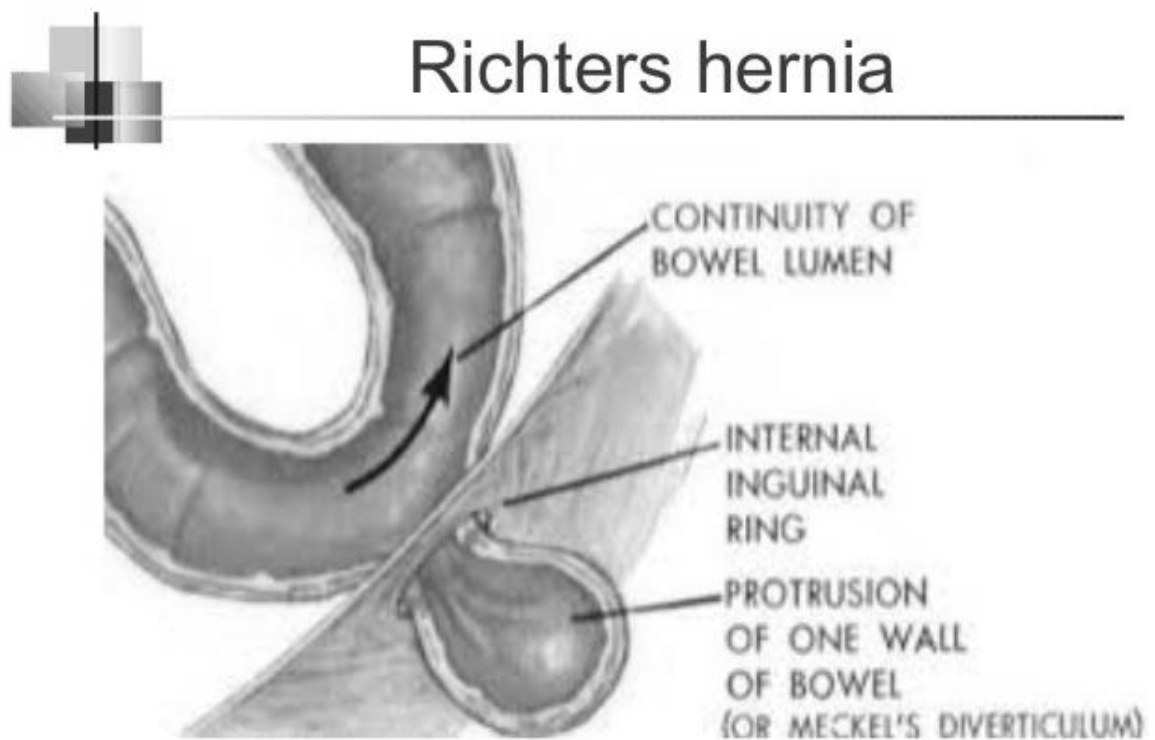
A large globular hernia when descends well into the scrotum this condition is suspected.





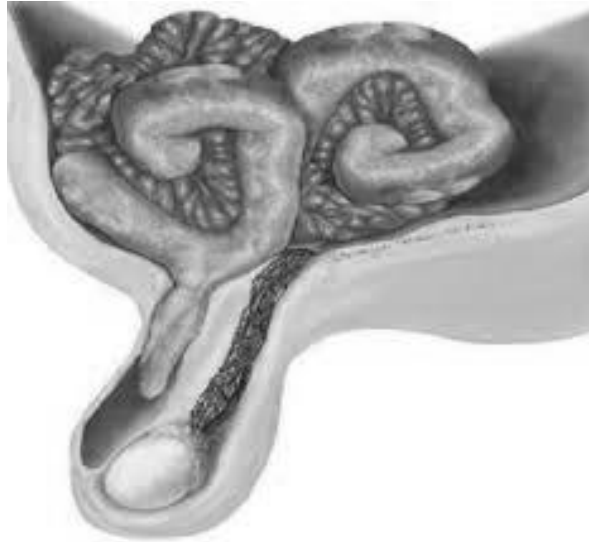
## 2. Richter's hernia

In this type a portion of the circumference of the bowel becomes strangulated



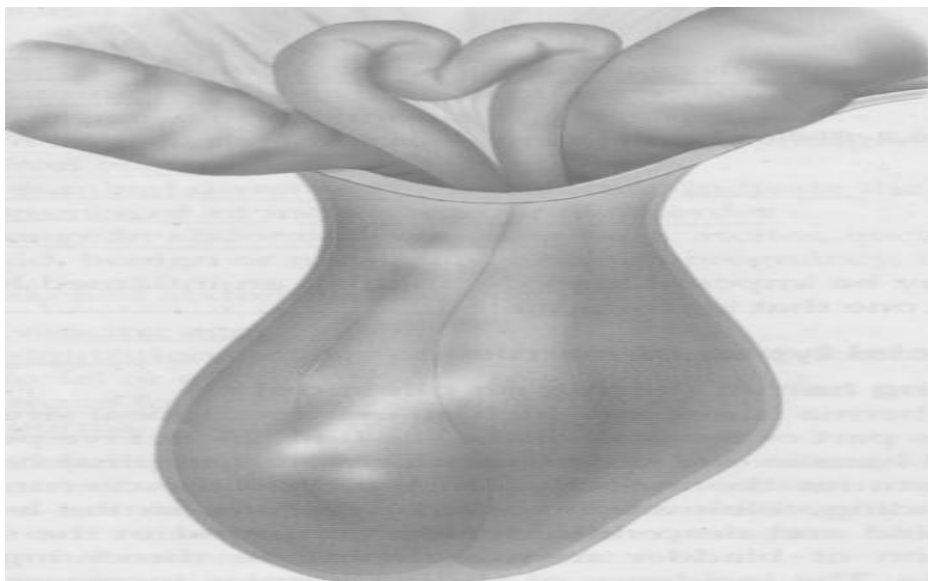
### 3. Litter's hernia

In this type meckel's diverticula is the content



### 4. Maydl's hernia (Hernia -en-w) or retrograde strangulation

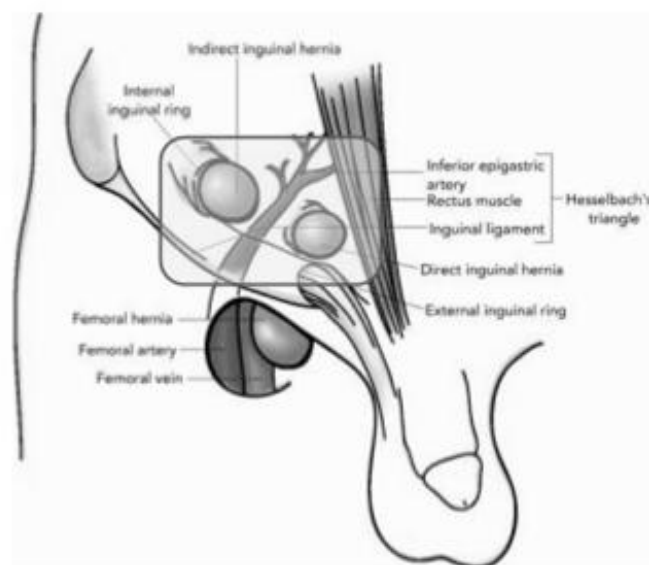
In this type two loops of bowels remain in the sac and the connecting loop remains within the abdomen and becomes strangulated, the loops of hernia look like W



## 5. Pantaloon hernia (double hernia, saddle hernia, Romberg hernia)

Its contains both direct and indirect inguinal hernia sacs

Clinically present as direct hernia

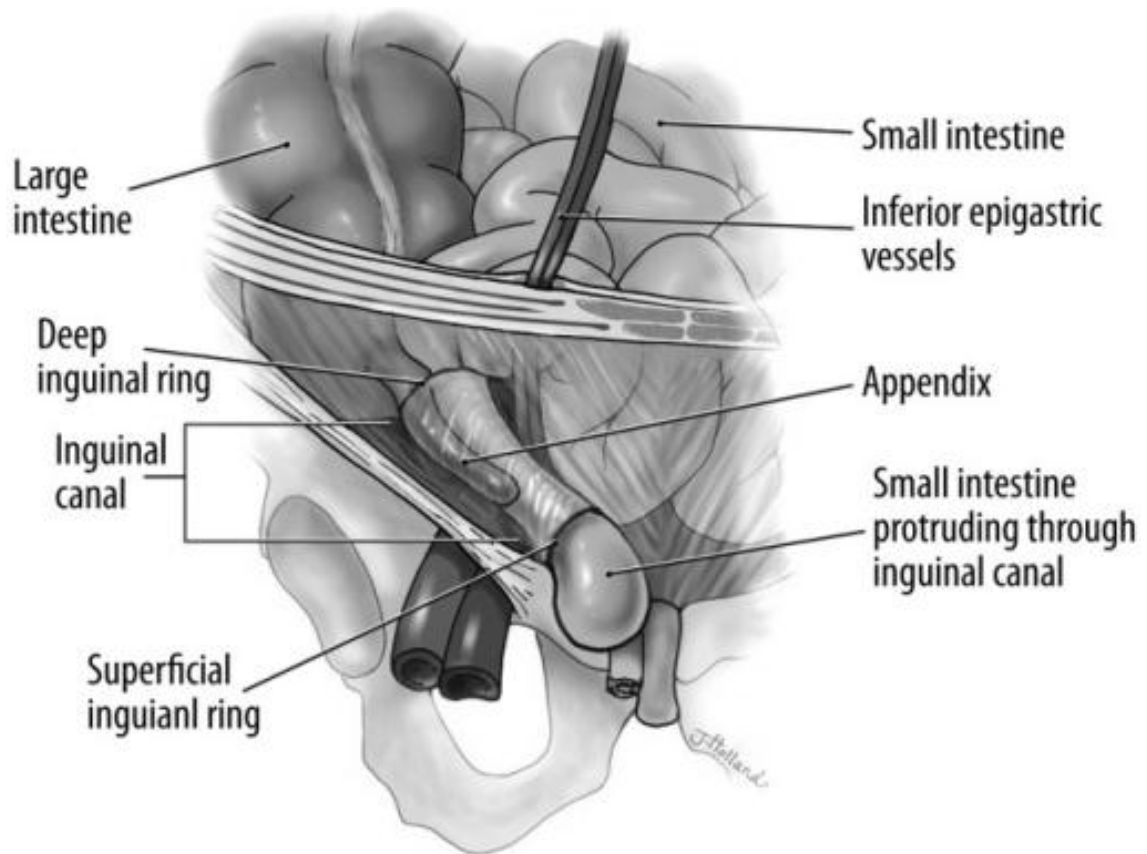


## 6. Infantile hernia

In this type processes vaginalis is closed at internal ring and hernia sac either invaginates processes vaginalis as inverted umbrella or comes behind the processus vaginalis.

## 7. Amyand's hernia

It is a rare variety, less than 1% of inguinal hernia, here appendix as the contents of hernia sac



## **THEORIES FOR HERNIA FORMATION**

1. Reid's metastatic emphysema theory

due to smoking

2. Cloquet's lipoma theory

due to the pile driver action of fat

3. Fruchaud's theory

Due to large opening in the lower abdomen - inbetween the pubic bone and conjoint tendon. Divided into two half by inguinal ligament. Through the upper half part passes the inguinal hernia, while through the lower half part passes the femoral hernia.

4. Denervation theory

Ilioinguinal nerve injury after appendectomy.

5. Oblique pelvis

Due to high arch of the internal oblique , inefficient shutter mechanism, prone to inguinal hernia.

6. Wide female pelvis

Lower arch of internal oblique muscle has more efficient shutter mechanism - usually indirect inguinal hernias are uncommon in females. Due to wider femoral ring - femoral hernias are more common in females

7. Uglavasky theory

Due to Chronic increased Intra abdominal pressure

8. Peacock's theory

Due to defect in the collagen synthesis

9. Walk's theory

weakness of abdominal wall at exit of neurovascular bundle

10. Keith's theory

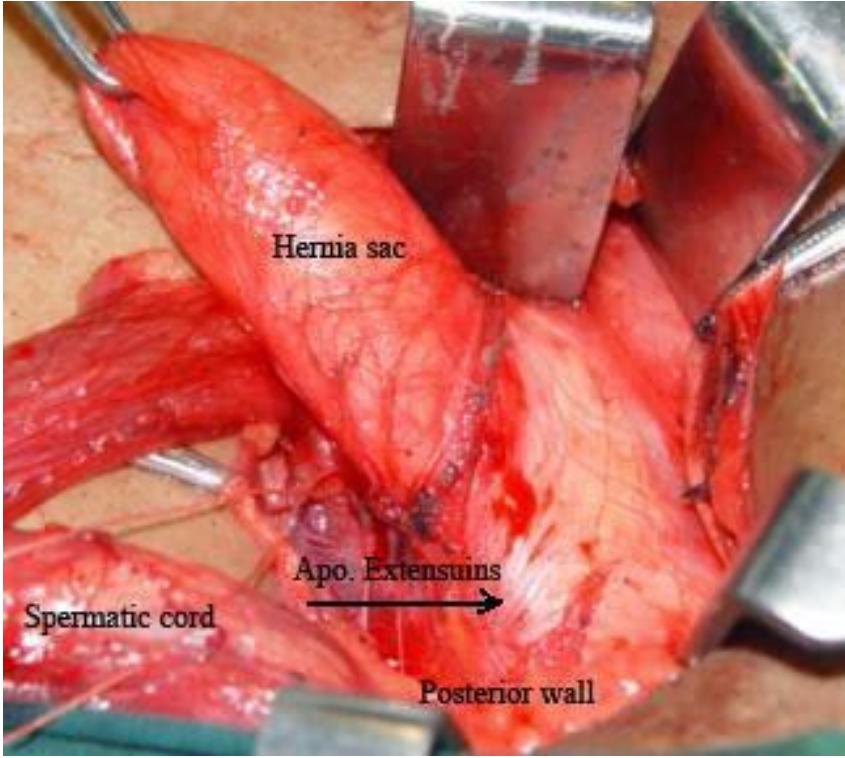
Degeneration of connective tissue ,especially in the fascia transversalis-  
due to stress

11. Dr. Desarda's theory

- a) Transversalis fascia is never gives protection from the herniation process as believed today or stated in the text books or various research articles.

- b) Transversalis fascia is very thin like paper and is an extension of the endo-abdominal fascia
- c) Posterior wall of the inguinal canal is not only a single layer wall composed of the transversalis fascia as believed today but is composed of two layers. Transversalis fascia is a posterior layer and in front of it is another layer composed of the aponeurotic extensions from the Transversus Abdominis Aponeurotic Arch also called as the "Dessidious part of the Transversus Abdominis Aponeurotic Arch". These aponeurotic extensions in the posterior wall of the inguinal canal gives real protection from the herniation process. The inguinal hernia formation can take place only if these aponeurotic extensions are absent or deficient. Loss of strength and physiologically a-dynamic nature of the posterior wall of the inguinal canal due to absent aponeurotic extensions in the posterior wall and loss of strength of cremasteric fascia and musculo-aponeurotic structures around the inguinal canal are the real factors or the cause of hernia formation.

**Dessidious Part of the Transversus Aponeurotic Arch**





## **Complaints**

Dull dragging pain referred to the testis - increases on work

If obstructed hernia having symptoms of constipation, vomiting and pain  
if strangulated hernia may have severe pain, shock and collapse.

## **Clinical Findings**

Piriform shaped swelling - in the inguinal region

Cough impulse +

Reducibility +

Neck of the hernia is supero-medial to pubic tubercle

## **Special tests**

### **Deep ring occlusion test**

After reducing the swelling deep ring will have been occluded by thumb

Indirect inguinal hernia-swelling does not appear

Direct inguinal hernia-swelling does appear

### **Finger Invagination test**

Indirect hernia- impulse at tip of finger

Direct hernia-impulse at pulp of finger

### **Three finger test-zieman'test**

The examiner places his index finger on the deep ring, middle finger on the external ring, ring finger over the saphenous opening, the patient is asked to cough, if impulse felt on index finger –indirect hernia

### **INVESTIGATIONS**

Ultrasound

CT scan

MRI scan

Herniogram

### **Differential Diagnosis:**

#### Males

1. Femoral hernia
2. Direct inguinal
3. Vaginal hydrocele
4. encysted hydrocele of cord
5. Undescended testis
6. Spermatocele
7. Varicocele
8. Diffuse lipoma of cord.

## Females

9. Femoral hernia
10. Hydrocele of canal of Nuck

## **TREATMENT FOR HERNIA**

### **Principles of treatment:**

1. Restore the disrupted anatomy
2. Repair using fascia / aponeurosis NOT muscle
3. No tension
4. Suture material used should hold until natural support is formed over it. (i.e. monofilament nylon or polyethylene)

### **Management**

1. Resuscitation - in case of strangulated hernia with gangrene with shock or with intestinal obstruction.
2. Reduction of hernia - includes taxis, & reduction under anesthesia.
3. Repair - of the defect - may be herniorrhaphy or hernioplasty.

### **Strangulated hernia -**

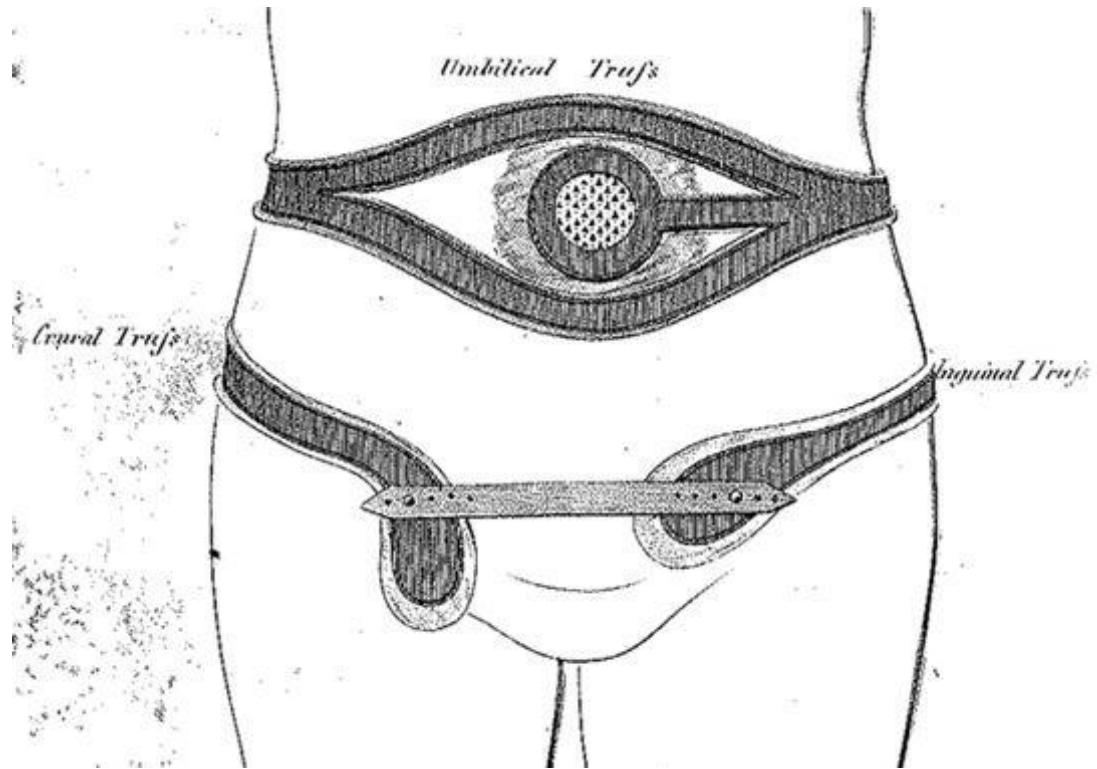
- treat as emergency
- treat shock if any. Start IV antibiotics
- Incision over the most prominent part of swelling - sac carefully identified & dissected out. Sac opened.
- Aspirate all fluid (highly infectious)

- Resect any unviable intestine or omentum
- EO aponeurosis & external ring divided. Sac opened throughout the length upto deep ring & a little inside.
- Viable contents reduced. Definite repair carried out - any prosthetic repair is contra-indicated.

- **Non - Operative approach** - in elderly, unfit / unwilling for surgery.

- Use of truss is advised in such cases- Truss must be applied with hernia reduced. Must prevent reappearance of the hernia on straining

# TRUSS



Surgery-treatment of chice

Herniotomy

Hernioraphy (Open suture repair)

Bassini

Shouldice

Desarda

Open flat mesh repair

Lichtenstein repair

Open complex mesh repair

Plugs

Hernia systems

Open preperitoneal repair

Stoppa

Laparoscopic repair

TEP (Total Extraperitoneal) approach

TAPP (Trans Abdominal Preperitoneal) approach

## **LICHTENSTEIN REPAIR (Open flat mesh repair)**

This is tension free, simple, flat, synthetic mesh repair described by Lichtenstein in 1980. Synthetic material is polypropylene.

### **Patient Preparation**

This technique can be performed under local, regional, or general anesthesia. One cited advantage of performing this technique in awake patients is the opportunity to ask the patient to cough and assess the repair for weakness. The arms may remain out stretched or can be tucked on the basis of the patient's body habitus and the surgeon's preference. In routine cases, a urinary catheter is not necessary. Sufficient bladder decompression is achieved if the patient is able to urinate immediately prior to the procedure and a consensus is reached with anesthesia that minimal amounts of intravenous fluids will be administered intra operatively. The lower abdomen and groin are prepped consistent with the surgeon's preference. Many surgeons prefer the use of a plastic barrier draped over the skin to prevent contact of the mesh with the skin. Unless the patient has a large intra scrotal hernia, the scrotum does not need to be draped into the operative field. The use of the plastic barrier drape makes it possible to easily include the umbilicus, the anterior superior iliac spine (ASIS), and the pubic tubercles into the operative field. A single dose of first generation cephalosporin is commonly administered for prophylaxis.

**Procedure:**

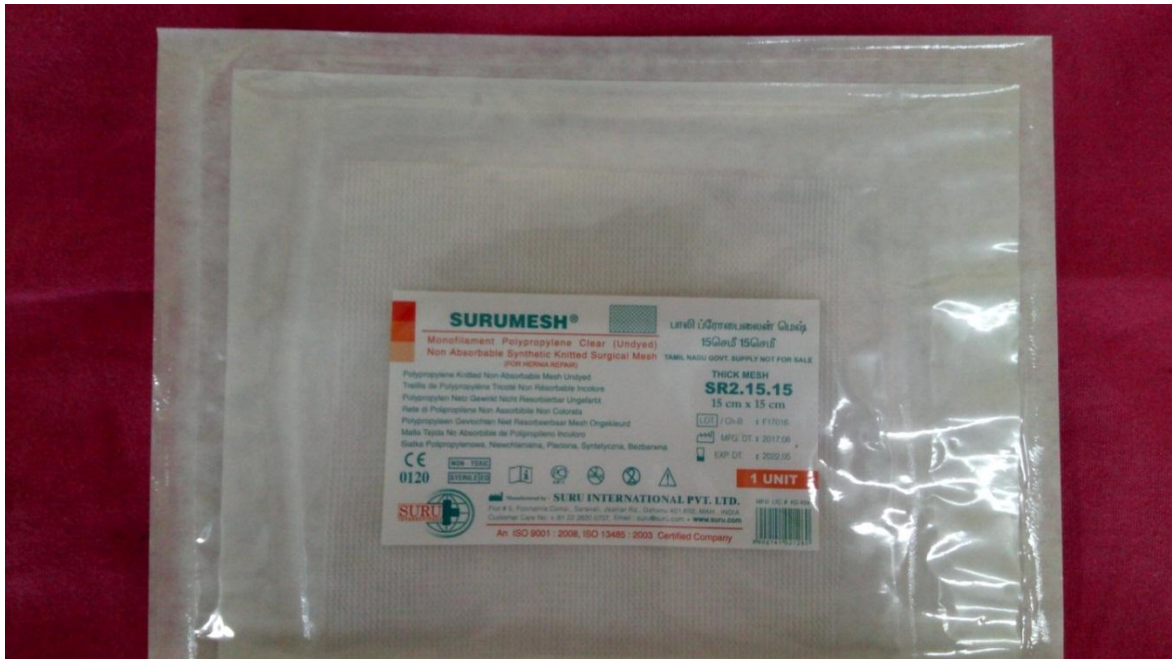
Under regional anaesthesia patient in supine position, the oblique incision is essentially made over the distance from the internal to the external ring which in theory allows for the smallest length of incision needed. The oblique incision is prepared by marking a line from the *ASIS* to the pubic tubercle. A 5 to 7 cm incision is then made parallel 1 cm Cephalad to the previously marked line which begins medially 2 cm lateral to the pubic tubercle in the anterior abdominal wall, after opening the layers of abdominal wall such as external oblique aponeurosis inguinal canal opened. Spermatic cord is dissected, external spermatic fascia, Cremasteric fascia, internal spermatic fascia opened, sac identified, presence of lateral or medial is confirmed. The sac of medial hernia inverted and the transversalis fascia is suture plicated, if the sac is lateral, opened any contents reduced. The sac is then sutured closed at its neck and excess sac removed. Medial defect is closed, a piece of mesh, measuring 8x15 cm is placed over the posterior wall, behind the spermatic cord at the deep inguinal ring. loose sutures hold the mesh to the inguinal ligament and conjoint tendon, external oblique closed with 2 o vicryl than subcutaneous and skin are closed.



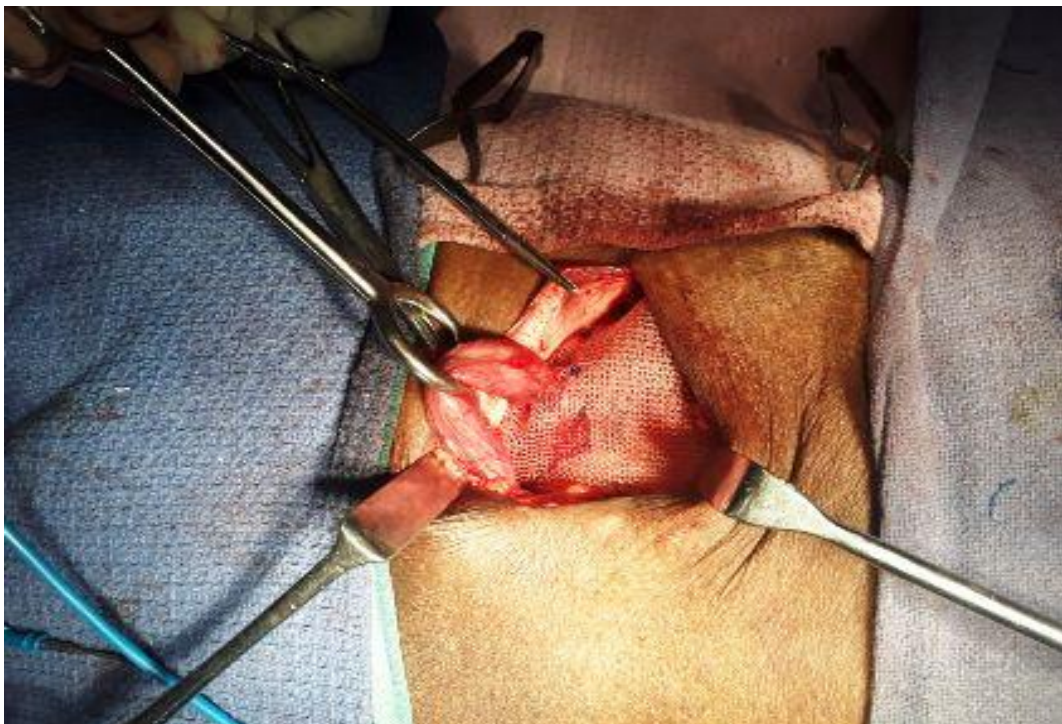
## **POSTOPERATIVE MANAGEMENT**

An ice pack is used for 24 hours on the wound to minimize swelling. Male patients should wear scrotal support for at least a week. This reduces tension on the testicle and increases comfort in the post operative period. Patients are given oral narcotic pain medication and non-steroidal anti-inflammatory agents for pain. Most patients can return to work depending on the physical requirements in 1 to 2 weeks, but there is a wide variation on the basis of patient motivation and the extent of physical activity required. Patients are advised to avoid truly strenuous lifting for 6 weeks postoperatively

## Mesh



## Lichtenstein repair



## **LIMITATIONS OF MESH**

Presence of infection

Expensive

## **COMPLICATIONS**

- 1) recurrence
- 2) chronic groin pain
- 3) sepsis & sinuses
- 4) testicular damage
- 5) migration
- 6) perforation
- 7) rejection

## **DESARDA REPAIR**

Skin and fascia are incised through a regular oblique inguinal incision to expose the external oblique aponeurosis. The thin, filmy fascial layer covering it is kept undisturbed as far as possible. The thinned out portion is usually seen at the top of the hernia swelling, extending and fanning out to the lower crux of the superficial ring.

The external oblique is cut in line with the upper crux of the superficial ring, which leaves the thinned out portion in the lower leaf so a good strip can be taken from the upper leaf. The external oblique, which is thinned out as a

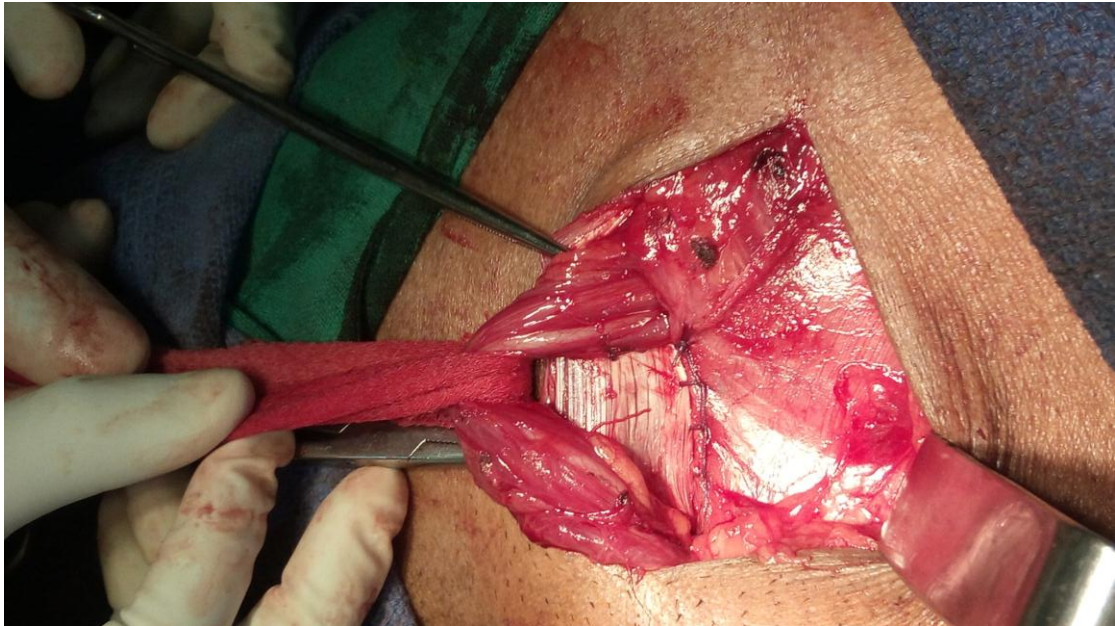
result of aging or long standing large hernias, can also be used for repair if it is able to hold the sutures. The Cremasteric muscle is incised for the Herniotomy and the spermatic cord together with the Cremasteric muscle is separated from the inguinal floor. The sac is excised in all cases except in direct hernias where it is inverted. The medial leaf of the external oblique Aponeurosis is sutured with the inguinal ligament from the pubic tubercle to the abdominal ring using PDSII no.1 (Monofilament Polydioxanone Violet) continuous sutures. The first two sutures are taken in the anterior rectus sheath where it joins the external oblique aponeurosis. The last suture is taken so as to narrow the abdominal ring sufficiently without constricting the spermatic cord (In fact, here we are creating a new internal ring. Each suture is passed first through the inguinal ligament, then the transversalis fascia, and then the external oblique. The index finger of the left hand is used to protect the femoral vessels and retract the cord structures laterally while taking lateral sutures.

A splitting incision is made in this sutured medial leaf, partially separating a strip OF 1-2 CMS. WIDTH but NEVER more than 2 cms. This splitting incision is extended medially up to the pubic symphysis and laterally 1–2 cms beyond the abdominal ring. The medial insertion and lateral continuation of this strip is kept intact. A strip of the external oblique, is now available, the lower border of which is already sutured to the inguinal ligament. The upper free border of the strip is now sutured to the internal oblique or conjoined muscle lying close to it with PDSII no.1 (Monofilament Polydioxanone violet)

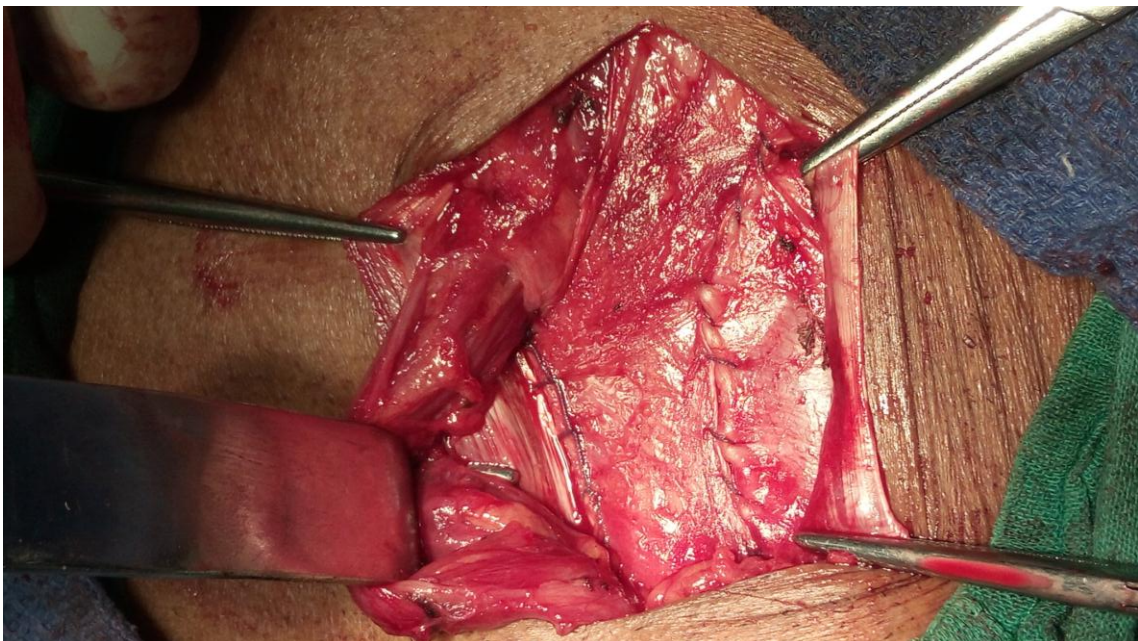
continuous sutures throughout its length The aponeurotic portion of the internal oblique muscle is used for suturing to this strip wherever and whenever possible; otherwise, it is not a must for the success of the operation. This will result in the strip of the external oblique being placed behind the cord to form a new posterior wall of the inguinal canal.

At this stage the patient is asked to cough and the increased tension on the strip exerted by the external oblique to support the weakened internal oblique and transversus abdominis is clearly visible. The increased tension exerted by the external oblique muscle is the essence of this operation. 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 of the external oblique in front of the cord, as usual, again using PDSII no.1 (Monofilament Polydioxanone violet) continuous sutures. Undermining of the newly formed medial leaf on both of its surfaces facilitate its approximation to the lateral leaf. The first stitch is taken between the lateral corner of the splitting incision and lateral leaf of the external oblique. This is followed by closure of the superficial fascia and the skin as usual.

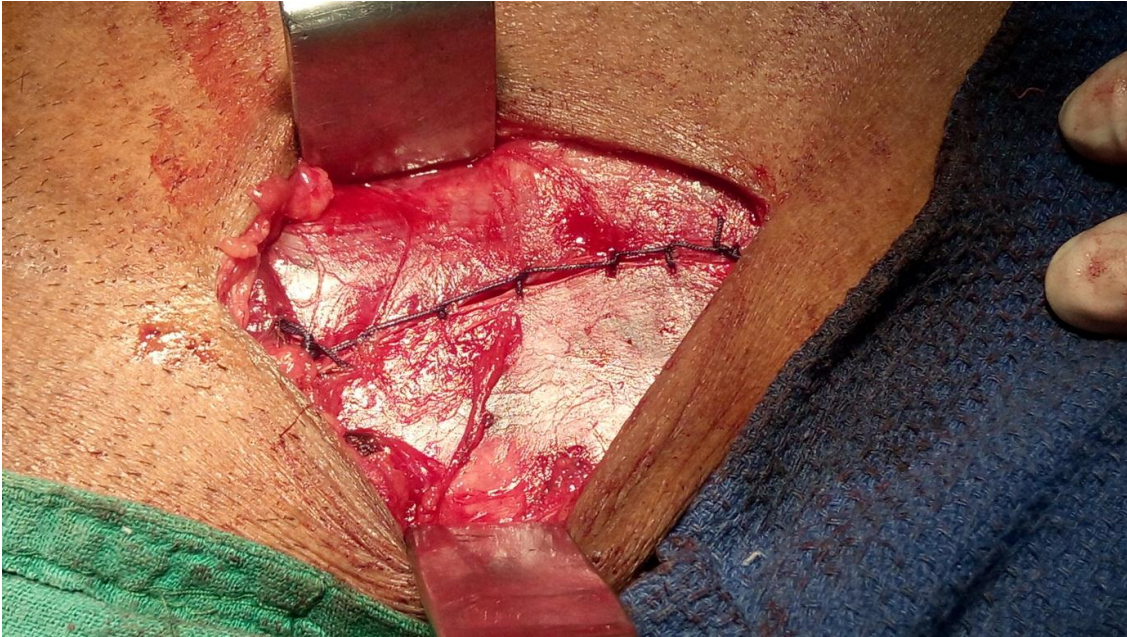
**Strip of the External Oblique – Lower Border Sutured to the Inguinal Ligament**



**Strip of the External Oblique – Upper Border Sutured to the Internal Oblique or Conjoined Muscle**



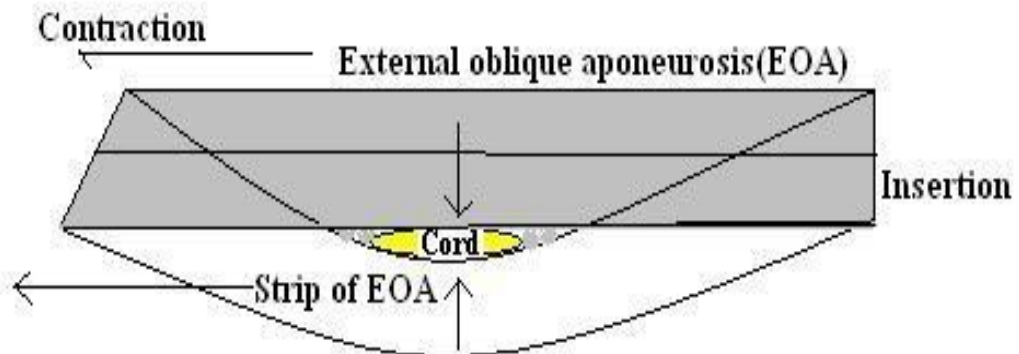
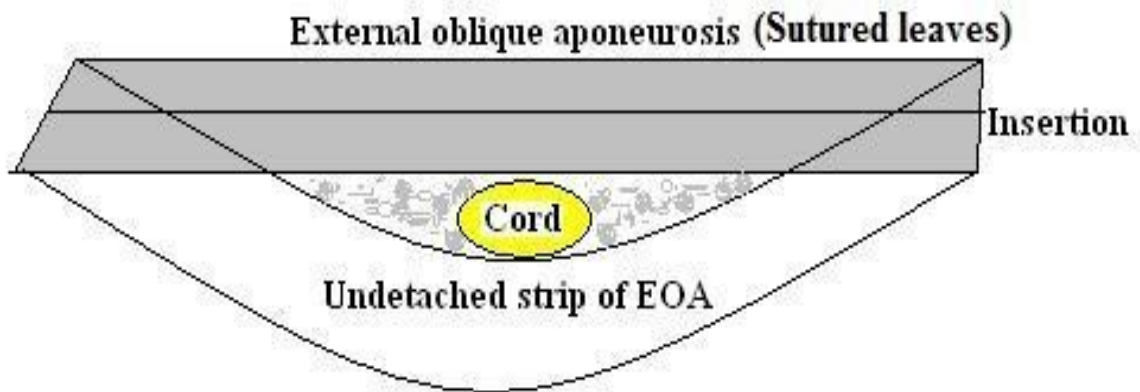
## External Oblique Closure – New Formed



### **Mechanism of action:**

Contractions of the abdominal wall muscles pull this strip upwards and laterally against the fixed structures like inguinal ligament and pubic symphysis, creating tension above and laterally and turning the strip into a shield to prevent any herniation. This additional strength given by the external oblique muscle to the weakened muscle arch to create tension in the strip and prevent re-herniation is the essence of this operation. The shielding action of the strip of EOA can be elegantly demonstrated on the operating table by asking the patient to cough. Second important factor that prevents hernia formation in the normal individuals is anterior-posterior compression of the inguinal canal caused by the external oblique aponeurosis compressing against the posterior wall. This compression is lost if the posterior wall is weak and flabby due to absent aponeurotic extension cover. The strip of EOA sutured in this operation gives the aponeurotic cover to the posterior wall transversalis fascia again and restores this anterior-posterior compression effect during the raised intra-abdominal pressures. The contraction of the external oblique muscle pulls anterior aponeurosis and the posterior placed strip also, naturally compressing the inguinal canal.





Anterio-posterior compression of EOA & post. wall (strip of EOA) forms a solid shield by compressing the cord structures that prevents the recurrence

# **MATERIALS AND METHODS**

## MATERIALS AND METHODS

### Study Site

Department of General Surgery, Kilpauk Medical College and Govt. Royapettah Hospital, Chennai.

### Collaborating Departments

- Department of Anaesthesiology
- Department of Radiology
- Department of General Medicine
- Department of Medical Biochemistry

### Study Period

February 2017 to September 2017

**Materials** : All Patients Having Inguinal Hernia Diagnosed Clinically and by Radiological Examination were Included in the Study

**Methodology** : Over A Period of Eight Months 50 Patients Aged Between 21 & 60 Years Treated for Inguinal Hernia were Included in this Prospective Randomised Study.

Patients were Randomly Divided into Two Equal Groups.

Group I (Control Group) Were Subjected to Lichenstein Tension Free Mesh Repair

Group II (Study Group) were Subjected to Desarda Non Mesh Tissue Repair Patients Above 50 Years of Age and any Patients Associated with Recurrent Inguinal Hernia and Patients with Obstruction Ir-reducible Inguinal Hernia were not Included in our Study.

**Type of Study** : Prospective study

**Sample Size** : 50

**Inclusion Criteria:**

1. Adult patients above the age of 21 years.
2. Patient With Clinically Demonstrable Inguinal Hernia Were Included In Study

**Exclusion Criteria:**

1. Patients over 60 years of age.
2. Patients Associated with Recurrent Inguinal Hernia
3. Patients with Obstruction Ir-reducible Inguinal Hernia

Type of analysis: Clinical data analysis

### **Data Collection:**

The data of each patient was collected in a specially designed proforma which is enclosed.

### **Statistical Analysis**

Descriptive statistics was done for all data and suitable statistical tests of comparison were done. Continuous variables were analysed with the Unpaired test and categorical variables were analysed with Fisher Exact Test. Statistical significance was taken as  $P < 0.05$ . The data was analysed using SPSS Version 16. Microsoft Excel 2010.was used to generate charts

### **Ethical Considerations**

The following ethical guidelines were put into place for the research period:

- The dignity and wellbeing of students was protected at all times.
- The research data remained confidential throughout the study and the researcher obtained the students' permission to use their real names in the research report.

Research protocol was presented in Institutional Ethical review Board and due permission was obtained to undertake the study

## **Conflict of Interest**

Study is self-sponsored with support from institution. There is no commercial or conflict of interest

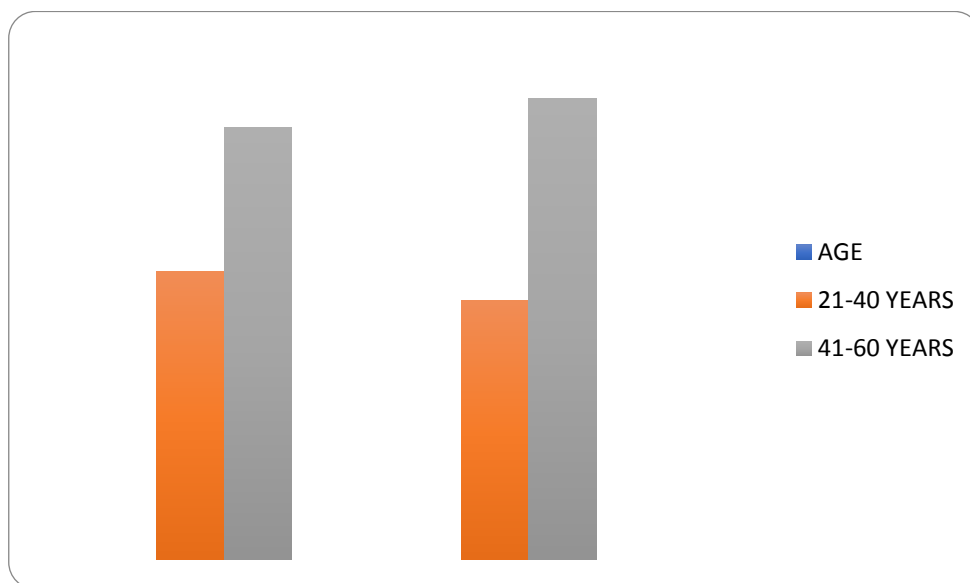
# **RESULTS**

# RESULTS

## 1. AGE DISTRIBUTION

AGE (YEARS)	LICHTENSTEIN (N=25)	DESRADA (N=25)
21-40	10	9
41-60	15	16

There is no significance difference regarding age



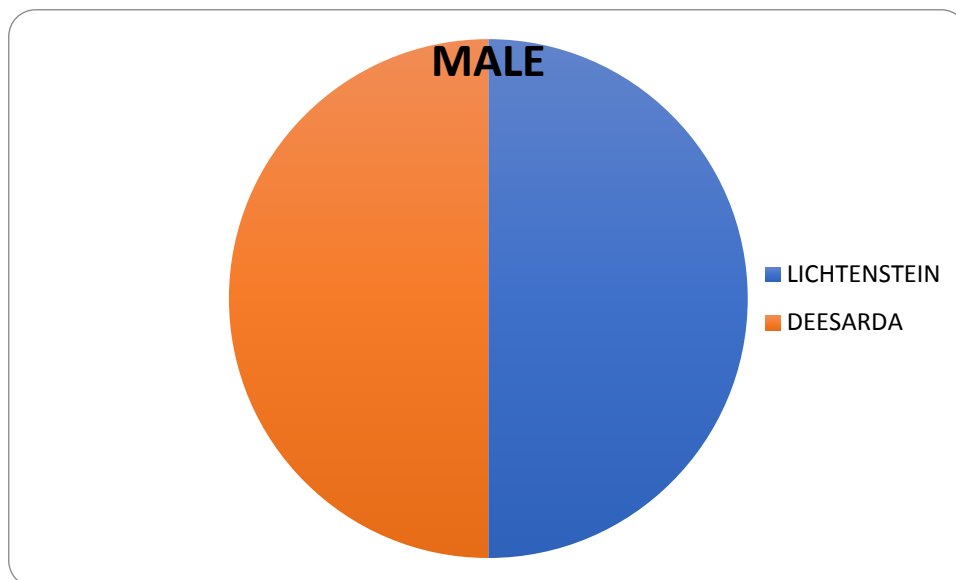
**Figure 1. AGE DISTRIBUTION**



## 2. SEX

SEX	LICHENSTEIN (N=25)	DESARDA (N=25)
MALE	25	25
FEMALE	0	0

There is no difference regarding sex

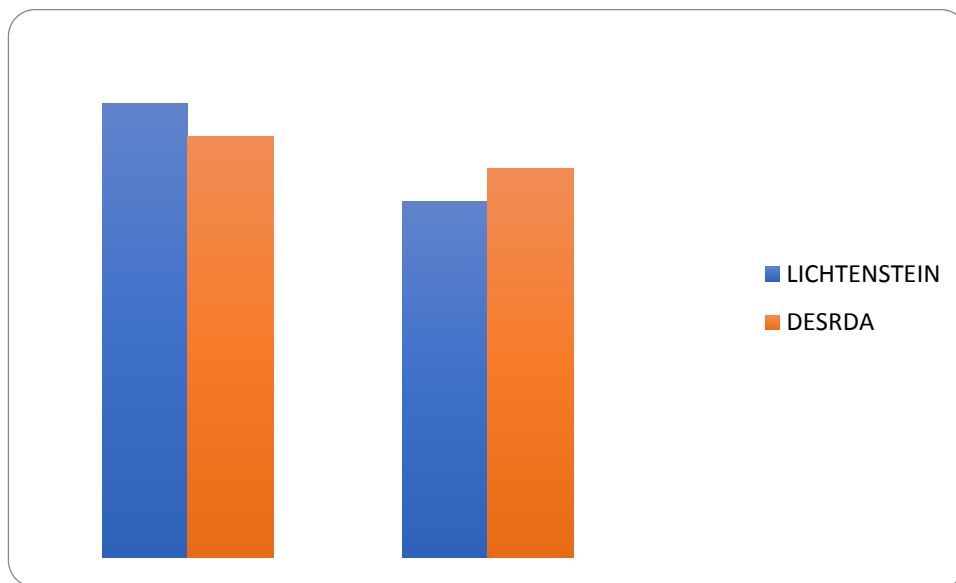


**Figure 1. SEX**

### 3. LOCATION

LOCATION	LICHTENSTEIN (N=25)	DESARDA (N=25)
RIGHT	14	13
LEFT	11	12
BILATERAL	0	0

There is no difference regarding location of hernia

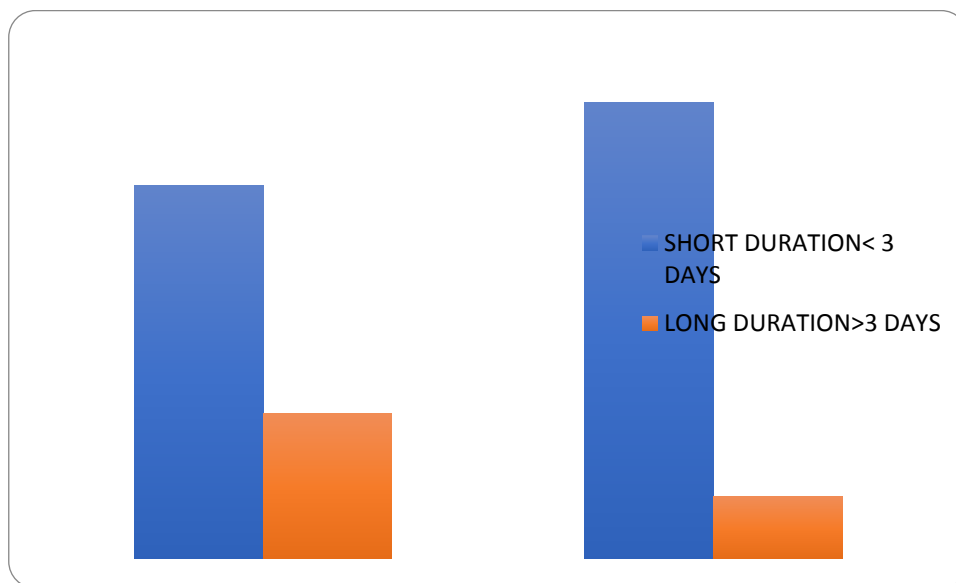


**Figure. 2 LOCATION OF HERNIA**

#### 4. DURATION OF HOSPITAL STAY

DURATION	LICHTENSTEIN (N=25)	DESARDA (N=25)
SHORT (<3 DAYS)	18	22
LONG (>3 DAYS)	7	3

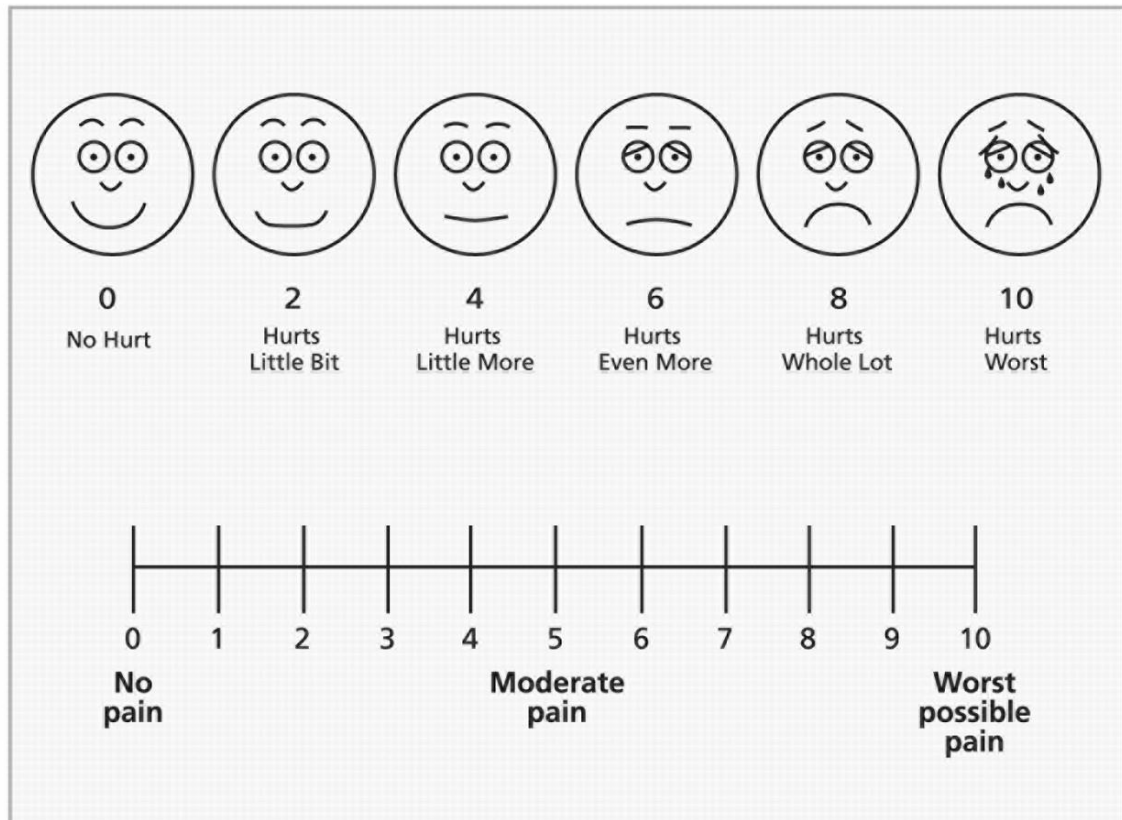
Mean hospital stay for Desarda's group was less than 3 days, for Lichtenstein group was more than 3 days (p value <0.0001)



**Figure 4. DURATION OF HOSPITAL STAY**

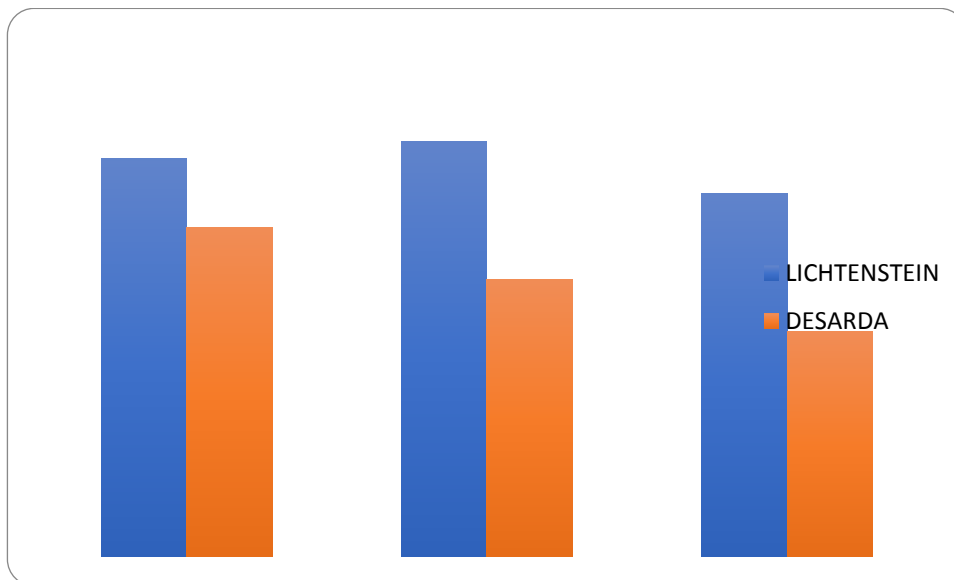
## 5. PAIN

Analysis of pain score according to visual analogue score,



<b>PAIN (MILD TO MODERATE)</b>	<b>LICHTENSTEIN (N=25)</b>	<b>DESARDA (25)</b>
FIRST POD	23	19
THIRD POD	24	16
FIFTH POD	21	13

Mild to moderate on 1<sup>st</sup>,3<sup>rd</sup>,5<sup>th</sup> post operative days was significantly less in Desarda's group as compare to Lichtenstein group(P value <0.0001).



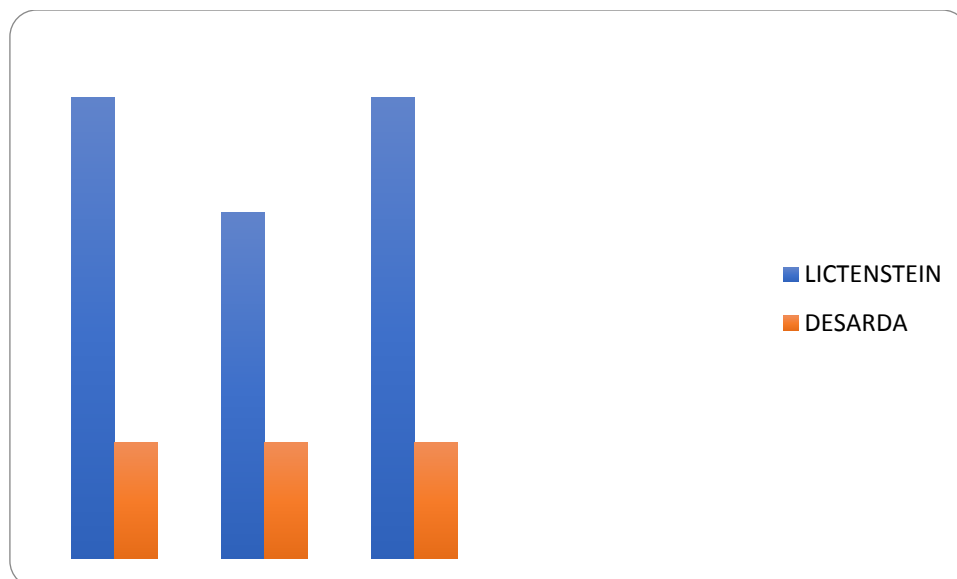
**Figure 5. PAIN**

## 6. COMPLICATIONS

COMPLICATIONS	LICHTENSTEIN (N=25)	DESARDA (N=25)
SEROMA	4	1
WOUND INFECTION	3	1
HEMATOMA	4	1
ORCHITIS	0	0
TESTICULAR ATROPHY	0	0
RECURRANCE	0	0

There is no recurrence between both groups, complications are more for Lichtenstein group then Desarda group (p value <0.0034).

There were no case of chronic groin pain lasting more than 3 month in either of the group.

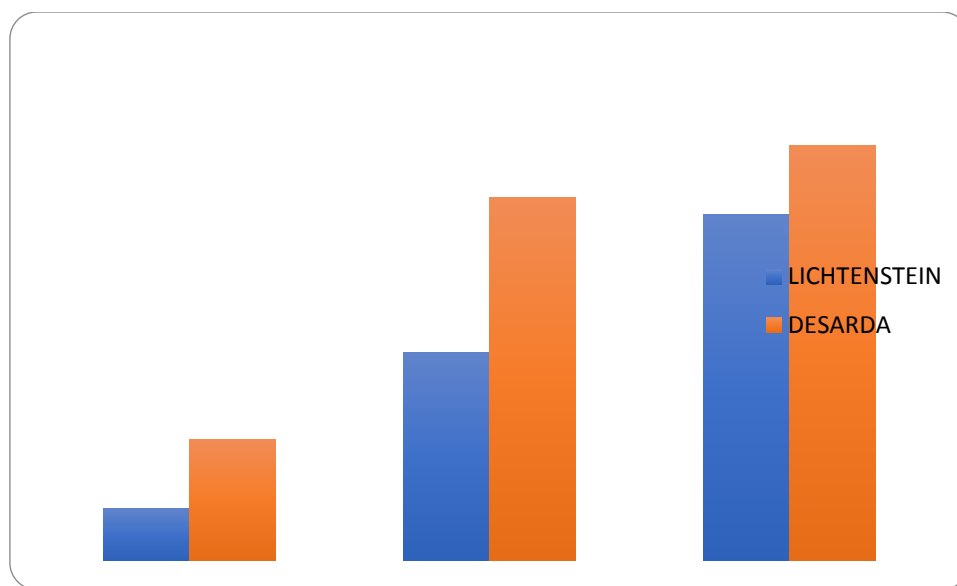


**Figure 6. COMPLICATIONS**

## 7. RETURN TO NORMAL NON STERNOUS ACTIVITY

<b>RETURN TO NORMAL NON STERNOUS WORK</b>	<b>LICHTENSTEIN (N=25)</b>	<b>DESARDA (N=25)</b>
1-7 DAYS	3	7
8-15 DAYS	12	21
16-30 DAYS	20	24

Return to normal nonsternous Activity After 7-15 days in Desarda group was 84 % while only 48% of patient in lichtenstein repair.(p value <0.0001).



**Figure 7. RETURN TO NORMAL NONSTERNOUS ACTIVITY**

# **DISCUSSION**



## DISCUSSION

Lichtenstein Mesh repair is now widely used, and is often referred to as the gold standard despite a relatively paucity of clinical trial comparing mesh with suture repair. Cost of surgery<sup>14</sup> and post-operative morbidity affecting the quality of life are important consideration in the inguinal hernia surgery. There are no clear scientific evidence to improve to prove that the mesh prosthesis repair is superior to non-prosthesis repair in this respect Porrero JL. El Cambio et al.<sup>15</sup>

There are advantages and disadvantages associated with all types of open inguinal hernia surgery. Existing non prosthesis repair (Bassini/Shuldice) is blamed for causing tissue tension and mesh repair is blamed for causing complication of foreign body. Desarda's suture 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<sup>16</sup>. The posterior wall of the inguinal canal was weak and without dynamic movement in all patients. Strong aponeurotic extensions were absent in the posterior wall. The muscle arch movement was lost or diminished in all patients. The movement of the muscle arch improved after it was sutured to the upper border of a strip of the external oblique aponeurosis (EOA). The newly formed posterior wall was kept physiologically dynamic by the additional muscle strength provided by external oblique muscle to the weakened muscles of the muscle arch. A physiologically

dynamic and strong posterior inguinal wall, and the shielding and compression action of the muscles and aponeurosis around the inguinal canal are important factors that prevent hernia formation or hernia recurrence after repair. In addition, the squeezing and plugging action of the cremasteric muscle and binding effect of the strong cremasteric fascia, also play an important role in the prevention of hernia MP Desarda et al.<sup>17</sup> Desarda's result in a tension free repair without the use of any foreign body, being simple to perform.

For inguinal hernia repair, different studies have tried to give an answer as to which of the existing technique is better<sup>18</sup>. THE EU HERNIA COLLABORATION made a systemic revision of the randomized prospective studies and analysis of the result of different studies. The use of synthetic mesh substantially reduces the risk of hernia recurrence irrespective of placement method. Mesh repair appears to reduce the chance of persisting pain rather than increase it McGillicuddy JE et al.<sup>19</sup>

No patient had severe pain postoperatively and nearly all patients (n = 396) were free of pain and discomfort after the second postoperative day. 340 patients (85%) were discharged by the 4th postoperative day, and most returned to normal activities within 2 weeks. There was 1 early Haematocele, and 1 recurrence at 2 years Desarda MP et al<sup>10</sup>. In this study Return to normal nonsternous Activity After 7-15 days in Desarda group was 84 % while only 48% of patient in lichtenstein repair.(p value <0.0001).

After Desarda repair there was less intensive postoperative pain, rated in VAS scale at 3.3 in first day after the surgery, 2.1 in second day and 1.5 in third one, respectively in group II rated at 3.8, 2.7 and 1.6. Patients after Desarda repair were discharged from hospital on fourth day after the surgery, in group II on fifth postoperative day ( $p < 0.05$ ). One week after the hernia repair patients in both groups equally classified the intensity of the pain (VAS 1.2). Six months after the hospitalization the effect of performed surgery was described as good or very good. Only one patient in group I was unsatisfied with the surgery results. There was minor intensity of the pain at this point--similar in both groups (I--0.8, II--1.1). Full activity was achieved by 46 patients in group I and 45 in group II. There was no hernia recurrence among the patients six months after the surgery Mitura K, Romanczuk M et al.<sup>12</sup> In This study mild to moderate pain only noticed mild to moderate on 1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup> post-operative days was significantly less in Desarda's group as compared to Lichtenstein group ( $P$  value  $< 0.0001$ ).

A total of 208 male patients were randomly assigned to the D or L group (105 vs. 103, respectively). The primary outcomes measured were recurrence and chronic pain. Additionally, early and late complications, foreign body sensation, and return to everyday activity were examined in hospital and at 7, 30 days, and 6, 12, 24, and 36 months after surgery. During the follow-up, two recurrences were observed in each group ( $p = 1.000$ ). Chronic pain was

experienced by 4.8 and 2.9% of patients from groups D and L, respectively ( $p = 0.464$ ). Foreign body sensation and return to activity were not different between the groups. There was significantly less seroma production in the D group ( $p = 0.004$ ) Szopinski J, Kapala A, Prywinski S, et al.<sup>13</sup> In This study no one documented chronic pain after both groups, significantly seroma less in Desarda group (4%) compared to Lichtenstein group(16%),  $p$  value  $<0.0034$ )

The external oblique muscle technique satisfies all criteria of modern hernia surgery. Desarda's technique is simple and easy to do. It does not require risky or complicated dissection. There is no tension in suture line .It does not require any foreign material and does not use weak muscle or fascia transversalis for repair. It does not use mesh prosthesis so it is more economical and also avoid morbidity associated with foreign body like rejection, infection, chronic groin pain. Szopinski et al.,<sup>20</sup> stated in their Randomized controlled trial that the Desarda's technique has the potential to enlarge the number of tissue based method available to treat groin hernias. The most evident indication for use financial constraints or if a patient disagree with the use of mesh..

# **CONCLUSION**

## CONCLUSION

The study is designed to compare the outcome of Lichtenstein tension free mesh repair and Desarda's repair. Though it requires studying large number of patients and a longer follow up, based on the results of our study following conclusion drawn.

1. The Lichtenstein repair and Desarda procedures of primary inguinal hernia repair do not differ in the means of procedure, complexity
2. local complications and pain intensity is higher in Lichtenstein repair compared to Desarda's repair
3. The time taken for return to normal nonstrenuous activity is significantly higher for Lichtenstein group compared to Desarda's repair. The patients are satisfied with the Lichtenstein repair and Desarda's repair with surgery outcome.
4. There is no recurrence of hernia seen in both groups during follow up period. Desarda's technique is based on the physiological principles. This operation is simple to perform, does not require foreign body like mesh or complicated dissection of the inguinal floor as in Bassini and Shouldice
5. Desarda's technique is cost effective when compared with Lichtenstein method, so early can do in rural areas
6. The mean hospital stay is low for Desarda's repair compared to Lichtenstein repair

# **ANNEXURE**

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## PROFORMA

NAME: AGE: SEX:  
ADDRESS UNIT:  
IP NO:

OCCUPATION:

DOA: DOS: DOD:

PRESENTING COMPLAINTS:

DURATION OF COMPLAINTS:

ANY SIGNIFICANT PAST/PRESENT HISTORY:

ANY SIGNIFICANT COMORBIDITIES:

## **PHYSICAL EXAMINATION:**

Level of consciousness

Orientation

Hydration status

Anemia

Jaundice

Vitals

CVS/RS

Abdomen

CNS

P/R:

P/V:

External genitalia

## **INVESTIGATIONS:**

BLOOD

Complete hemogram

Renal Function tests

Serum electrolytes

XRAY ABDOMEN ERECT

USG ABDOMEN

**SURGICAL MANAGEMENT AND OPERATIVE FINDINGS**

COMPLICATIONS DURING IMMEDIATE POSTOPERATIVE PERIOD UPTO 30 DAYS

**POSTOPERATIVE ASSESSMENT**

Patient Name :

Age :

Sex:M/F

IP No.:

	<b>LICHENSTIN REPAIR</b>	<b>DESARDA REPAIR</b>	<b>P VALUE</b>
AGE			
21-40 YEARS			
41-60 YEARS			
SEX			
MALE			
FEMALE			
LOCATION			
RIGHT			
LEFT			
BILATERAL			
HOSPITAL STAY			
SHORT DURATION < 3 DAYS			
LONG DURATION>3DAYS			

PAIN(MILD TOMODERATE)			
1 POD			
3POD			
5POD			
POSTOPERATIVE COMPLICATIONS			
SEROMA			
WOUND INFECTION			
HEMATOMA			
ORCHITIS			
TESTICULAR ATROPHY			
RECURRENCE			
RETURN TO NORMAL NON STERNOUS WORK			
1-7 DAYS			
8-15 DAYS			
16-30 DAYS			

3.Comments :

## சுய ஒப்புதல் படிவம்

ஆய்வு செய்யப்படும் தலைப்பு“*A COMPARATIVE STUDY OF LICHTENSTEIN MESH REPAIR VS NONMESH TISSUE REPAIR DESARDA'S TECHNIQUE FOR INGUINAL HERNIA REPAIR*

- ” Department of General Surgery, GRH, KMCH.

- பங்கு பெறுபவரின் பெயர் :

- பங்கு பெறுபவரின் வயது :

- பங்கு பெறுபவரின் எண் :

- மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. நான் இவ்வாய்வில் தன்னிச்சையாக பங்கேற்கிறேன். எந்த காரணத்தினாலோ எந்த சட்டசிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகிக் கொள்ளல்லாம் என்றும் அறிந்து கொண்டேன். இந்த ஆய்வு சம்பந்தமாகவோ, இதை சார்ந்து மேலும் ஆய்வு மேற்கொள்ளும் போதும் இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். இந்த ஆய்வின் மூலம் கிடைக்கும் தகவலையோ, முடிவையோ பயன்படுத்திக் கொள்ள மறுக்கமாட்டேன்.

- இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக் கொள்கிறேன். இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு

உண்மையுடன் இருப்பேன் என்றும்  
உறுதியளிக்கிறேன்.

- பங்கேற்பவரின் கையொப்பம்:
- இடம் :
- தேதி :
- பங்கேற்பவரின் ஆய்வாளரின் கையொப்பம்:
- ஆய்வாளரின் கையொப்பம்:



## MASTER CHART

S.NO	NAME	AGE	SEX	IPNO	LICHTENSTEIN	DESARDA	SIDE	HOSPITALSTAY	ORCHITIS	SEROMA	HEMATOMA	INFECTION	TESTICULAR ATROPHY	RECURRANCE
1	srinivasan	26	m	86654	+		R	<3DAYS	0				0	
2	chandran	60	m	87769	+		L	<3DAYS	0		+		0	0
3	jegadeesh	55	m	88441	+		R	<3DAYS	0				0	0
4	sakthivel	30	m	88765		+	R	>3DAYS	0				0	0
5	raji	52	m	89062	+		L	>3DAYS	0			+	0	0
6	suriya	38	m	89509		+	L	<3DAYS	0				0	0
7	raji	42	m	90327		+	R	>3DAYS	0				0	0
8	ganesan	58	m	90321	+		R	<3DAYS	0				0	0
9	perumal	40	m	90794	+		R	<3DAYS	0				0	0
10	mani	60	m	91642		+	L	>3DAYS	0	+			0	0
11	balakrishnan	51	m	92822		+	L	<3DAYS	0				0	0
12	deva	22	m	93501	+		L	<3DAYS	0				0	0
13	ramachandran	38	m	94047		+	L	<3DAYS	0				0	0
14	raji	42	m	94655		+	L	>3DAYS	0				0	0
15	sundaram	55	m	94696		+	L	<3DAYS	0				0	0
16	aslam basa	55	m	95810		+	R	<3DAYS	0				0	0
17	duraisamy	60	m	96396		+	R	<3DAYS	0		+		0	0
18	karunakaran	58	m	97159		+	L	<3DAYS	0				0	0
19	aurumugam	35	m	97985	+		L	<3DAYS	0				0	0
20	jeyavel	25	m	98162	+		L	<3DAYS	0				0	0
21	sithan	50	m	97959		+	R	<3DAYS	0				0	0
22	sheshadri	58	m	98567		+	L	<3DAYS	0				0	0
23	muniyandi	55	m	99403		+	R	<3DAYS	0			+	0	0
24	venkatapathy	58		99569		+	L	<3DAYS	0				0	0
25	muralikrishna	34	m	98929		+	L	<3DAYS	0				0	0
26	duraisamy	60	m	99832	+		R	>3DAYS	0		+		0	0
27	mubarak	24	m	99841		+	R	<3DAYS	0				0	0
28	sathish	24	m	100678	+		L	<3DAYS	0				0	0
29	dhatchayani	37	m	100765		+	R	<3DAYS	0				0	0
30	chandran	37	m	100765		+	R	<3DAYS	0				0	0
31	boopalan	36	m	101633	+		L	<3DAYS	0				0	0
32	parthiban	62	m	101311		+	R	<3DAYS	0				0	0
33	dhanush	25	m	102304		+	R	<3DAYS	0				0	0

34	hariprasad	38	m	102981	+		R	<3DAYS	0	+			0	0
35	rakesh	22	m	103629		+	L	<3DAYS	0				0	0
36	krishnan	46	m	104283	+		R	<3DAYS	0				0	0
37	sandeep	57	m	105135		+	R	<3DAYS	0				0	0
38	ashokkumar	40	m	105087	+		L	<3DAYS	0				0	0
39	mohan	48	m	105076		+	L	<3DAYS	0				0	0
40	kannan	37	m	105904	+		R	<3DAYS	0				0	0
41	ravi	54	m	105799		+	R	<3DAYS	0				0	0
42	gopalan	59	m	107215	+		R	<3DAYS	0				0	0
43	subramani	60	m	107198	+		L	> 3DAYS	0	+			0	0
44	jhon	55	m	107943	+		R	<3DAYS	0				0	0
45	muthusamy	42	m	108467	+		R	<3DAYS	0	+	+		0	0
46	mahalingam	51	m	107848	+		L	> 3DAYS	0				0	0
47	saroja	59	m	108895	+		L	> 3DAYS	0	+		+	0	0
48	munusamy	60	m	108875	+		R	<3DAYS	0				0	0
49	ayyanar	46	m	108919	+		R	> 3DAYS	0				0	0
50	vijayakumar	50	m	108925	+		R	> 3DAYS	0		+	+	0	0