"A STUDY ON COMPARISON OF REPAIRS OF LARGE DIRECT INGUINAL HERNIA'S WITH AND WITHOUT TANNER'S MUSCLE SLIDE INCISION" AT GOVT. KILPAUK MEDICAL COLLEGE HOSPITAL."

Dissertation submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI

With partial fulfilment of the regulations for

the award of the degree of

M.S (General Surgery)

BRANCH-I

GOVERNMENT KILPAUK MEDICAL COLLEGE

Chennai

May -2018

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **"A STUDY ON COMPARISON OF REPAIRS OF LARGE DIRECT INGUINAL HERNIA'S WITH AND WITHOUT TANNER'S MUSCLE SLIDE INCISION" AT GOVT. KILPAUK MEDICAL COLLEGE HOSPITAL."** is a bonafide work of **Dr. SENTHIL RAJ .T**, 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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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation titled **"A STUDY ON COMPARISON OF REPAIRS OF LARGE DIRECT INGUINAL HERNIA'S WITH AND WITHOUT TANNER'S MUSCLE SLIDE INCISION**" 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.M.ALLI DGO.,MS.,** Government Kilpauk Medical College and Hospital.

This dissertation is submitted to **THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI** in partial fulfilment 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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Place : Chennai **Dr. T.SENTHIL RAJ**

CERTIFICATE BY THE GUIDE

This is to certify that the dissertation titled **"A STUDY ON COMPARISON OF REPAIRS OF LARGE DIRECT INGUINAL HERNIA'S WITH AND WITHOUT TANNER'S MUSCLE SLIDE INCISION**" within General Surgery Department at Govt. Kilpauk Medical College Hospital is a bonafide research work done by post graduate in M.S. General Surgery, Government Kilpauk Medical College & Hospital, Chennai-10 under my direct guidance and supervision in my satisfaction, in partial fulfilment of the requirements for the degree of **M.S. General Surgery**.

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

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I thank each and every person involved in making this manuscript from inception to publication.

INSTITUTIONAL ETHICS COMMITTEE
GOVT. KILPAUK MEDICAL COLLEGE,
CHENNAI-10
Protocol ID. No.09/2017 Meeting held on 20/01/2017
CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "**A Study on comparison of repairs of large direct inguinal hernia's with and without Tanner's muscle slide incision.** " submitted by Dr.T.Senthilraj, Postgraduate in General Surgery, Govt. Kilpauk Medical College, Chennai.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

DEAN
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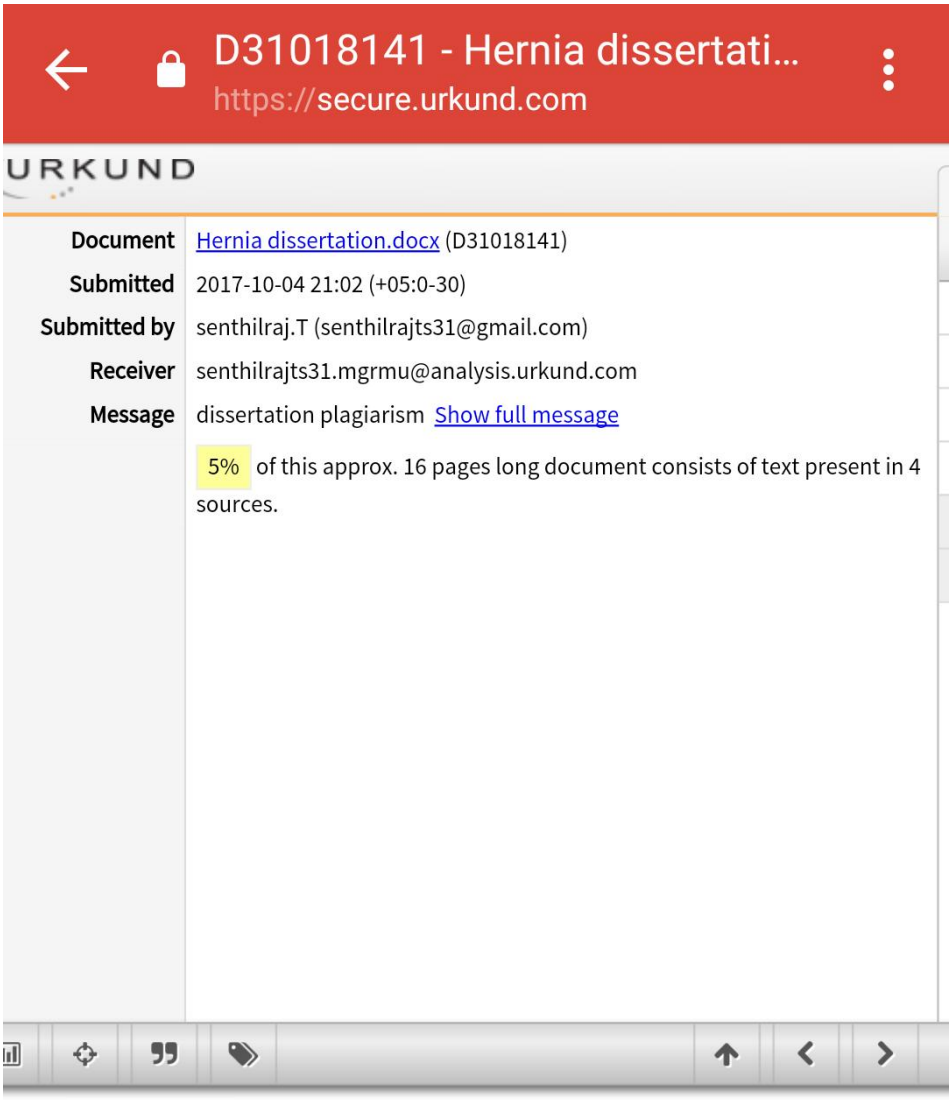
14/3/17



Aims of study: This study form compares two approaches to hernia repairs, Tanner's approach versus conventional repair, in a tertiary care set up. Recent techniques Shouldice repair and Lichtenstein repair has not been considered, since retrospective data was a total dismal due to cost effectiveness and infrastructure available to us, at the moment [4, 5, 6, 7].

In view of the large number of groin hernias being treated in this hospital it has been considered worthwhile due to cost effectiveness and infrastructure available to us, at the moment. The study compares these two techniques regarding: a. Ease of surgery b. Duration of surgery c. Post

CONTENTS

INTRODUCTION

“THE HISTORY OF HERNIA IS THE HISTORY OF SURGERY”

-Jose F Patino

“HELIODORUS”-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 wal strenghthening of the inguinal wall and high ligation of sac with anatomical reconstruction. Later his techniques are modified 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 overe lapping layers with continuous sutures. Tensio 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 ÄRREGUI and TEP by PHILIPS.

AIM OF STUDY

This study form compares two approaches to hernia repairs, Tanner's approach versus conventional repair, in a tertiary care set up. Recent techniques Shouldice repair has not been considered, since retrospective data was a total dismal due to cost effectiveness and infrastructure available to us, at the moment [4, 5, 6, 7].

In view of the large number of groin hernias being treated in this hospital it has been considered worthwhile due to cost effectiveness and infrastructure available to us, at the moment. The study compares these two techniques regarding:

a. Ease of surgery

b. Duration of surgery

c. Post operative complications

d. Recurrence, if any.

REVIEW OF LITERATURE

INGUINAL HERNIA:

Hernia is defined as ABNORMAL PROTRUSION OF A PART (OR) WHOLE OF THE VISCOUS THROUGH A NORMAL OR ABNORMAL OPENING THROUGH THE WALL OF THE CAVITY THAT CONTAINS IT.

TYPES OF HERNIA:

1) Vaginal (complete):

Descends upto the scrotal base,

Testis not felt separately

2) Funicular:

Testis felt separately

Processus vaginalis closed above epididymis

3)**Bubonocele:**

Inguinal swelling only

FOUR GROIN HERNIAS:

a) Direct Inguinal hernia

b) Indirect inguinal hernia

c) External supravesical hernia

d) Femoral hernia

ANATOMY OF INGUINAL CANAL(HOUSE OF BASSINI):

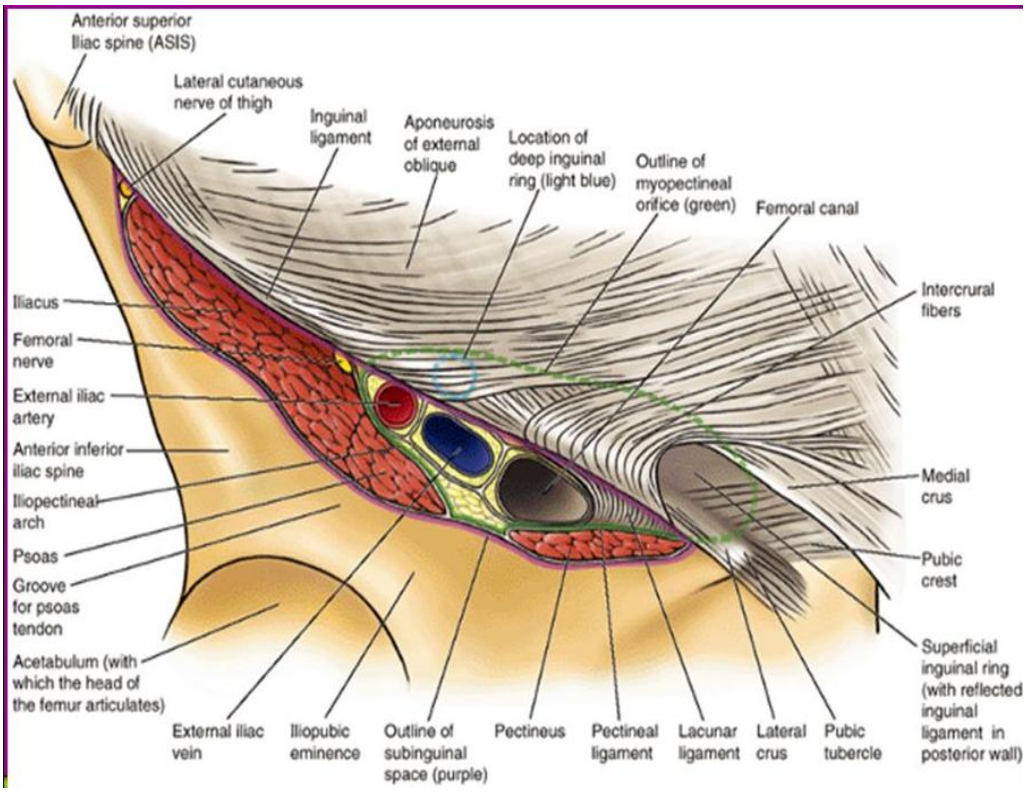
3.75 cm length, extends from deep inguinal to superficial inguinal ring, deep ring is semi-oval opening in the facia transversalis, superficial ring is triangular opening in the external oblique aponeurosis guarded by two crura of muscle fibres.

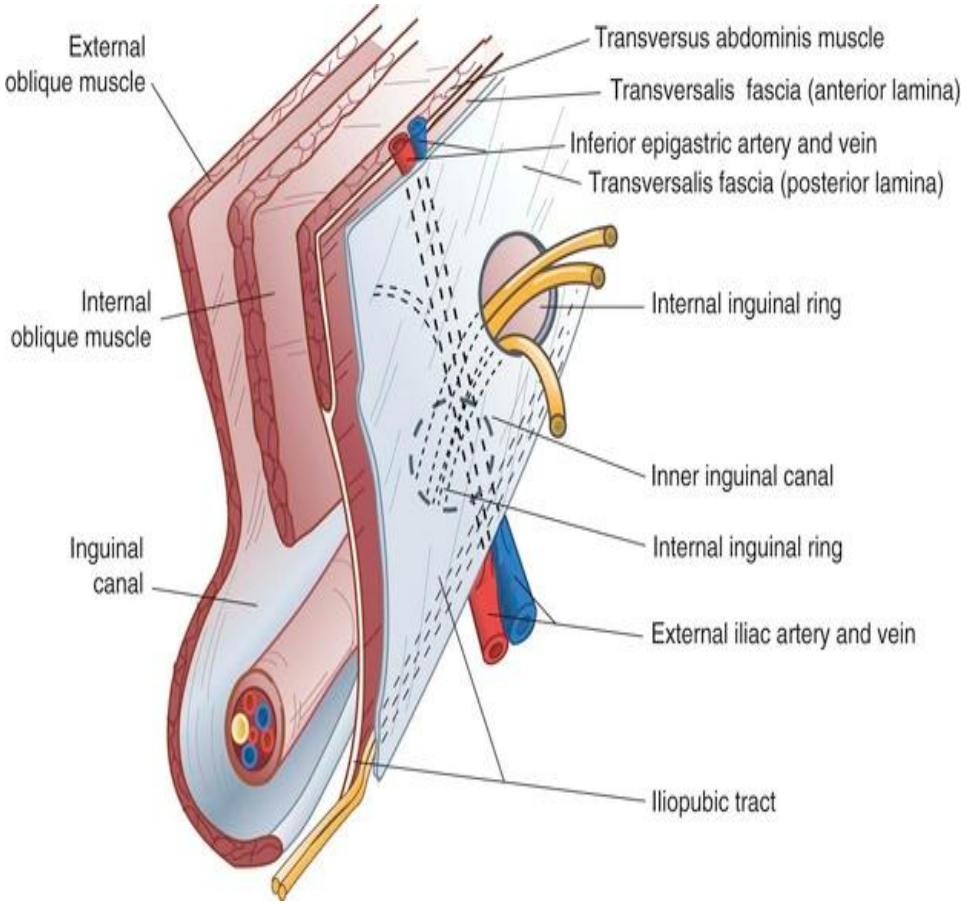
BOUNDARIES:

Anterior: skin, superficial fascia, external oblique aponeurosis, Lateral one-third by internal oblique muscle fibres.

Posterior: Laterally by aponeurosis of transversalis abdominis muscle and transversalis fascia, Medially by the internal oblique aponeurosis.

INGUINAL CANAL - ANATOMY




External oblique muscle
Transversus abdominis muscle
Transversalis fascia (anterior lamina)
Inferior epigastric artery and vein
Transversalis fascia (posterior lamina)
Internal oblique muscle
Internal inguinal ring
Inner inguinal canal
Inguinal canal
Internal inguinal ring
External iliac artery and vein
Iliopubic tract

Superior: arching fibres of internal oblique muscle and transversalis abdominis muscle and aponeurosis

Inferior: Inguinal ligament and lacunar ligament.

CONTENTS OF INGUINAL CANAL:

MALES:

1) Vas deferens

2) Genital branch of genitofemoral nerve

3) Ilioinguinal nerve

4) Sympathetic nerve

5) Artery to ductus

6) External spermatic artery

7) Internal spermatic artery

8) Pampiniform plexus of veins

9) External and internal spermatic fascia

10) Cremastric fascia

FEMALES

1) Round ligament

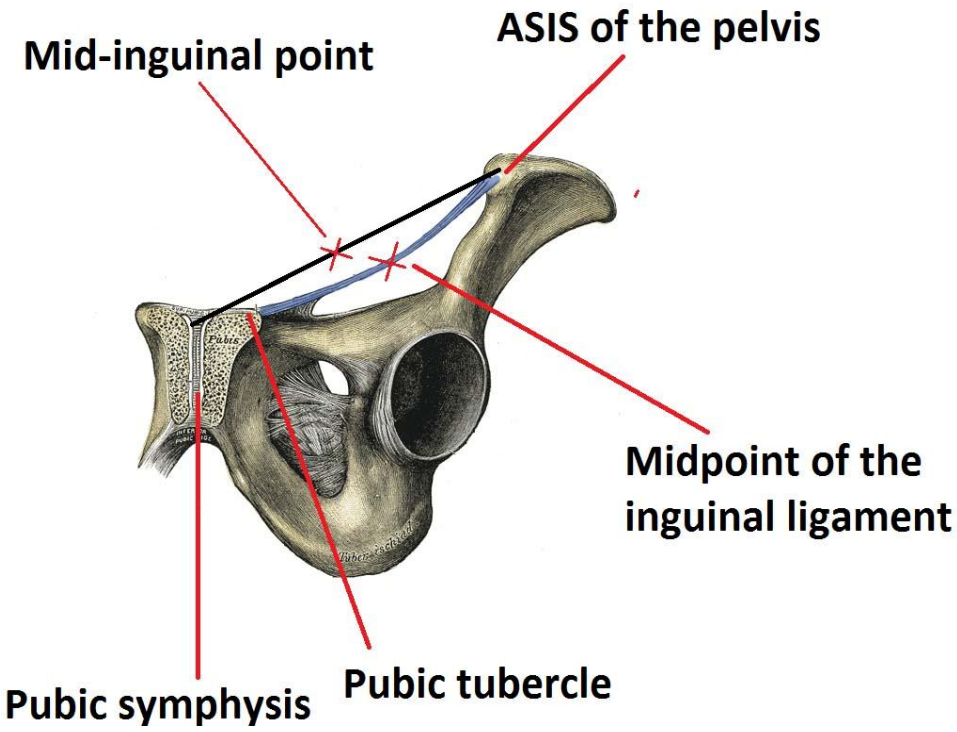
2) Genital branch of genitofemoral nerve

LANDMARKS:

DEEP RING: Half inch above Mid inguinal point between ASIS and Pubic symphysis.

SUPERFICIAL RING: Just above pubic tubercle.

SAPHENOUS OPENING: 4 cm below and lateral to pubic tubercle.



MECHANISM THAT PREVENT HERNIA WHEN ABDOMINAL PRESSURE RISES:

a) FLAP VALVE MECHANISMS:

Oblique canal, approximation of anterior and posterior wall

b) SHUTTER MECHANISMS:

Arched fibres of internal oblique.

c) BALL VALVE MECHANISM:

Cremaster contracts thereby superficial ring plugged by spermatic cord.

d) SLIT VALVE MECHANISM:

Crura of superficial ring.

HESSELBACH TRIANGLE:

Weak spot in the anterior abdominal wall through which direct hernia appears.

Medial- Outer border of rectus abdominis

Lateral: Inferior epigastric vessels

Below: Medial part of inguinal ligament

Floor: Fascia tranversalis

PARTS OF HERNIA:

Sac, Contents, Coverings

Sac: mouth,neck(narrowest part), body, fundus

INGUINAL LIGAMENT:

Obliquely arranged anterio-inferior fibres of external oblique aponeurosis fold back on to themselves to form inguinal ligament attaches from ASIS to pubic tubercle and other portion is fan shaped attached to pectineal line of pubis is also called as gimbernat ligament.

ILIOPECTINEAL TRACT:

A Strong fascial band from the crest of ilium and ASIS,forms an integral part of anterior femoral sheath.

PERITONEUM

From laparoscopic view the peritoneal folds form important landmarks in the peritoneal space. The median umbilical fold extends from the umbilicus to the urinary bladder and covers the urachus. The median umbilical fold is formed due to the presence of obliterated portion

of fetal umbilical artery. The lateral umbilical fold covers the inferior epigastric artery as it courses towards the posterior rectus sheath and enters it approximately at the arcuate line of douglas.

Between the median and medial ligaments a depression usually exists called the supravesicle fossa.

This is the site of supravesical hernia.

Hesselach's triangle is seen as superomedially as medial border of rectus sheath, superolateraly inferior epigastric vessels and inferiorly as coopers ligament.

PERITONEAL FOLDS:

From laparoscopic view the peritoneal folds from important landmarks in the preperitoneal space.

There are five peritoneal folds in the lower anterior abdominal wall converging towards the umbilicus. They are median umbilical ligament,two medial umbilical ligaments, two lateral umbilical ligaments.

TRIANGLE OF DOOM:

Formed by laterally by spermatic vessels, medially by vas deferens, inferiorly by inferior flap of peritoneal dissection, contains externa iliac vessels hidden beneath it.

TRIANGLE OF PAIN:

Superiorly by iliopubic tract, medially by spermatic vessles, laterally by lateral pelvic wall, contains Femoral and genital branch of genitofemoral nerve, femoral nerve and lateral femoral cutaneous nerve of thigh.

CORONA MORTIS

Commonly an anastomotic vessel between the obturator vessel and inferior epigastric vessel is present and can be seen arching over coopers ligament known as the corona mortis (death crown). Called so as inadvertent bleeding may occur during hernia surgery. The veins can also be troublesome, especially when they are larger than the arteries.

TRANSVERSALIS FASCIA

When peritoneum is opened from within the abdomen preperitoneal space is reached. This space is between parietal peritoneum and tranversalis fascia. This space is designed in front of the urinary

ladder as **space of retzius**. The lateral extension of this space is known as **space of bogros**. The transversalis fascia is continuous laterally and posteriorly with endoabdominal and endopelvic fascia and there by forms with them an expraperitoneal reinforcing layer. The derivatives of transversalis fascia are

a) Both the crura of deep inguinal ring

b) Iliopubic tract

c) Part of cooper's ligament

d) Ilio pectinal arch

FRUCHAUD'S MYOPECTINEAL ORIFICE:

An area bound medially by recuts muscle and its sheath, laterally by iliopsoas muscle superiorly by internal oblique and transverse abdominis, inferiorly by cooper's ligament. Critical anatomical landmarks as inguinal ligament, femoral vessels, spermatic cord are contained in this area. It is funnel shaped and its orifice is lined by transversalis fascia. Fruchaud's concept is that all the groin hernias is failure of transversalis fascia to retain the peritoneum.

ANATOMY OF FEMORAL CANAL:

Femoral canal is 2x2 cm in size, medial compartment of femoral sheath,

Base-**FEMORAL RING**

Bounded by: Anteriorly-Inguinal ligament

Posteriorly- cooper's ligament

Medially-Lacunar ligament

Laterally- Femoral vein

Contents: Cloquet's node, lymphatics, areolar tissue.

INDIRECT INGUINAL HERNIA:

Protrusion of hernia content takes place through the deep inguinal ring, the sac follows the spermatic cord in males and round ligaments in females, anterolateral to the sac. It may be congenital or acquired.

DIRECT INGUINAL HERNIA:

The ring of direct hernia is located in hesselbach's triangle, the hernia sac passes through the floor of the inguinal canal, posteromedially.

Sl. No.		Direct	Indirect
1	Extend to scrotum	Does not go down to the scrotum	Can descend into the scrotum
2	Direction of reduction	Reduce upwards and then straight backwards	Reduce upwards and then laterally backwards
3	Controlled by pressure over the internal ring	Not controlled after reduction, by pressure over the internal inguinal ring	Controlled, after reduction by pressure over the internal inguinal ring
4	Direction of reappearance after reduction	The bulge reappears outwards to original position	The bulge reappears in the middle of the inguinal region and then flows medially before turning down to the neck of the scrotum
5	Palpable defect	Defect may be felt in the abdominal wall above	No palpable defect as it is behind the fibres of the external oblique pubic tubercle muscle
6	Relationship of cord to sac	Sac appears medial to the inferior epigastric artery and is outside the spermatic cord (posterior to the cord)	The sac is inside the spermatic cord

PECULARITIES OF DIRECT INGUINAL HERNIA

- Appear later in life
- Do not occur in children
- Rare in women
- Rarely strangulate
- Direct hernia is always acquired
- Usually seen in males
- They do not often attain large sizeor descend into the scrotum
- The protruding mass mainly consists of extraperitoneal fat
- The neck of the sac is wide

FREQUENCY OF TYPES OF HERNIA

- Inguinal-75% (indirect-65%-55% are right sided and direct 35%)
- Femoral-20% women and 5% in men
- Umbilical -15%
- Rarer forms-1.5%
- Bilateral-12%

FEMORAL HERNIA:

Protrusion of the preperitoneal fat or viscous through the femoral canal.

CLASSIFICATION OF FEMORAL HERNIA

A) Classical type: hernia occurs medial to femoral vein.

Special type:

1) prevascular hernia of Narath: sac lies in front of femoral artery.
2) external femoral hernia:sac passes through lacunar ligament.
3) laugier's femoral hernia: sac passes through lacunar ligament.
4) sarafini hernia: sac descends behind femoral vessels.
5) deep femoral hernia: sac passes deep to femoral vessels deep to deep fascia, cannot protrude through saphenous opening.

OTHER HERNIAS

SLIDING HERNIA(hernia-en-glissade)

Sliding hernia is a condition where portion of cecum and appendix on the right side, sigmoid on the left side and urinary bladder on both the sides will slide down behind the sac. Even though it is not inside the sac,

it forms the posterior wall of the sac. If the wall of the sac is unusually thick preoperatively, one should carefully rule out a sliding hernia.

MAYDL'S HERNIA

This is so called W loop hernia where the small intestine forms a W loop within the hernia sac. The importance of this type of hernia is in case of obstruction, even if the visible intestine inside the sac is viable if one is not pulling out the rest of the intestine, you are likely to miss gangrene for the rest of the bowel.

PANTALOON'S HERNIA

OTHERS NAMES: double hernia, saddle hernia, Romberg hernia

Here both direct and indirect inguinal sacs are present an clinically present as direct hernia. During surgery, indirect sac may be missed and so leads to recurrent hernia through retained or unidentified indirect sac. Here both medial and lateral sacs straddle the inferior epigastric artery. It is one of the cause for recurrent hernia.

DIFFERENCES BETWEEN INGUINAL AND FEMORAL HERNIA

INGUINAL	FEMORAL
Above and medial to the pubic tubercle	Below and lateral to the pubic tubercle
Above the crease of the groin	Below the crease of the groin
Can be reduced completely	Cannot be reduced completely
Cough impulse usually present	Many do not have cough impulse

DIFFERENTIAL DIAGNOSIS

INGUINAL SWELLING

- enlarged lymph nodes
- undescended testis
- lipoma
- femoral hernia
- saphena varix
- psoas abscess
- femoral aneurysm

INGUINOSCROTAL SWELLING

- encysted hydrocele of cord
- varicocele
- lymphvarix
- diffuse lipoma of cord
- inflammatory thickening of cord

FEMORAL SWELLING

- inguinal hernia
- sapheno varix
- cloquet's node
- lipoma
- femoral aneurysm
- psoas abscess

RECURRENT HERNIA

INCIDENCE:

FOR INGUINAL HERNIA : 2.3 to 20%

FOR FEMORAL HERNIA : 11.8 to 75%

MOST COMMON SITE FOR RECURRENT HERNIA

Medially: the transversus abdominis tendon is inserted to the rectus sheath as much as 2 cm above the pubic tubercle. If the mesh is not reaching beyond the pubic tubercle for 1cm, there is a chance for recurrence.

The second most common site is at the internal ring.

ETIOLOGY OF THE HERNIAS:

Patent processes vaginalis

A. Increased intra abdominal pressure due to obesity, pregnancy, constipation, chronic cough, bladder outlet obstruction.

B. General factor like advancing age, adiposity, lack of physical exercise, multiple pregnancy, etc.

C. Abnormalities in collagen in transversalis fascia due to various factors like Hurler's disease, Hunter's disease, Marfan's syndrome, Ehler's danlos syndrome, etc.

CLINICAL CLASSIFICATION:

SIMPLE- 1) Indirect inguinal hernia

2) Direct inguinal hernia

COMPLICATED -1) Irreducible

2) Incarcerated

3) Obstructed

4) Strangulated

5) Inflamed

CLASSIFICATION OF INGUINAL HERNIA:

GILBERT'S CLASSIFICATION:

INDIRECT	
SMALL	I
MEDIUM	II
LARGE	III
DIRECT	
ENTIRE FLOOR	IV
DIVERTICULAR	V
COMBINED	
INDIRECT AND DIRECT	VI
FEMORAL	VII

In 1993, NYHUS published another classification to aid in surgical decision making best matching the types of hernia with specific operation.

NYHUS CLASSIFICATION

TYPE I	Indirect, small
TYPE II	Indirect, medium
TYPE III A	Direct
TYPE III B	Indirect, large
TYPE III C	Femoral
TYPE IV	Recurrent
TYPE IV A	Direct
TYPE IV B	Indirect
TYPE IV C	Femoral
TYPE IV D	Combination of A,B,C

BENDAVID TSD CLASSIFICATION:

Bendavid in 1994 proposed TSD (Type, staging and dimension) classification. In this classification he used four anatomical regions in groin. Medial and lateral divided by epigastric vessels, anterior and posterior divided by inguinal ligament. Stage reflects degree of descent of sac.

TYPE	Anterolateral(indirect) Anteromedial (direct) Posteromedial (femoral) Posterolateral (perivascular)
STAGE	I) Sac in canal II) Sac outside external ring III) Sac into scrotum
DIMENSION	Orifice maximum in centimetres

SCHUMPELICK-AACHEN CLASSIFICATION

L	Lateral(indirect)	
M	Medial(direct)	
Mc	Medial combined	
F	Femoral	
Orifice size	Grade 1	<1.5cms
	Grade 2	1.5-3 cms
	Grade 3	>3 cms

In an attempt to bring together the best features of above classification Robert m . zollinger, jr has given unified classification

UNIFIED CLASSIFICATION

1	Indirect, small
2	Indirect, medium
3	Indirect , large
4	Direct, small
5	Direct, medium
6	Direct, large
7	Combined-pantaloon
8	Femoral
9	Others

A any not classified by nubmer above; femoral + indirect or direct; massive.>8cms (four fingers) inguinal defect; prevascular.

RISK FACTORS FOR GROIN HERNIAS TO PREVENT AS ACUTE EMERGENCY

- advancing age
- large hernia with small opening
- delay in hospitalisation
- coexisting medical complication

In inguinal hernia the strangulation probability was not more than 2% per year. But the probability of strangulation for femoral hernia is about 40 % per year.

COMPLICATED GROIN HERNIA

IRREDUCIBLE HERNIA: when sac contents cannot be resuced into abdomen without any complication

CAUSES

- adhesions of its contents with sac
- adhesions of its contents within the sac
- adhesions of one part of sac to other
- sliding hernia
- huge scrotal hernia

INCARCERATED HERNIA : this term is often used loosely, as an alternative to obstruction or strangulation, but it is the condition where the lumen of that portion of bowel occupying the sac is blocked with faeces.

OBSTRUCTED HERNIA : irreducible hernia containing intestine which is obstructed without interference of blood supply to intestine. Symptoms are mild colicky abdominal pain and tenderness over the hernia site. The onset of symptoms is more gradual than in strangulated hernia.

STRANGULATED HERNIA : the intestine is obstructed and its blood supply is impaired. Initially venous return is impeded; the intestinal wall becomes congested and bright red, with transduation of serous fluid into sac. As congestion increases the wall of the intestine becomes purple in colour and the arterial supply becomes purple in colour and the arterial supply becomes impaired.

Blood is extravasated under serosa; intestine losses its tone and becomes friable. bacterial transudation occurs and sac fluid becomes infected. Gangrene appears at the ring of constriction and at the antimesentric border of bowel. If strangulation is unrelieved perforation and hence peritonitis ensures.

Clinical features are sudden pain at the hernia site then in whole abdomen, nausea and vomiting occurs. Hernia is irreducible, extremely tense and tender. There will be no expansible impulse on cough. Gangrene may occur as early as 5-6 hours after the onset of first symptom. Although inguinal hernia is ten times more common than femoral hernia, strangulation is more common in femoral hernia.

INFLAMED HERNIA; inflamed hernia can occur from inflammation of content of sac, example acute appendicitis (amayands hernia) or salpingitis, or from external cause like trophic ulcers that develops in dependent areas. Hernia is tender and the skin is red and oedematous.

SURGERIES FOR HERNIA

HERNIOTOMY

Separation of sac from cord structures, reducing the contents,then transfixation and ligation of sac, excise the redundant sac.

Relation of sac with cord,

Direct sac- posteromedial to the cord

Indirect sac- anteromedial to the cord

In case of indirect hernia, transfixation and ligation of the sac done where direct hernia just push the sac back into the abdomen without opening.

HERNIORRHAPHY:

1) Herniotomy

2) Narrowing of the deep ring with prolene is called as LYTLE'S REPAIR, then approximation of conjoint tendon with inguinal ligament with prolene.

HERNIOPLASTY(LICHENSTEIN MESH REPAIR):

Is used for all types of inguinal hernia nowadays for its least recurrence, here prolene mesh of size 16x10 cm is taken and fixed in the inguinal canal where the first bite is taken from the periosteum of the pubic tubercle and fix the mesh to a point beyond the deep ring, then the mesh fixed with inguinal ligament and conjoint tendon by using 2-0 prolene without tension.

COLOR OF SUTURE MATERIAL USED FOR HERNIA SURGERIES:

Prolene (polypropylene) – dark blue

Vicryl (polyglycolic acid) – violet

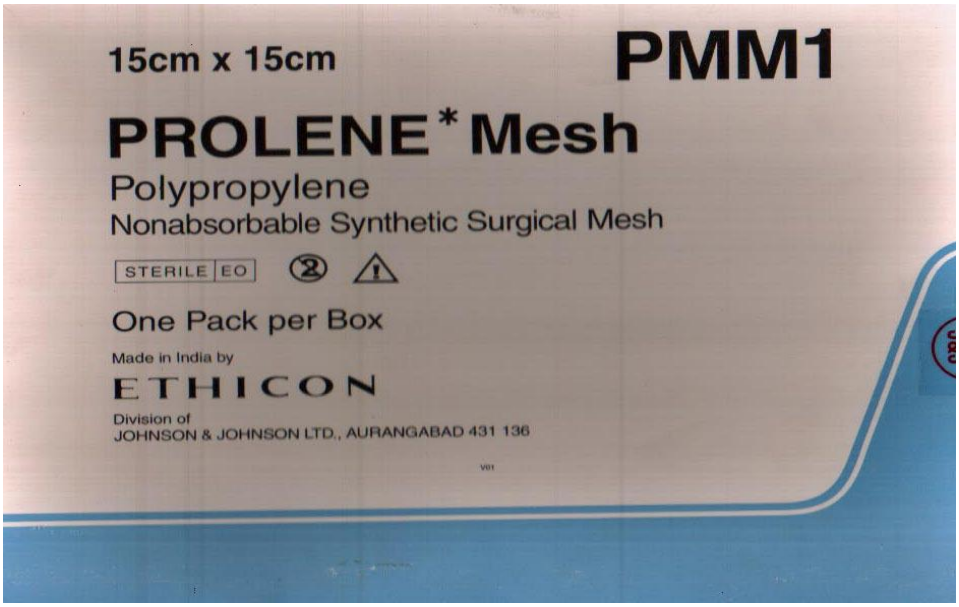
Silk – black

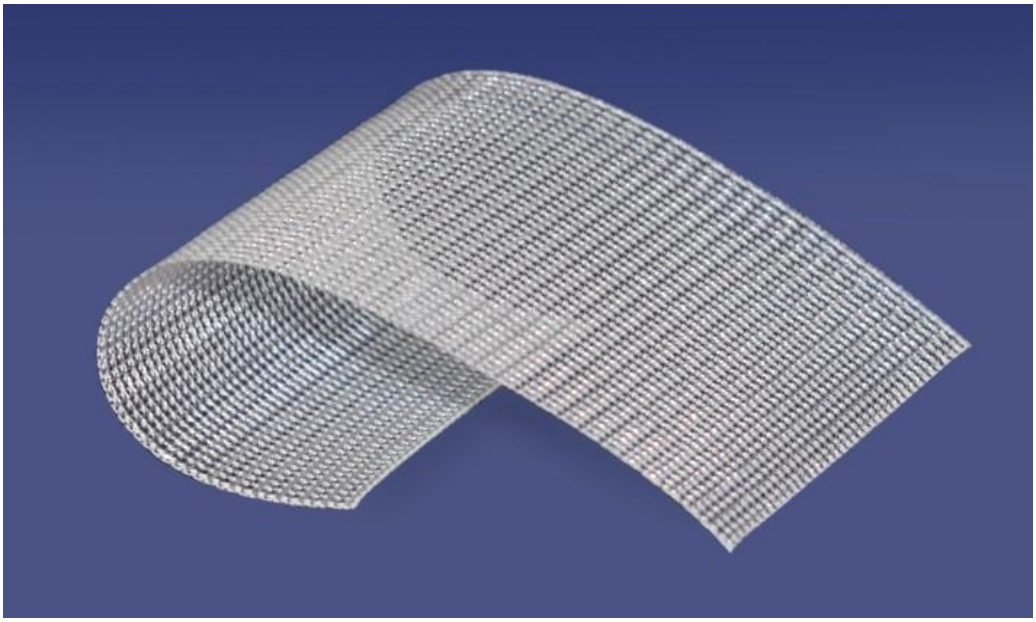
Catgut- brown

Prolene mesh – white

Increasing order of the size of the materials

3’0>2’0>1’0 > 1’ > 2’ >3’



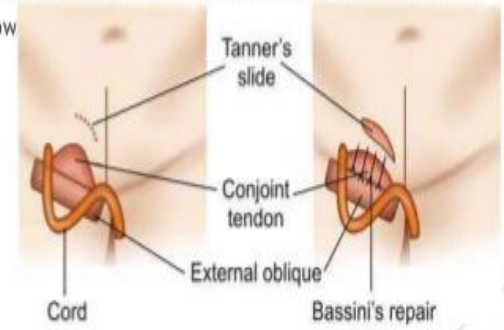


TANNER'S MUSCLE SLIDE TECHNIQUE:

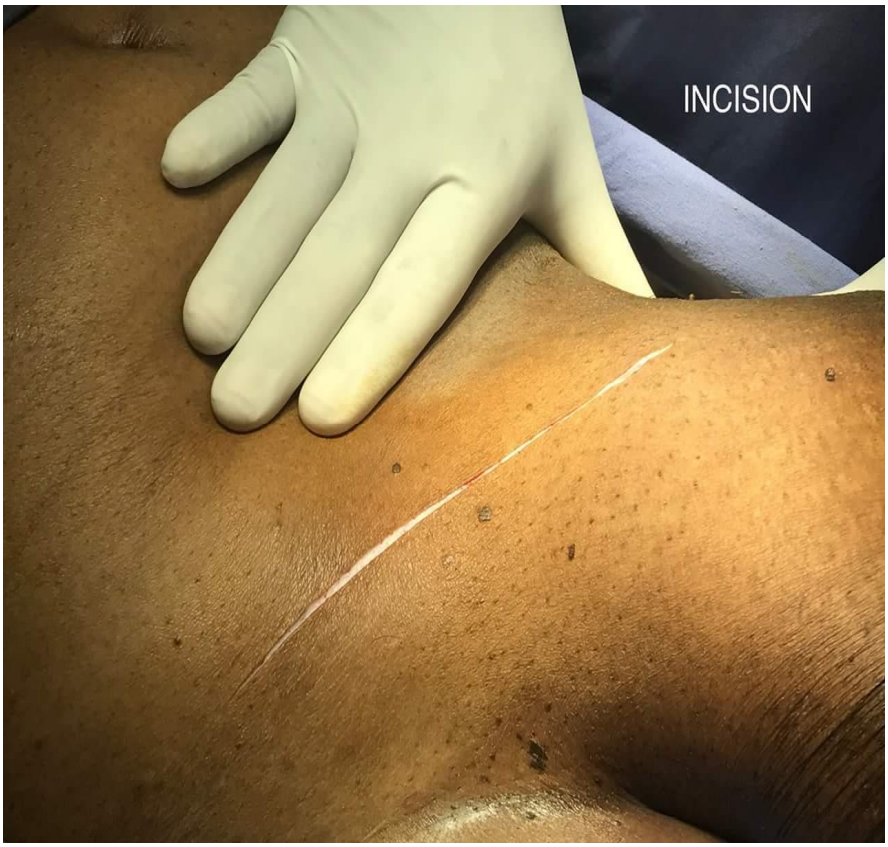
First described by WOLFLER in 1892,basically all the herniorrhaphy are tension repairs in order to avoid the tension in the herniorrhaphy site, the incision made curvilinearly over the lower anterior rectus sheath which relaxes the conjoined muscle and get approximated with inguinal ligament without tension.

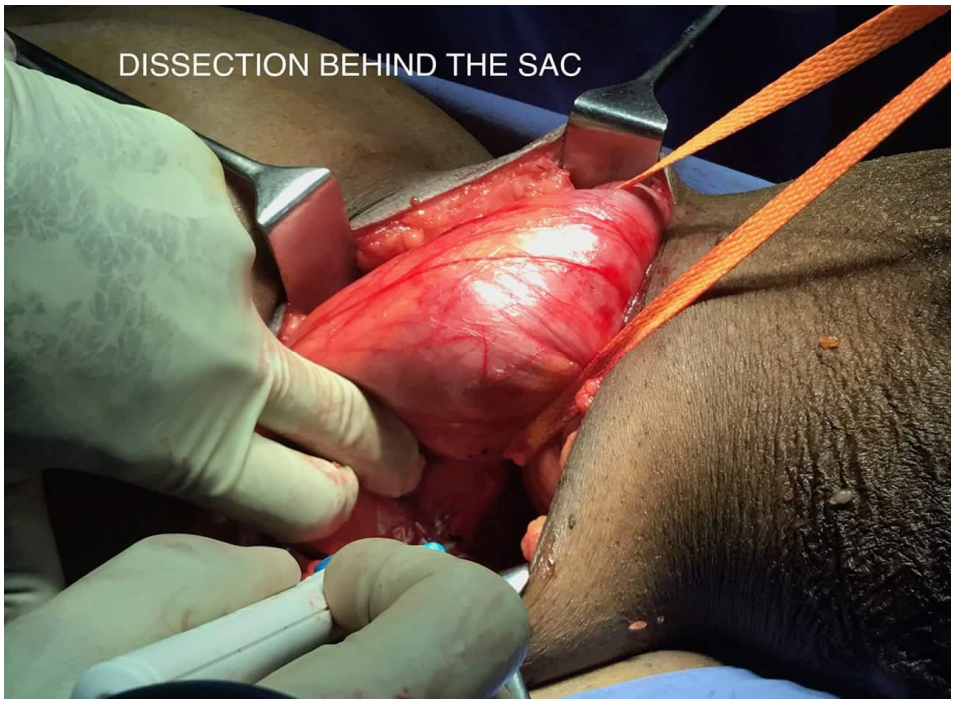
Tanner Slide Operation

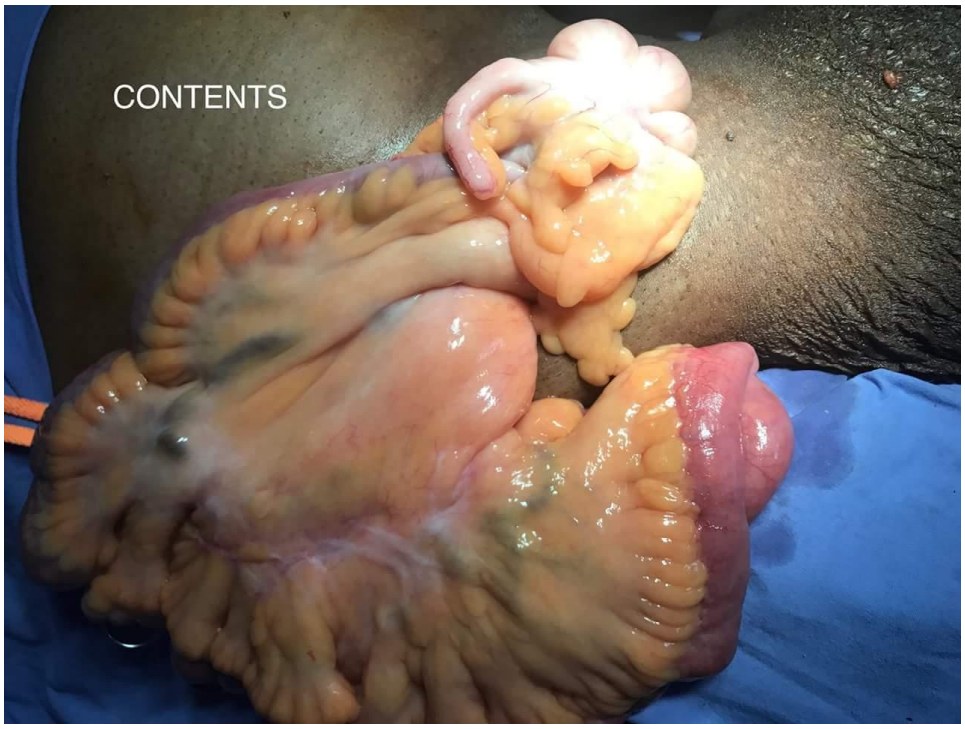
- To reduce the tension in the repair area, **relaxing incision** is placed over the **lower rectus sheath** after modified bassini's surgery so that conjoined tendon is allowed to slide dow




GIANT HERNIA SEEN
FROM LEFT SIDE


INCISION


DISSECTION BEHIND THE SAC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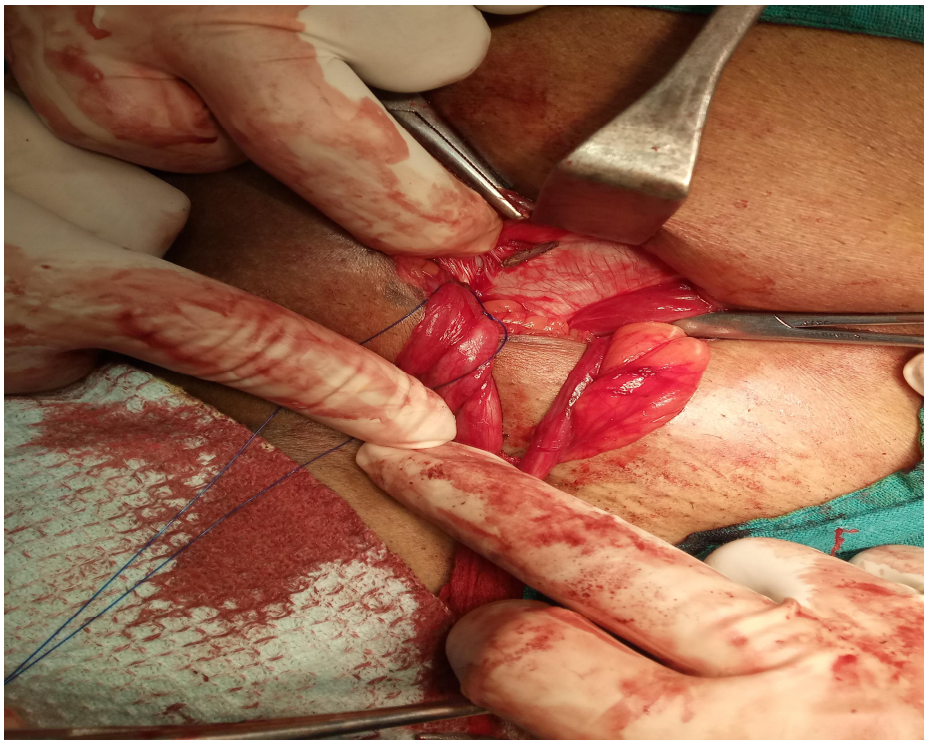
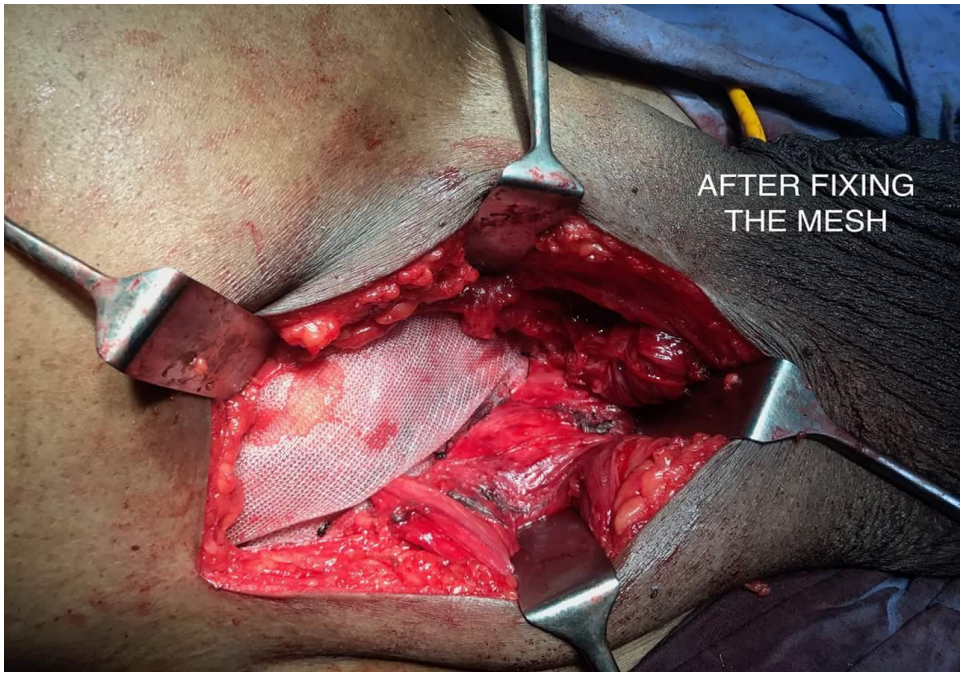



AFTER FIXING
THE MESH

STEPS:

A) Retract external oblique aponeurosis and excise the sac

B) Incise the fused aponeurosis of internal oblique and transversus abdominis slide it downwards and sutured conjoined tendon to the inguinal ligament(BASSINI'S REPAIR)

C) Slide complete, the lateral cut edge of the aponeurosis sutured to rectus muscle

INDICATION:

1) Mainly used for larger inguinal hernias

2) Bassini's repair that requires unacceptably tight sutures

3) Large direct hernias

4) Old indirect hernias

CONTRAINDICATIONS:

1) A patient in whom it is unnecessary

2) Hernia with infected or gangrenous bowel or omentum

SHOULDICE REPAIR:

SHOULDICE gave additional strength to the posterior wall by double breasting the fascia transversalis, which is best among the all anatomical hernia repairs, least recurrence

STOPPA'S PROCEDURE:

For bilateral direct hernia, a modified pfannenstiel incision made in the lower abdominal wall and a very large

mesh placed in between the peritoneum and fascia transversalis.

HAMILTON BAILEY OPERATION

Cord is removed from inguinal canal by ligating at the external and internal ring, testis is retained for psychological reason, inguinal canal is repaired,testis derives its blood supply from the scrotal vessels and survives.

KUNTZ OPERATION:

Orchidectomy is done along with the removal of entire cord and testis, then posterior inguinal canal strengthening done , mostly done in old age patients with recurrent hernias.

DARNING:

A type of herniorrhaphy which is done by approximating the conjoined tendon with inguinal ligament using 1 prolene without tension, suture materials appears like mesh due to multiple crossings looks like darning also called as Moloney's darn repair.

LAPARASCOPIC HERNIA REPAIR:

TAPP(Trans-abdominal preperitoneal repair):

Approach by entering the peritoneal cavity throughsub umbilical port, pneumoperitoneum is created to 12 mmHg, a 30° scope introduced, landmarks like external iliac vessels, umbilical fold, vas, testicular vessels are identified, peritoneum opened, Sac dissected from cord, sac excised, prolene mesh introduced and fixed to cooper's ligament, rectus sheath, conjoined tendon, peritoneum is closed over the mesh.

Advantages: easy technique, can be done for those people who had open prostatectomy.

Disadvantages: chance of visceral injuries more than TEP

TEP (Total extraperitoneal repair):

Here peritoneal cavity not entered, we create extra peritoneal space by using balloon or direct inflation to reach the pre-peritoneal space of the lower abdomen.

Advantage: as we go totally extraperitoneal, no chance of intraabdominal injury, easy recovery.

Disadvantages: difficult to training, needs a lot of training.

SURGERY FOR FEMORAL HERNIA

LOCKWOOD LOW OPERATION: here sac is approached below the inguinal ligament through groin crease incision(or over the swelling) so that fundus of sac is dissected by direct vision and repair done from below

Here inguinal hernia is sutured to cooper's ligament. standard and ideal (cooper's ligament repair).

MC'EVEDY HIGH OPERATION: a incision is made over the femoral canal extending vertically above the inguinal ligament. Sac is dissected from below, neck from above and repair is done from above. it gives a very good exposure of both neck , fundus and repair is also easier. It is done in strangulated femoral hernia.

LOTHEISSEN'S OPERATION: It is through inguinal canal approach(like for inguinal hernia). Transversalis fascia is opened and neck of the sac is identified in the femoral ring. Sac is dissected from above, neck is ligated and repair is done.

LOTHEISSEN'S REPAIR: after herniotomy, conjoined tendon is sutured to iliopectineal line (ligament) by interrupted sutures (2 or 3), using nonabsorbable monofilament sutures.care should be taken to avoid injury to femoral vein, pubic branch of obturator artery, bladder. It is not as strong as cooper's ligament repair. Complications like bleeding, haematoma, abscess formation.

AK HENRY APPROACH: repair of bilateral femoral hernia through lower abdominal incision.

Polypropylene mesh can be buttressed over the femoral canal to close the defect.

Laparoscopic mesh repair-TEP/TAPP

COMPLICATION OF HERNIA SURGERIES:

1. Seroma
2. Hematoma
3. Wound infection
4. Injuries to cord and testicles
5. Bladder injuries
6. Chronic groin pain
7. Recurrence
8. Osteitis pubis
9. Enterocutaneous fistula
10. Inguinodynia (prosthetic complication)
11. Laparoscopic complications
    - Vascular injuries, visceral injuries, trocar site complication, bowel obstruction.
12. General complication like urinary retention

MATERIALS AND METHODS

Study site

Department of General Surgery, Kilpauk Medical College and Research Institute, Chennai.

Collaborating Departments

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

Study Design

Single Blind Randomised Control Trial

Study Period

January 2017 to June 2017

Selection of study population

- Total sample size N = 52
- Divided into 2 study groups
- Group “with Tanner’s” (N=26) – Elective inguinal hernia repair with tanners muscle slide down technique
- Group “without Tanner’s” (N=26) - Elective inguinal hernia repair without tanners muscle slide down technique

Inclusion criteria

- Patients aged 40-75 years
- Male Gender
- Patients with large and difficult Direct Inguinal Hernia
- Patients with defect of size > 2.5 cm
- Patient without co-morbidity
- (TB ,HT , DM, Bronchial asthma, seizure)

Exclusion Criteria

- Patients with co-morbid conditions like immune compromised patients, patients on cancer chemotherapy, immunotherapy and on long term steroids.
- Patients with recurrent inguinal hernia
- Patients with complications like obstruction, strangulation, incarceration, bilateral inguinal hernia.
- Previous surgery - Prostatectomy

Surgical Procedure

Tanner slide with darning repair

After doing standard herniotomy, upper leaf of external oblique was retracted upwards, and a 3 centimeter incision made over internal oblique and rectus sheath, and then continuous Vicryl single ‘0’ sutures from public tubercle to conjoint tendon, arching fibers of internal oblique

to cooper's ligament, up to deep inguinal ring and then sutures were crisscrossed from lateral end to medial end; darning appeared like mini mesh. Cord reposed and wound closed as mentioned in Bassini's repair.

Sample Size

Sample size was determined based on

Study

Comparative Study: Tension Free Halsted Tanner S Slide With Darning Repair With Bassini S Repair For Inguinal Hernia.

Authored by

Lovesh Shukla et al

Published in

JMEDS July Month : 2014 Volume : 3 Issue : 27 Page : 7416-7420.

In this study, the incidence of postoperative wound infection was 16% in patients who underwent Tension free Halsted Tanner's slide with darning repair for inguinal hernia.

Description:

- The confidence level is estimated at 95%
- With a z value of 1.96
- The confidence interval or margin of error is estimated at +/-10
- Assuming p% =16 and q%=84

$$n = p\% \times q\% \times [z/e\%]^2$$

$$n = 16 \times 84 \times [1.96/8]^2$$

$$n = 51.63 \text{ (rounded to 52)}$$

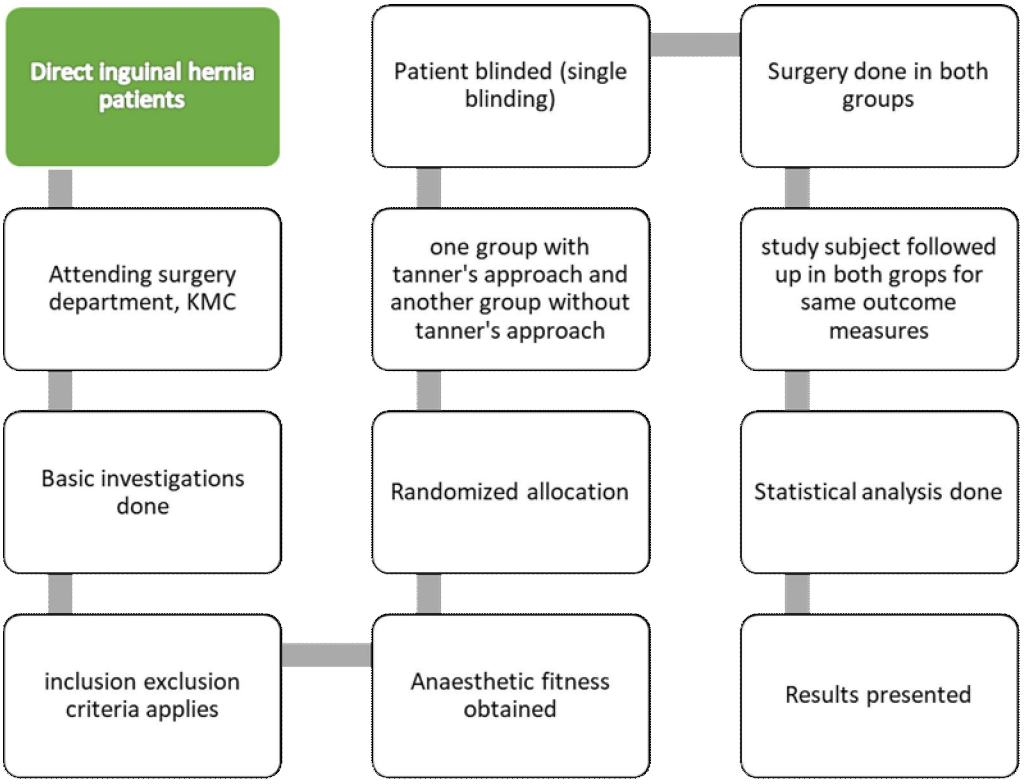
Therefore 52 is the minimum sample size required for the study assuming 80% as the power of study.

In my study I plan to recruit a minimum of 52 subjects. 26 per intervention arm (2 arms – inguinal hernia repair with tanners slide incision and inguinal hernia repair without tanners slide incision).

Sampling method

- Judgement sampling method was adopted

Study protocol



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.

OBSERVATION AND DATA ANALYSIS

STUDY SUBJECTS

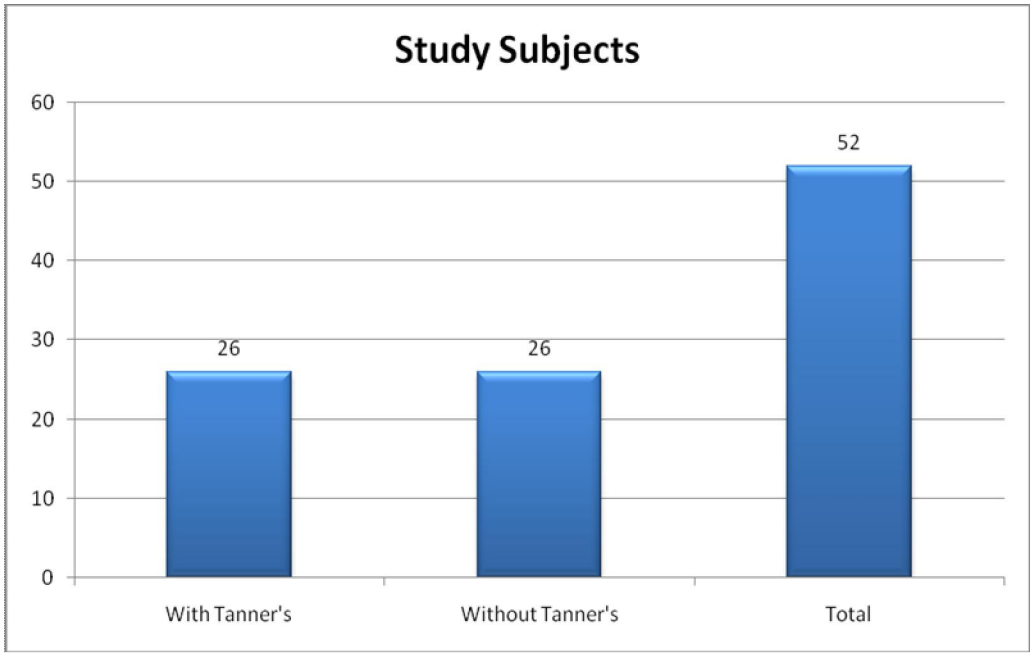


Figure 1. Study subjects classification

Study Subjects	With Tanner's	Without Tanner's	Total
Number	26	26	52
Percentage	50.00	50.00	100

Table 1. Study subjects classification

In this study, an analytical approach was adopted to assess the effectiveness of hernioplasty repairs for large direct inguinal hernia with and without Tanner's muscle slide down technique in relation to outcome variables like duration of surgery, ease of surgery, post operative complications and recurrence.

Data collected from 52 selected subjects were internally compared, tabulated, analysed and interpreted by using descriptive and inferential statistics based on the formulated objectives of the study.(Table 1 and Figure 1)

AGE

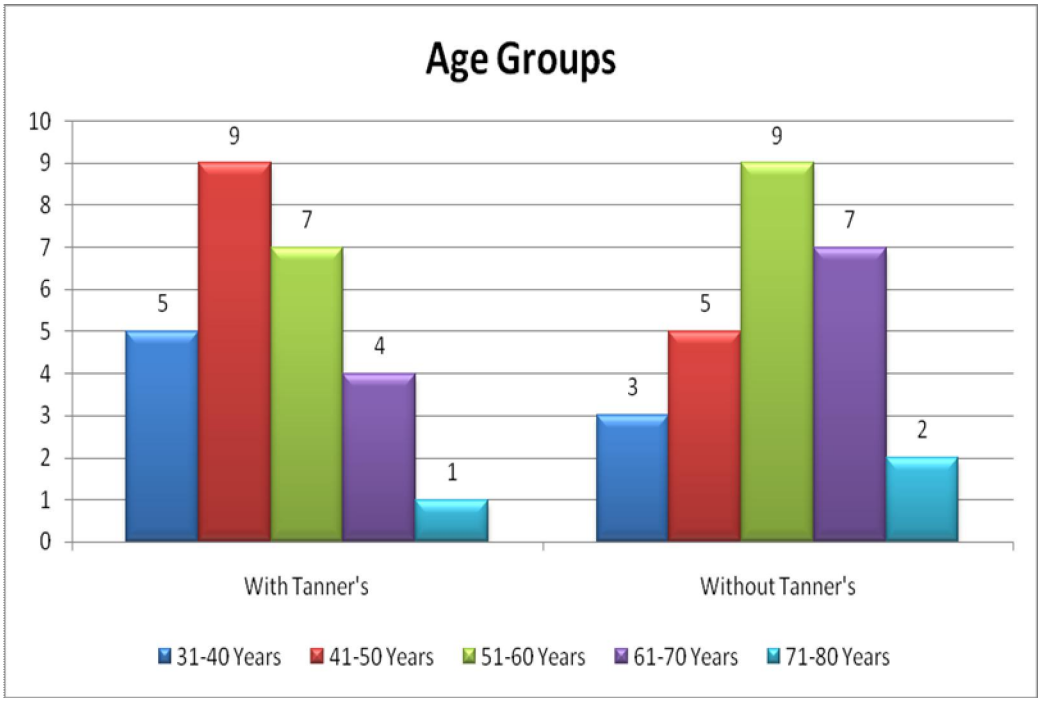


Figure 2(a). Classification based on age groups

Age Groups	With Tanner's	%	Without Tanner's	%
31-40 Years	5	19.23	3	11.54
41-50 Years	9	34.62	5	19.23
51-60 Years	7	26.92	9	34.62
61-70 Years	4	15.38	7	26.92
71-80 Years	1	3.85	2	7.69
Total	26	100.00	26	100.00

Table 2(a). Classification based on age groups

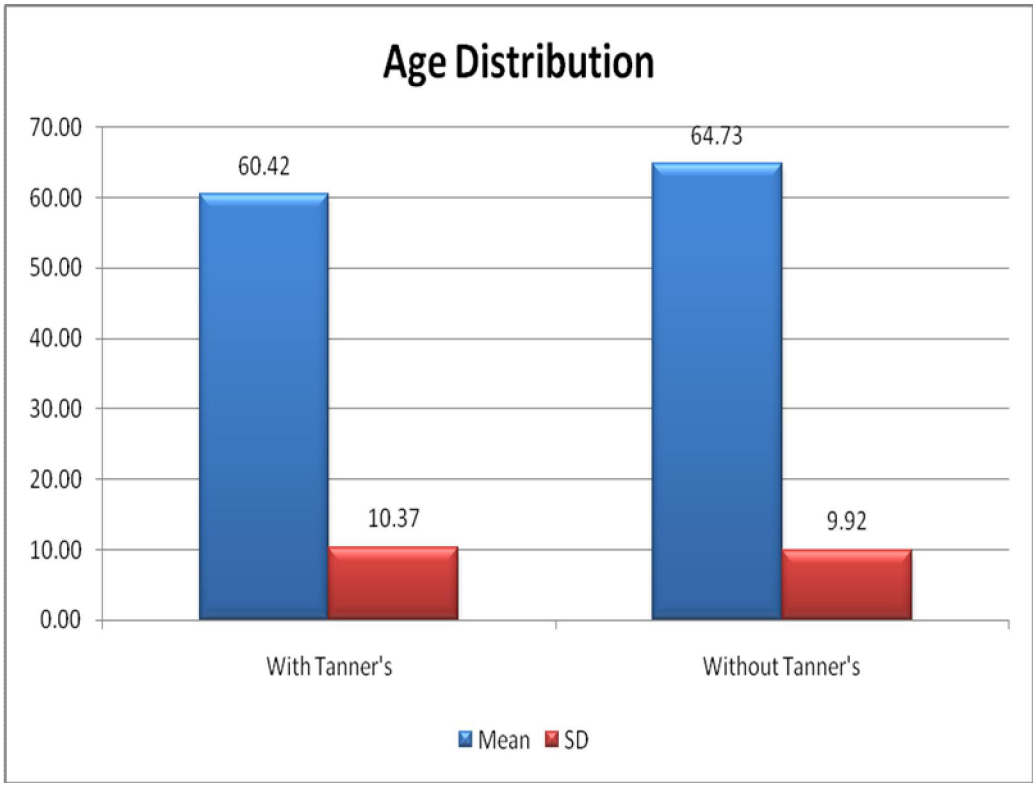


Figure 2(b). Age distribution

Age Distribution	With Tanner's	Without Tanner's
Mean	60.42	64.73
SD	10.37	9.92
P value Unpaired t Test		0.1322

Table 2(b). Age distribution

Table 2(a)(b) depicts the classification of subjects by age based on intervention groups. It is evident from the results that majority in with tanner"s group were in 41-50 years age group (34.62%) with a mean age of 60.42 years. Similarly in without tanner's group majority were in 51-60 years age group (34.62%) with a mean age of 64.73 years. (p=0.1322) The data subjected to statistical unpaired t test reveals the existence of statistically insignificant association between age distribution and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p > 0.05$).

Gender Status

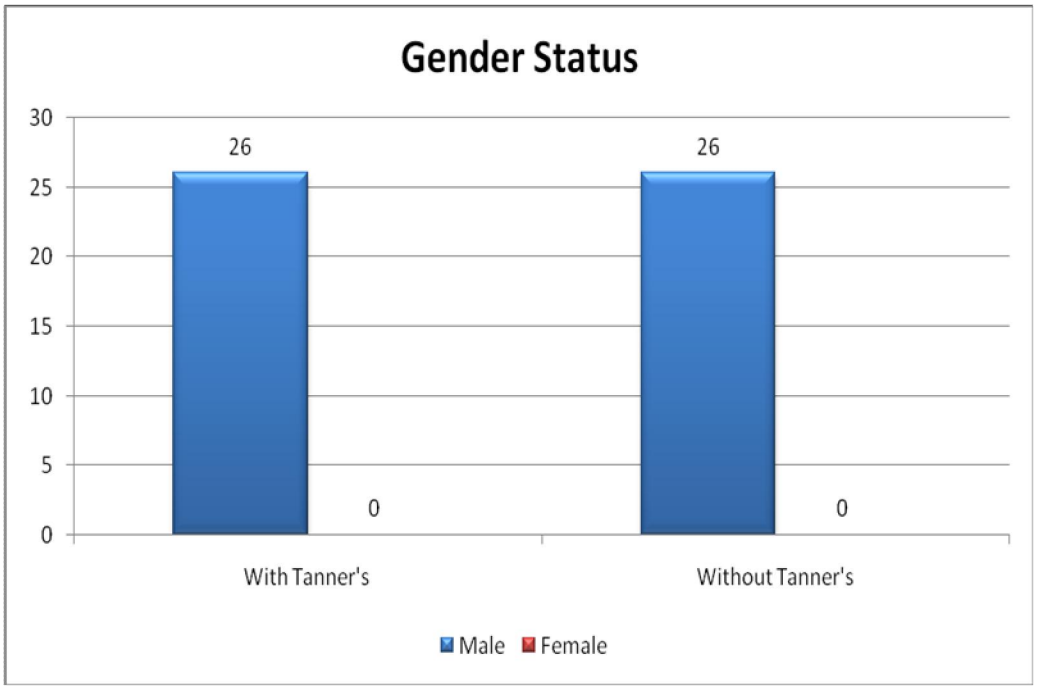


Figure 3. Classification based on gender

Gender Status	With Tanner's	%	Without Tanner's	%
Male	26	100.00	26	100.00
Female	0	0.00	0	0.00
Total	26	100.00	26	100.00
P value Fishers Exact Test			>0.9999	

Table 3. Classification based on gender

Majority of the subjects were males (100%) in with tanner's group and same in without tanner's group (100%) (p= >.0.9999) (Table 3).

The data subjected to statistical fishers exact test reveals the existence of statistically insignificant association between gender status and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p > 0.05$).

Hernia Side

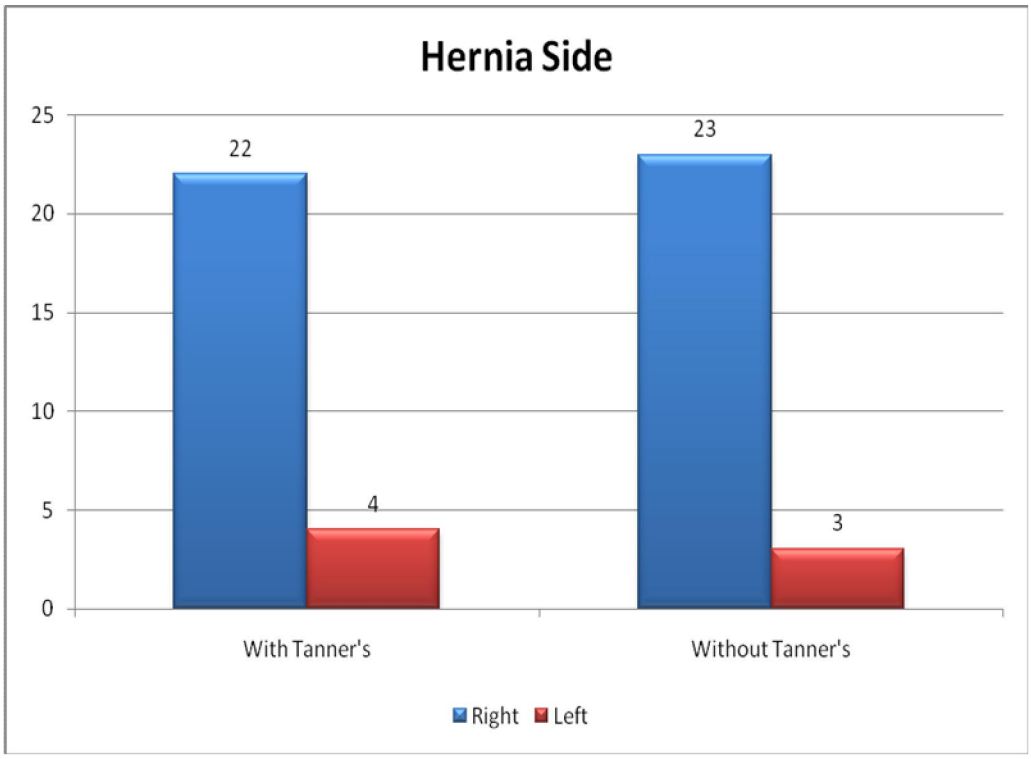


Figure 4. Classification based on side of large direct inguinal hernia presentation

Hernia Side	With Tanner's	%	Without Tanner's	%
Right	22	84.62	23	88.46
Left	4	15.38	3	11.54
Total	26	100.00	26	100.00
P value Fishers Exact Test			>0.9999	

Table 4. Classification based on side of large direct inguinal hernia presentation

84.62% of the study subjects in with tanner's group had right sided large direct inguinal hernia compared to 15.38% having left sided hernia. In without tanner's group 88.46% of the study subjects had right sided large direct inguinal hernia compared to 11.54% having left sided hernia. (p= >0.9999) (Table 4).

The data subjected to statistical fishers exact test reveals the existence of statistically insignificant association between hernia side status and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p > 0.05$).

Duration of Hernia

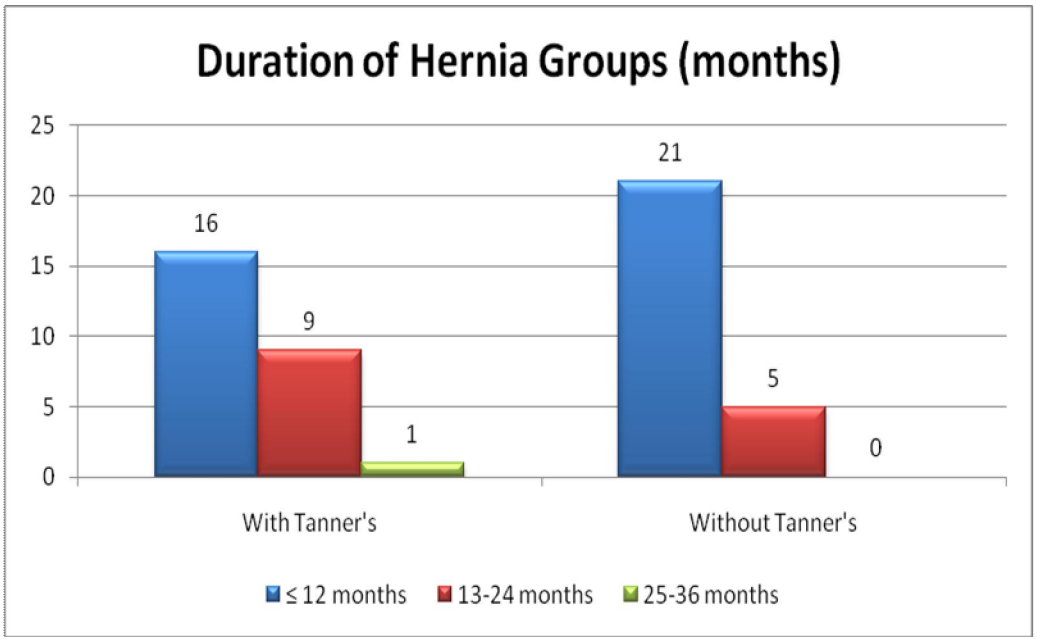


Figure 5(a). Classification based on duration of hernia

Duration of Hernia Groups (months)	With Tanner's	%	Without Tanner's	%
≤ 12 months	16	61.54	21	80.77
13-24 months	9	34.62	5	19.23
25-36 months	1	3.85	0	0.00
Total	26	100.00	26	100.00

Table 5(a). Classification based on duration of hernia

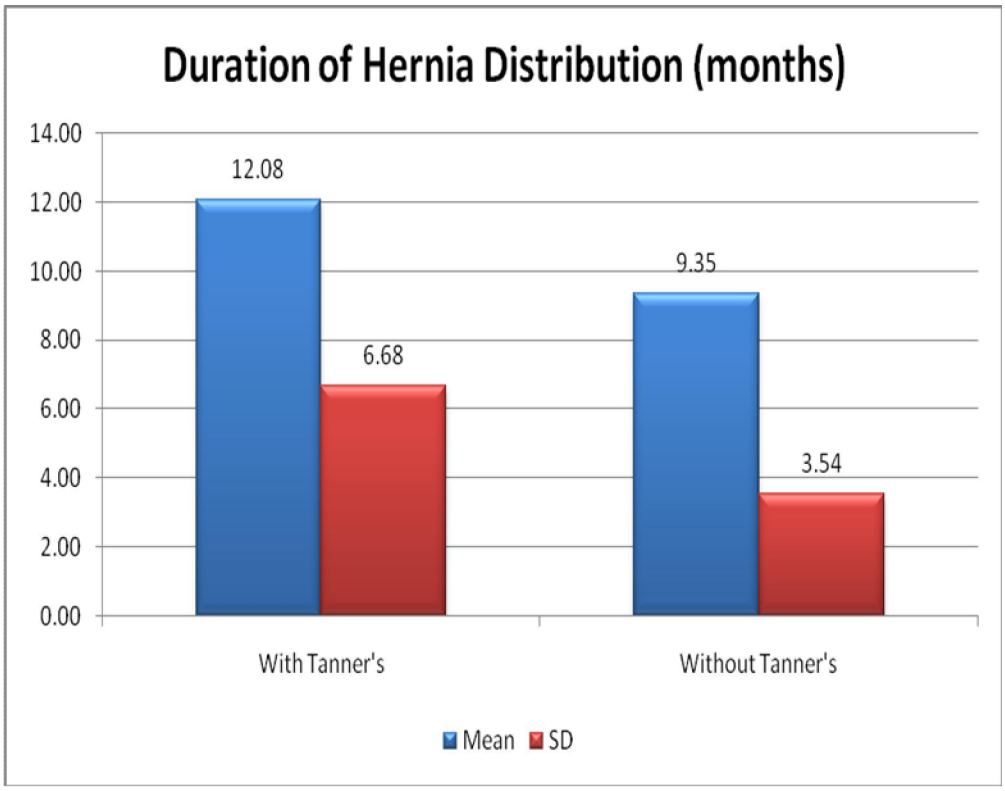


Figure 5(b). Duration of hernia distribution

Duration of Hernia Distribution (months)	With Tanner's	Without Tanner's
Mean	12.08	9.35
SD	6.68	3.54
P value Unpaired t Test		0.0715

Table 5(b). Duration of hernia distribution

Table 5(a)(b) depicts the classification of subjects by duration of hernia based on intervention groups. It is evident from the results that majority in with tanner's group apparently suffered from hernia for less than 12 months (61.54%) with a mean duration of 12.08 months and 80.77% of the subjects in without tanner's group had hernia for less than 12 months with a mean duration of 9.35 months. (p=0.0715).

The data subjected to statistical unpaired t test reveals the existence of statistically insignificant association between duration of hernia distribution and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) (p > (0.05).

Duration of Surgery

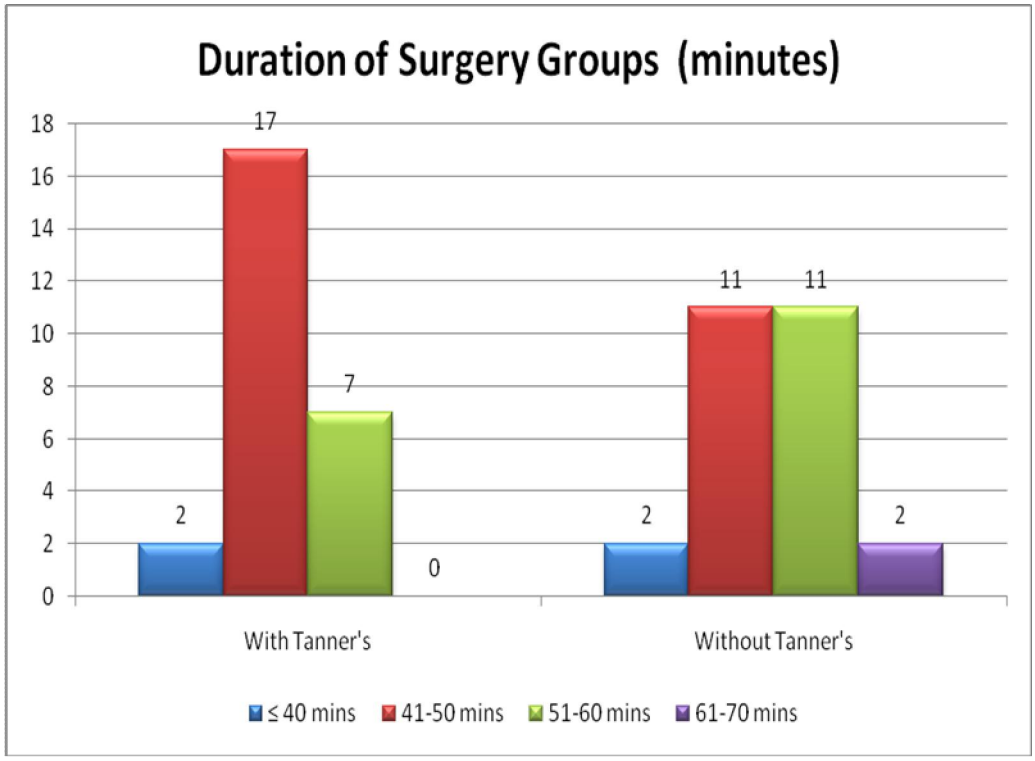


Figure 6(a). Classification based on duration of surgery

Duration of Surgery Groups (minutes)	With Tanner's	%	Without Tanner's	%
≤ 40 mins	2	7.69	2	7.69
41-50 mins	17	65.38	11	42.31
51-60 mins	7	26.92	11	42.31
61-70 mins	0	0.00	2	7.69
Total	26	100.00	26	100.00

Table 6(a). Classification based on duration of surgery

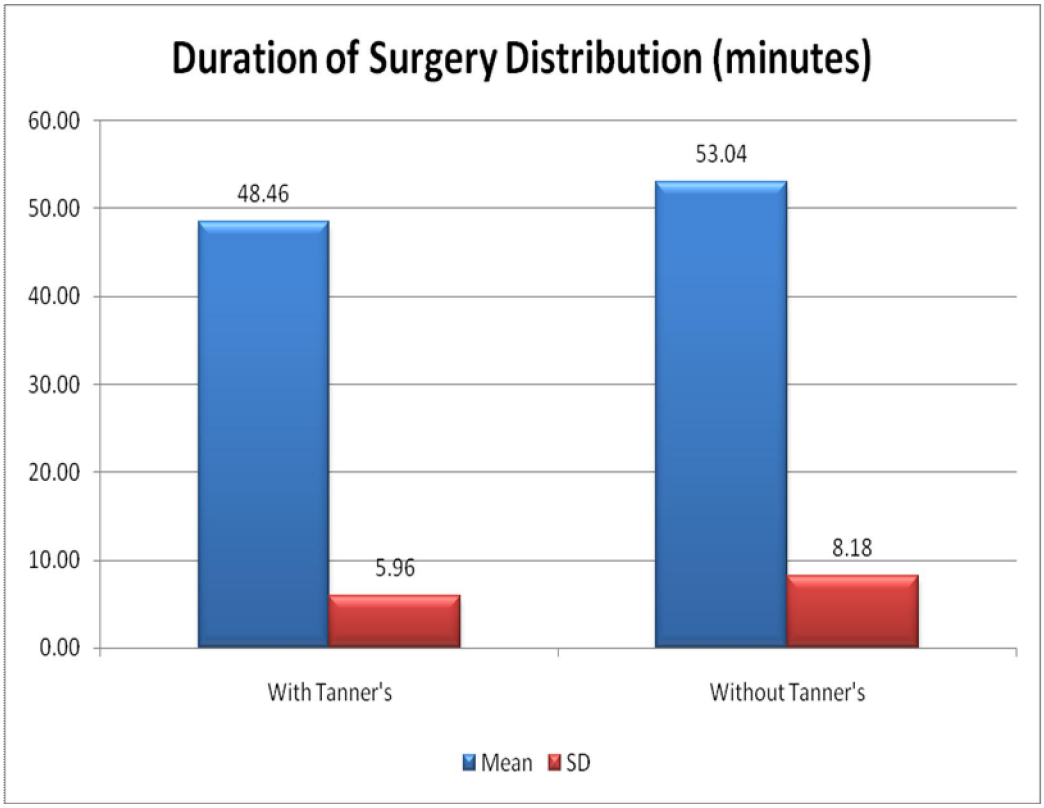


Figure 6(b). Duration of surgery distribution

Duration of Surgery Distribution (minutes)	With Tanner's	Without Tanner's
Mean	48.46	53.04
SD	5.96	8.18
P value Unpaired t Test		0.0253

Table 6(b). Duration of surgery distribution

Table 6(a)(b) depicts the classification of subjects by duration of hernia surgery based on intervention groups. It is evident from the results that majority in with tanner's group were in 41-50 and 51-60 minutes surgery duration group (65.38%) with a mean surgery duration of 48.46 minutes. Similarly in without tanner's group majority were in 41-50 minutes surgery duration group (42.31%) with a mean surgery duration of 53.04 minutes.($p=0.0253$).

The data subjected to statistical unpaired t test reveals the existence of statistically significant association between duration of hernia surgery distribution and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p < 0.05$).

Hernial Contents

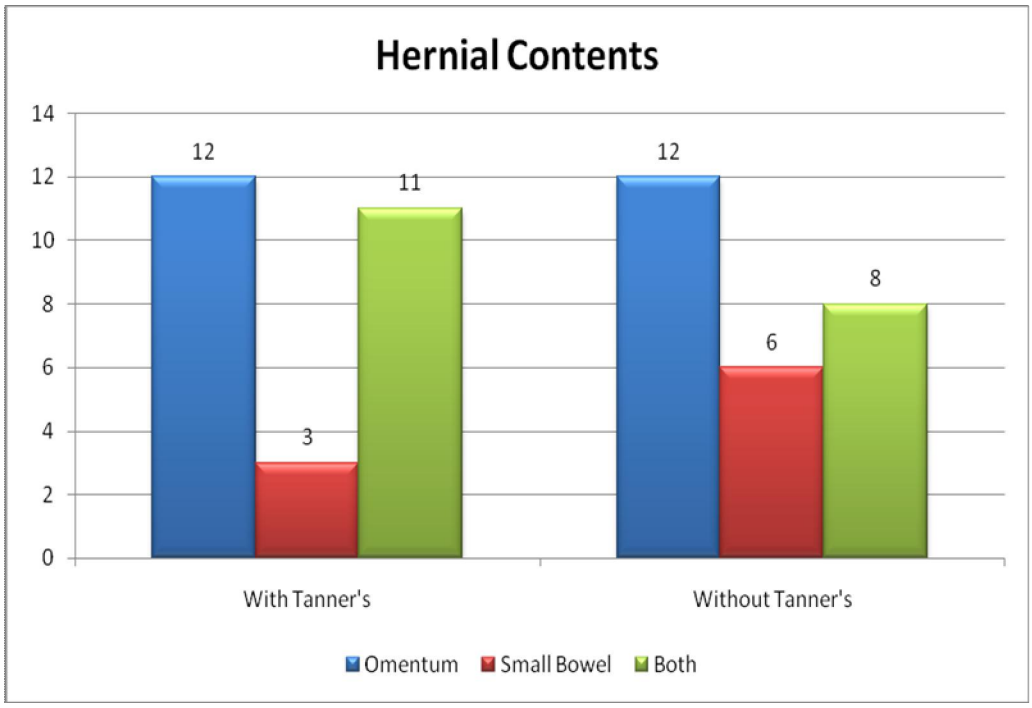


Figure 7. Classification based on hernia contents

Hernial Contents	With Tanner's	%	Without Tanner's	%
Omentum	12	46.15	12	46.15
Small Bowel	3	11.54	6	23.08
Both	11	42.31	8	30.77
Total	26	100.00	26	100.00
P value Fishers Exact Test			0.5412	

Table 2. Classification based on hernia contents

46.15% of the study subjects in with tanner's group had omentum as hernia contents followed by omentum+small bowel in 42.31% of the subjects. In without tanner's group 46.15% of the study subjects had omentum as hernia contents followed by omentum+small bowel in 30.77% of the subjects. (p= 0.5412) (Table 7).

The data subjected to statistical fishers exact test reveals the existence of statistically insignificant association between hernia contents status and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p > 0.05$).

Complications

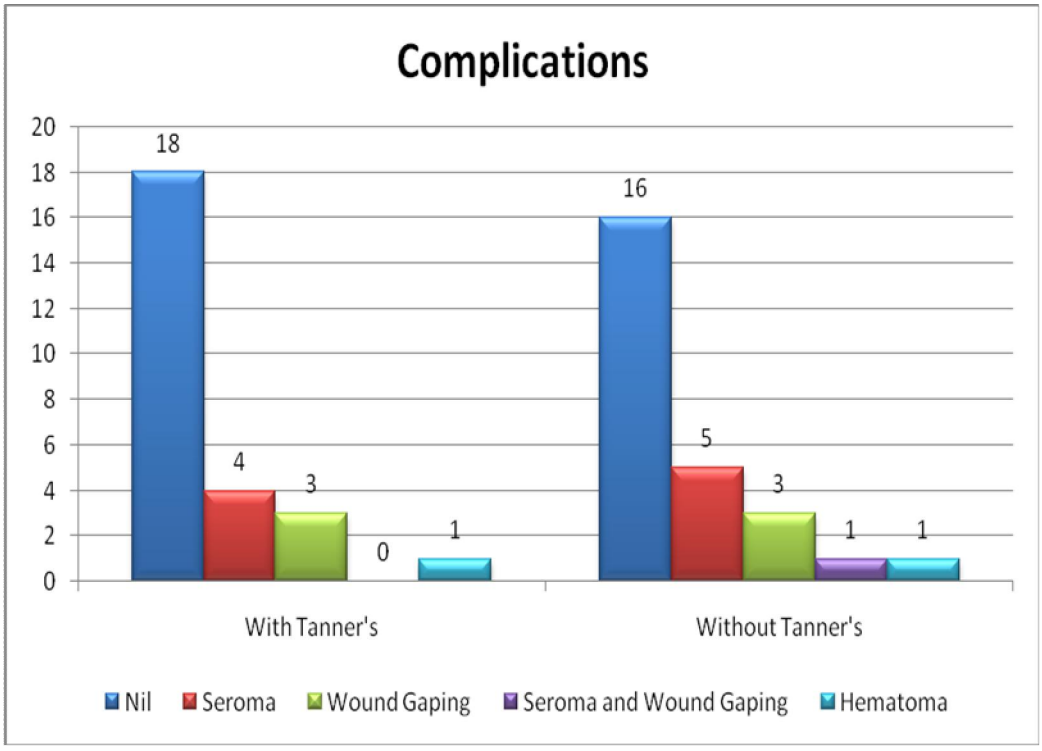


Figure 8. Classification based on complications

Complications	With Tanner's	%	Without Tanner's	%
Nil	18	69.23	16	61.54
Seroma	4	15.38	5	19.23
Wound Gaping	3	11.54	3	11.54
Seroma and Wound Gaping	0	0.00	1	3.85
Hematoma	1	3.85	1	3.85
Total	26	100.00	26	100.00
P value Fishers Exact Test			0.5767	

Table 8. Classification based on complications

In relation to complications, seroma was the main complication observed (15.38%) followed by wound gaping (11.54%) in with tanner's group. In without tanner's group seroma was the main complication observed (19.23%) followed by wound gaping (11.54%). (p= 0.5657) (Table 7).

The data subjected to statistical fishers exact test reveals the existence of statistically insignificant association between complications status and hernioplasty repairs procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p > 0.05$).

Postoperative Hospital Stay

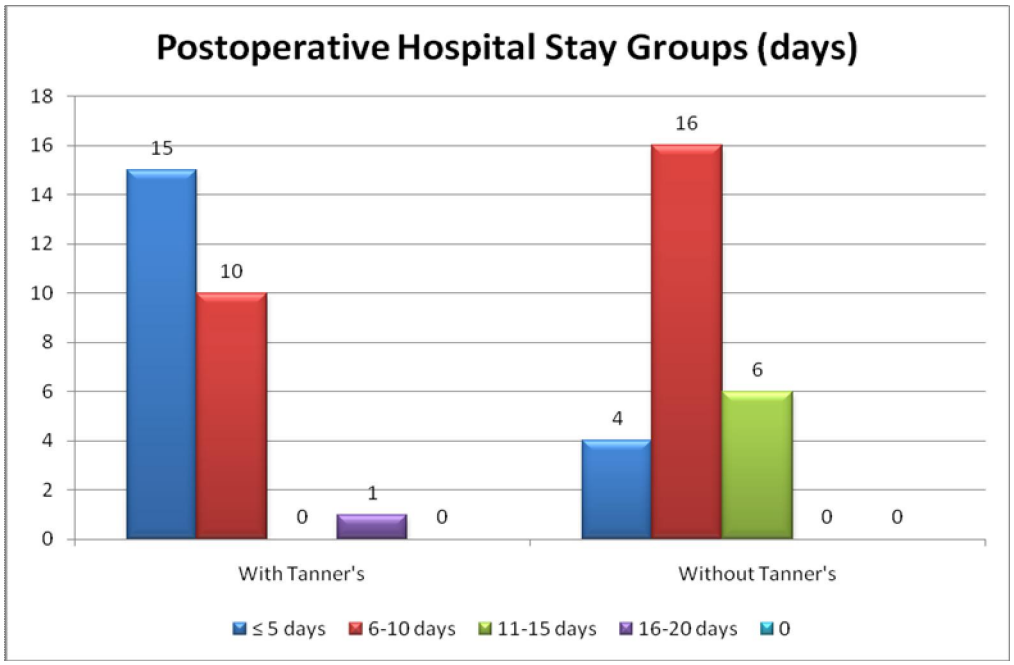


Figure 9(a). Classification based on postoperative hospital stay

Postoperative Hospital Stay Groups (days)	With Tanner's	%	Without Tanner's	%
≤ 5 days	15	57.69	4	15.38
6-10 days	10	38.46	16	61.54
11-15 days	0	0.00	6	23.08
16-20 days	1	3.85	0	0.00
Total	26	100.00	26	100.00

Table 9(a). Classification based on postoperative hospital stay

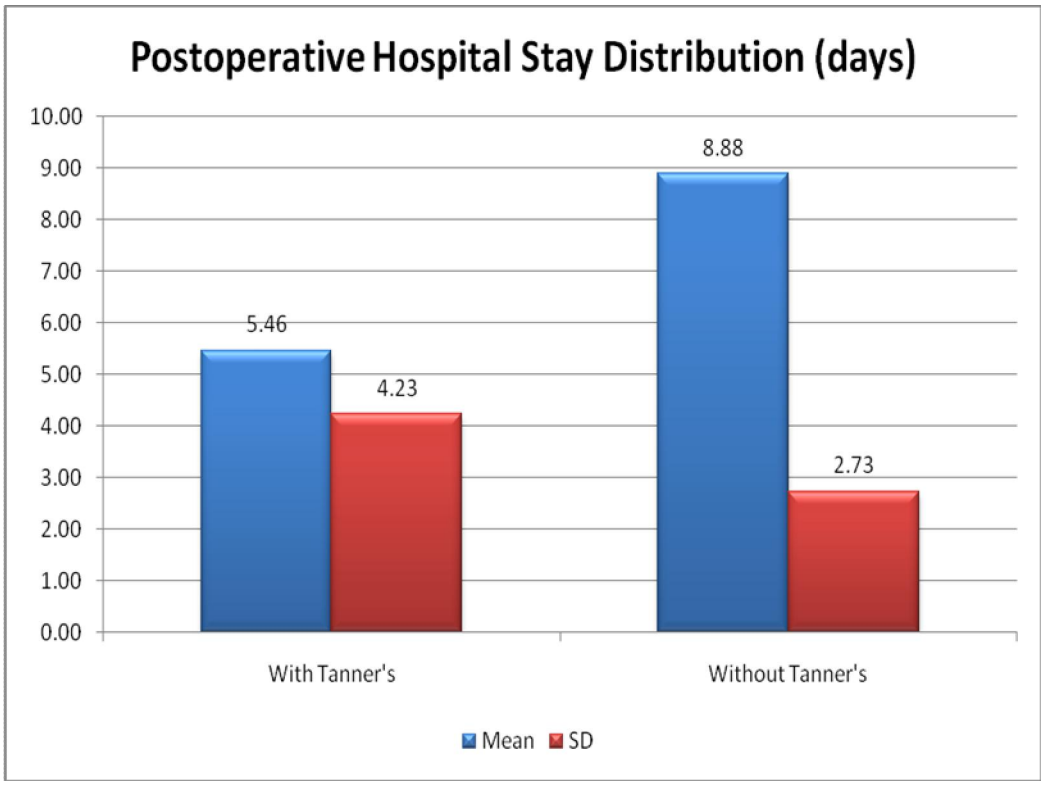


Figure 9(b). Postoperative hospital stay distribution

Postoperative Hospital Stay Distribution (days)	With Tanner's	Without Tanner's
Mean	5.46	8.88
SD	4.23	2.73
P value Unpaired t Test		0.0011

Table 9(b). Postoperative hospital stay distribution

Table 9(a)(b) depicts the classification of subjects by postoperative hospital stay period based on intervention groups. It is evident from the results that majority in with tanner's group were in less than 5 days postoperative hospital stay duration group (57.69%) with a mean stay duration of 5.46 days. Similarly in without tanner's group majority were in 6-10 days postoperative hospital stay duration group (61.54%) with a mean stay duration of 8.88 days.($p=0.0011$).

The data subjected to statistical unpaired t test reveals the existence of statistically significant association between postoperative hospital stay distribution status and hernioplasty repair procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p < 0.05$).

Pain Scores

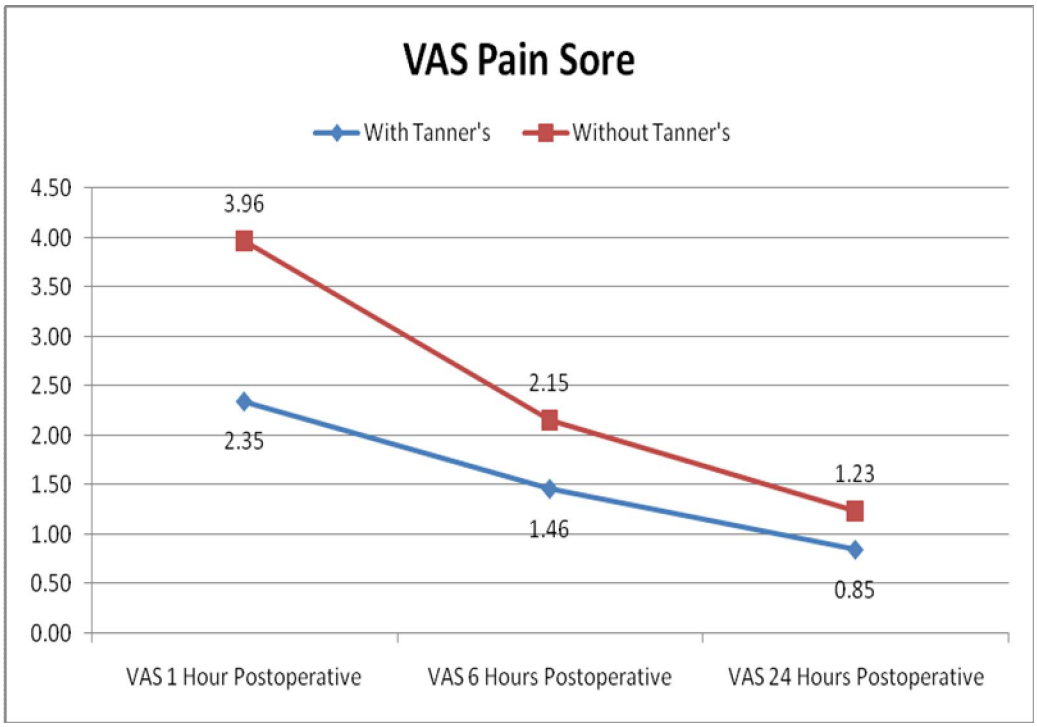


Figure 10. VAS pain score distribution

VAS Pain Sore		VAS 1 Hour Postoperative	VAS 6 Hours Postoperative	VAS 24 Hours Postoperative
With Tanner's	Mean	2.35	1.46	0.85
	SD	0.69	0.90	1.01
Without Tanner's	Mean	3.96	2.15	1.23
	SD	0.45	0.54	1.14
P value Unpaired t Test		<0.0001	<0.0001	-0.2038

Table 10. VAS pain score distribution

Table 10 depicts the classification of subjects by pain score using visual analog scale based on intervention groups. It is evident from the results that majority in with tanner's group had a mean VAS pain score of 2.35, 1.46 and 0.85 at 1 hour, 6 hours and 24 hours postoperative respectively. Similarly in without tanner's group majority had a mean VAS pain score of 3.96, 2.15 and 1.23 at 1 hour, 6 hours and 24 hours postoperative respectively. (1 hour - p= <0.0001, 6 hours - p= <0.0001 and 24 hours p= 2038).

The data subjected to statistical unpaired t test reveals the existence of statistically significant association between VAS pain score distribution status and hernioplasty repair procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p < 0.05$).

Patient Satisfaction

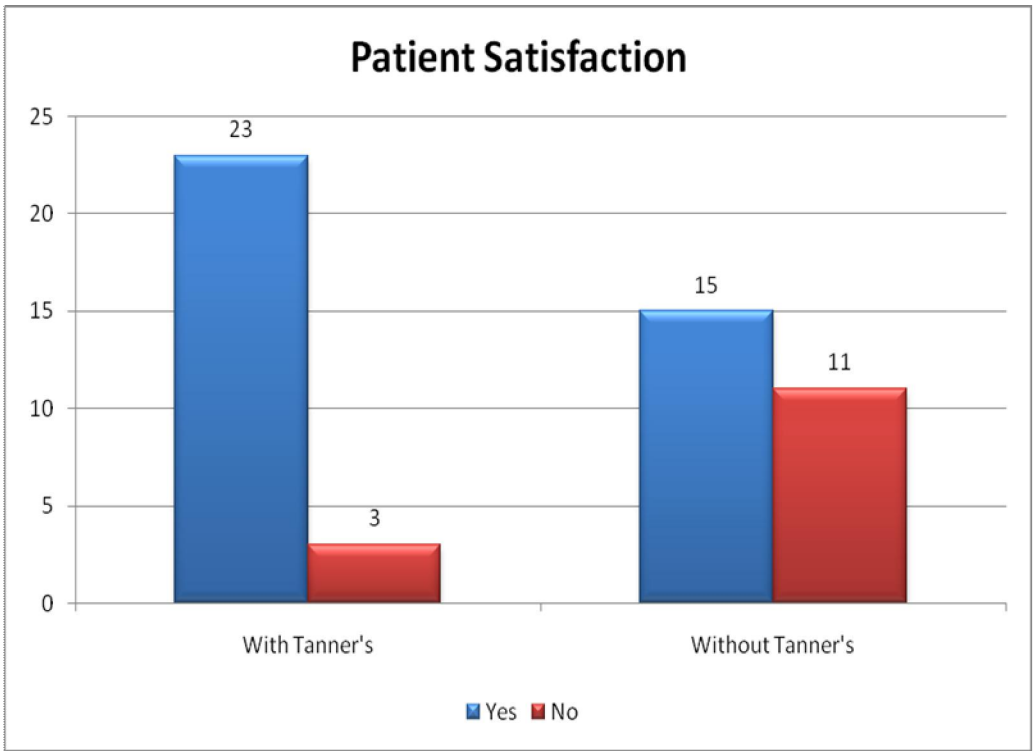


Figure 11. Classification based on patient satisfaction

Patient Satisfaction	With Tanner's	%	Without Tanner's	%
Yes	23	88.46	15	57.69
No	3	11.54	11	42.31
Total	26	100.00	26	100.00
P value Fishers Exact Test			0.0152	

Table 11. Classification based on patient satisfaction

Table 11 depicts the classification of subjects by patient satisfaction status based on intervention groups. It is evident from the results that majority in with tanner's group were satisfied with surgery outcomes (88.46%). Similarly in without tanner's group majority were satisfied with surgery outcome (57.69%) ($p=0.0152$).

The data subjected to statistical unpaired t test reveals the existence of statistically significant association between VAS pain score distribution and hernioplasty repair procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p < 0.05$).

Recurrence

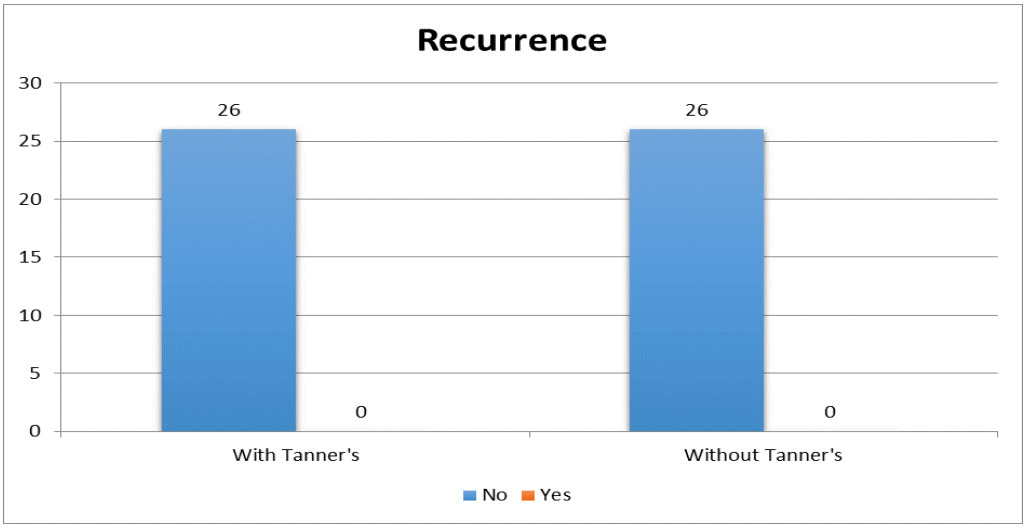


Figure 12. Classification based on hernia recurrence

Recurrence	With Tanner's	%	Without Tanner's	%
No	26	100.00	26	100.00
Yes	0	0.00	0	0.00
Total	26	100.00	26	100.00
P value Fishers Exact Test			>0.9999	

Table 12. Classification based on hernia recurrence

Table 12 depicts the classification of subjects by recurrence of hernia status based on intervention groups. It is evident from the results that majority in with tanner's group did not have recurrence of hernia (100%) and similarly in without tanner's group majority did not have recurrence (100%) ($p=0.1066$).

The data subjected to statistical fishers exact test reveals the existence of statistically insignificant association between hernia recurrence status and hernioplasty repair procedures for large direct inguinal (tanner's procedure and conventional without tanner's procedure) ($p > 0.05$).

DISCUSSION

This single blind randomized control trial was carried out in Department of General surgery, Kilpauk Medical college from JANUARY 2017 to JUNE 2017. A total of 52 patients undergoing elective inguinal hernia repair were divided into two intervention groups of 26 each. Group “with Tanner’s” consisted of patients who had tanners muscle slide down technique and group without Tanner’s” consisted of patients who had no tanners muscle slide down technique.

The findings of this study have been discussed with reference to the aims and objectives and in relation with findings of other reference studies.

In our study age, gender, side of hernia presentation, duration of hernia, hernia contents, complications and recurrence showed no significant difference and effects between the with Tanner’s group and without Tanner’s group.

DURATION OF HERNIA SURGERY

In our study the duration of hernia surgery between with Tanner’s group and without Tanner’s group was meaningfully significant. This is exhibited by the reduced mean duration of hernia surgery in “with

Tanner's group" compared to "without Tanner's" group (4.58 minutes quicker, 9% less time). Further, Cohen's effect size value (d = 0.65) suggested a moderate practical significance (74% study subjects with tanners muscle slide down technique will have shorter duration of hernia surgery as outcome).

POSTOPERATIVE HOSPITAL STAY

In our study the postoperative hospital stay duration between with Tanner's group and without Tanner's group was meaningfully significant. This is exhibited by the reduced mean duration of postoperative hospital stay in "with Tanner's group" compared to "without Tanner's" group (3.42 days shorter, 39% less time). Further, Cohen's effect size value (d = 0.98) suggested a high practical significance (84% study subjects with tanners muscle slide down technique will have shorter duration of postoperative hospital stay as outcome).

POSTOPERATIVE VAS PAIN SCORE

In our study the postoperative VAS pain score between with Tanner's group and without Tanner's group was meaningfully significant. This is exhibited by the reduced mean VAS pain score postoperatively in "with Tanner's group" compared to "without Tanner's" group at 1 hour

(1.62 score points less, 41% less pain) and 6 hour (0.69 score points less, 32% less pain). The Postoperative VAS pain score between with Tanner's group and without Tanner's group at 24 hours was insignificant. Further, Cohen's effect size value at 1 hour (d = 2.85) suggested a very high practical significance (99% study subjects with tanners muscle slide down technique will have lesser postoperative pain at I hour as outcome).

Similarly, Cohen's effect size value at 6 hour (d = 0.96) suggested a high practical significance (84% study subjects with tanners muscle slide down technique will have lesser postoperative pain at 6 hours as outcome).

PATIENT SATISFACTION STATUS

In our study the patient satisfaction status between with Tanner's group and without Tanner's group was meaningfully significant. This is exhibited by the increased patient satisfaction percentage in "with Tanner's group" compared to "without Tanner's" group (30.77 percentage points more, 35% more satisfaction). Further, Cohen's effect size value (d = 0.53) suggested a moderate practical significance (70% study subjects with tanners muscle slide down technique will have higher satisfaction as outcome).

CONCLUSIONS

We can conclude that:

- Age, gender, side of hernia presentation, duration of hernia, hernia contents, complications and recurrence had no statistically significant role to play on elective inguinal hernia repair outcomes between Group “with Tanner’s” and group without Tanner’s”.
- When surgery related outcomes were matched, the following conclusions was observed in “with Tanner’s group” compared to “without Tanner’s” group :
    - Shorter duration of hernia surgery
    - Shorter duration of postoperative hospital stay
    - lesser postoperative pain till 6 hours
    - higher patient satisfaction
- This study is a hypothesis proving study. Hence results have high clinical significance.

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PROFORMA

DATA COLLECTION FORM

Id of the patient: Sex : Date:

Investigator name: Time:

Pre-operative data

Date of birth

Weight and BMI

Smoking history (current smoker (Y or N)

Medical history (COPD, diabetes, cardiac disease)

Preoperative Radiotherapy or chemotherapy

Preoperative corticosteroids

Previous abdominal operations

Complications if any in previous operations

Other abdominal hernias (inguinal, umbilical,epigastric hernias)

Hernia defect size measured in ultra sound

Contents of hernia sac, reducibility

Intra op details

Type of operation

Type and length of prosthesis

Length of incision

Blood loss

Operation time

Antibiotic prophylaxis

Suture material

Drains and location

Thrombosis prophylaxis

Pain medication

Post-operative data

Immediate

Blood transfusion

Postoperative ventilation and duration

In hospital post op stay

duration of stay ICU / Ward

duration of Suction drain and quantity, quality of drain

surgical site infection

pain scoring by visual analog score on post op day 1 and 5 and at discharge

Post op follow up: during each visit once a week in first post op month and biweekly in second post op month

surgical site infections

seroma

pain score as measured in visual analog score with respect to position bending, turning and at rest

activities of daily living

return to occupation

INFORMED WRITTEN CONSENT

- Subject identification number for this trial _____
- Title of the Project : A Study on comparison of repairs of large direct inguinal hernia's with and without Tanner's muscle slide incision at Government Kilpauk Medical College Hospital.
- Name of the Principal Investigator _____ Tel. No._____
- I have received the information sheet on the above study and have read and / or understood the written information. I have been given the chance to discuss the study and ask questions. I consent to take part in the study and I am aware that my participation is voluntary. I understand that I may withdraw at any time without this affecting my future care. I understand that the information collected about me from my participation in this research and sections of any of my medical notes may be looked at by responsible persons (ethics committee members / regulatory authorities). I give access to these individuals to have access to my records. I understand I will receive a copy of the patient information sheet and the informed consent form.

_____ _____

- Signature / Thumb Impression of subject Date of signature
- _____
- Name of the subject in capitals

_____ _____

- Signature / Thumb Impression of legally accepted representative Date of signature
- (The legally acceptable representative signature should be added if the subject is a minor or is unable to sign for themselves. The relationship between the subject and the legally acceptable representative should be stated. The impartial witness signature should be added if the subject / legally acceptable representative is unable to read or write and consent should be obtained in his presence.)

_____

- name of legally acceptable representative in capitals. Relationship in capitals_____

_____ _____

- Signature of the person conducting the informed consent discussion Date of Signature

_____

- name of the person conducting the Informed consent discussion in capitals

_____ _____

- Signature of impartial witness Date of signature

_____ name of the impartial witness in capitals

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- ஆய்வு செய்யப்படும் தலைப்பு"A Study on comparison of repairs of large direct inguinal hernia's with and without Tanner's muscle slide incision" Department of General Surgery, 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 PREOPERATIVE PATIENT DETAILS

S. NO	NAME	AGE	SEX	IP NO.	SYMPTOMS	DURATION OF HERNIA IN MONTH	SIDE	CONTENTS	PROCEDURE	POST OP COMPLICATIONS
1	SAMIKANNU	49	M	46546	enlarged scrotum/groin	11	left	Omentum,small bowel	Lt hernioplasty without Tanner's	nil
2	RAMU	65	M	45444	Swelling groin, enlarged scrotum,dull aching pain	12	Right	small bowel	Rt hernioplasty with withoutTanner's	seroma
3	KAMESH	53	M	33655	Heaviness,Swollen and enlarged scrotum	9	Right	Omentum	Rt hernioplasty without Tanner's	nil
4	GANAPATHY	71	M	65656	Swollen and enlarged scrotum	15	Right	small bowel and omentum	Rt hernioplasty without Tanner's with omentectomy	wound gaping and seroma
5	KANDAN	54	M	45465	swelling groin and scrotum	8	Right	omentum	Rt hernioplasty without Tanner's	Hemotoma
6	RANGAN	60	M	75656	Painless swelling groin and scrotum	10	Right	Omentum	Rt hernioplasty without Tanner's with omentectomy	seroma
7	RANGASWAMY	86	M	56545	Swollen and enlarged scrotum	5	Right	omentum and small bowel	Rt hernioplasty without Tanner's	nil
8	VELAVAN	59	M	58321	Swollen and enlarged scrotum	7	Right	Omentum	Rt hernioplasty without Tanner's	wound gaping
9	MUGILAN	64	M	53117	Huge scrotum with heaviness and dragging type of pain	12	Right	small bowel and omentum	Rt hernioplasty without Tanner's with omentectomy	nil
10	KANAGAVEL	74	M	65656	Painless swelling groin and scrotum	11	Right	omentum	Rt hernioplasty without Tanner's with omentectomy	nil
11	PANDIARAJ	63	M	64892	Swollen and enlarged scrotum	5	Right	small bowel	Rt hernioplasty without Tanner's	seroma

S. NO	NAME	AGE	SEX	IP NO.	SYMPTOMS	DURATION OF HERNIA IN MONTH	SIDE	CONTENTS	PROCEDURE	POST OP COMPLICATIONS
12	MURUGAN	70	M	71456	Swollen and enlarged scrotum	15	Right	omentum and small bowel	Rt hernioplasty without Tanner’s	nil
13	THIRUMOORTHI	72	M	53654	Painless swelling groin and scrotum	9	Right	Omentum	Rt hernioplasty without Tanner’s	POST-OP pain
14	SENTHILKUMAR	65	M	46253	Huge scrotum with heaviness	9	Right	Omentum	Rt hernioplasty without tanner's	Nil
15	RAJAN	74	M	43565	Painless swelling groin and scrotum	11	Right	Small bowel	Rt hernioplasty without tanner's	Nil
16	KIRUBA	82	M	47896	Swollen and enlarged scrotum	13	Right	Small bowel and omentum	Rt hernioplasty without tanner's with omentectomy	wound gaping
17	BASKAR	67	M	74156	Painless swelling groin and scrotum	6	Right	Omentum	Rt hernioplasty without tanner's	Nil
18	VIGNESH	71	M	73256	Swollen and enlarged scrotum,dragging type of pain	3	Left	Omentum	Lt hernioplasty without tanner's and omentectomy	Nil
19	JOSEPH	65	M	72589	Painless swelling groin and scrotum	12	Right	Small bowel and omentum	Rt hernioplasty without tanner's	seroma
20	SAI KRISHNA	52	M	74589	Huge scrotum with heaviness	7	Right	Small bowel	Rt hernioplasty without tanner's	Nil
21	GANESH	84	M	71698	Swollen and enlarged scrotum,dragging type of pain	14	Right	Omentum	Rt hernioplasty without tanner's	nil
22	SHANKAR	49	M	65412	Swollen and enlarged scrotum	8	Right	Small bowel and omentum	Rt hernioplasty without tanner's	Seroma
23	KARUNAKARAN	67	M	52648	Huge scrotum with heaviness	3	Right	Small bowel	Rt hernioplasty without tanner's	nil

S. NO	NAME	AGE	SEX	IP NO.	SYMPTOMS	DURATION OF HERNIA IN MONTH	SIDE	CONTENTS	PROCEDURE	POST OP COMPLICATIONS
24	PRASSANA	73	M	63542	Discomfort,heaviness,enarged scrotum and groin	9	Right	Omentum	Rt hernioplasty without tanner's with omentectomy	nil
25	PERUMAL	62	M	65412	Swollen and enlarged scrotum	14	Left	Omentum	Lt hernioplasty without tanner's	nil
26	NARAYANA SAMY	72	M	58921	Swollen and enlarged scrotum	5	Right	Small bowel	Rt hernioplasty without tanner's	wound gaping

S.NO	NAME	AGE	SEX	IP NO.	SYMPTOMS	DURATION OF HERNIA IN MONTH	SIDE	CONTENTS	PROCEDURE	POST OP COMPLICATIONS
1	VIJAYARAJAN	42	M	47868	Discomfort,heaviness enlarged scrotum/groin	13	Right	Omentum,small bowel	Rt hernioplasty with Tanner’s with omentectomy	Seroma
2	RAMASAMY	55	M	49690	Swelling groin, enlarged scrotum,dull aching pain	10	Right	Omentum,small bowel	Rt hernioplasty with Tanner’s	nil
3	KUMAR	49	M	43129	Swollen and enlarged scrotum	7	Right	Omentum	Rt hernioplasty with Tanner’s	nil
4	SELVARAJ	63	M	55960	Huge scrotum with heaviness,dragging type of pain	11	Right	small bowel and omentum	Rt hernioplasty with Tanner’s with omentectomy	wound gaping
5	MUTHUSMAY	60	M	55955	Painless swelling groin and scrotum	7	left	omentum	Lt hernioplasty with Tanner’s	nil
6	RAVI	72	M	61800	Discomfort swollen and enlarged scrotum	18	Right	Omentum,small bowel	Rt hernioplasty with Tanner’s with omentectomy	hematoma
7	MUTHUKARUPPAN	68	M	62902	Swollen and enlarged scrotum	8	Right	omentum	Rt hernioplasty with Tanner’s	nil

8	VEERAPANDIYAN	49	M	65112	Bulge in groin and scrotum disappears on lying down	14	Right	Omentum,small bowel	Rt hernioplasty with Tanner's with omentectomy	Seroma
9	SATHIYAMOORTHY	58	M	64920	Swollen and enlarged scrotum,dragging type of pain	18	Right	small bowel	Rt hernioplasty with Tanner's	nil
10	KATHIRAVAN	62	M	60629	Discomfort swollen and enlarged scrotum	17	left	omentum	Lt hernioplasty with Tanner's with omentectomy	Post op pain and seroma
11	PERIYASAMY	52	M	71122	Huge scrotum with heaviness	9	Right	small bowel and omentum	Rt hernioplasty with Tanner's	nil
12	KANNAN	74	M	71235	Swollen and enlarged scrotum	15	Right	omentum	Rt hernioplasty with Tanner's	nil
13	PALANISAMY	63	M	72420	Painless swelling groin and scrotum	9	Right	Omentum	Rt hernioplasty with Tanner's	Nil
14	SENGODAN	52	M	42390	Swollen and enlarged scrotum	14	Right	Omentum	Rt hernioplasty with tanner's	seroma
15	SARAVANAN	47	M	73995	Painless swelling groin and scrotum	7	Left	Small bowel and omentum	Lt hernioplasty with tanner's and omentectomy	Nil
16	KARUNANIDHI	59	M	45940	Huge scrotum with heaviness	12	Right	Small bowel and omentum	Rt hernioplasty with tanner's	Nil
17	SURESH	62	M	72887	Swollen and enlarged scrotum	15	Right	Omentum	Rt hernioplasty with tanner's	Nil
18	PANJAMOORTHY	78	M	73230	Painless swelling groin and scrotum	11	Right	Omentum	Rt hernioplasty with tanner's and omentectomy	Nil
19	LAKSHMANAN	56	M	75521	Swollen and enlarged scrotum,dragging type of pain	36	Left	Small bowel and omentum	Lt hernioplasty with tanner's	Nil
20	MOORTHY	82	M	72672	Swollen and enlarged scrotum	9	Right	Omentum	Rt hernioplasty with tanner's	wound gaping
21	MAGESH	49	M	76633	Swollen and enlarged scrotum,dragging type of pain	22	Right	Small bowel and omentum	Rt hernioplasty with tanner's	nil

22	KRISHNAN	69	M	78742	Huge scrotum with heaviness	7	Right	Small bowel and omentum	Rt hernioplasty with tanner's	Seroma
23	RAMAKRISHNAN	76	M	78898	Discomfort,heaviness,enarged scrotum and groin	5	Right	Small bowel	Rt hernioplasty with tanner's	nil
24	ABDUL	63	M	79117	Swollen and enlarged scrotum	6	Right	Omentum	Rt hernioplasty with tanner's	nil
25	RAGHAVAN	51	M	79296	Huge scrotum with heaviness	11	Right	Small bowel	Rt hernioplasty with tanner's	nil
26	MANI	60	M	79927	Swollen and enlarged scrotum	3	Right	Omentum	Rt hernioplasty with tanner's with omentectomy	wound gaping