GOOD MORNING!

CASE PRESENTATION & DISCUSSION ON INGUINOSCROTAL MASS

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General Data

E.P.

55 male

Malate, Manila

Chief complaint

Inguinoscrotal mass on the right

History of Present Illness

10 months → bulging inguinal mass
- 4x5cm
- reducible when patient lies down
- straining, prolonged standing
- (-) pain, fever
- (-) changes in bowel movement
- (-) urinary symptoms
- (-) respiratory symptoms

4 months PTA → increase size of mass, reaches the scrotal area

Consult → Persistence of symptoms

Admission

Past Medical Hx:

Hypertensive HBP 160/90

UBP 120/80

prn intake Calcibloc 5mg po

Physical Examination

General Survey:

- Conscious, coherent, ambulatory
- not in cardiorespiratory distress

BP130/90 HR 81 RR 19 T 37.1

C&L symmetrical chest expansion

(-) wheezes, rales

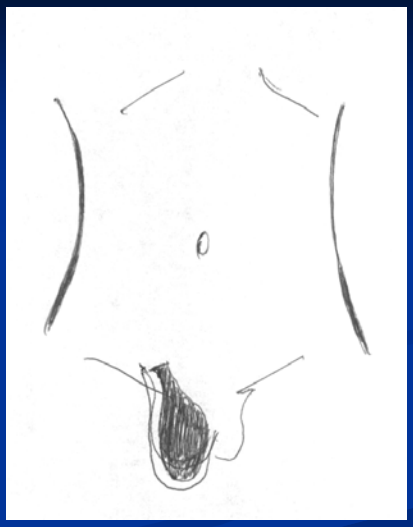
Heart:

- normal rate regular rhythm, (-) thrills, murmur

Abdomen:

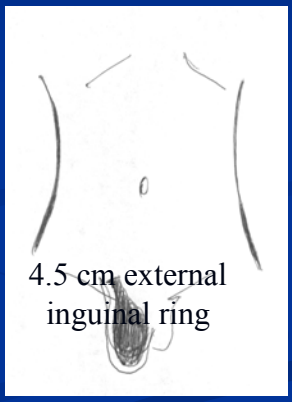
- flat, NABS, soft, non tender, no organomegaly

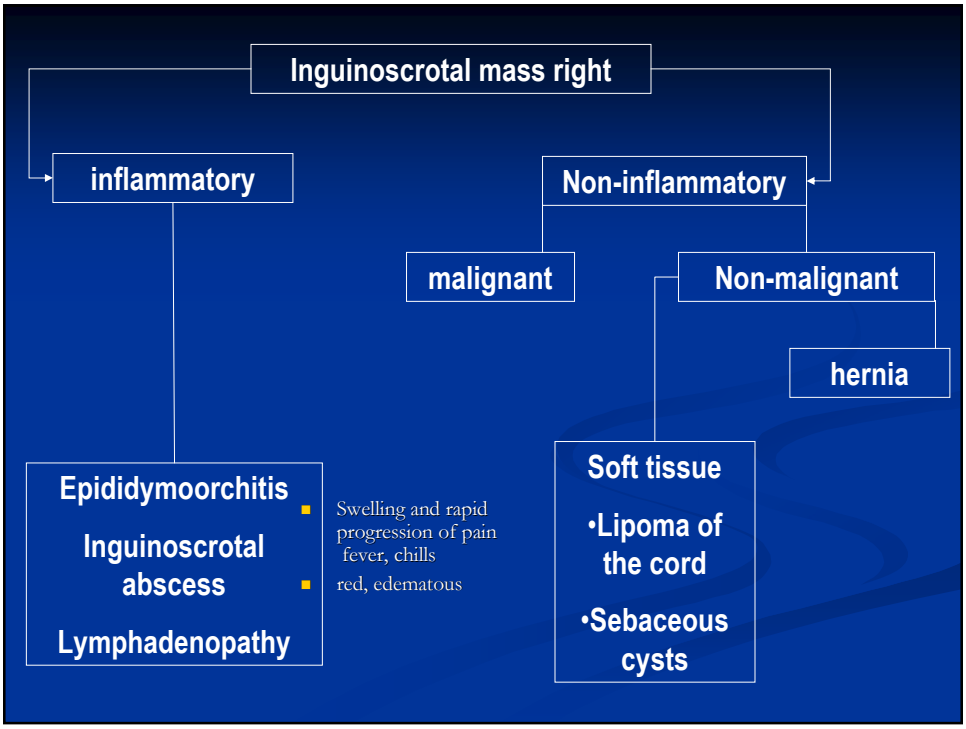
Inguinal ring 4.5 cm
Inguino scrotal mass right
Reducible
Soft
(-) bowel sounds
(-) transillumination
(-) erythema
(-) tenderness

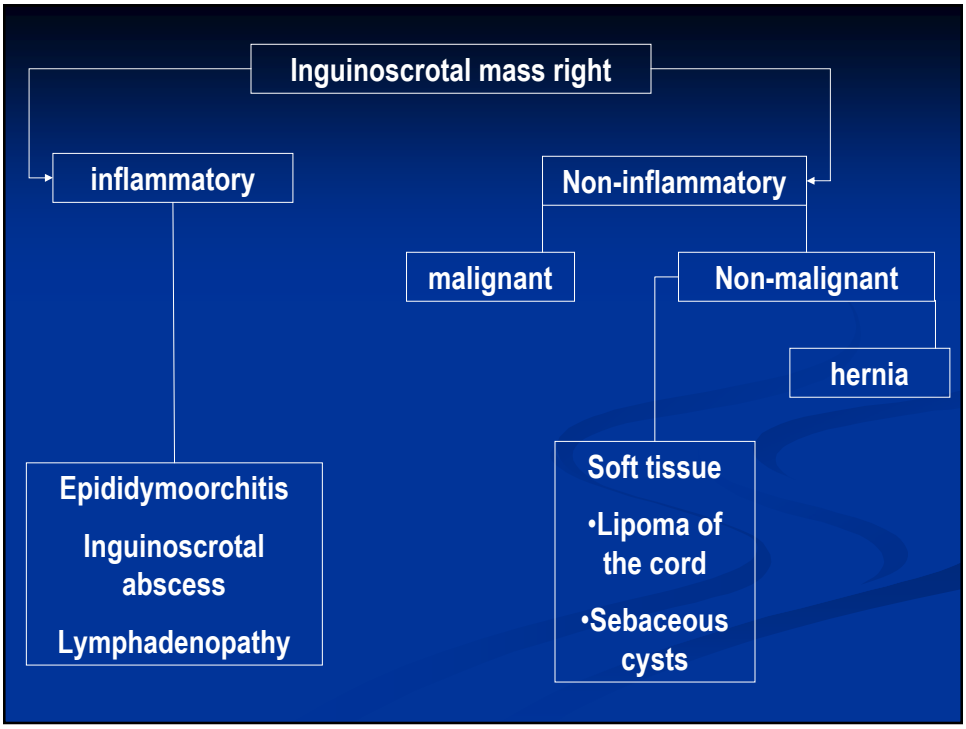


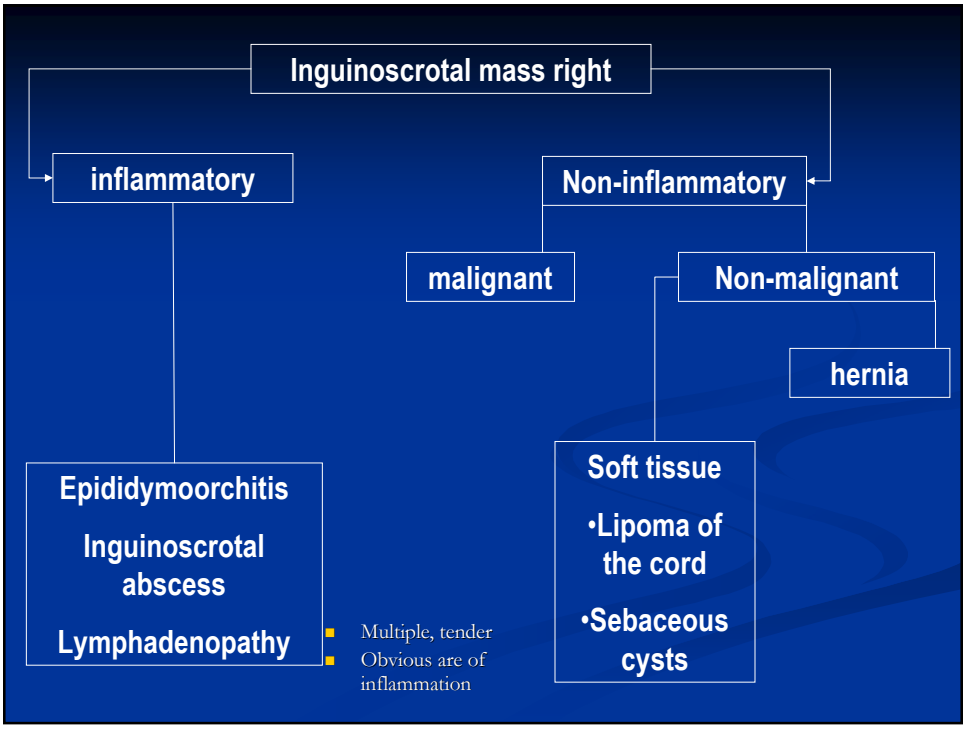
Salient features

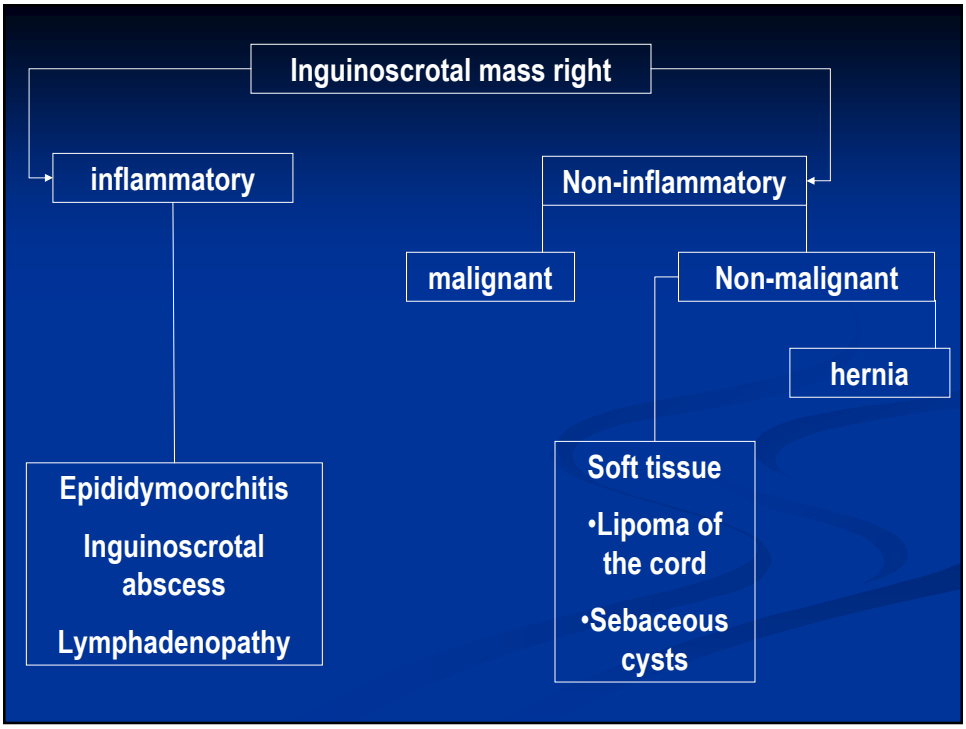
- 55 Male
- Recurrent inguinoscrotal mass
- Reducible
- Noted when patient strains & prolonged standing
- Soft, non-tender
- (-) bowel sounds
- (-) transillumination

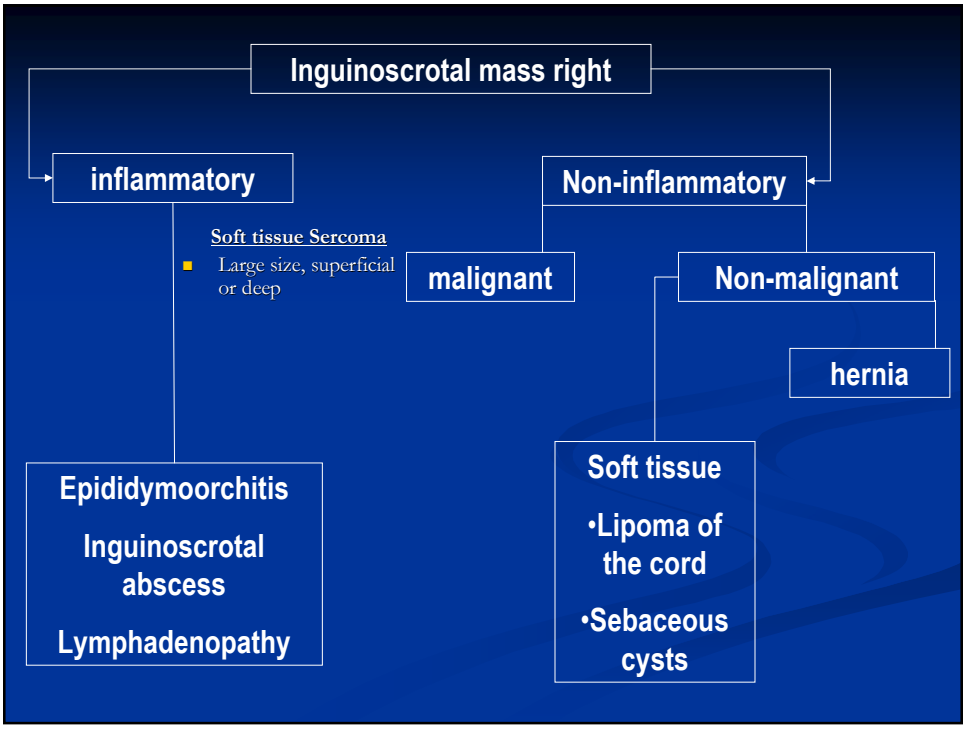


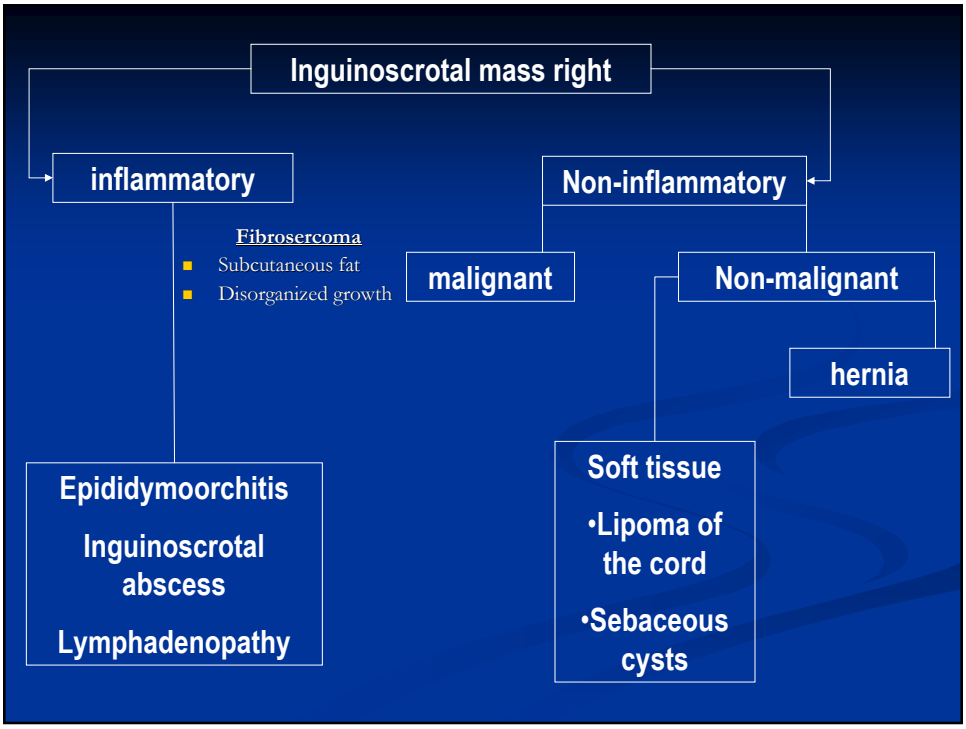


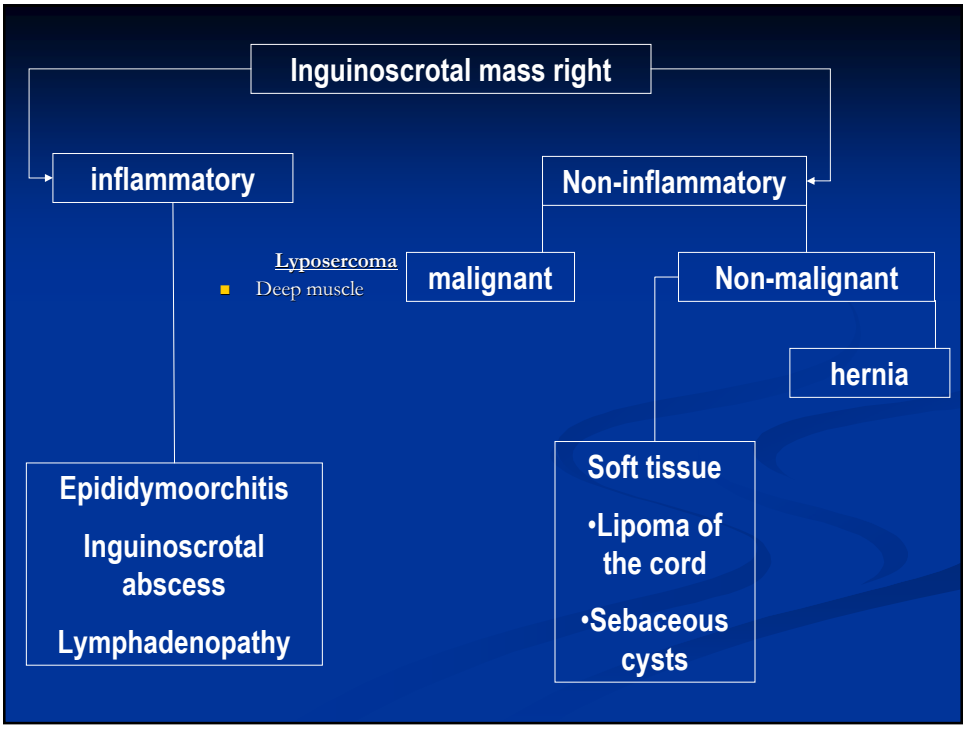

Inguinoscrotal mass right
inflammatory
Non-inflammatory
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts

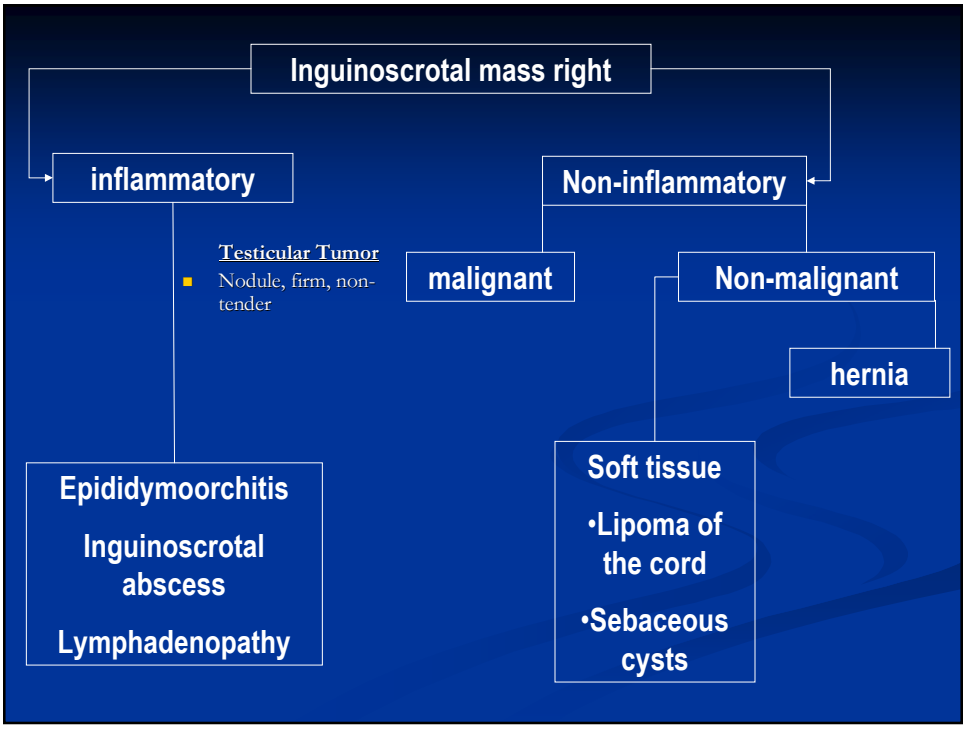

Inguinoscrotal mass right
inflammatory
Non-inflammatory
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts
Multiple, tender
Obvious are of inflammation

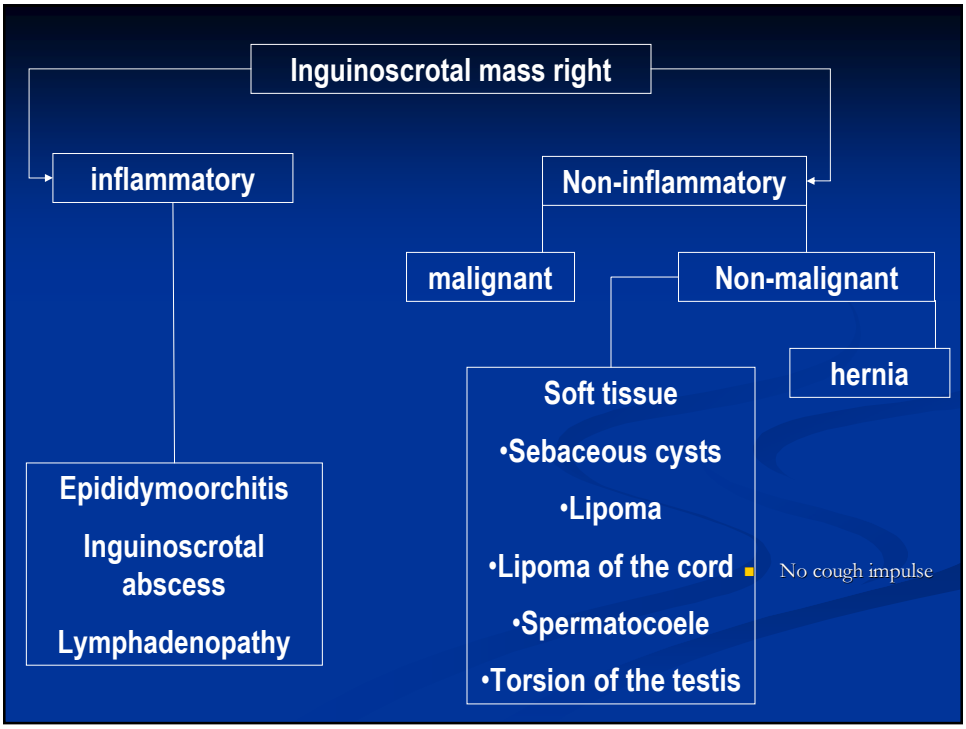

Inguinoscrotal mass right
inflammatory
Non-inflammatory
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts

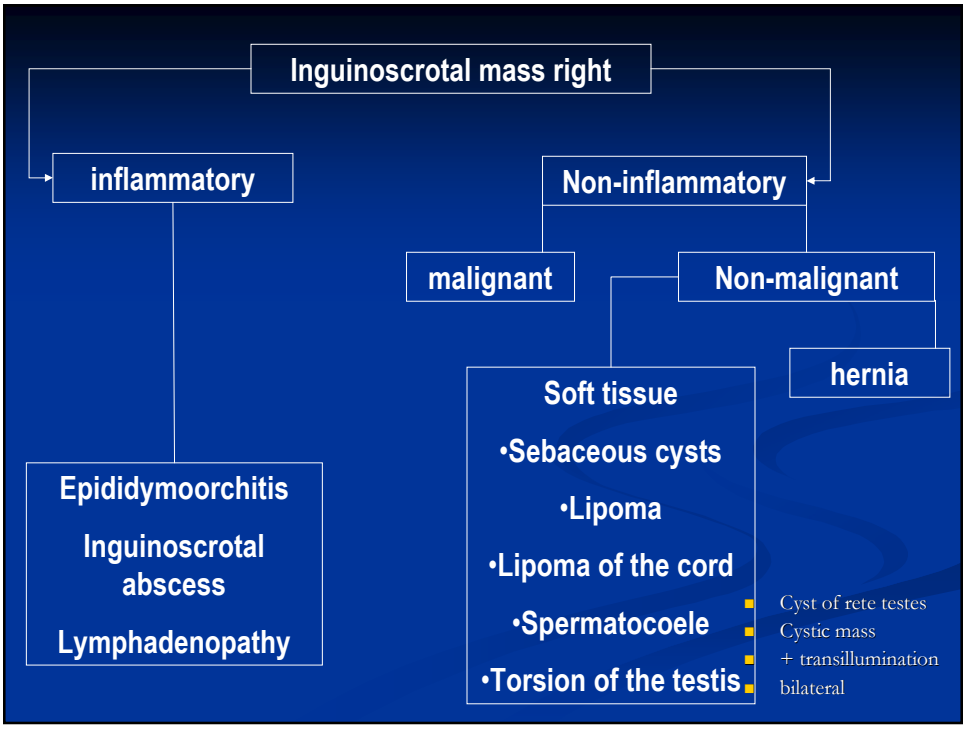

Inguinoscrotal mass right
inflammatory
Non-inflammatory
Soft tissue Sercoma
Large size, superficial or deep
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts

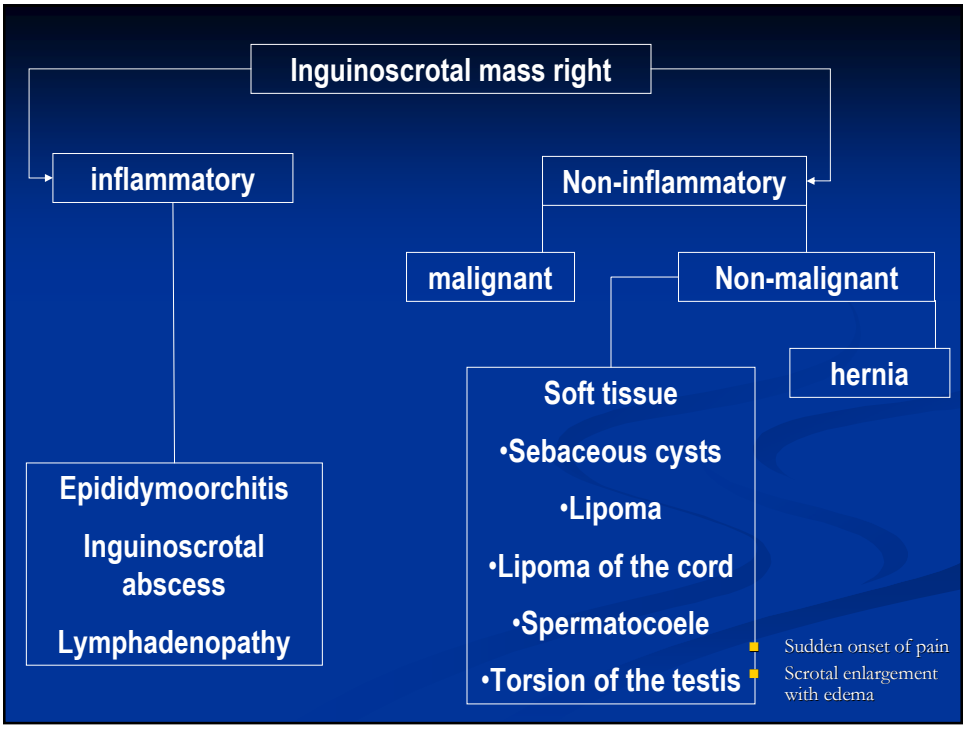

Inguinoscrotal mass right
inflammatory
Non-inflammatory
Fibrosercoma
Subcutaneous fat
Disorganized growth
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts

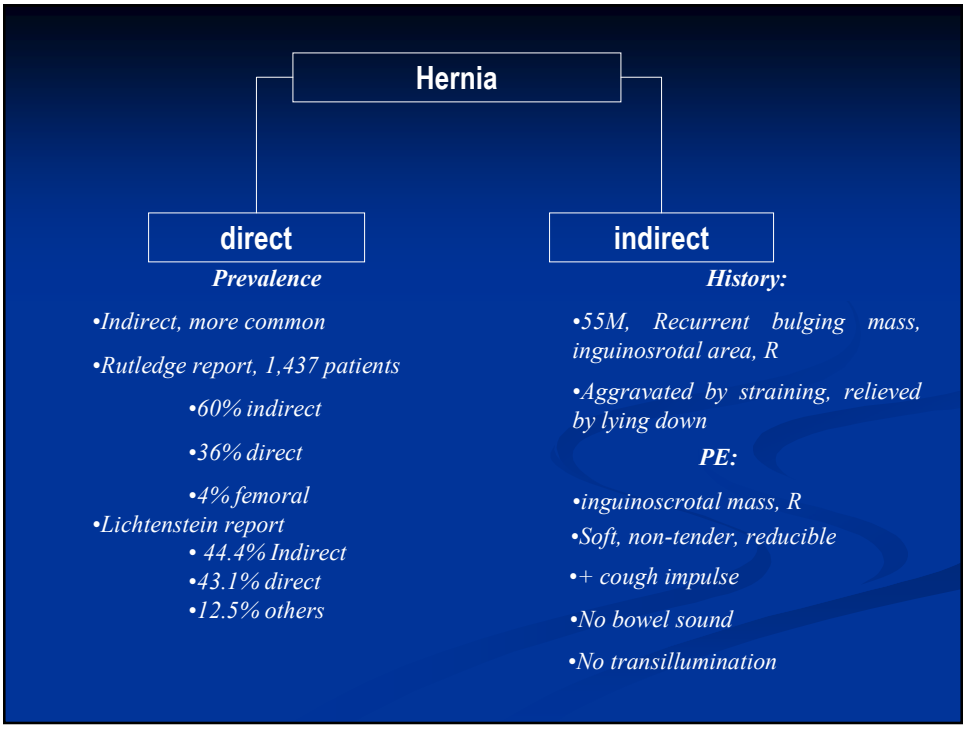

Inguinoscrotal mass right
inflammatory
Non-inflammatory
Lyposercoma
Deep muscle
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts


Inguinoscrotal mass right
inflammatory
Non-inflammatory
Testicular Tumor
Nodule, firm, non-tender
malignant
Non-malignant
hernia
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Soft tissue
•Lipoma of the cord
•Sebaceous cysts


Inguinoscrotal mass right
inflammatory
Non-inflammatory
malignant
Non-malignant
hernia
Soft tissue
•Sebaceous cysts
•Lipoma
•Lipoma of the cord
No cough impulse
•Spermatocoele
•Torsion of the testis
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy


Inguinoscrotal mass right
inflammatory
Non-inflammatory
malignant
Non-malignant
hernia
Soft tissue
•Sebaceous cysts
•Lipoma
•Lipoma of the cord
•Spermatocoele
•Torsion of the testis
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Cyst of rete testes
Cystic mass
+ transillumination
bilateral


Inguinoscrotal mass right
inflammatory
Non-inflammatory
malignant
Non-malignant
hernia
Soft tissue
•Sebaceous cysts
•Lipoma
•Lipoma of the cord
•Spermatocoele
•Torsion of the testis
Epididymoorchitis
Inguinoscrotal abscess
Lymphadenopathy
Sudden onset of pain
Scrotal enlargement with edema



Impression	Certainty	Treatment
Primary Indirect Inguinal Hernia	95%	Surgical
Secondary Direct Inguinal Hernia	5%	Surgical

Paraclinical Diagnostic Procedure

Do I need paraclinical procedure?

NO.

Certain of my primary diagnosis

- pattern recognition
- prevalence

Goal of Treatment

- Reduce herniated organ/bowel
  - Ligation of the sac
  - repair defect ≥4cm

Treatment Options

- There are at present three general options for the surgical repair of indirect inguinal hernia, namely:
  - open repair with mesh grafting,
  - open repair without mesh grafting,
  - laparoscopic repair with mesh grafting

4 cm internal ring	BENEFIT	RISK	COST	AVAILABILITY
OPEN WITHOUT MESH	▪Repair floor anatomical	▪Infection recurrence	P 2000	Available
OPEN WITH MESH	▪RR 0.2% ▪Low recurrence rate ▪Less post-op pain ▪Easy to perform ▪Early back to work	▪Graft rejection	P 5000	Available most of the time
LAPARO-SCOPIC	same	▪Intra abdominal complication	P 8000-P10000	Not available

- At present, although open repair with mesh and laparoscopic repair are now commonly done especially in developed countries, the controversy is far from being settled because of the tendency for blanket recommendations and randomized controlled trials and meta-analyses showing conflicting results, some favoring open repair without mesh (1,5,7).

- others favoring open repair with mesh (9-10) and still others, laparoscopic approach (11-13).

Protocol on Hernia

- A departmental consensus was made using the diameter of the external inguinal ring (>4 centimeters) as predictor for preoperative preparation of mesh in patients for indirect inguinal hernia repair.

Protocol on Hernia

- The protocol was then prospectively validated on adult patients with unilateral indirect inguinal hernia from January to August, 2003 using intra-operative measurement of the external and internal inguinal ring as the indicator for mesh grafting.

- The department believes that there are indications for the use of mesh in the treatment of indirect inguinal hernia. Recurrence and large size of hernia defect are the basic indications
- favoring open repair without mesh (1,5,7)
- open repair with mesh (4, 13) and still others, laparoscopic approach (3, 6, 11).

Pre-op preparation

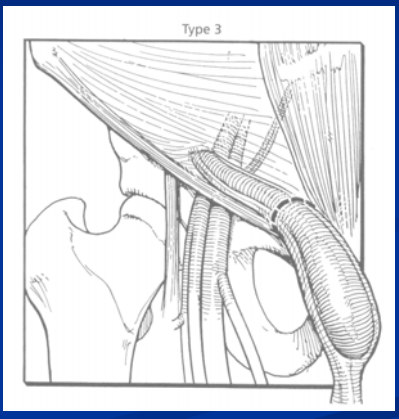
- Psychological support
- Screen for previous medical problem
  - Hypertension
    - Metoprolol 50mg BID x 2 weeks
- Optimize patient's condition
- Consent
- Preparation of materials

Operative Technique

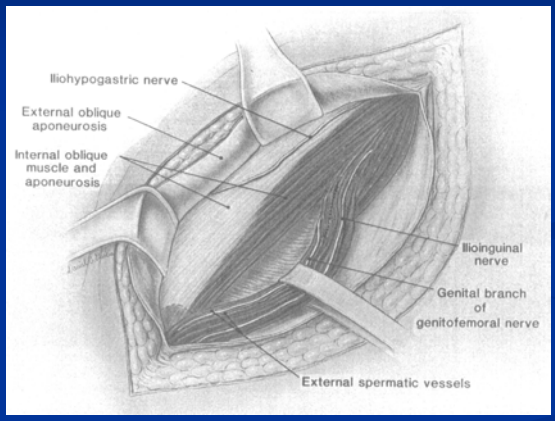
- Oblique incision over Langer's line
- External oblique aponeurosis opened

Intra-op findings

- Hernial sac located anteromedially to the cord containing omentum
- Internal ring measures 4 cm in widest diameter

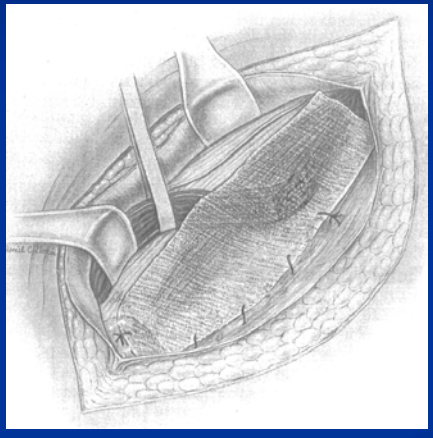


Operative Technique



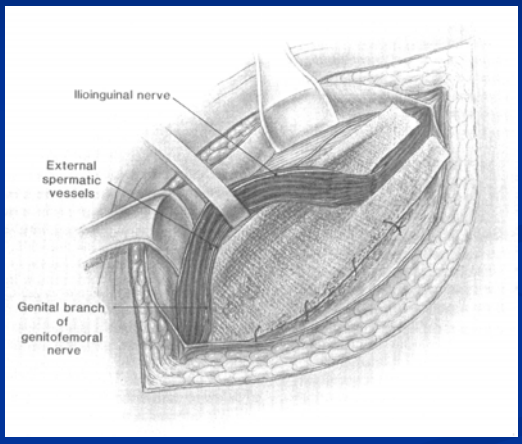
- Spermatic cord identified
- Hernial sac identified and opened
- Hernial contents reduced
- Ligation of the hernial sac

Operative Technique



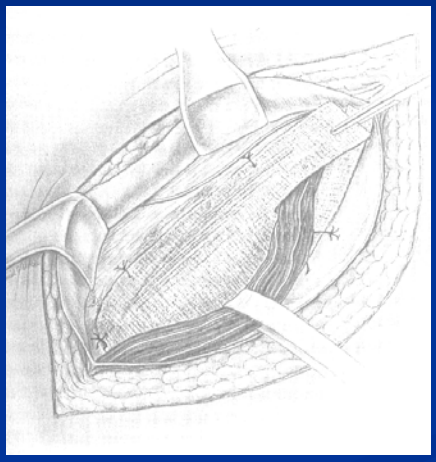
- Mesh approximated over the defect
- Medial corner of the mesh overlaps the pubic bone
- And sutured with interrupted prolene 3-0

Operative Technique



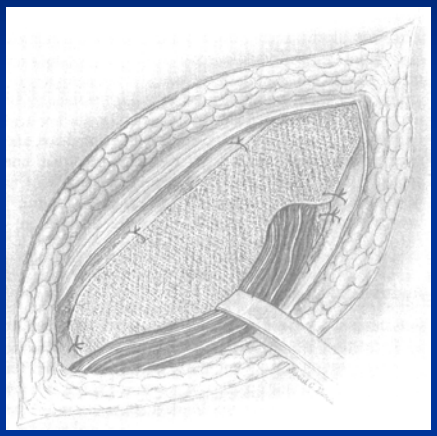
Spermatic cord placed between the two tails of the mesh

Operative Technique



Two tails crossed –over and sutured together

Operative Technique



- Hemostasis
- Instrument and sponge checked
- Fascial closure with vicryl 0
- Subcuticular skin closure with vicryl 4-0
- Dry sterile dressing

Final Diagnosis

- Indirect Inguinal Hernia, Right
  Grade III-B

Post-op support

- Analgesia

  Ketoprofen 100mg TIV q6 x 3 doses

  shifted to oral Paracetamol 500mg q4
- Early ambulation
- Diet as tolerated
- Daily wound care
- Discharged on the 2nd POD

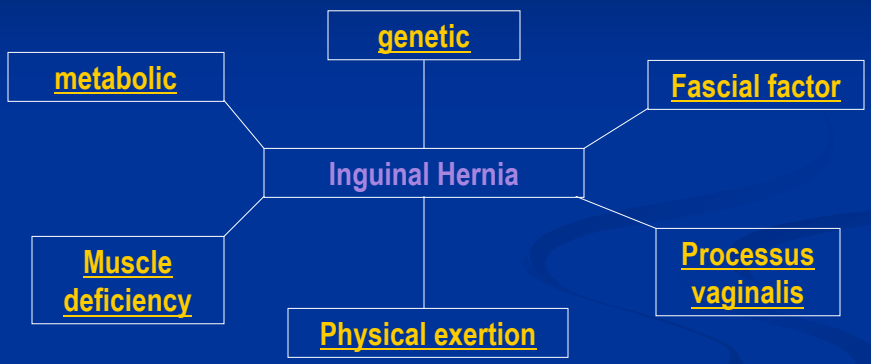
Prevention and Health

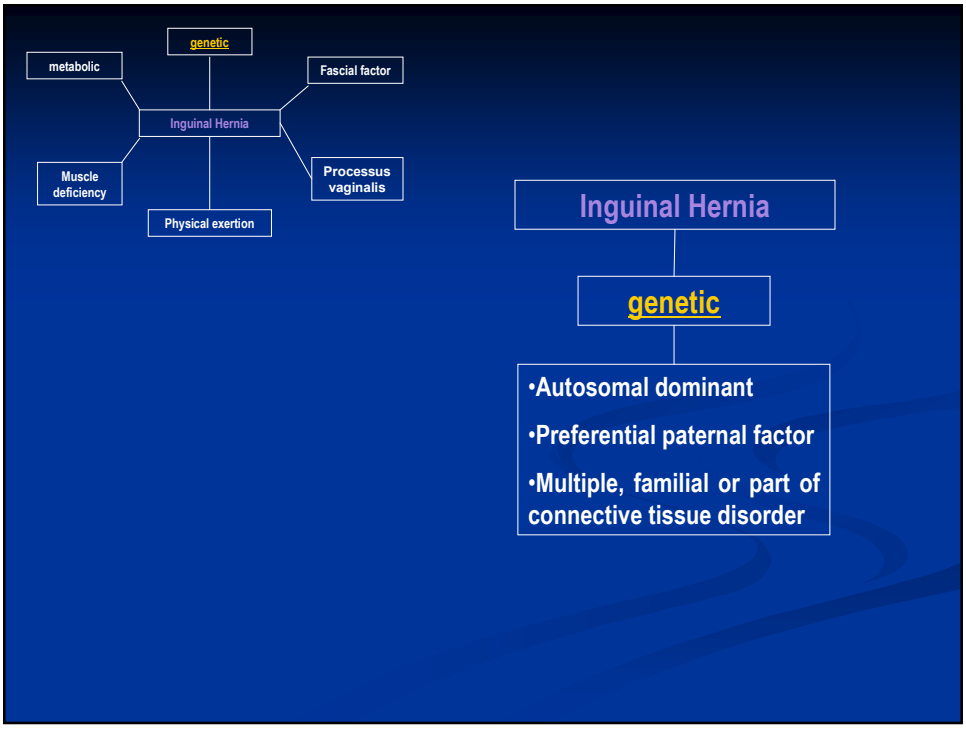
- Anticipate complications
  - Adequate hemostasis
  - Avoid vascular compromise
  - Avoid infection
  - Avoid dehiscence

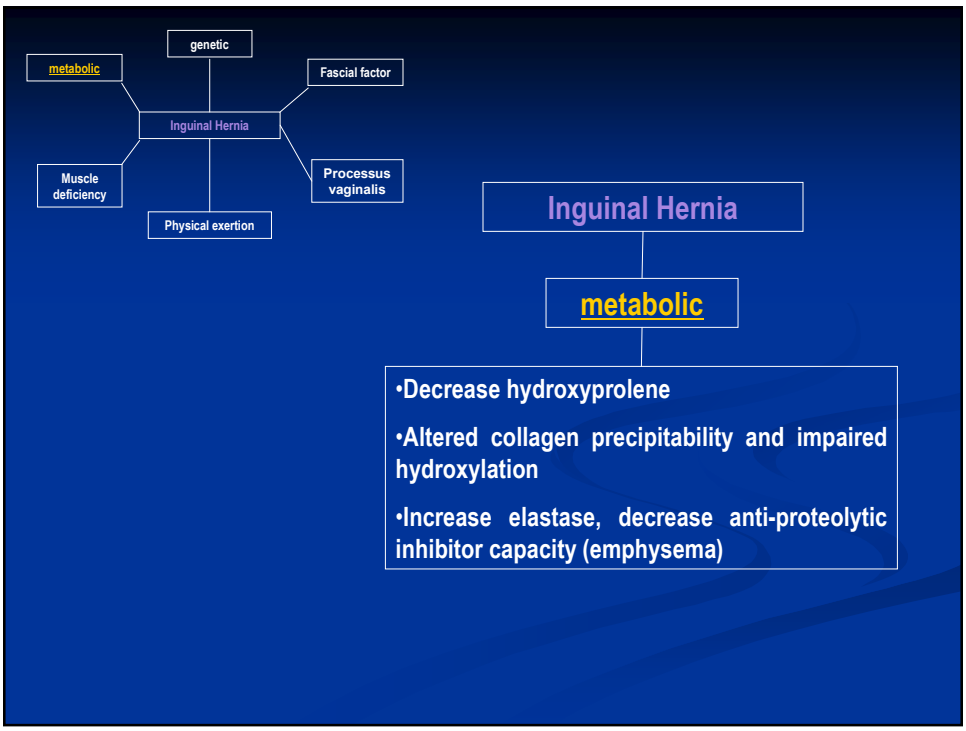
Prevention and Health

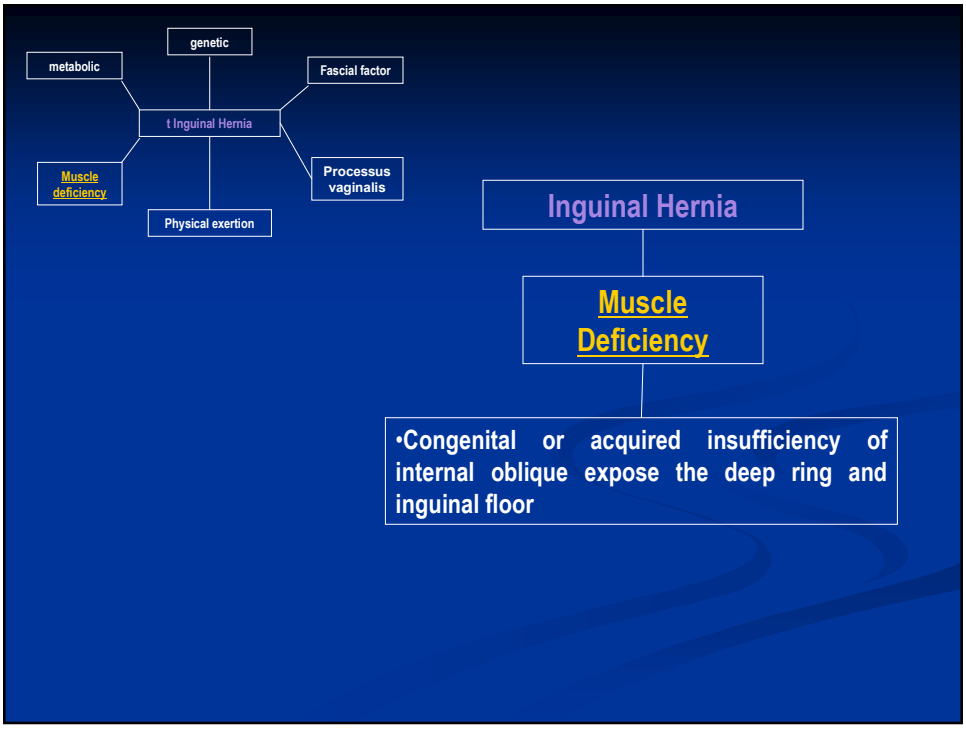
- Alive patient
- Patient's health problem resolved
- No complaint
- No disability
- No medical suit
- Satisfied patient

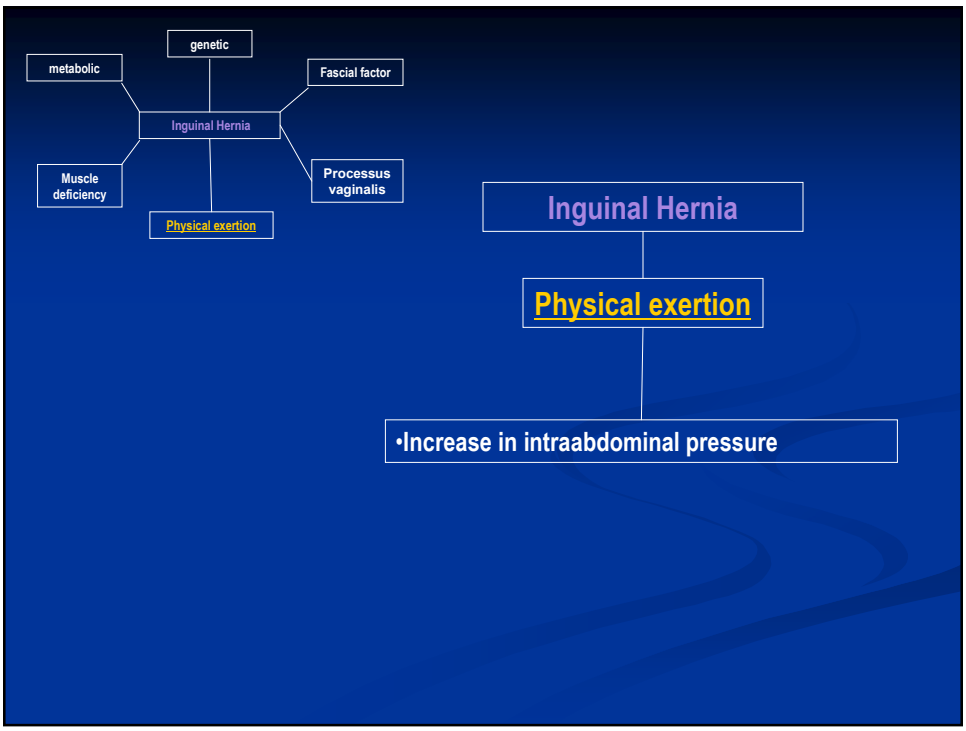
Pathophysiology

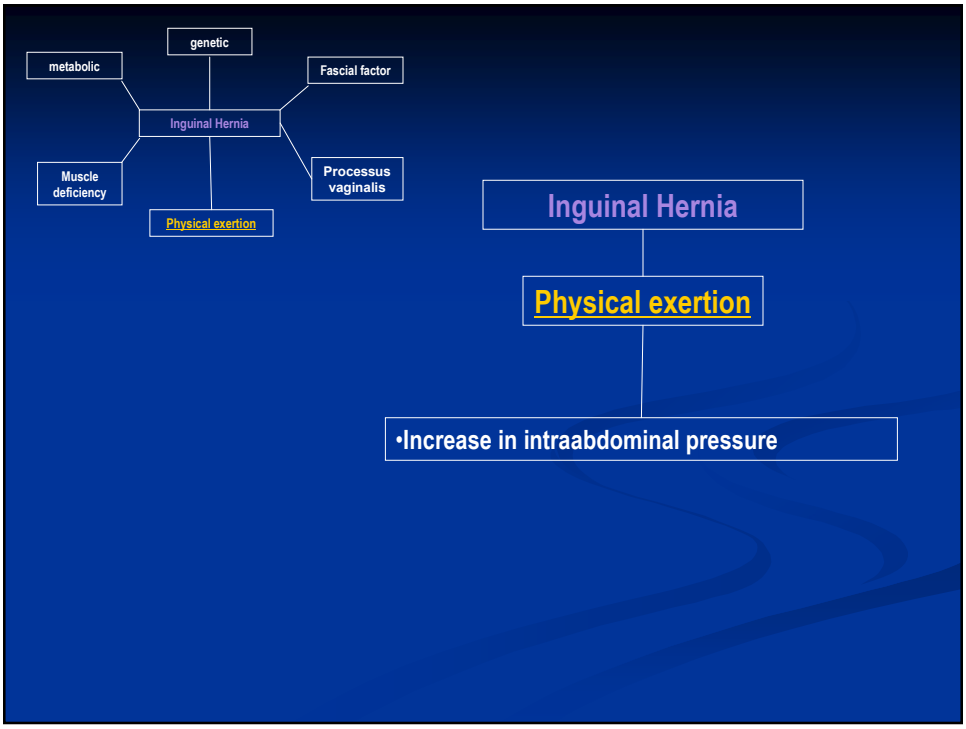


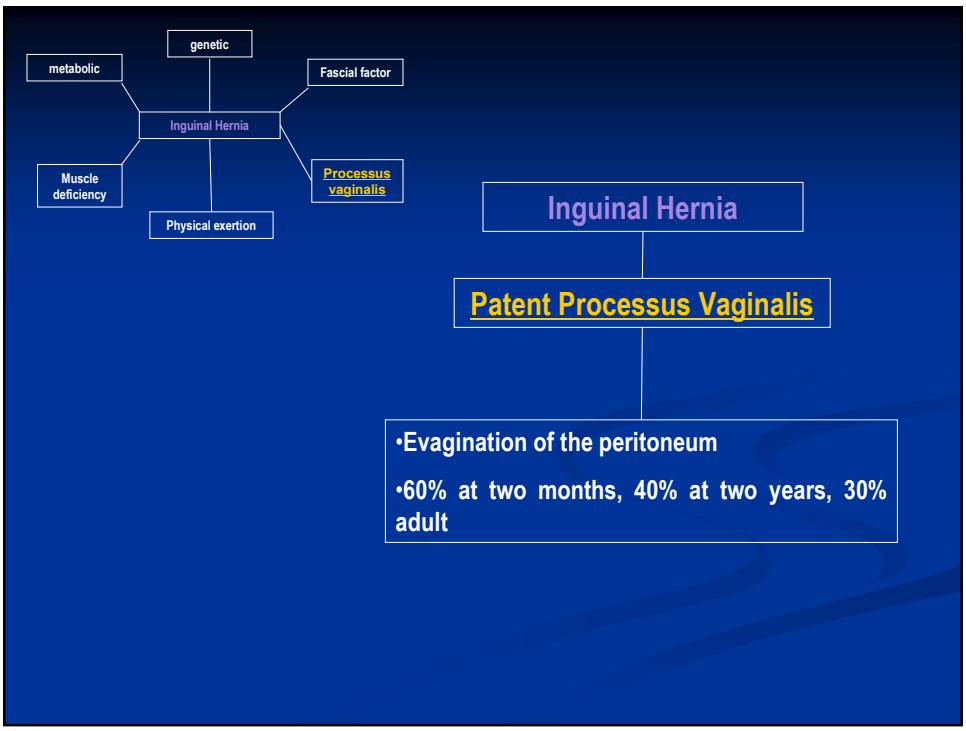

genetic
metabolic
Fascial factor
Inguinal Hernia
Muscle deficiency
Processus vaginalis
Physical exertion
Inguinal Hernia
genetic
•Autosomal dominant
•Preferential paternal factor
•Multiple, familial or part of connective tissue disorder

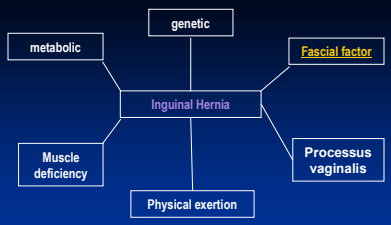

genetic
metabolic
Fascial factor
Inguinal Hernia
Muscle deficiency
Processus vaginalis
Physical exertion
Inguinal Hernia
metabolic
•Decrease hydroxyprolene
•Altered collagen precipitability and impaired hydroxylation
•Increase elastase, decrease anti-proteolytic inhibitor capacity (emphysema)


genetic
metabolic
Fascial factor
t Inguinal Hernia
Muscle deficiency
Processus vaginalis
Physical exertion
Inguinal Hernia
Muscle Deficiency
•Congenital or acquired insufficiency of internal oblique expose the deep ring and inguinal floor


genetic
metabolic
Fascial factor
Inguinal Hernia
Muscle deficiency
Processus vaginalis
Physical exertion
Inguinal Hernia
Physical exertion
•Increase in intraabdominal pressure


genetic
metabolic
Fascial factor
Inguinal Hernia
Muscle deficiency
Processus vaginalis
Physical exertion
Inguinal Hernia
Physical exertion
•Increase in intraabdominal pressure

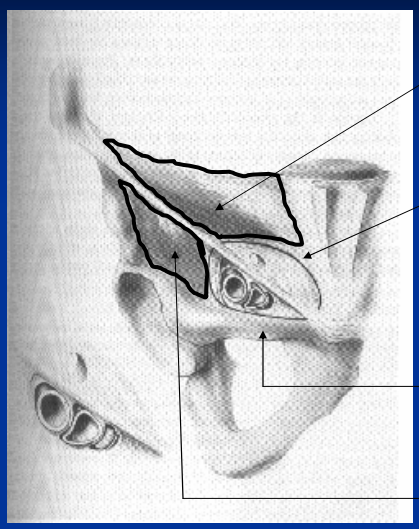

genetic
metabolic
Fascial factor
Inguinal Hernia
Muscle deficiency
Processus vaginalis
Physical exertion
Inguinal Hernia
Patent Processus Vaginalis
•Evagination of the peritoneum
•60% at two months, 40% at two years, 30% adult



Inguinal Hernia

Fascial factor

- Myopectineal Orifice Fruchaud
- Boundaries: superior, internal oblique + transverse abd muscle; lateral, iliopsoas; medial, rectus; inferior, pecten
- Transversalis fascia



Internal oblique and transverse abdominis

Myopectineal orifice of Fruchaud

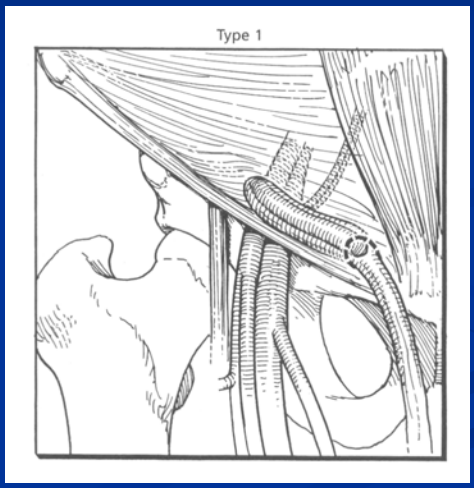
Pecten pubis

Ileopsoas m.

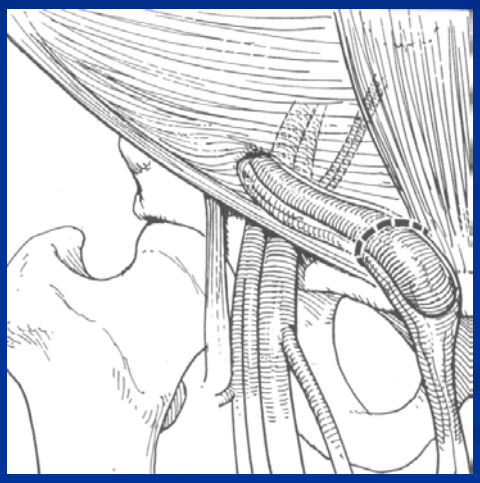
Nyhus Classification

Type I	Indirect, small
Type II	Indirect, medium
Type III	A. Direct
	B. Indirect, large
	C. Femoral
Type IV	Recurrent

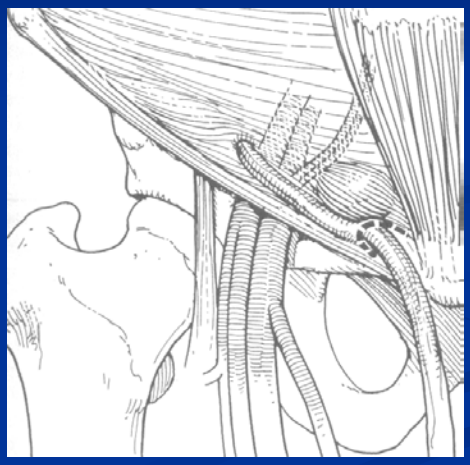
Type 1 Indirect, small



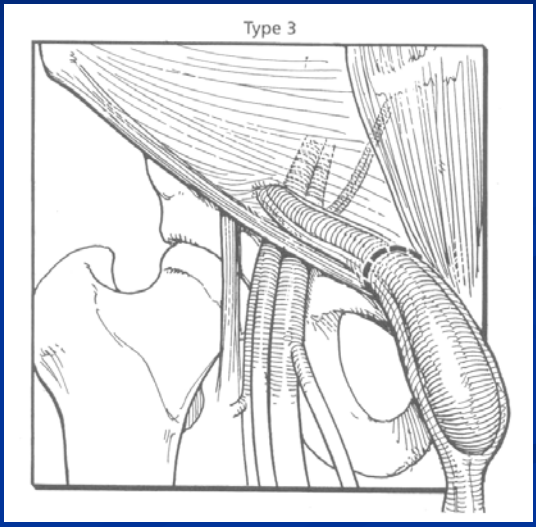
Type II Indirect, medium



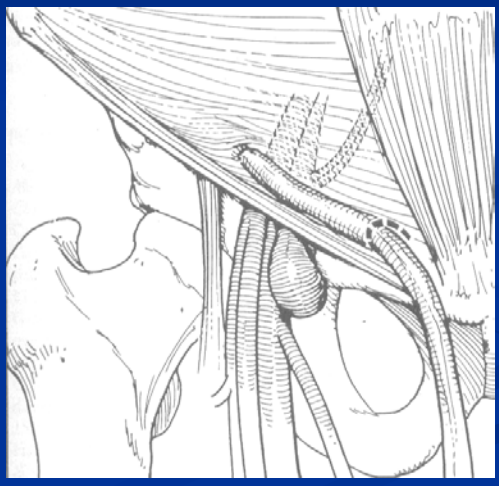
Type III A. Direct



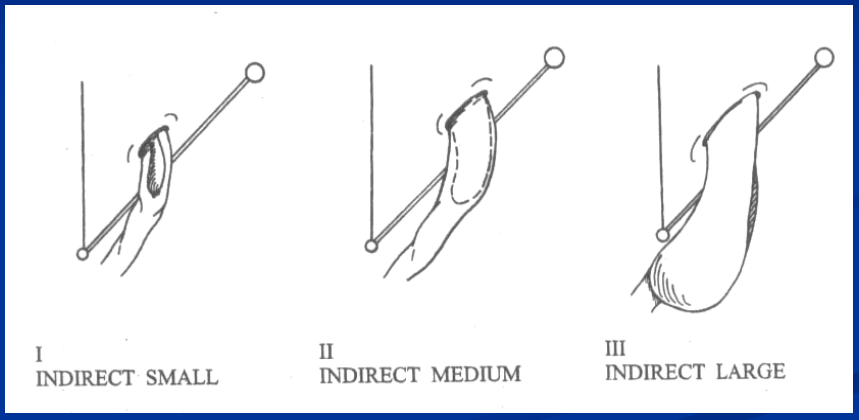
B. Indirect, large



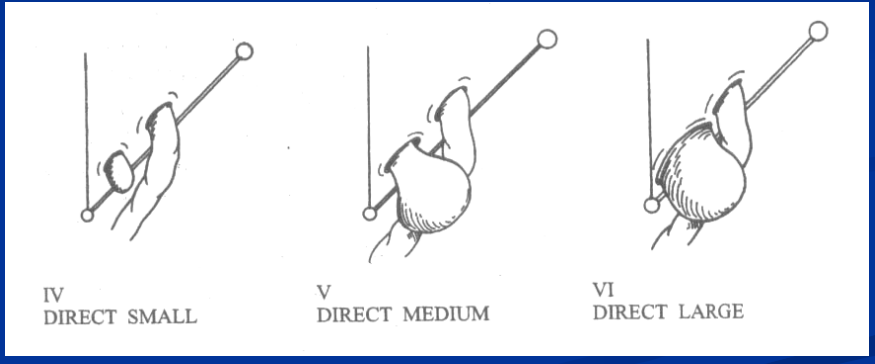
Type III C



Unified Classification



Unified Classification



Nyhus Classification of Inguinal Hernias.

Type 1	**Indirect hernia with normal internal ring**
Type 2	Indirect hernia with dilated internal ring. Posterior wall intact
Type 3	Posterior wall defect
A	Direct inguinal hernia
B	Indirect inguinal hernia. Internal ring dilated. Posterior wall defective
C	Femoral hernia
Type 4	Recurrent hernia

Gilbert's Classification of Inguinal Hernias.

Type	Description
Type I	Indirect, tight ring, sac any size, reducible
Type II	Indirect, ring < 4 cm
Type III	Ring > 4 cm, sliding component, displaces inferior epigastric vessels
Type IV	Defective canal floor, ring is sound
Type V	Direct diverticular defect 1-2 cm suprapubic, but anywhere along floor
Type VI	Pantaloon hernia
Type VII	Femoral hernia

References

1. Barth R J, Burchard K W, Tosteson A et al. Short-term outcome after mesh or Shouldice herniorrhaphy: A randomised, prospective study. Surgery. 1998; 123: 121-126.
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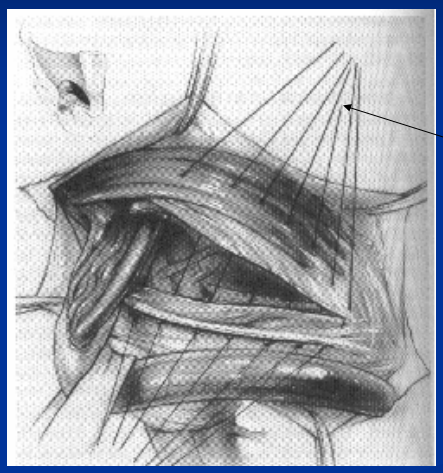
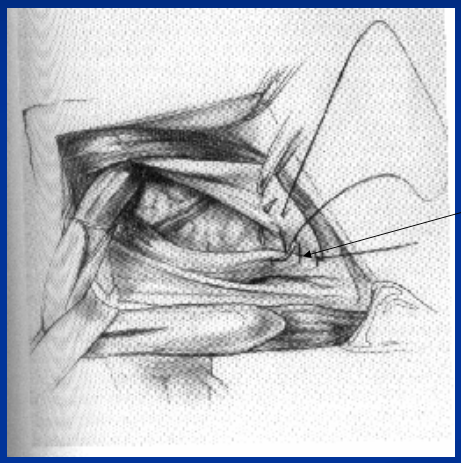
Bassini Repair



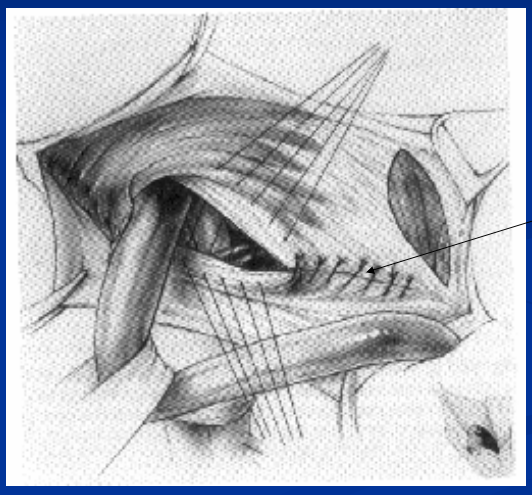
Uses interupted sutures

Shouldice Repair



Uses continuous, imbricated sutures

McVay's Repair



Approximates the transversus abdominis and the tranversalis fascia

Paraclinical Diagnostic Process

Diagnostic Procedure	Benefit	Risk	Cost	Availability
herniography	Will differentiate a direct from an indirect hernia	Peritonitis Hypersensitivity	P500.00	Not available
ultrasound	Will r/o other causes of groin masses	Acceptable	P300.00	Not readily available
x-ray	Will r/o intestinal obstruction	Exposure to radiation	P150.00	Available
CT-scan	Will r/o other causes of groin masses	Exposure to radiation	P3000.00	Not readily available

THANK YOU!