المبنى الادارى

SCROTAL PATHOLOGIES

BY

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SCROTAL PATHOLOGIES

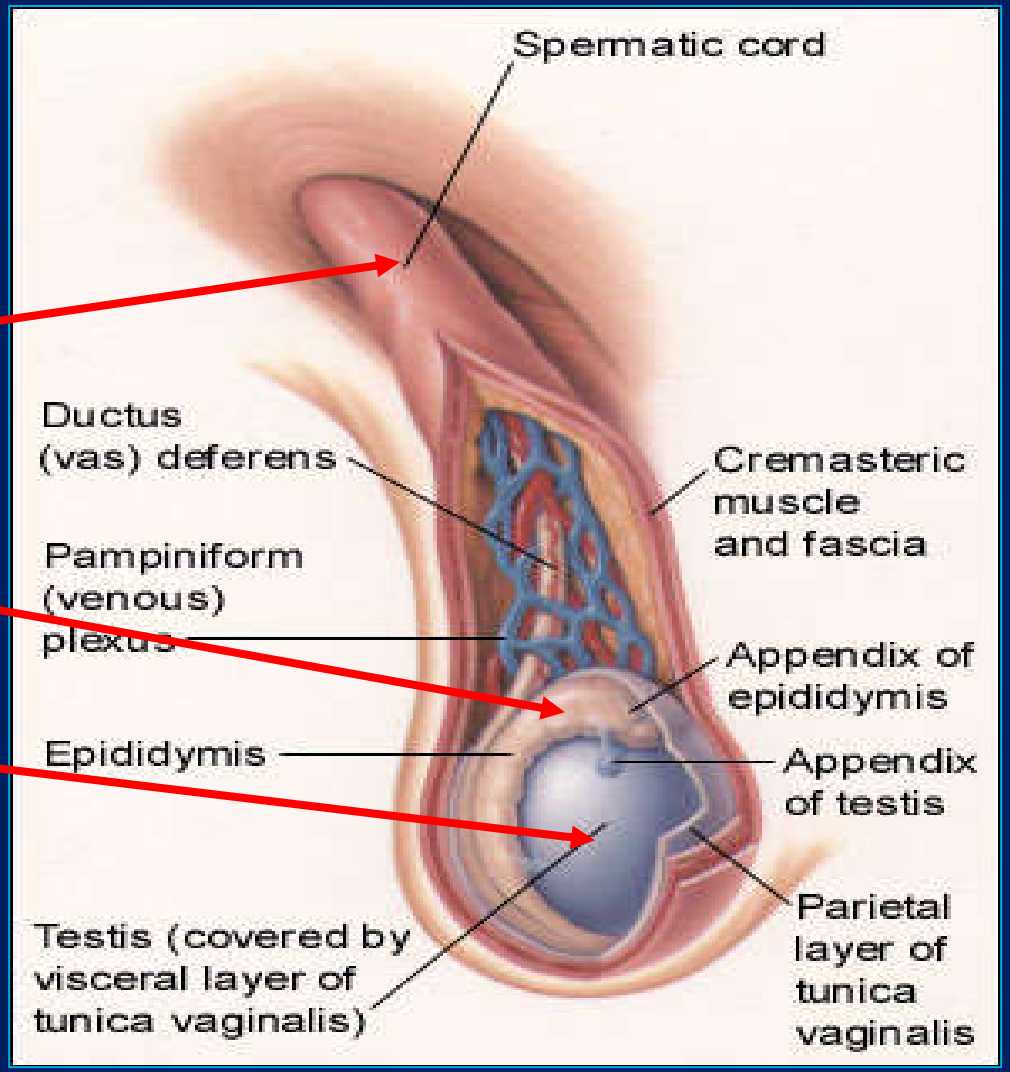
- Common conditions: ~15% of males.
- Patients tend to present later in the disease process.
- Some lesions potentially life threatening:
  - Testicular cancer.
  - Fournier's gangrene.

SCROTAL PATHOLOGIES

- Benign lesions more common than malignant.
- Malignant lesions are most likely intra-testicular than para-testicular
- Testicular cancer is the most curable solid tumor (esp. if caught early)

Anatomy

- Spermatic Cord.
- Epididymis.
- Testicle.



Anatomy (Cont.)

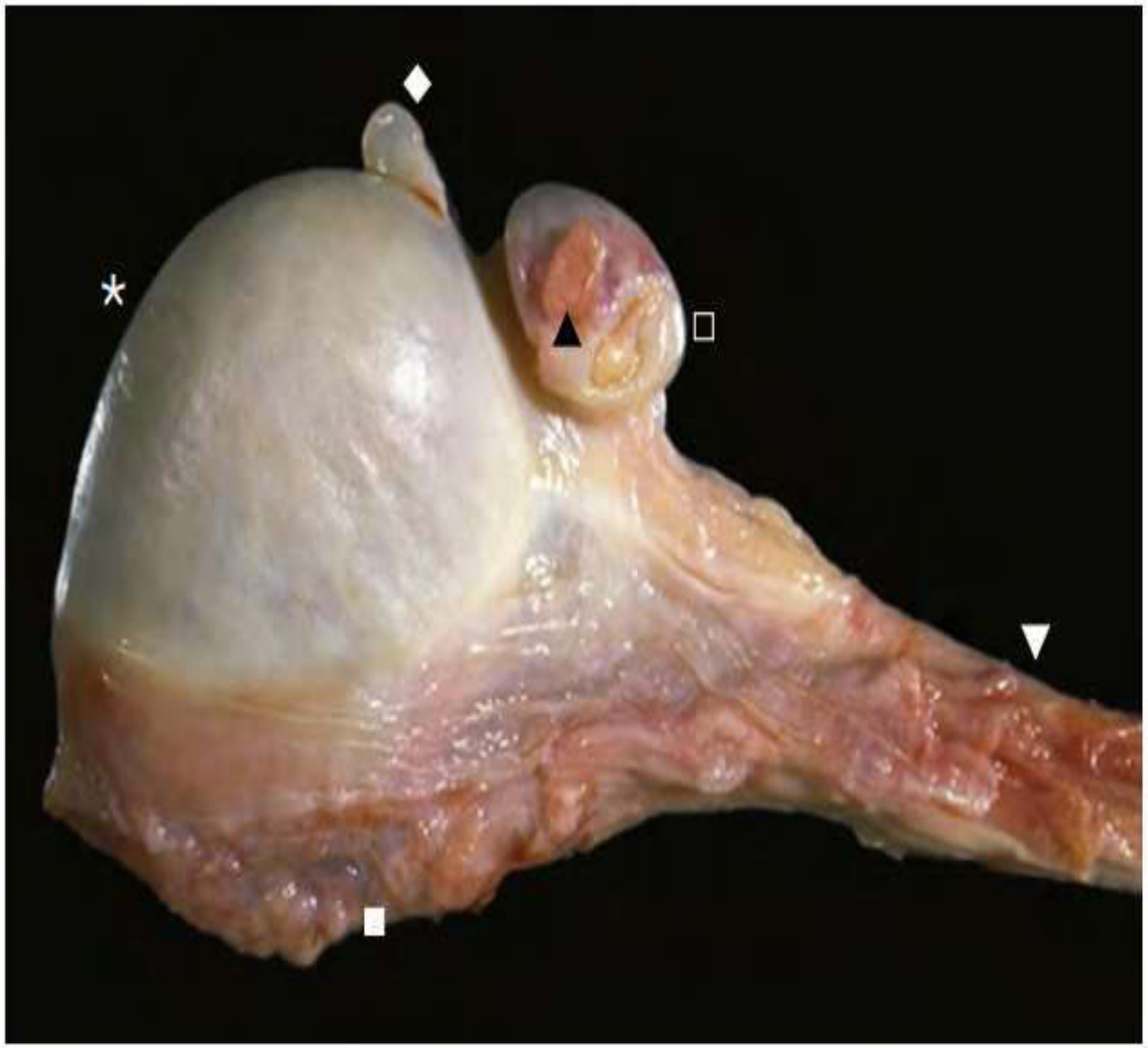
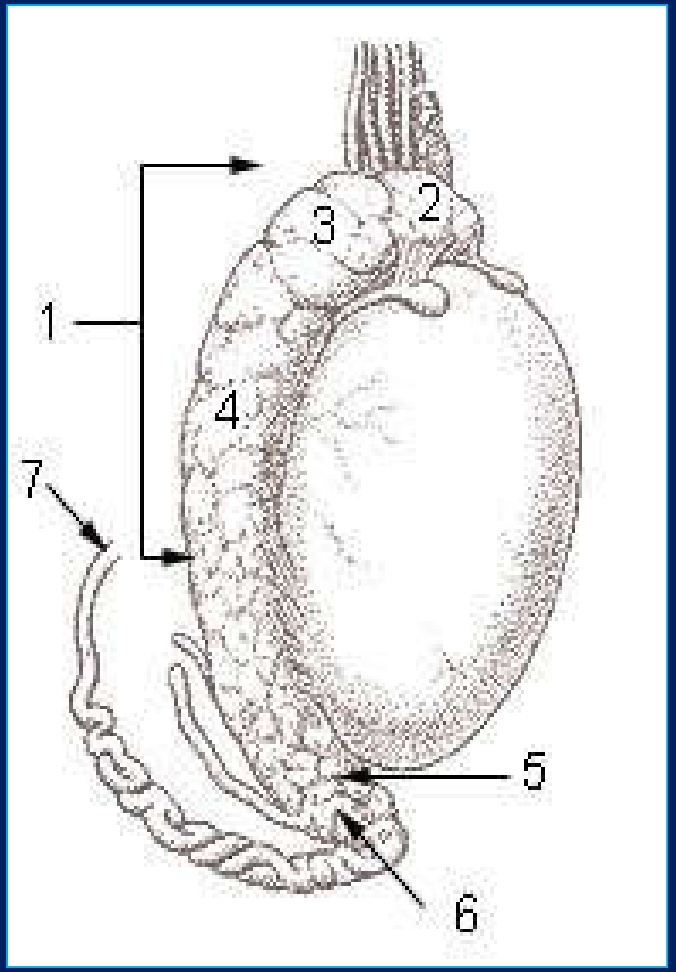


Figure 12-9 Normal testis, gross
Here is a normal testis and adjacent structures, including the body of the testis (★), epididymis (□), and spermatic cord (▼). Note the presence of two vestigial structures, the appendix testis (◆) and the appendix epididymis (▲). The pampiniform plexus of veins (■) lies posterior to the body of the testis. The normal testis descends down into the lower abdomen under the influence of müllerian inhibiting substance. Final descent into the scrotum in the third trimester of fetal development occurs under the influence of increasing androgens. Failure of the testis to descend normally results in cryptorchidism. The Leydig cells of a cryptorchid testis function normally, but the increased body temperature diminishes spermatogenesis.

Anatomy (Cont.)

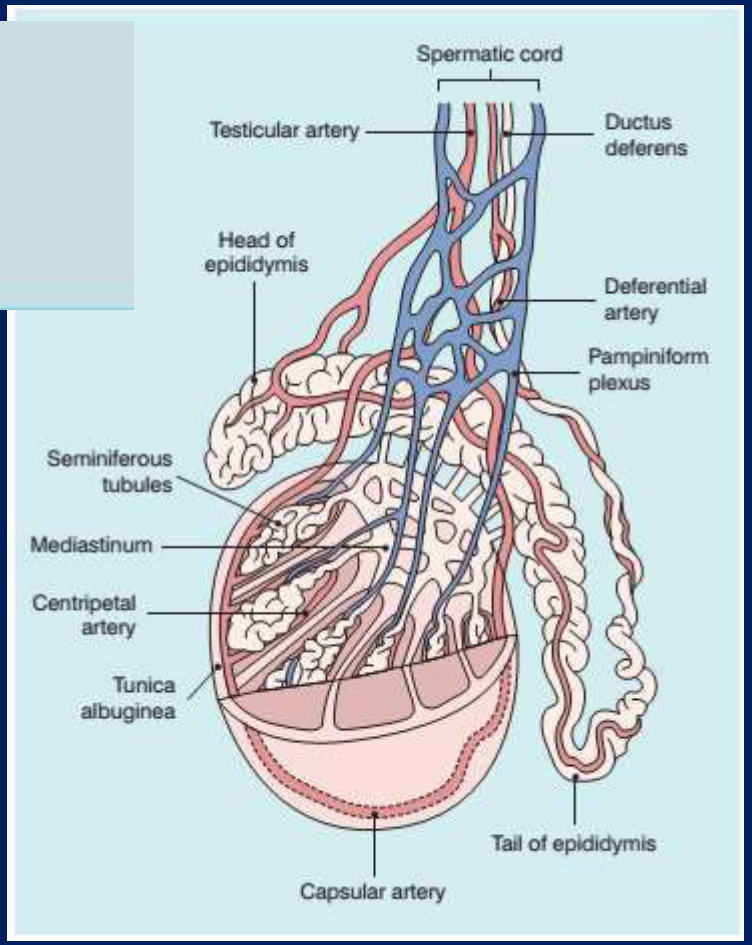
1.Epididymis
2 .Head of epididymis
3 .Lobules of epididymis
4 .Body of epididymis
5 .Tail of epididymis
6 .Duct of epididymis
7 .Deferent duct (ductus deferens or vas deferens)



Anatomy (Cont.)

Testicular artery
↓
Capsular artery
↓
Centripetal artery
↓
Recurrent rami

- Testicular artery.
  - Branch off aorta.
  - Major intra-testicular blood supply.
- Cremasteric artery.
- Deferential artery.
  - Extra-testicular blood supply



SCROTAL PATHOLOGIES

Clinical Questions:

1) Is it **Cutaneous** or **Intra-scrotal** lesion?
2) Is it ***intra- or extra-testicular***?
3) What is the patients **age**?
4) Is the ***onset*** **acute or chronic**?
5) Is it ***painful or Not***?
6) Does it ***trans-illuminate***?
7) Are there ***urinalysis*** findings?

SCROTAL PATHOLOGIES

1. Cutaneous Lesions:
2. Intra-scrotal Lesions:
   a. Extra-testicular;
      a. Epididymis.
      b. Spermatic cord.
      c. Appendages.
   b. Intra-testicular;
      - Testes.

1- Cutaneous Scrotal Lesions

A. Benign

- Angio-keratoma.
- Psoriasis.
- Epidermal cysts.
- Vitiligo.

B. Malignant

- Squamous cell carcinoma.
- Kaposi's sarcoma.

C. Infectious

- Condyloma.
- Tinea cruris.
- Fournier's gangrene.

Angio-keratoma

- Ectatic dermal blood vessels.
- 1-2mm papules.
- Benign.
- May bleed recurrently & profusely requiring cauterization.

Psoriasis

- May involve groin & scrotum
- Red plaques with white scale patches.
- Occurs elsewhere.
- Treatment:
  - Topical steroids.
  - Emollients.
  - Systemic steroids
  - Psoralian.
  - PUVA.

Epidermal cysts

- Very common.
- Benign.
- Liable to recurrence.
- Local resection if symptomatic/painful.

Vitiligo

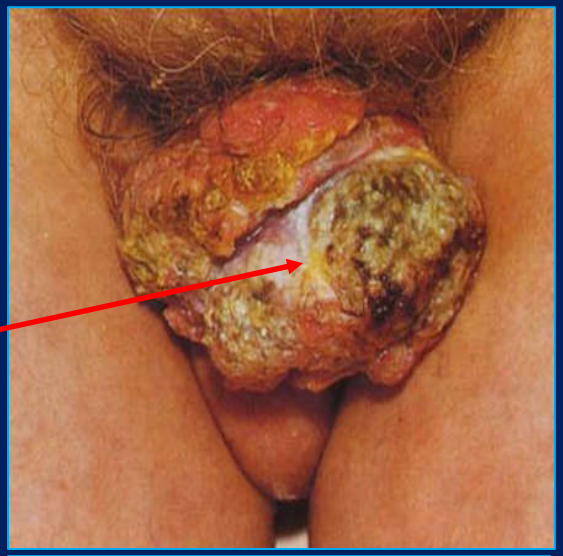
- ~1% of population.
- Skin depigmentation.
- Genitalia commonly involved.
- May regress spontaneously.
- Treatment:
  - Reassurance.
  - UV light.
  - Corticosteroids.

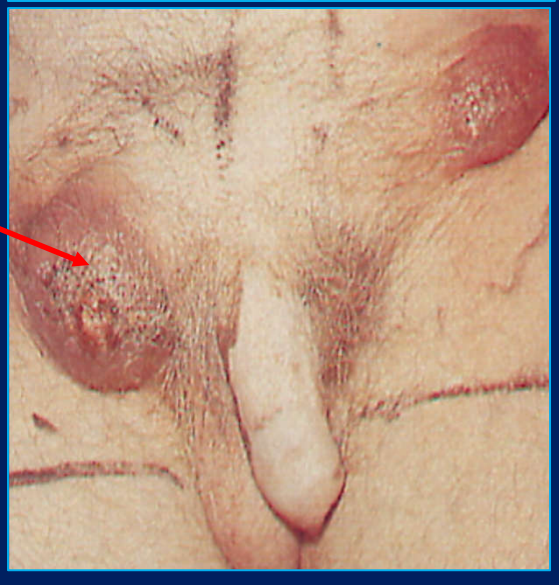
Squamous Cell Carcinoma

Aetiology:

- Industrial exposure.
- Viral (HPV).
- Hygiene.

- Chronic ulcerative, enlarging lesion.
- Delay in presentation.
- Inguinal metastases common.
- Wide local excision.
- Outcome:
  - Dependent on nodal involvement.





Kaposi's Sarcoma

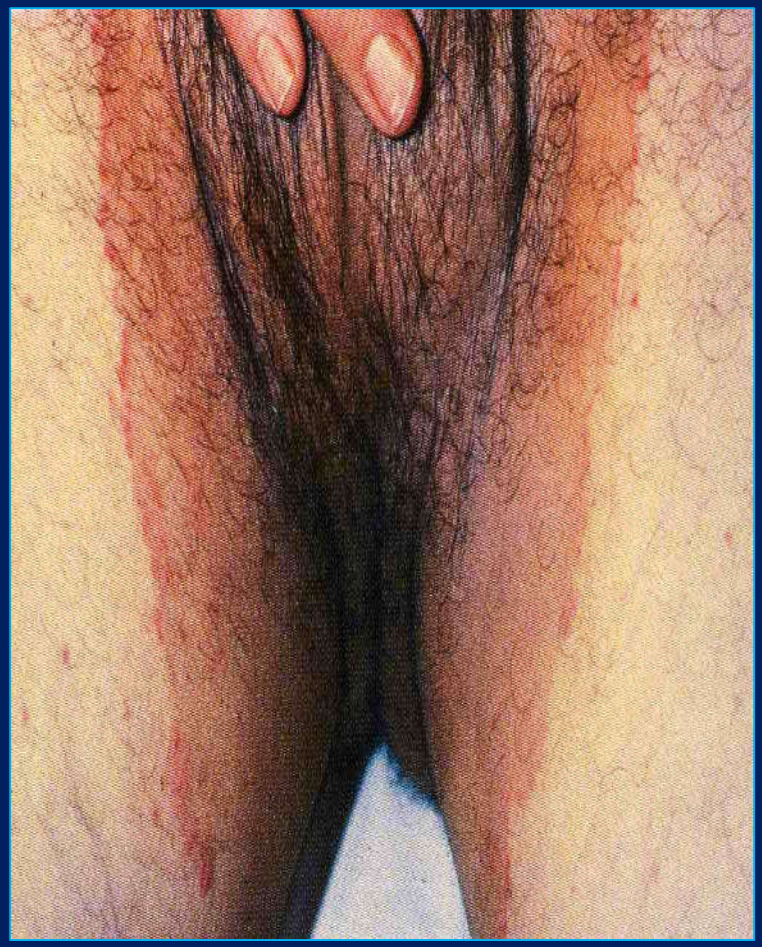
- Associated with HIV-1.
- Increasing in incidence.
- Light brown in colour.
- 3% of men with AIDS will initially present with genital Kaposi’s.
- Treatment if irritating or cosmetically bothersome.
  - Intra-lesional chemotherapeutics.
  - Local excision.

Condyloma

- Papillary, cauliflower-like proliferations.
- Human papilloma virus (6 & 11)
- Treat symptomatic lesions:
  - Podophyllin.
  - Imiquimod (Aldara™),
  - Cautery/liquid N2,
  - Laser ablation,
- Cannot be cured of the underlying viral infection

Tinea cruris

- Fungal infection “jock itch”
- Causative agent (Trichophyton sp.)
- chronic hyperpigmented area within the inguinal folds.
- Treated with;
  - Topical anti-fungals.
  - Sytematic anti-fungals.
  - Local skin care.



Fournier's gangrene

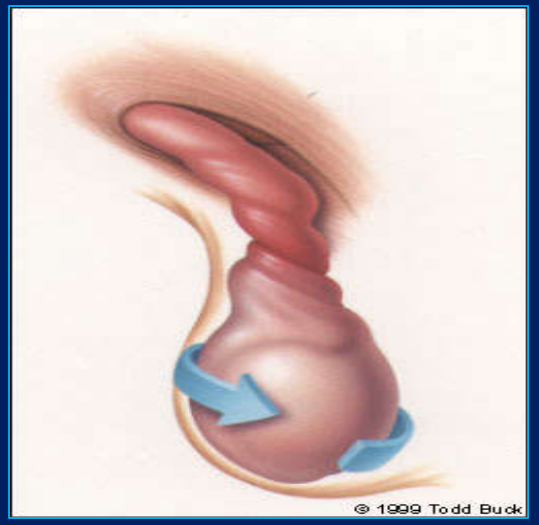
- Necrotizing fasciitis of the deep Cutaneous structures and fascia.
- Painful, necrotic, foul smelling lesions.
- **A life threatening disease!**
- **Common in diabetics and immune-compromised patients.**
- Requires prompt diagnosis.
- Treatment:
  - Extensive debridement of affected tissues.
  - Broad spectrum antibiotics.

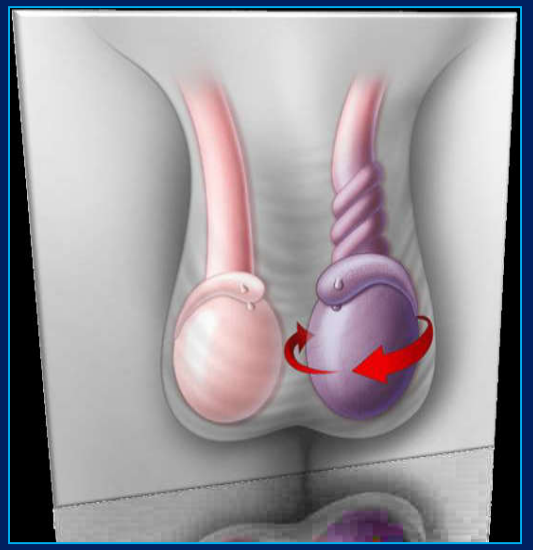
2- Intra-scrotal Lesions
A-Extra-testicular

- Benign
  - Testicular Torsion
  - Torsion of Testicular Appendage
  - Hydrocele
  - Haematocele
  - Spermatocele
  - Epididymitis
  - Varicocele
  - Hernia
- Neoplastic
  - Adenomatoid tumour of epididymis
  - Sarcoma

Testicular Torsion

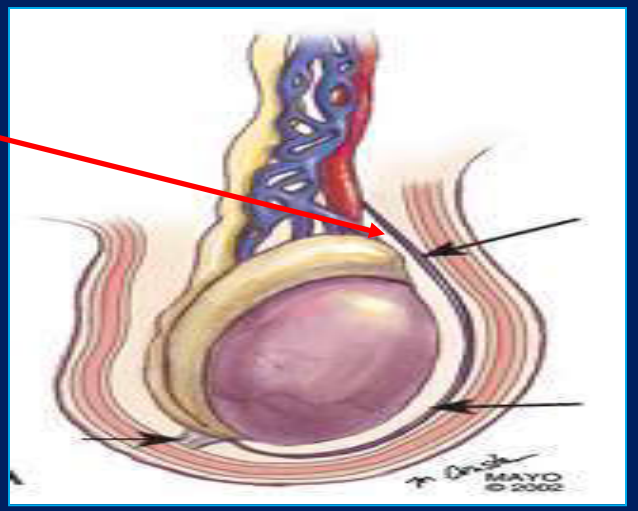
- Urologic emergency.
- Early diagnosis and treatment are vital;
  - To saving the testicle.
  - To preserving future fertility.
- “Bell clapper deformity”





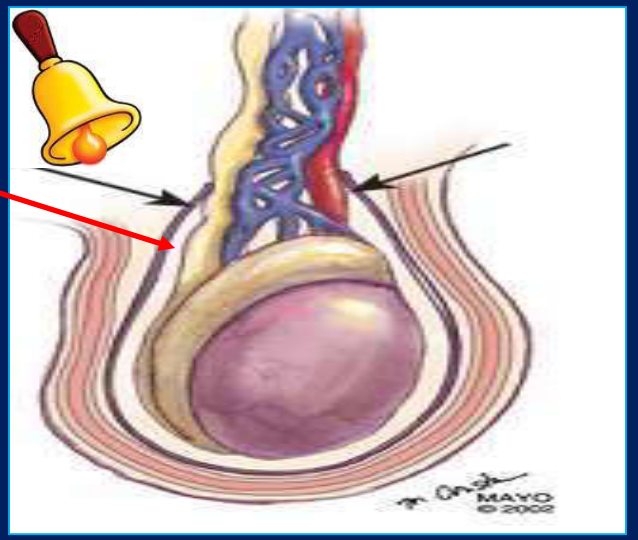
Testicular Torsion (cont.)

- The tunica vaginalis does not completely surround the testis and epididymis, which are attached to the posterior scrotal wall.



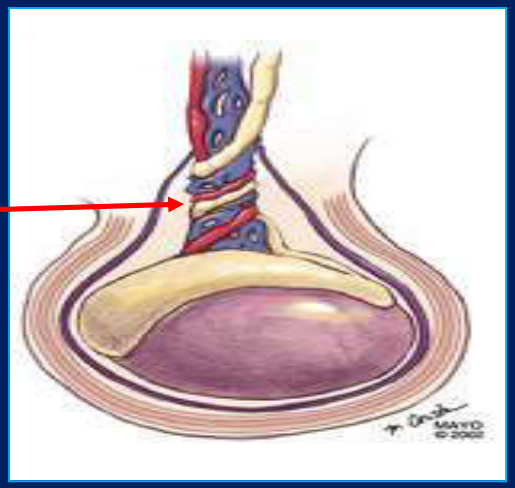
- **Bell-clapper anomaly.**

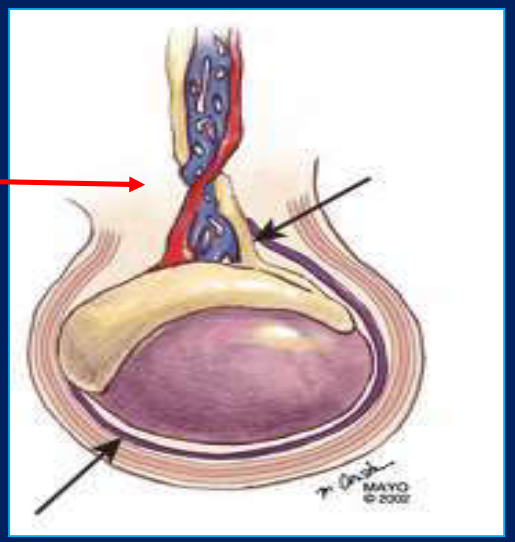
The tunica vaginalis completely surrounds the testis, epididymis, and part of the spermatic cord, predisposing to torsion.



Testicular Torsion (cont.)

- Types:
  - **Intra-vaginal Torsion.**
    - **More common**
    - **In adolescents**
    - bell clapper deformity.
  - **Extra-vaginal Torsion.**
    - **Less common.**
    - in newborns.
    - No bell clapper deformity.





Testicular Torsion (cont.)

Testicle rotates on spermatic cord

Venous occlusion, edema

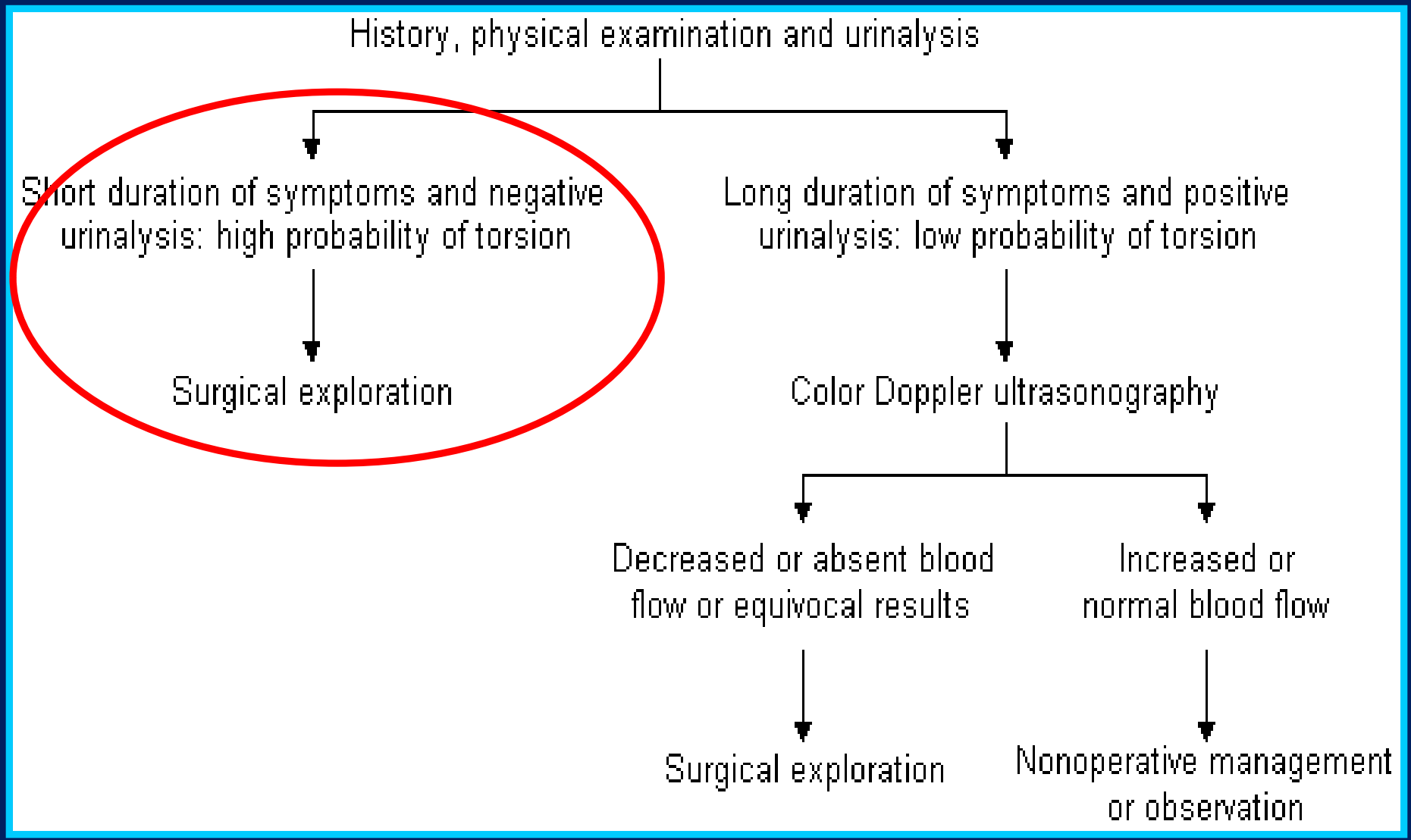
Arterial ischemia

Infarction

Testicular Torsion (cont.)

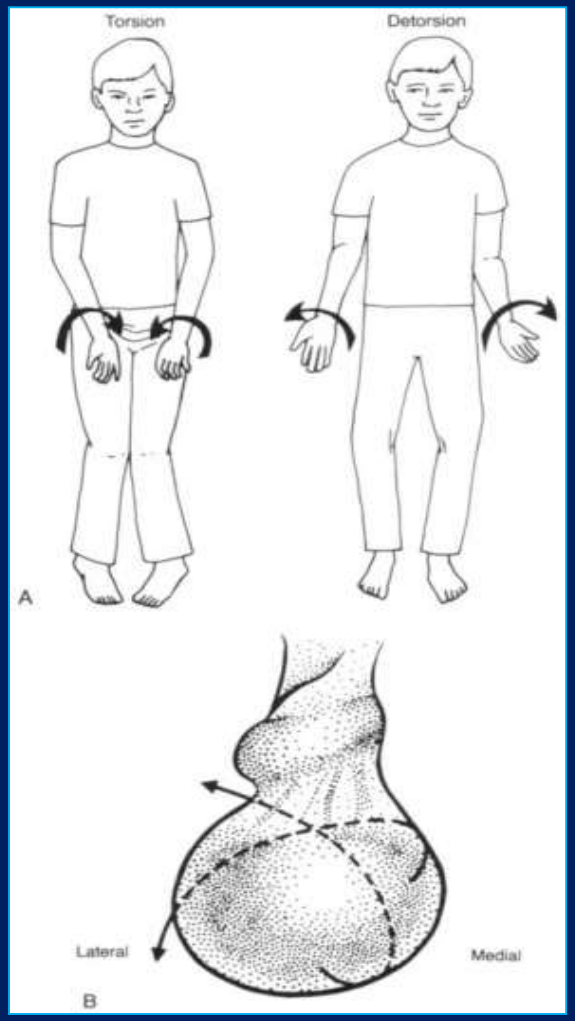
- Presentation and finding:
  - Acute severe testicular pain.
  - Tender, swollen and hang higher up testis.
  - Scrotal skin become red, hot and edematous.
  - Palpation may feel the twisted cord.
  - Pain increases or not improved by raising the testis.
  - Previous episodes, spontaneous resolution.
  - Related to activity, trauma, during sleep.
  - Nausea, vomiting, abdominal pain, fever.

Testicular Torsion (cont.)



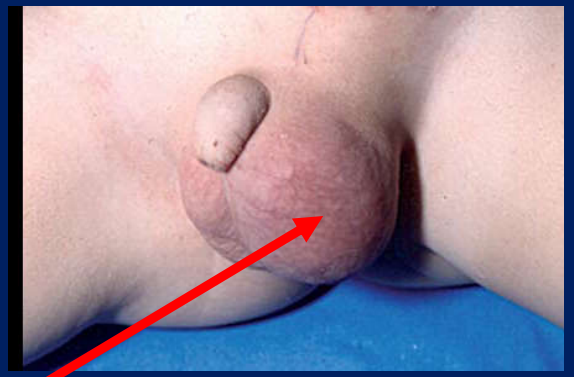
Testicular Torsion (cont.)

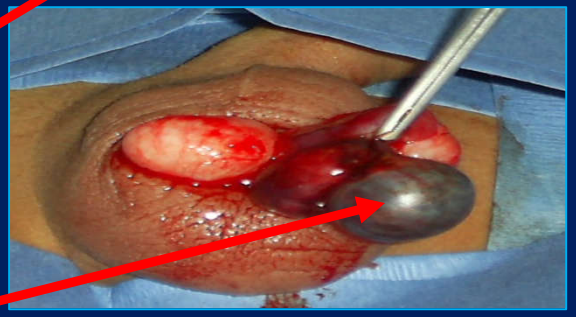
- Treatment:
  - Non-operative.
    - Untwist the testis from medial to lateral (opening a book)
    - May need to rotate 2-3 times for complete detorsion.
  - Surgical.
    - Failure of non-operative reduction.
  - Operation.
    - The testis is de-rotated and fixed.
    - The gangrenous testis is removed.

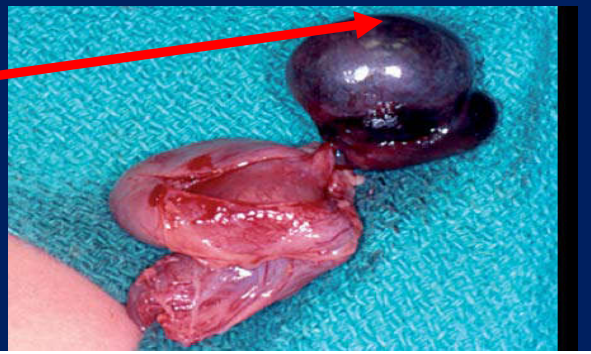


Testicular Torsion (cont.)

- Prompt surgical exploration:
- Testis can be salvaged;
  - 97% within <6 hours.
  - 60 % within < 12 hours.
  - <10% within >24 hours.
- Torsion







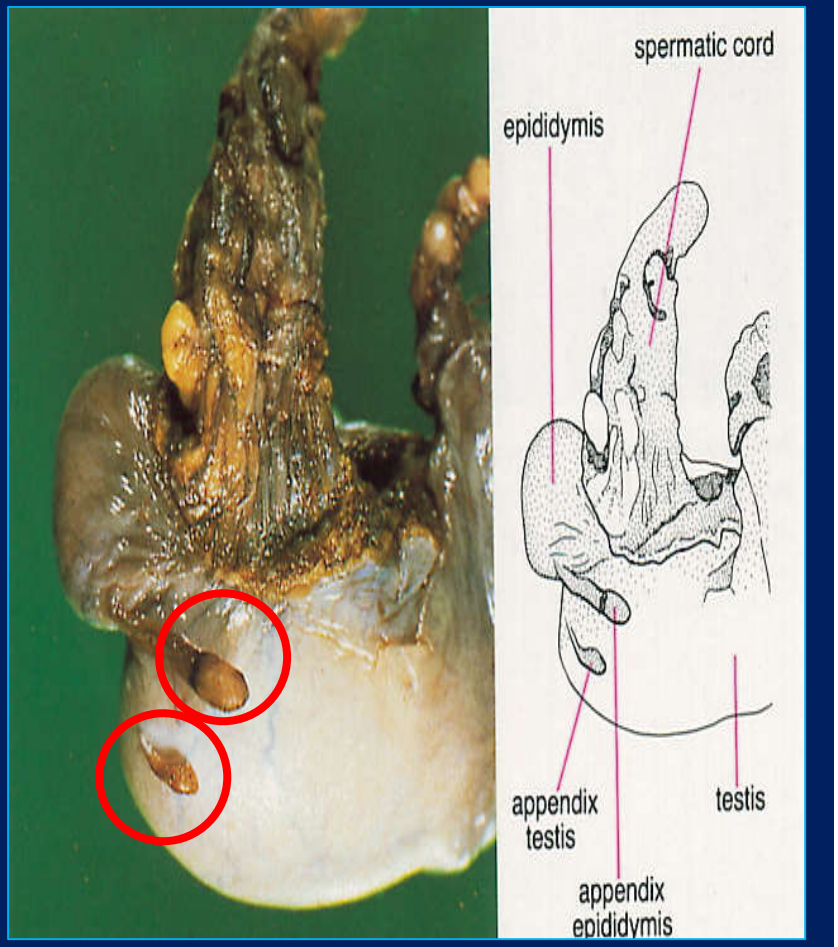
Testicular Torsion (cont.)

• Age?	12-25 (75%)
• Acute or Chronic?	Acute
• Painful?	Yes, markedly
• Trans-illuminates?	No
• Intra-Testicular?	No (pain)
• Urinalysis?	Negative

** This requires urgent attention**

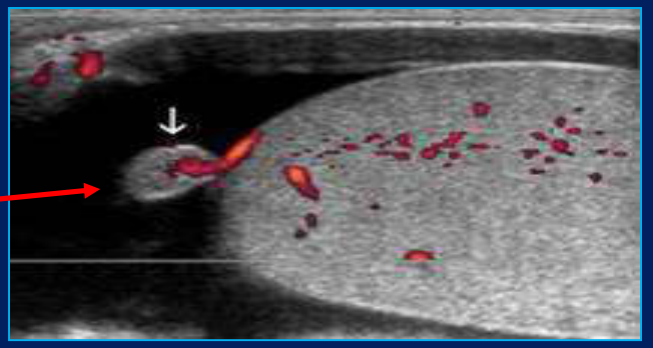
Torsion of Testicular Appendages

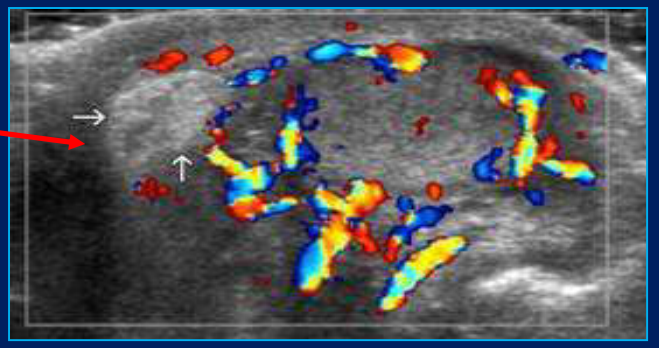
- Torsion of the appendix testes or appendix epididymis.
- Blue dot sign (seen on scrotum).
- More focal pain (upper hemi-scrotum).
- Often difficult to distinguish from other causes.
- Treatment:
  - Conservative
  - NSAID's



Torsion of Testicular Appendages (cont.)

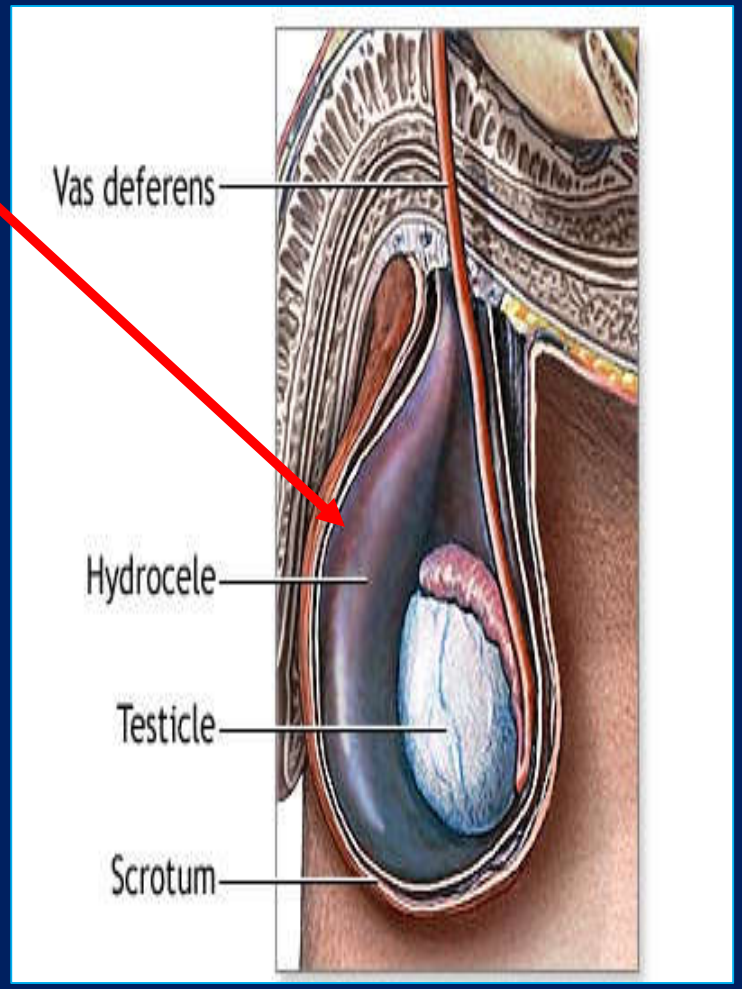
- Scrotal ultrasound.
- Blue dot sign.
- Non-vascular appendix testis.





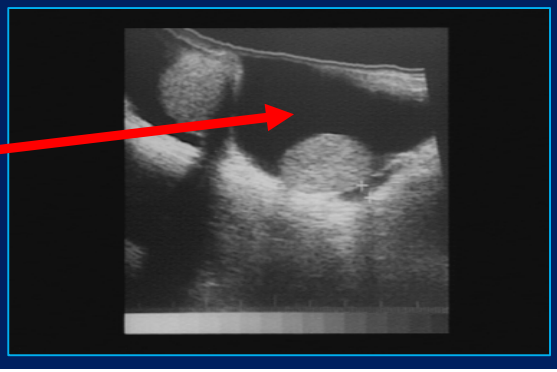
Hydrocele

- A collection of serous fluid between the two layers of the tunica vaginalis.
- 1% of all males.
- Very common benign scrotal mass.
- Etiology: Increased production or decreased absorption of fluid by scrotal lymphatics.



Hydrocele (Cont.)

- Types:
  - ❖Congenital.
  - ❖Infantile.
  - ❖Encysted Hydocele.
  - ❖Acquired.
    - Vaginal.
    - Post-varicoclectomy.
    - Post-inflammatory.
    - Post-herniotomy.
- Trans-illumination.
- Scrotal ultrasound.



Hydrocele (Cont.)

Treatment: (Hydrocelectomy)

- Large
- Bothersome
- Socially embarrassing
- Uncomfortable

Hydrocele (Cont.)

• Age?	<1 years, >40 years
• Acute or Chronic?	Chronic (usually)
• Painful?	No
• Trans-illuminates?	Yes
• Intra-Testicular?	No, surrounding
• Urinalysis	Normal

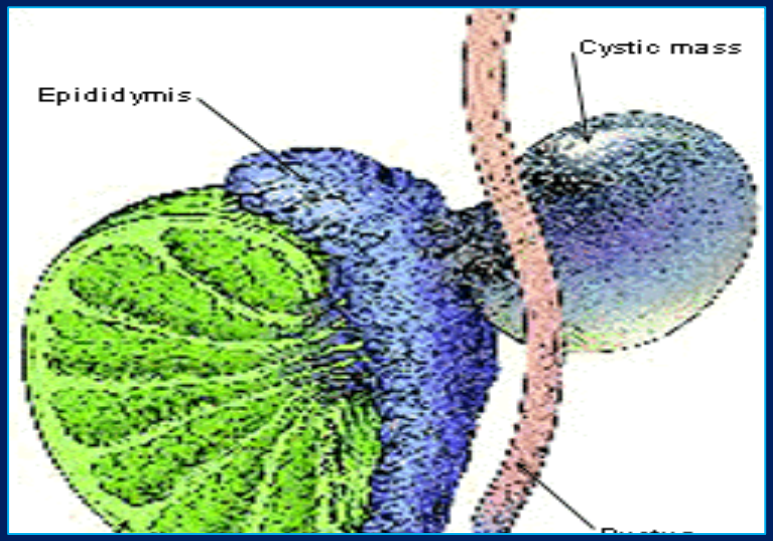
Haematocele

- Haemorrhage into the tunica vaginalis
  - direct trauma.
  - hemorrhagic diseases.
- Long-standing cases; thickened with dense fibrous tissue coated tunica vaginalis with calcifications.

Figure 21.3 Haematocele testis. Sectioned surface of the sac shows thick wall coated internally by brownish, tan and necrotic material which is organised blood clot (arrow).

Spermatocele

- A sperm containing cyst arising from the head of the epididymis.
- Caused by ductal obstruction.
  - Traumatic.
  - Inflammatory.
  - Idiopathic.
- Lesion is usually discrete from the testicle (superior).
- Excise if large & bothersome.



Spermatocele (Cont.)

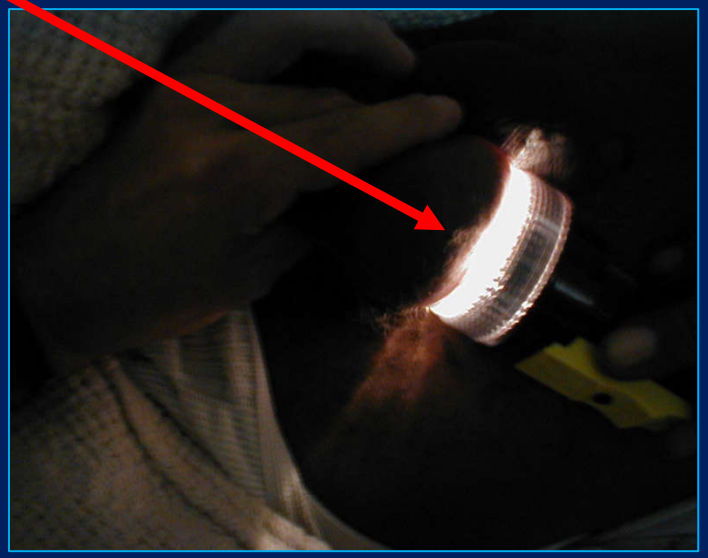
• Age?	>40 years
• Acute or Chronic?	Chronic
• Painful?	No
• Trans-illuminates?	Yes
• Intra-Testicular?	No (superior)
• Urinalysis?	Normal

Epididymitis

- Inflammation of the epididymis
- Generally due to ascending or haematogenous bacterial infection
- Etiology:
  - <35 years: C. trachomatis or N. gonorrhea
  - >35 years: Gram negative (E. Coli)

Epididymitis (Cont.)

- Examination:
  - Erythematous or indurated scrotal skin.
  - No trans-illumination.
- Complications:
  - Abscess.
  - Infertility.
  - Testicular infarction.
  - Chronic pain.



Epididymitis

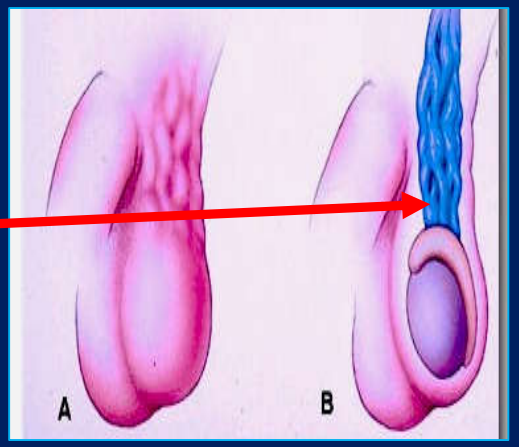
- RULE OUT TESTICULAR TORSION !
  - Doppler ultrasound.
  - Scrotal exploration.
- Treatment:
  - Bed rest, scrotal support.
  - NSAID's.
  - Age <35 years: Ceftriaxone 1g IV then Doxycycline 100mg x 14 days
  - Age >35 years: Quinolone x14 days

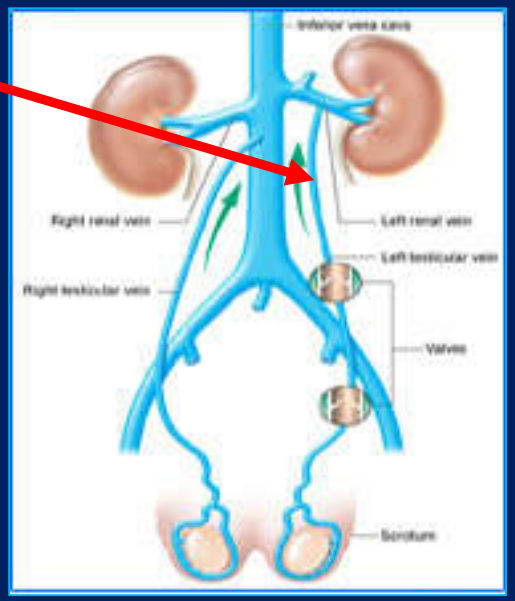
Epididymitis (Cont.)

• Age?	>20 years
• Acute or Chronic?	Sub-Acute
• Painful?	Yes
• Trans-illuminates?	No (only if reactive Hydrocele present)
• Intra-Testicular?	No (Posterior)
• Urinalysis?	Positive (50%)

Varicocele

- Dilation, elongation and torsuosity of pampiniform plexus of veins.
- ~15% of post-pubertal men
- Predominantly left sided (>90%).
- Cause with male infertility.
- Isolated right sided varicocele is worrisome for retroperitoneal mass or obstruction.





Varicocele (cont.)

- Types:
  - Primary (idiopathic).
    - Left side.
    - Bilateral.
  - Secondary.
    - Due to compression of the testicular vein.
    - Isolated Rt. Side varicocele.

Varicocele (cont.)

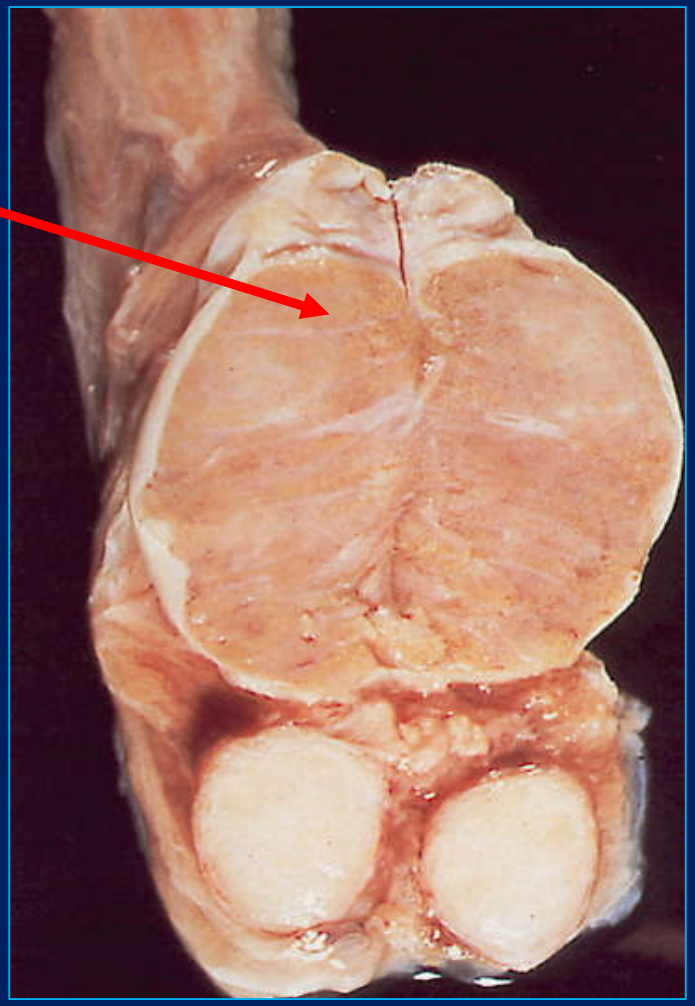
- Surgical varicocelectomy is required for:
  - Impaired sperm quality.
  - Loss of testicular volume.
  - Pre-adolescence varicocele.
  - Pain.
- Varicocelectomy involves ligation the offending incompetent vessels of the spermatic cord either:
  - Inguinal.
  - Subinguinal
  - Laparoscopically
  - Embolization

Varicocele (cont.)

• Age?	>12 years
• Acute or Chronic?	Chronic
• Painful?	No
• Trans-illuminates?	No
• Intra-Testicular?	No (left sided)
• Urinalysis?	Negative

Neoplastic

- A rare group of tumours
  - *Adenomatoid tumour* of the epididymis is the most common.
  - Sarcoma of the cord.



Inguinal Hernia

- Types:
  - Congenital.
  - Acquired.
    - Partial.
    - Complete.
- Reducible swelling.
- Contain omentum or intestine.
- Complications:
  - Irreducibility
  - Strangulation.
  - Obstruction.
- Treatment:
  - Herniotomy.
  - Herniorraphy.
  - Hernioplasty.

2- Intra-scrotal Lesions
B-Intra-testicular

1. Testicular tumors.

2. Empty scrotum.

Testicular tumors

1- Germ cell tumors:

2- Sex cord-stromal tumors:

- **All germ cell tumors originate from intratubular germ cell neoplasia (ITGCN) EXCEPT:**
  - **Pediatric yolk sac tumors**
  - **Teratomas.**
  - **Adult spermatocytic seminomas**

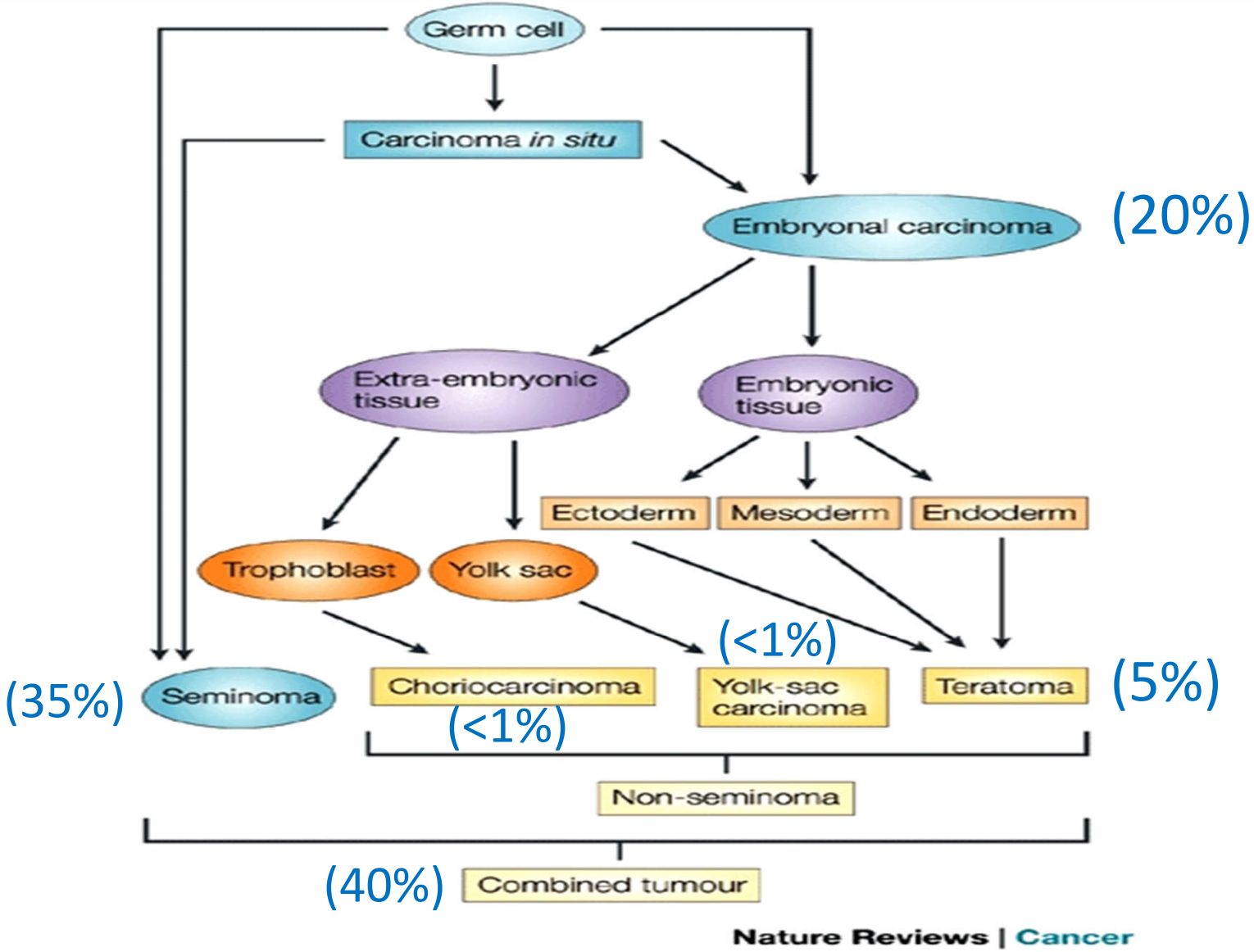
Table 21-5 Pathologic Classification of Common Testicular Tumors

Germ Cell Tumors
Seminomatous tumors
Seminoma
Spermatocytic seminoma
Nonseminomatous tumors
Embryonal carcinoma
Yolk sac (endodermal sinus) tumor
Choriocarcinoma
Teratoma
Sex cord-stromal Tumors
Leydig cell tumor
Sertoli cell tumor

Testicular tumors

- Compared with other types of cancer, it is relatively rare.
- Testicular tumours show excellent cure rates.
  - Teratoma

Testicular tumors (cont.)



Testicular tumors (Cont.)

- Risk factors:
  - **Cryptorchidism.**
  - **Genetic factors.**
    - **familial predisposition due to gene defect receptor tyrosine kinase KIT and BAK**
  - **Developmental disorders (testicular dysgenesis syndrome).**
    - **Cryptorchidism, Hypospadias, and poor sperm quality due to exposure to pesticides and non-steroidal estrogen.**

Testicular tumors (Cont.)

- Clinical Picture:
  - Painless enlargement of the testicle.
  - Dragging or heaviness in the scrotum.
  - Acute pain if hemorrhage occurred.
  - 10% of men present with symptoms related to metastatic disease (abdominal mass, back pain, neck mass, cough, hemoptysis, dizziness),
  - Gynecomastia.

Testicular tumors (Cont.)

- Epidemiology:
  - Incidence: 3/100,000.
  - Age group 15 – 35 years.
  - Rare in Asians, blacks.
  - Higher incidence in northern Europeans.

Testicular tumors (Cont.)

- History & Physical Examination:
  - Assess risk factors.
  - Check for lymphadenopathy, abdominal masses.
  - Examine both testes (2-5% bilateral)
    - Try to trans-illuminate.
    - If hydrocele prevents exam, get ultrasound.
  - ***Avoid biopsy.????***

Testicular tumors (Cont.)

- Investigations:
  - Tumor markers.
  - CXR.
  - CT scan of chest, abdomen and pelvis.
  - Radical orchiectomy.
  - Further staging after orchiectomy.
    - Repeat markers serially.

Testicular tumors (cont.)

1. a-fetoprotein
   - Normal <20ng/ml, Elevated in:
     - 80% of embryonal carcinoma
     - yolk sac and teratocarcinoma
     - NOT in seminoma or choriocarcinoma
2. b-HCG
   - Elevated in almost all choriocarcinomas
   - Elevated in 5% of pure seminomas
3. Others
   - LDH,CEA.

Testicular tumors (cont.)

- Staging: **American Joint Committee on Cancer (1997):**
  - Stage I:
    - Confined to testis.
  - Stage IIa:
    - Retroperitoneal nodes <2cm.
  - Stage IIb:
    - Retroperitoneal nodes >2cm but < 5 cm.
  - Stage IIc:
    - Retroperitoneal nodes >5 cm.
  - Stage III:
    - Visceral metastases or supra-diaphragmatic nodes .

Testicular tumors (cont.)

- TNM Staging:
- **T:Tumor**
- **Ptis: Intra-tubular neoplasia.**
- **PT1: Confined to the testis no infiltration of the tunica vaginalis.**
- **PT2: Infiltration of the tunica vaginalis with or without vascular invasion.**
- **PT3: Infiltration of the spermatic cord.**
- **PT4: Infiltration of the scrotum.**

Testicular tumors (cont.)

- **N: Lymph Node**
  - **NO** no nodal involvement
  - **N1** Nodal involvement less than 2 cm
  - **N2** Nodal involvement between 2 and 5 cm
  - **N3** Nodal involvement more than 5 cm

Testicular tumors (cont.)

- **M: Distant metastasis**
  - **MX: Distant metastasis cannot be assessed**
  - **M0: No distant metastasis.**
  - **M1: Distant metastasis.**
  - **M1a: Non-regional lymph nodes(s) or lung.**
  - **M1b: Other sites.**

Testicular tumors (cont.)

S	**Serum metastasis**
SX	**Serum marker studies not available or not performed**
S0	**Serum marker study levels within normal limits**
	LDH (U/I) HCG (mIU/ml) AFP (ng/ml)
S1	**<1.5 x N and <5000 and <1000**
S2	**1.5-10 x N or 5000-50000 or 1000-10000.**
S3	**>10 x N or > 50.000 or > 10000**

Testicular tumors (cont.)

- Seminoma:
  - Age of onset 30's
  - Grossly:
    - Gray, coalescing nodules
  - Micro:
    - Sheets of clear cells
  - May contain syncytiotrophoblasts

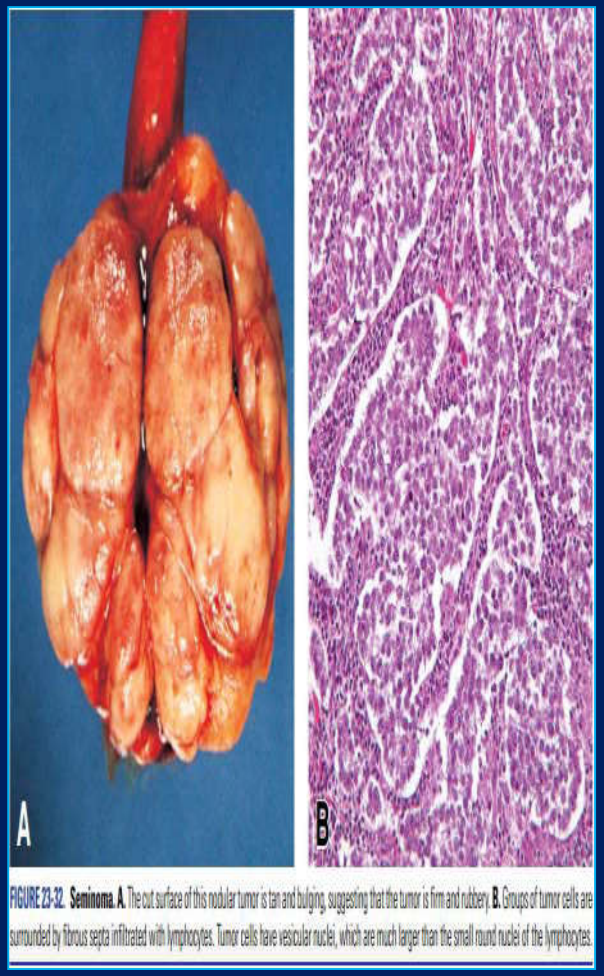
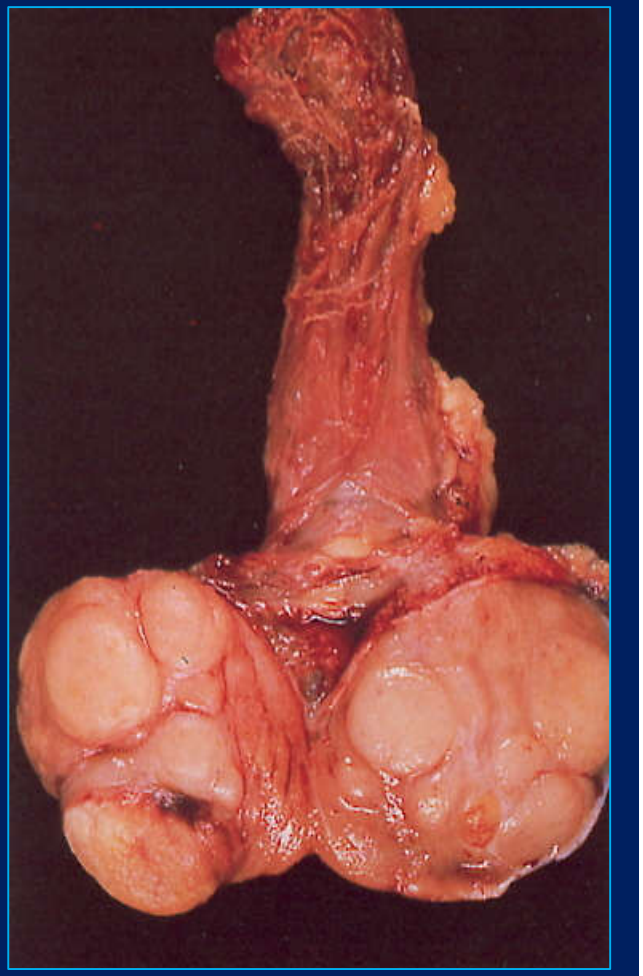


FIGURE 23-32. Seminoma. A. The cut surface of this nodular tumor is tan and bulging, suggesting that the tumor is firm and rubbery. B. Groups of tumor cells are surrounded by fibrous septa infiltrated with lymphocytes. Tumor cells have vesicular nuclei, which are much larger than the small round nuclei of the lymphocytes.



Testicular tumors (cont.)

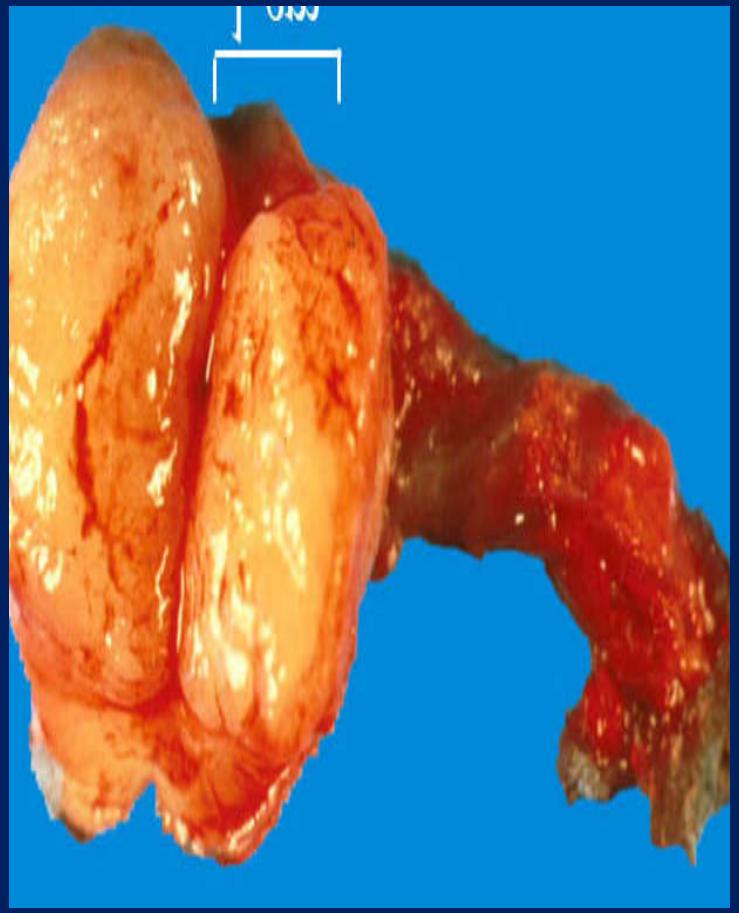
- Embryonal Carcinoma:
  - Often associated with teratoma
  - Younger onset
  - Increased AFP levels (>50%)
  - 1/3 have clinically evident met's at diagnosis
  - Grossly:
    - Solid, grey-white with necrosis
  - Micro:
    - Poorly differentiated

Testicular tumors (cont.)

- Teratoma:
  - Mature.
  - Immature.
  - Well differentiated tumours.
  - Lesions can become quite large.
  - Bimodal age distribution.

Testicular tumors (cont.)

- Yolk Sac Tumour:
  - Related to embryonal carcinoma
  - Occurs only in infants & very young children
  - Produces AFP



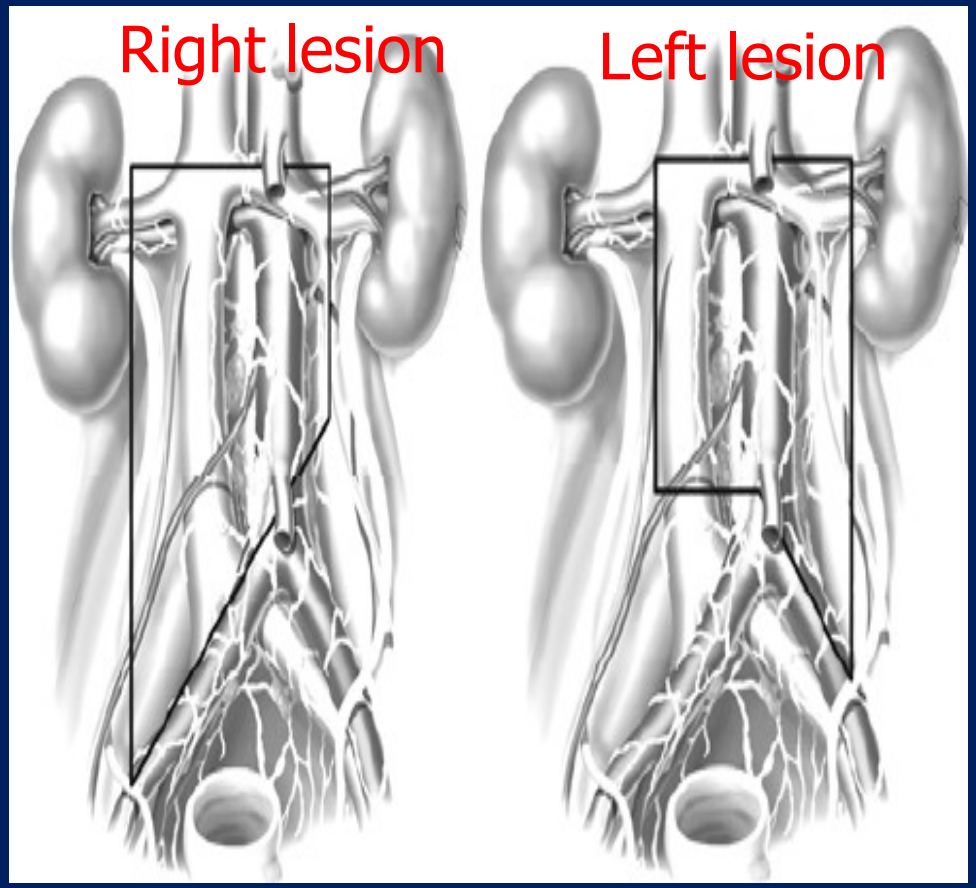
Testicular tumors (cont.)

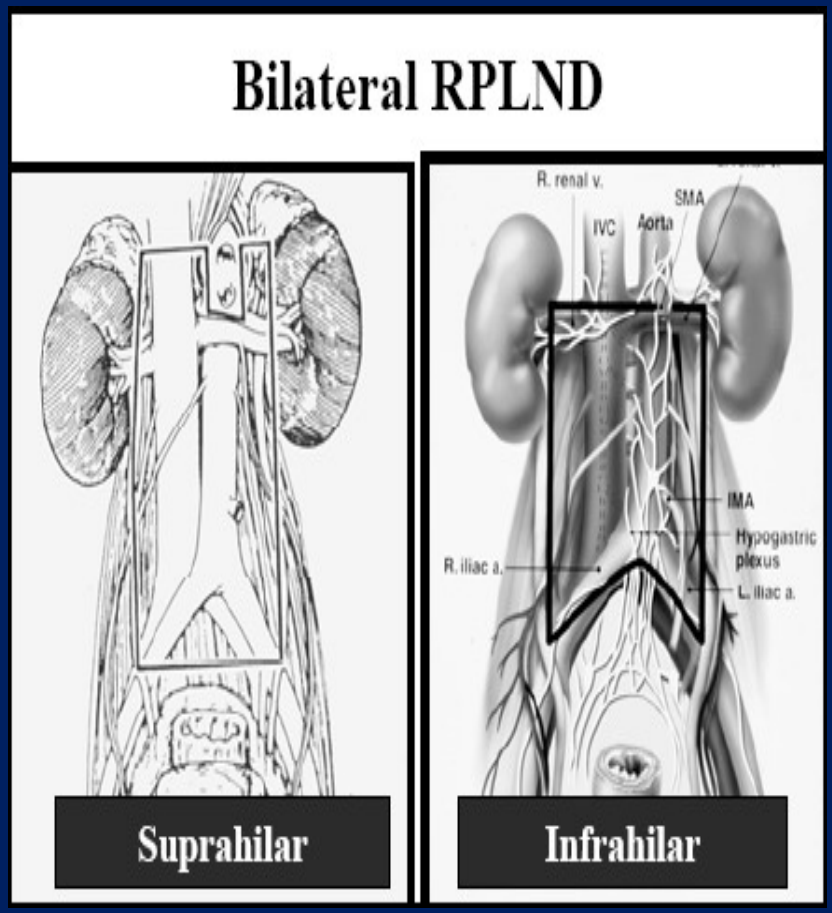
- Treatment:
  - Stage I disease = Radical Orchiectomy and surveillance.
  - Stage II and III disease = Radical Orchiectomy (AND).
    - Chemotherapy (Cisplatin based).
    - Radiotherapy (20 Gy – 3oGy- 36 Gy).
    - Perform RPLND for patients with residual retroperitoneal nodes after chemotherapy or radiotherapy (if tumour markers normalize).

Testicular tumors (cont.)

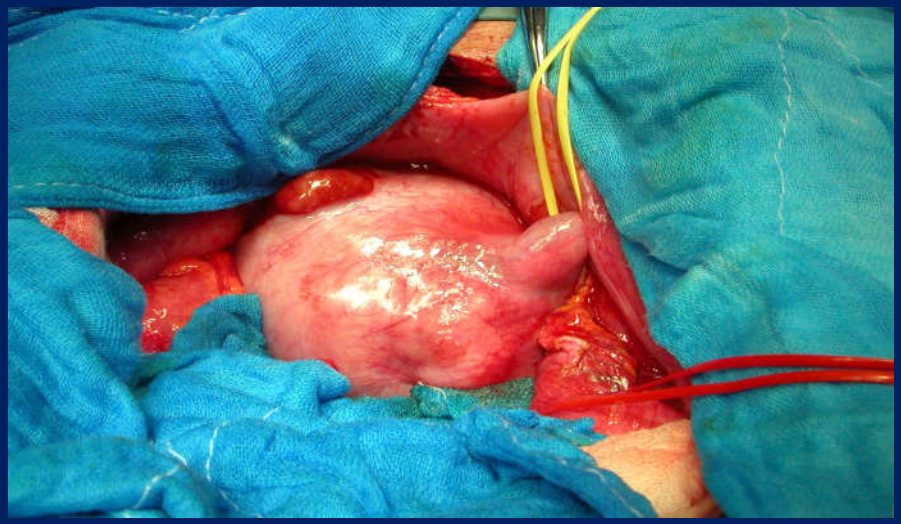
- Seminomas:
  - Diagnosed in stage I.
  - Lymphatogeous spread.
  - Have better prognosis with 90% cure rate.
  - Are extremely radiosensitive.
- Non-Seminomas:
  - Diagnosed in either stage II or III.
  - Hematogenous spread.
  - Behave in a more aggressive manner and have poor prognosis.
  - Are radio-resistant.

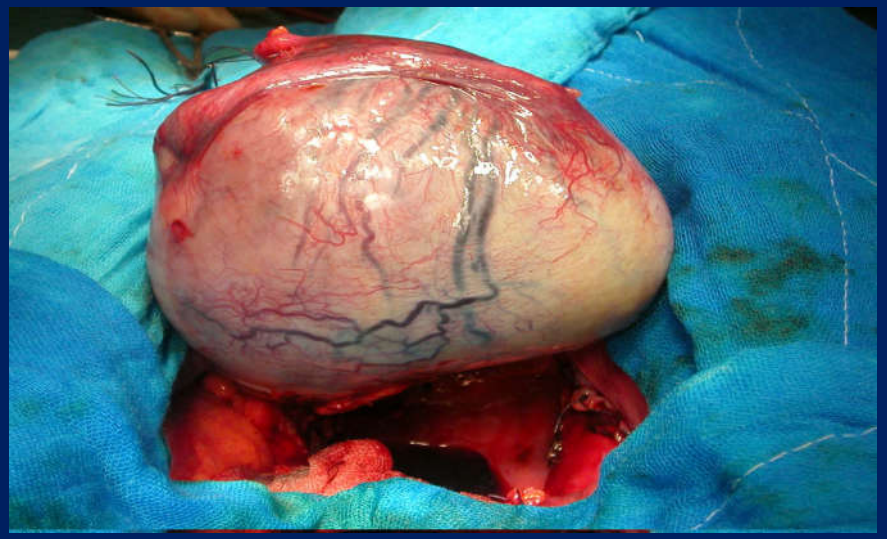
Testicular tumors (cont.)

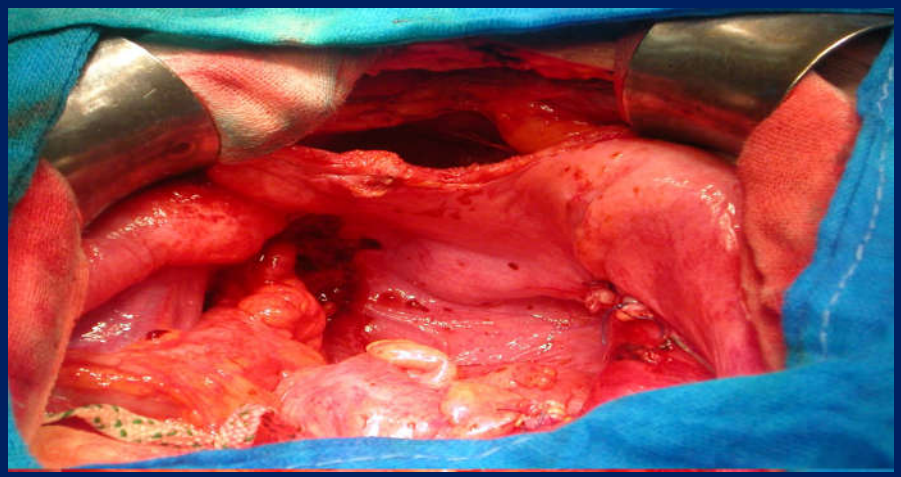


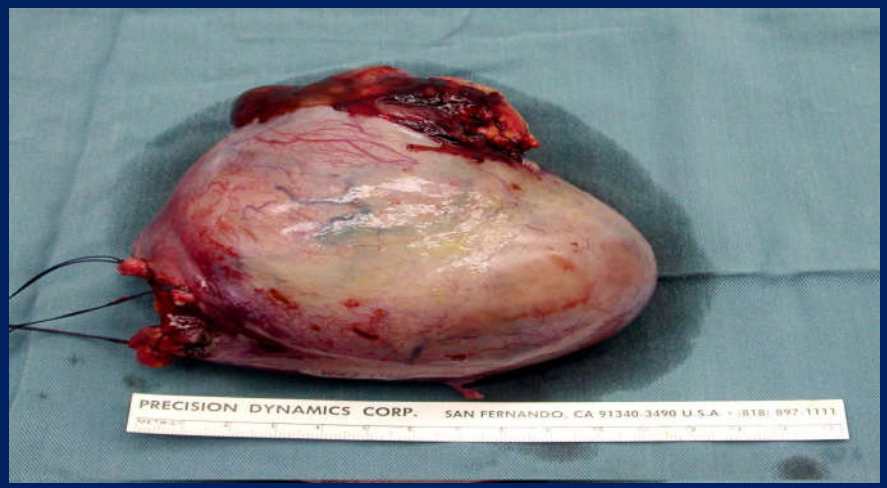


Testicular tumors (cont.)
Intra-abdominal seminoma









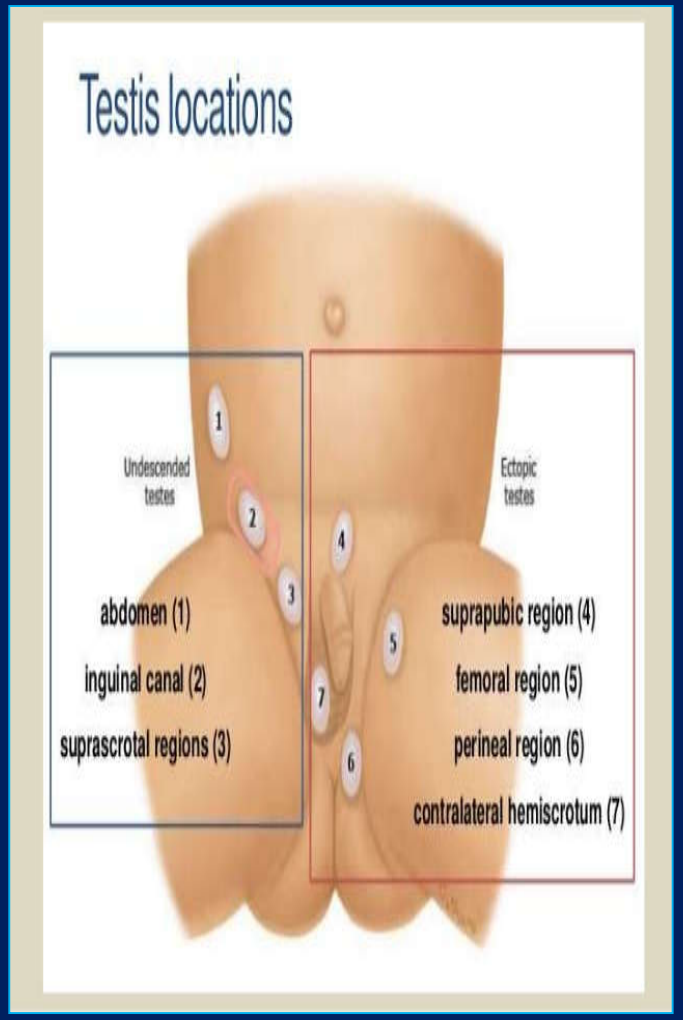
Testicular tumors (Cont.)

• Age?	15-35 years
• Acute or Chronic?	Chronic
• Painful?	No
• Trans-illuminates?	No
• Intra-Testicular?	**Yes!**
• Urinalysis?	Negative

This requires urgent attention

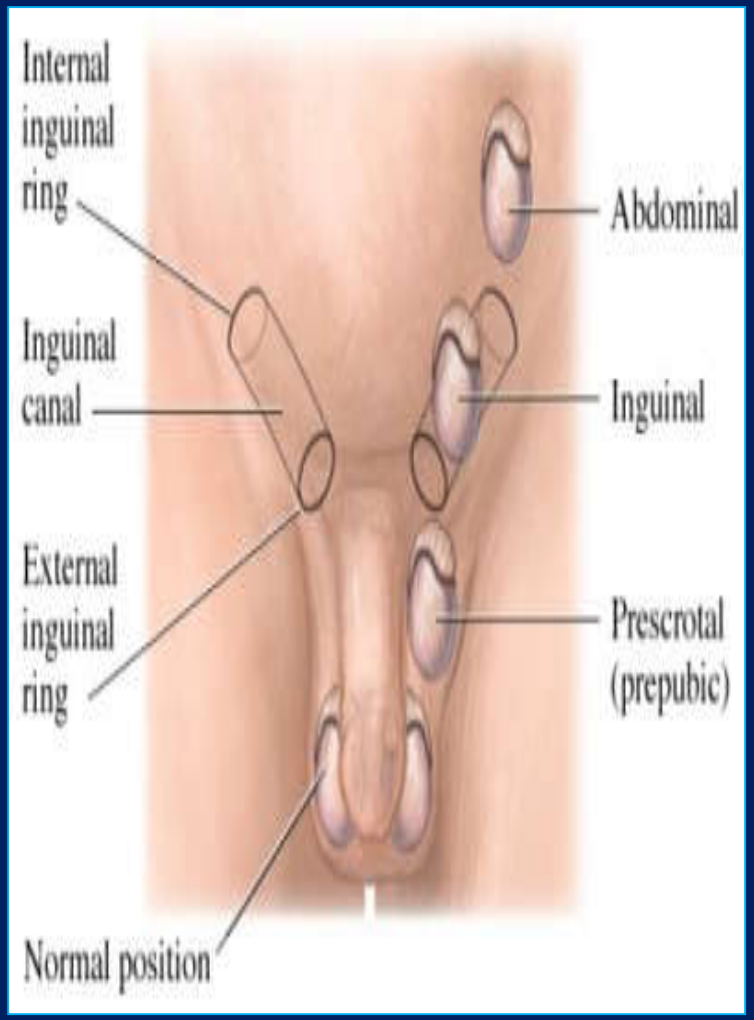
Empty scotum

- Etiology:
  1. Undescended testes.
  2. Ectopic testis:
     - multi-tailed gubernaculum.
  3. Retractile testis:
     - Exaggerated cremasteric reflex
  4. Atrophic.
  5. Agenitic.



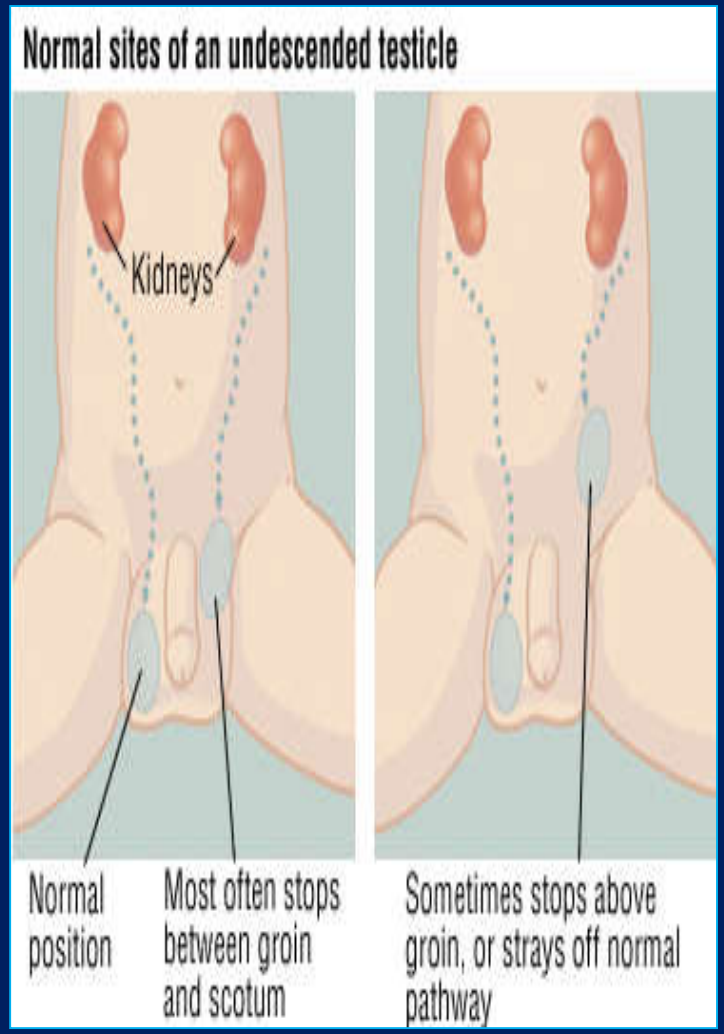
Undescended Testis (cont.)

- Epidemiology:
  - Failure of migration along the normal line of descent
  - Incidence.
    - 2-5 in general population.
    - in 30% of preterm.
    - In 3% of full term.
    - In 1% at one year.
  - Spontaneous descent after one year is rare.



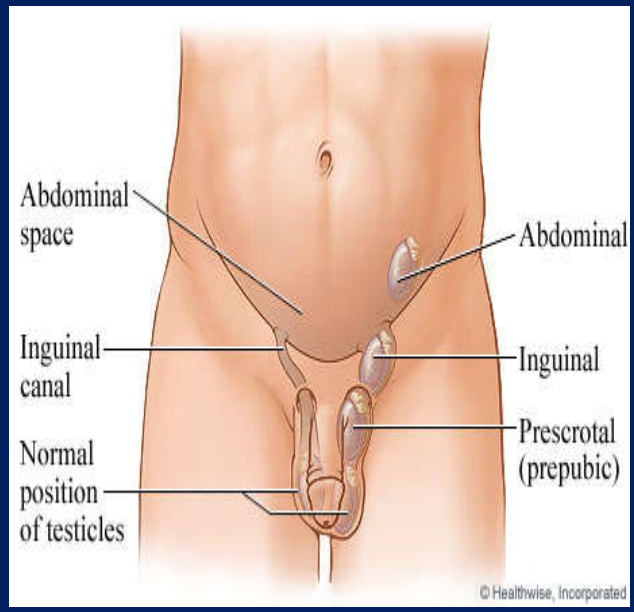
Undescended Testis (cont.)

- Testicular descent:
  - Trans-abdominal phase induced by müllerian inhibiting substance.
  - Inguino-scrotal phase is androgen-dependent induced by androgen-induced release of calcitonin gene related peptide from the genitofemoral nerve.



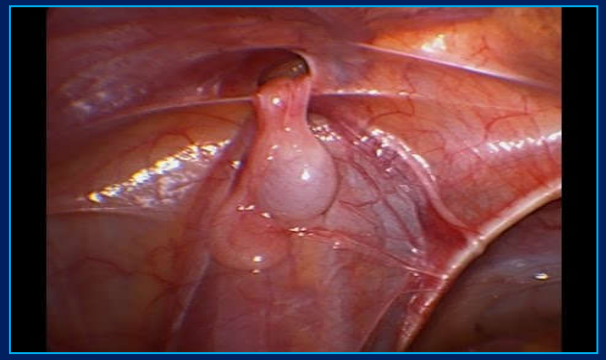
Undescended Testis (cont.)

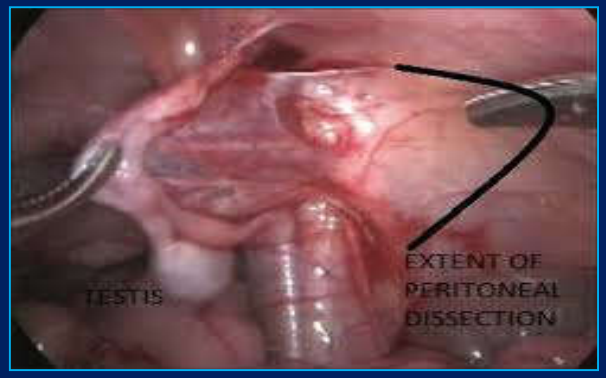
- Risk factor:
  - Prematurity.
  - Low birth weight.
  - Twin gestation.
  - Down syndrome.
  - Gestational diabetes mellitus.
  - Prenatal alcohol exposure.
  - Hormonal abnormalities.
  - Mother younger than 20 years.
  - A family history of undescended testes.



Undescended Testis (cont.)

- Classification:
  - Unilateral (75%).
  - Bilateral (25%).
  - Palpable (80%).
  - Impalpable (20%).
    - Present (80%):
      - Low abdominal (80%).
      - High abdominal (20%).
    - Absent (20%):
      - Agenesis.
      - Atrophy.





Undescended Testis (cont.)

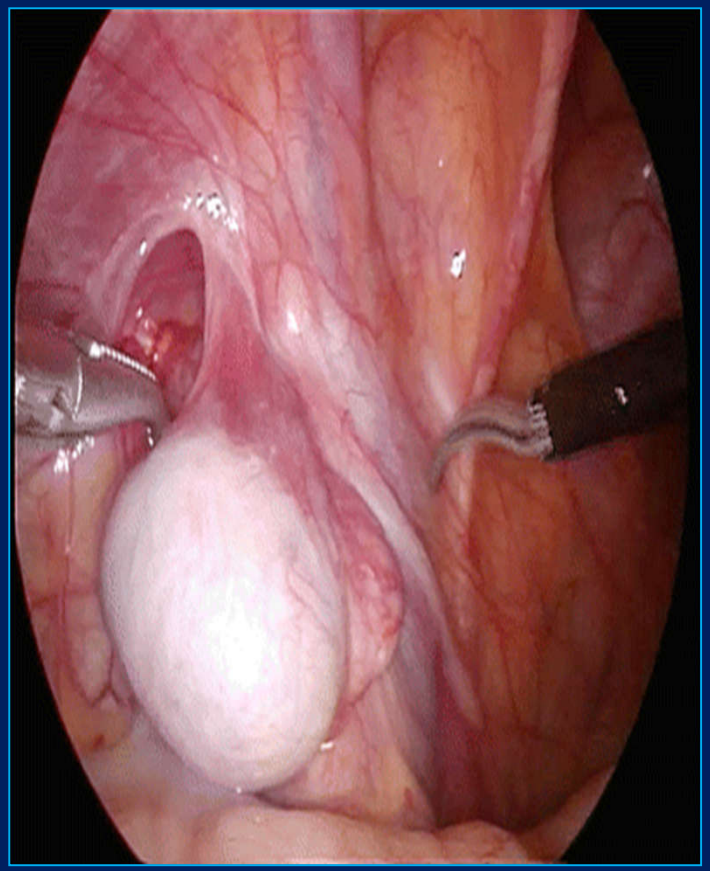
Complications of Undescended Testis

TESTIS

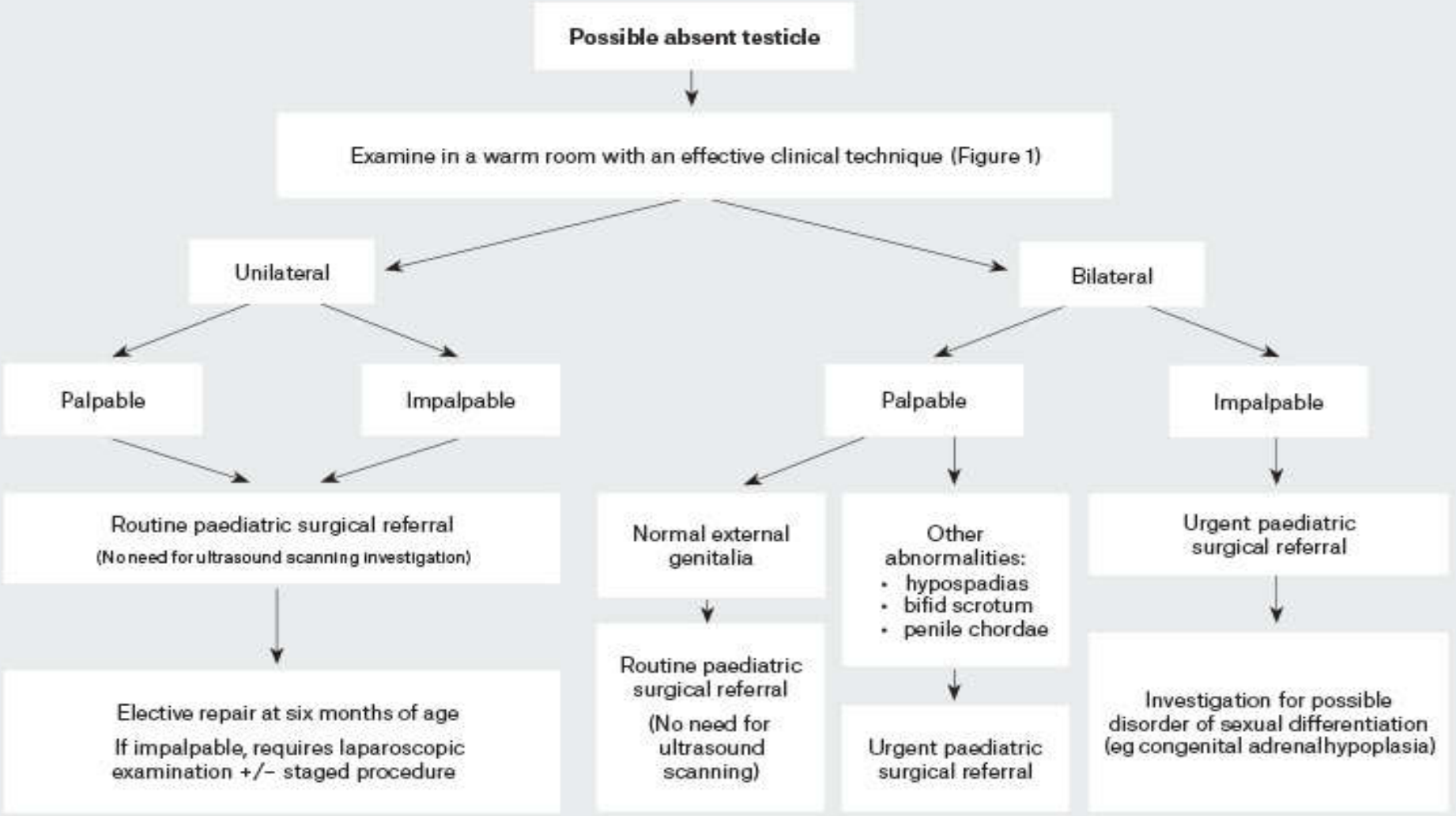
T - Trauma
E - Epididymoorchitis
S - Sterility
T - Torsion
I - Inguinal Hernia (most common)
S - Seminoma

Undescended Testis (cont.)

- Investigation for impalpable testis:
  - Radiology (U/S,CT, MRU).
    - Inconclusive.
    - Should not be done.
  - Diagnostic laparoscopy.
    - Standard .
    - Conclusive.



Undescended Testis (cont.)



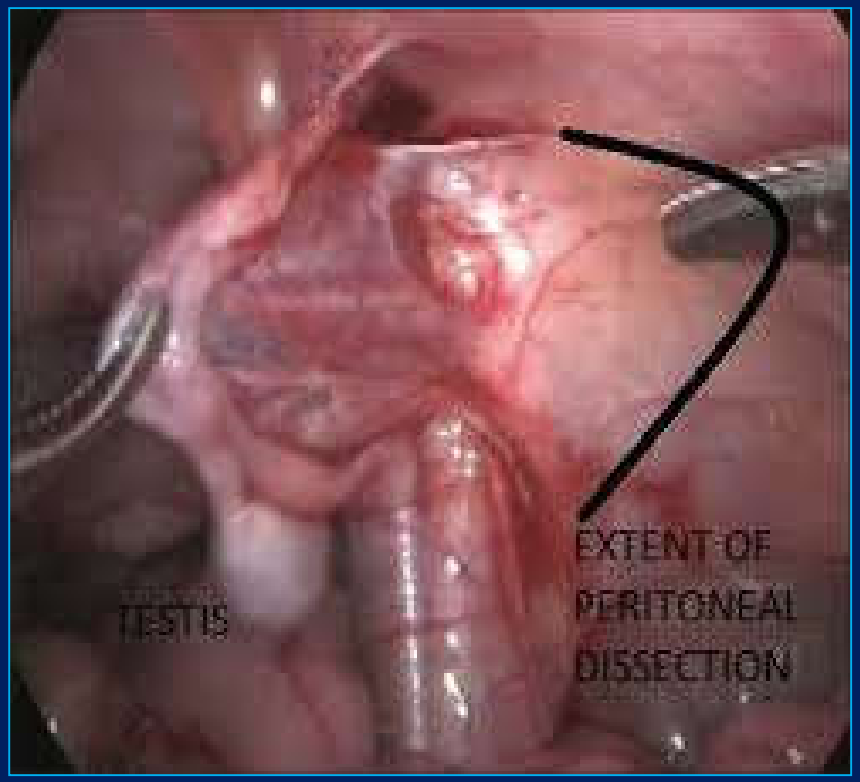
Undescended Testis (cont.)

- Treatment:
  - Undescended and Ectopic testis:
  - Target is to bring the testicle with its blood supply
    - into the scrotum as early as possible
  - Orchidolysis and Orchidopexy.
    - should be done within the 1st year of life.
  - Retractile testis:
    - Reassurance.
    - Orchidopexy if most of the time is high.

Undescended Testis (cont.)

- Why do operation in 1st year of life?????
  - Histological changes start within the 2nd year of life;
    - Arrested germ cell development.
    - Hyalinization and thickening of the basement membrane
    - Prominent Leydig cells.
  - Affecting spermatogenesis and fertility.

Undescended Testis (cont.)



Home Messages

- Scrotal pathologies are cutaneous and intra-scrotal.
- Most of them are benign.
- Some lesions are potentially life threatening.
  - Testicular cancer.
  - Fournier's Gangrene.
- Testicular torsion is a urologic emergency and early diagnosis and treatment are vital.

Home Messages

- Don’t forget to rule out Testicular torsion to diagnose Epididymitis.
- Varicocele is a cause of male infertility.

- Testicular cancer is the most curable of all solid (esp. if caught early).

- Almost 100% cure rate for low-stage disease

- Most Germ cell tumours are diagnosed in early stage.
- Staging is the corner stone.


Thank You