ACUTE SCROTAL CONDITIONS

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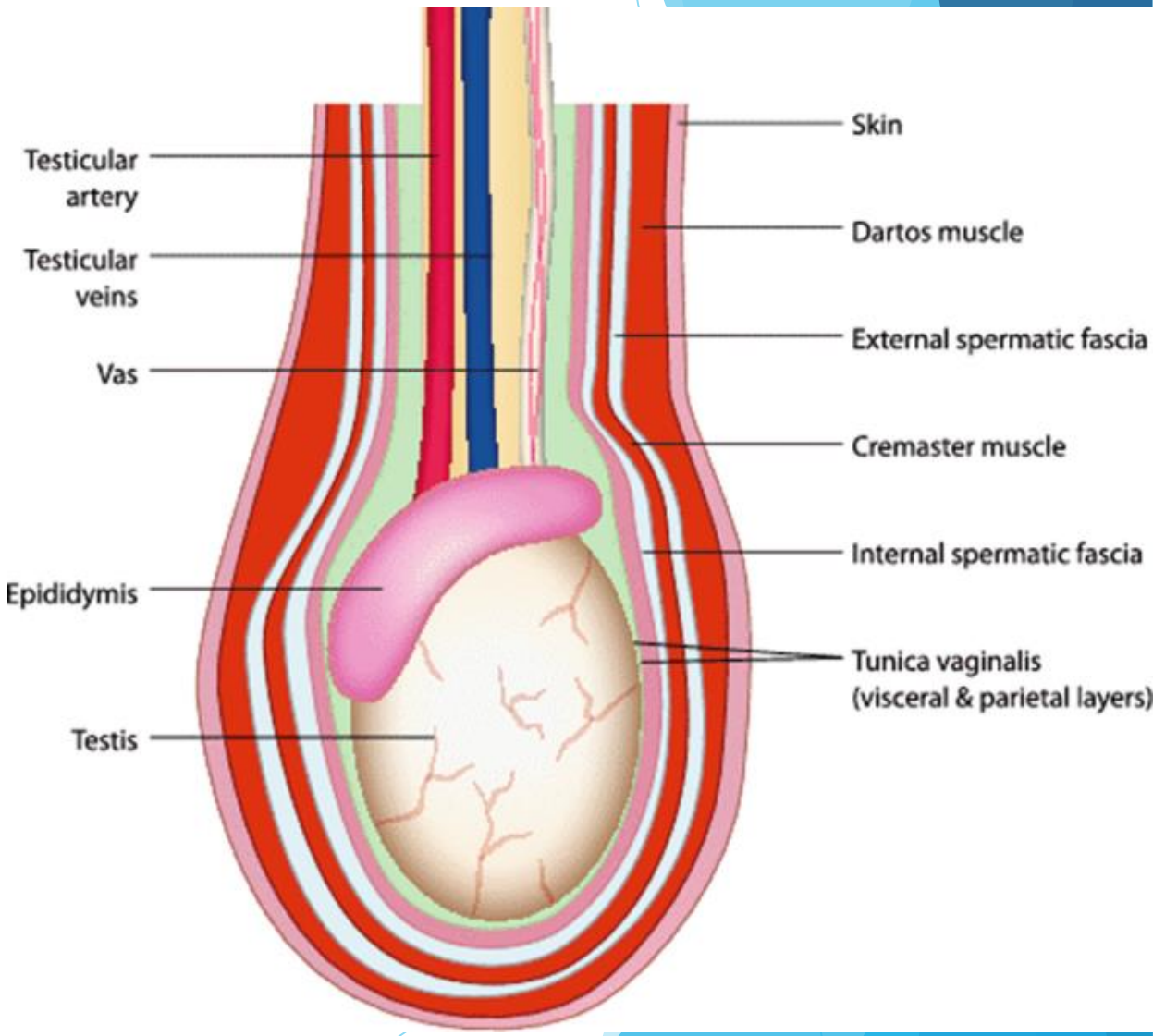
Anatomy of the scrotum

- SCROTAL WALL LAYERS:

1. Skin
2. Dartos fascia (scapa's fascia)
3. External spermatic fascia (ext. oblique fascia)
4. Cremaster muscle (int. oblique fascia)
5. Internal spermatic fascia (fascia transversalis)
6. Tonica vaginalis (peritoneum)

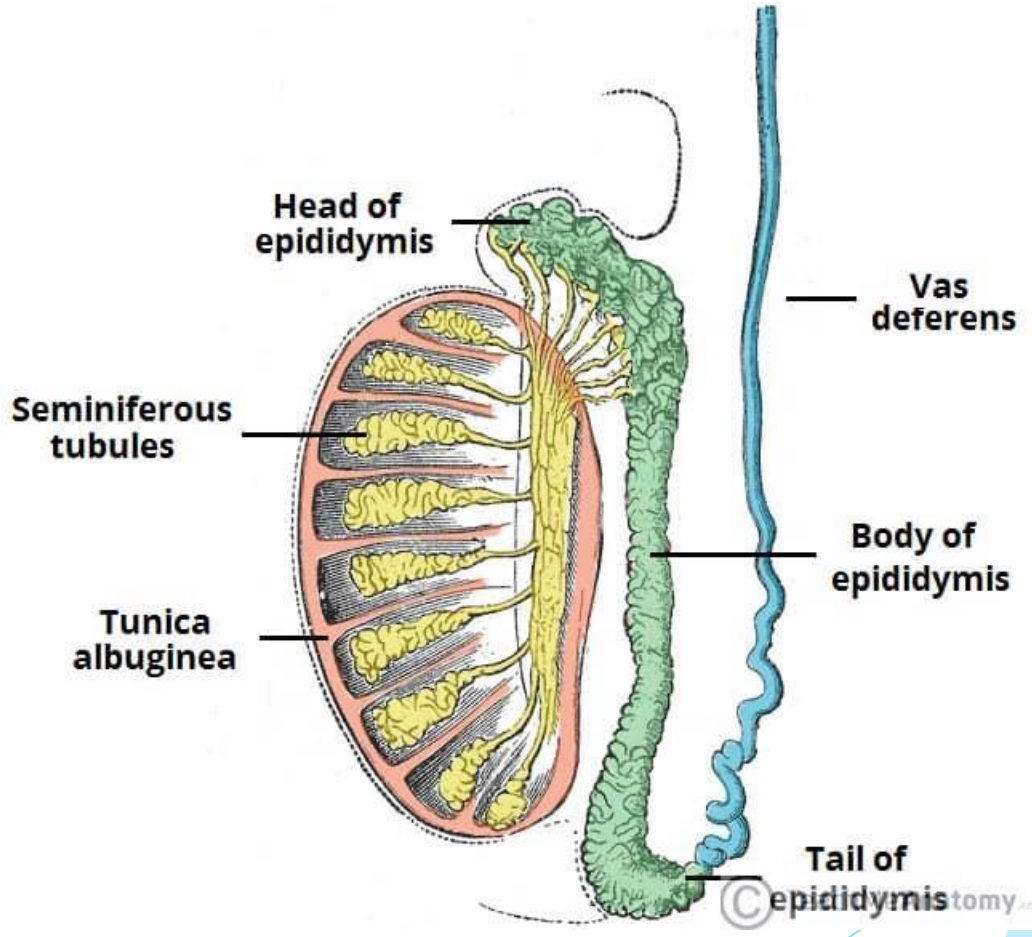


TESTIS & EPIDIDYMIS

- TESTIS
- Volume: 15-25ml
- Capsule (tonica albuginea)
- 200-300 seminiferous tubules
- Rete testis
- Efferent ducts

- EPIDIDYMIS:
- Head
- Body
- Tail

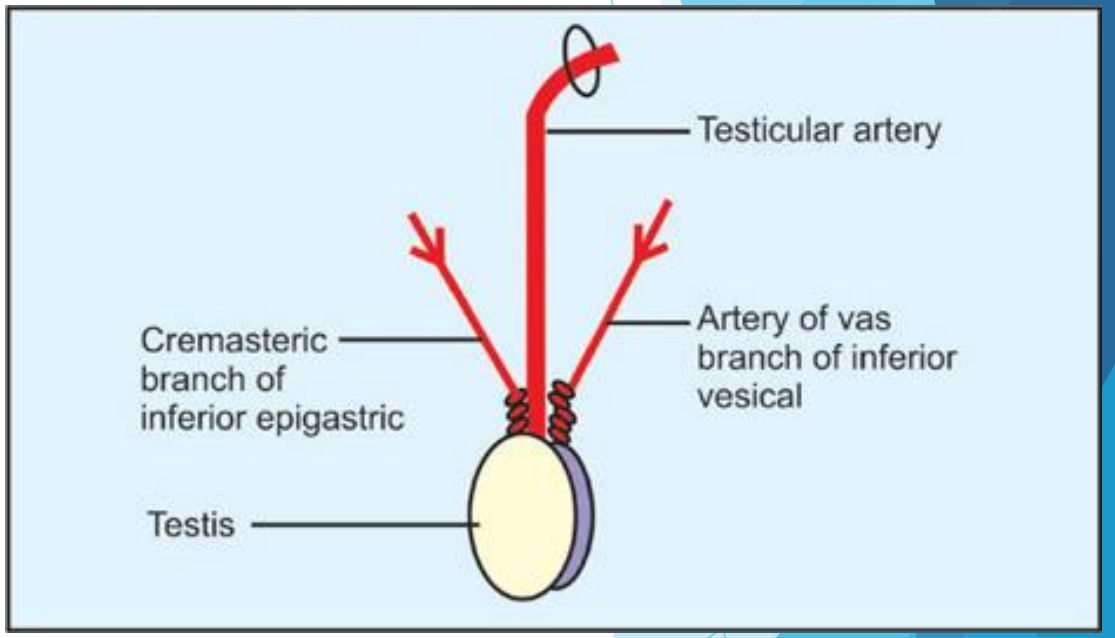
- VAS DEFERENS



BLOOD SUPPLY OF THE TESTIS

- 3 arterial blood supplies:

1. Testicular artery (internal spermatic) – main blood supply
2. Artery of the vas deferens (deferential artery)
3. cremasteric artery (external spermatic)



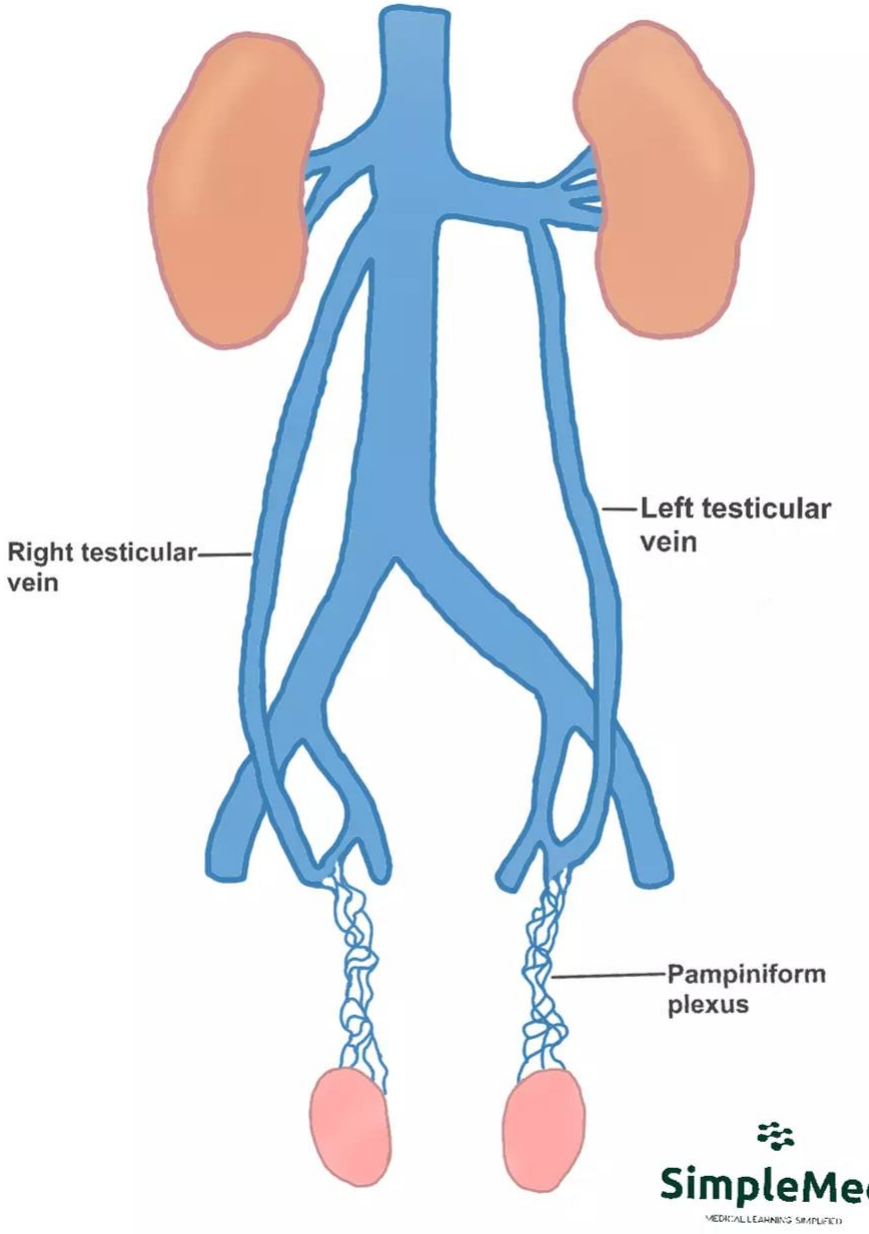
VENOUS & LYMPHATIC DARINAGE OF THE TESTIS

- PAMPINIFORM PLEXUS:
- network of testicular veins that anastomose as they

ascend surrounding the testicular artery to form two or three veins at the level of the inguinal canal

- then they form one vein that ascends to drain into:
- the inferior vena cava on the right
- the renal vein on the left side

- LYMPHATIC DRAINAGE:
- the para-aortic LNs from the left testis
- interaortocaval LNs from the right testis



BLOOD – TESTIS BARRIER

- extremely strong, tight junctions between Sertoli cells, which provide an intracellular barrier that allows for spermatogenesis in an immune privileged site
- Therefore, any violation of this barrier can lead to antisperm antibodies

ACUTE SCROUM

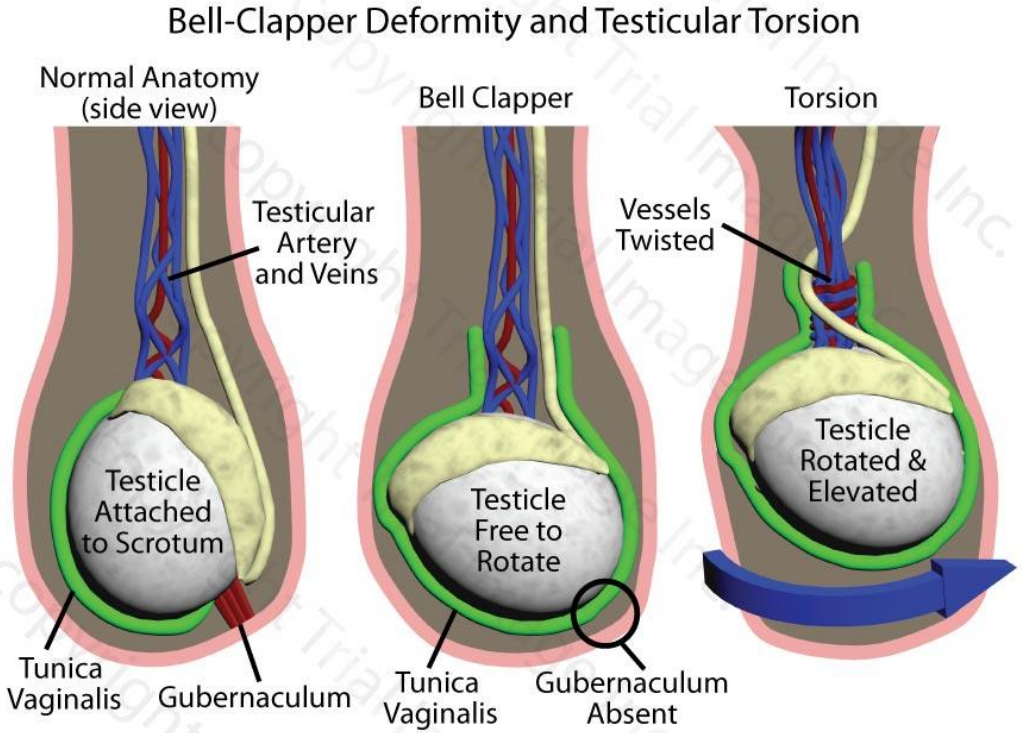
- Acute scrotum refers to the new onset of pain, swelling,
- and/or tenderness of intrascrotal contents.

- childern and adolescents:
- The most common diagnosis: torsion of the appendix testis
- The 2nd most common diagnosis: testicular torsion
- 3rd most common diagnosis: epididymitis
- Testicular torsion is most common in the pubertal period

Appendage torsion
  Appendix testis
  Other appendage (epididymis, paradidymis, vas aberrans)
Spermatic cord torsion
  Intravaginal, acute or intermittent
  Extravaginal
Epididymitis
  Infectious
    Urinary tract infection
    Sexually transmitted disease
    ?Viral
  Sterile or traumatic
Scrotal edema or erythema
  Diaper dermatitis, insect bite, or other skin lesions
  Idiopathic scrotal edema
Orchitis
  Associated with epididymitis with or without abscess
  Vasculitis (e.g., Henoch-Schönlein purpura)
  Viral illness (mumps)
Trauma
  Hematocele or scrotal contusion or testis rupture
Hernia or hydrocele
  Inguinal hernia with or without incarceration
  Communicating hydrocele
  Encysted hydrocele with or without torsion
  Associated with acute abdominal pathology (e.g.,
    appendicitis, peritonitis)
Varicocele
Intrascrotal mass
  Cystic dysplasia or tumor of testis
  Epididymal cyst, spermatocele or tumor
  Other paratesticular tumors
Musculoskeletal pain from inguinal tendonitis or muscle strain
Referred pain (e.g., ureteral calculus or anomaly)

TESTICULAR TORSION

- Acute Intravaginal Spermatic Cord Torsion:
- Testicular torsion is a true surgical emergency
- “bell-clapper deformity” (loss of gubernacular attachment)
- excess mobility of the testis within the tunica vaginalis
- peak age at 12 to 16 years
- Prevalence: 1:4000
- Left testis predominance



CLINICAL PRESENTATION

- Acute severe scrotal pain even at rest/sleep or after

Trauma

- The most common physical findings:

1. generalized testicular tenderness,
2. absent cremasteric reflex: genitofemoral nerve stimulation by scratching the inner thigh with resultant testis elevation
3. abnormal orientation of the testis:

high-riding and horizontally oriented testis

- Inguinal/abdominal pain - common
- Nausea/vomiting – common
- Scrotal edema and erythema may be present
- Dysuria and fever - uncommon

DIAGONSTIC STUDIES

- Urine analysis: limited usefulness
- Presence of WBC, epididymitis?
- Presence of RBC, stone?

- Color doppler Ultrasound: rapid, available, and safe modality to assess testicular architecture, intraparenchymal blood flow 97% accurate in the diagnosis
- immediate scrotal exploration: gold standard, especially if there is a delay in ultrasound, or if ultrasound inconclusive, or if clinically suspicious

Management and Surgical Treatment

- Testicular torsion is a true surgical emergency:
- When findings support or raise suspicion for spermatic cord torsion, emergent scrotal exploration is indicated and should not be delayed.
- >40% risk of testicular loss and orchiectomy if there is a delay in management more than 6 hours after onset of pain
- Manual detorsion is less effective, and shouldn't substitute scrotal exploration
- Orchidopexy should be preformed to the contralateral testis

TORTION-DETORTION

- **Intermittent Intravaginal Spermatic Cord Torsion**
- Episodes of self-limited acute scrotal pain precede acute testicular
- torsion in 30% to 50% of patients
- High risk for persistent torsion
- The diagnosis requires a high index of suspicion

Other types of tosrsion

- **Extravaginal Spermatic Cord Torsion (whole cord torsion)**
- This type affects infants and can occur during delivery, or postpartum
- Usually painless and ends up almost always with testicular atrophy

- **Torsion of the Appendix Testis and Epididymis:**
- the most common cause of acute scrotum in prepubertal children
- Embryologic remnants
- Symptoms are similar to testicular torsion
- “blue dot sign” a discoloration at the upper pole of the testis representing the ischemic appendage, may be seen through scrotal skin
- self-limited process
- CDUS rarely demonstrates an abnormal appendage but commonly shows hyperperfusion of the epididymis

Scrotal Trauma

- **Penetrating Scrotal injury** requires surgical exploration

- **Blunt Scrotal Trauma:**
- Extrascrotal hematoma (Cutaneous hematoma)

confined to the scrotal skin and do not extend into the space surrounding the testicle

- Intrascrotal Hematoma (hematocele)

accumulation of blood in the space between the testicle and the tunica vaginalis.

- Hematocele can arise from any of the following processes:

1. Trauma to scrotum, testis, epididymis, or spermatic cord. Most traumatic hematoceles are caused by testis rupture.
2. After scrotal surgery
3. Blood from the peritoneal cavity of intra-abdominal source

Evaluation of Scrotal Hematoma

- **History and physical examination**: note the presence of perineal hematoma, penile hematoma, and blood at the urethral meatus (indicates urethral injury).
- **Scrotal ultrasound with Doppler:** used primarily to evaluate the integrity and vascularity of the testicles (to rule out testicular rupture)
- **Urinalysis:** blood in the urine suggests a urethral injury.
- **Retrograde urethrogram:** when urethral injury is suspected.
- **CT scan with IV and oral contrast:** When intra-abdominal bleeding is suspected, obtain a

management

- **Cutaneous scrotal hematomas** usually resolve without intervention and are managed conservatively with scrotal support, scrotal elevation, and intermittent application of ice packs.

- **Hematoceles without testicular rupture:**
- a. Small stable hematoceles: conservative management
- b. Large hematocele: drainage (compression may cause testicular ischemia)

- **Hematoceles from testis rupture:** surgical exploration and testicular repair

Testicular trauma

- Most testicular injuries are caused by blunt trauma

- **Testicular Rupture (Testicular Fracture)**
- tear in the tunica albuginea, resulting in extrusion of seminiferous tubules and hematocele
- Testicular rupture is an emergency that requires prompt surgical repair.
- 80-90% of testicles are salvaged when surgery is performed within 72
- hours after blunt trauma, whereas only 32-45% are salvaged when surgery is delayed beyond 72 hours
- Scrotal ultrasound usually detect the tear site
- prompt surgical exploration and repair is indicated even when the scrotal ultrasound is inconclusive

Testicular dislocation

- Traumatic testis dislocation is displacement of the testis to a position outside the scrotum.
- usually occurs from blunt trauma to the scrotum or the perineum, especially high-speed motorcycle accidents when the rider’s scrotum and perineum impact the motorcycle's fuel tank.
- Patients present with testicular pain and an empty ipsilateral hemiscrotum
- ultrasound or CT may help localize the testis
- Management requires prompt surgical exploration and orchiopexy

EPIDIDYMITIS/ORCHITIS

- **Epididymitis** is inflammation of the epididymis
- **Edpididymo-orchitis:** inflammation of both epididymis and testis
- Isolated orchitis is RARE
- Can be infectious or noninfectious
- Causes:
- **Noninfectious:**

1. Testicular or epididymal tumor
2. Behcet's disease
3. Amiodaron (chemical epididymitis)

- **Infectious:**

1. In men < 35 years old: the most common cause is STD
2. In men > 35 years old, the most common is E. coli (non-STD)

- **Viral**: mumps orchitis (children)
- **Granulomatous:** caused by TB

Presentation & treatment

- most common symptom is testicular pain
- Fever
- Swelling and tenderness of the testicle, epididymis
- Scrotal erythema and edema
- Torsion is more likely when the onset of pain is sudden and extremely intense. Epididymitis is more likely when the onset of pain is gradual and progresses from mild to more intense.

- Treatment:

1. Empiric antibiotics while culture are pending according to the age group and suspected organism(STD or non-STD)
2. Scrotal support
3. Analgesics
4. Application of an ice pack

- Potential complications of epididymo-orchitis:
- a. Testis or epididymal abscess
- b. Pyocele (intrascrotal abscess)
- c. Chronic epididymitis or chronic orchitis (chronic orchialgia)
- d. Testicular atrophy (ischemic Orchitis)
- e. Infertility-

Scrotal Abscess

- Cutaneous Scrotal Abscess (Extrascrotal Abscess):
- abscess of the scrotal skin that does not extend to the tunica vaginalis (cutaneous source)
- Staphylococcus aureus is the most common organism
- Presentation:

1. redness, warmth, swelling, pain, and fluctuance
2. Fever and leukocytosis

- Treatment:
- Incision & drainage
- Systemic empiric antibiotics while culture pending

Pyocele (intrascrotal abscess)

- pus within the space between the testicle and the tunica vaginalis

- Pyocele can arise from any of the following processes:

1. Spread from an extrascrotal abscess.
2. Complication of epididymitis or orchitis
3. Pus from an intraperitoneal process
4. Direct inoculation- from scrotal surgery or penetrating trauma

- Treatment:
- incision and drainage (I & D) of the scrotal sac.
- systemic antibiotics with broad spectrum then adjust according to culture

THANK YOU