Diagnosis and Management of the Acute Scrotum

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Introduction

- The acute onset of pain ,tenderness or swelling of the scrotum or its contents is collectively referred to as the acute scrotum

Differential diagnosis

- Among broad differential ,Urological emergencies include :
  - Testicular torsion
  - Fournier’s gangrene
  - Traumatic injury

Differential diagnosis

- TT can be intravaginal vs extravaginal
- Can be intermittent ,days to months to spontaneous resolving
- TAT or TET may induce ischemia and pain of the appendage

Differential diagnosis

- Inflammation of epididymis or epididymo-orchitis typically progresses from a less severe localized epididymitis

- Causes include :
  - Adults → enteric uropathogens ,STD's
  - Paediatrics → poorly defined
  - Genitourinary abnormalities
  - Enterovirus ,adenovirus & trauma

Differential diagnosis

- Isolated orchitis → systemic vasculitis /henoch shonlein purpura ,behcet disease/ ,viruses /mumps ,TB/

- TB of epididymis accounts 10-35% of GU TB

Differential diagnosis

- Communicating and non communicating hydrocele can become inflamed and cause acute scrotum
- Varicocele might present with pain ,swelling & thrombosis
- Testicular ,pratesticular masses and mestastasis should be considered in scrotal mass
- Trauma /ruptured vs non ruptured/ ,referred pain

Epidemiology and age based consideration

- The majority of ED visits for acute scrotum in children are TT ,TAT & EO
- TT 83 % of acute scrotum episodes in neonates and infants
- TT 33-39 % of acute scrotum in adolescents
- In prepubertal boys :
  - TAT 46-70 %
  - TT 3-16 %
  - EO 11-32 %

Epidemiology and age based consideration

- EO is more common in postpubertal due to onset of sexual activity
- N.Gonorhea and C.Trachomatis in younger than 35 yrs
- Enteric uropathogens in more than 35 yrs

History & Physical Exam

- 1st modality of evaluation Hx & P.E
- S I R O D C A S P
- GU history
  - Trauma
  - UTI's
  - Anomalies
  - Previous episodes

- Onset in TT vs TAT ,EO
- Associated symptoms TT vs TAT ,EO
- Gradual onset of pain with swelling ,epididymal tenderness & Dysuria ??!!

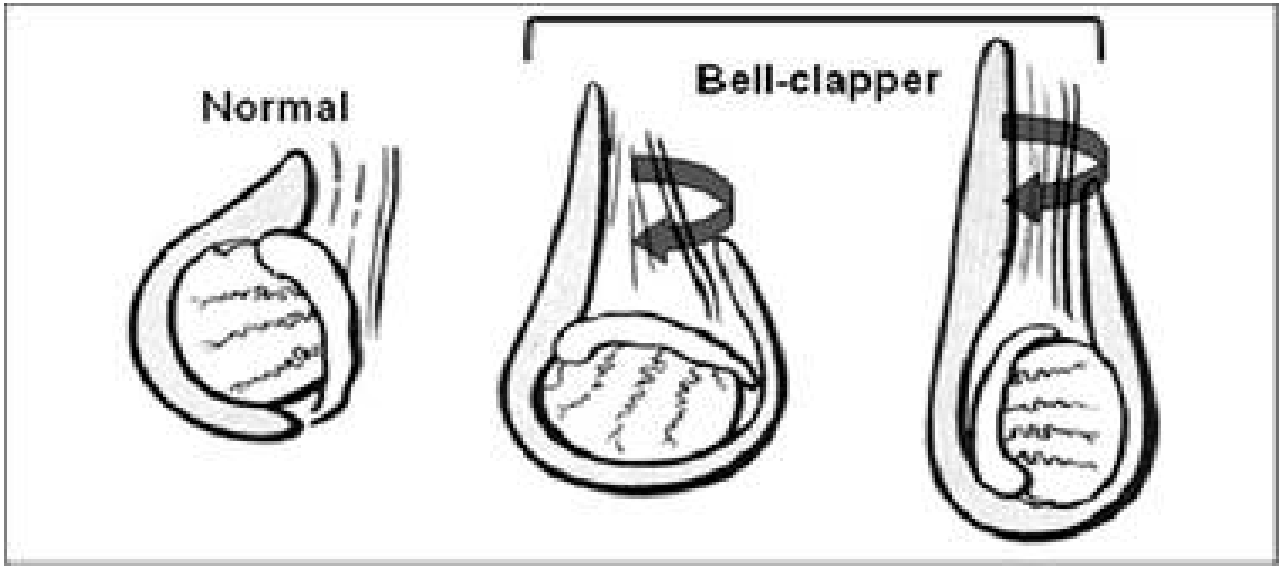
- Physical exam must establish discomfort status & distress

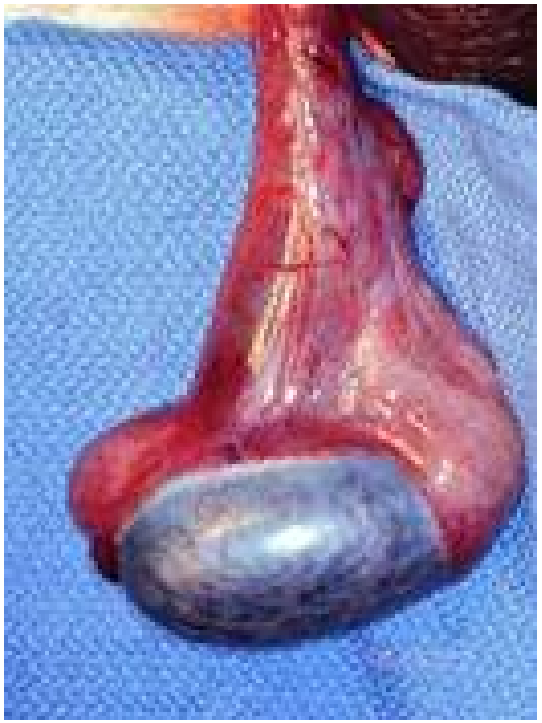
- Starting from least painful areas with abdominal assessment ??!!

- Genital exam :
  - Inspection
  - Cremasteric reflex (present vs absent) ??!!
  - Palpation (testis ,epididymis & spermatic cord)
  - Trasnilliumination vs Doppler Ultrasound
  - Sacral spine inspection

History & Physical Exam

- Clinical factors for testicular torsion :
  - Pain duration less than 24 hrs
  - Nausea/Emesis
  - Absent Cremasteric reflex
  - Abdominal pain
  - High position of testis (Bell-Clapper deformity)
  - Prhen’s sign

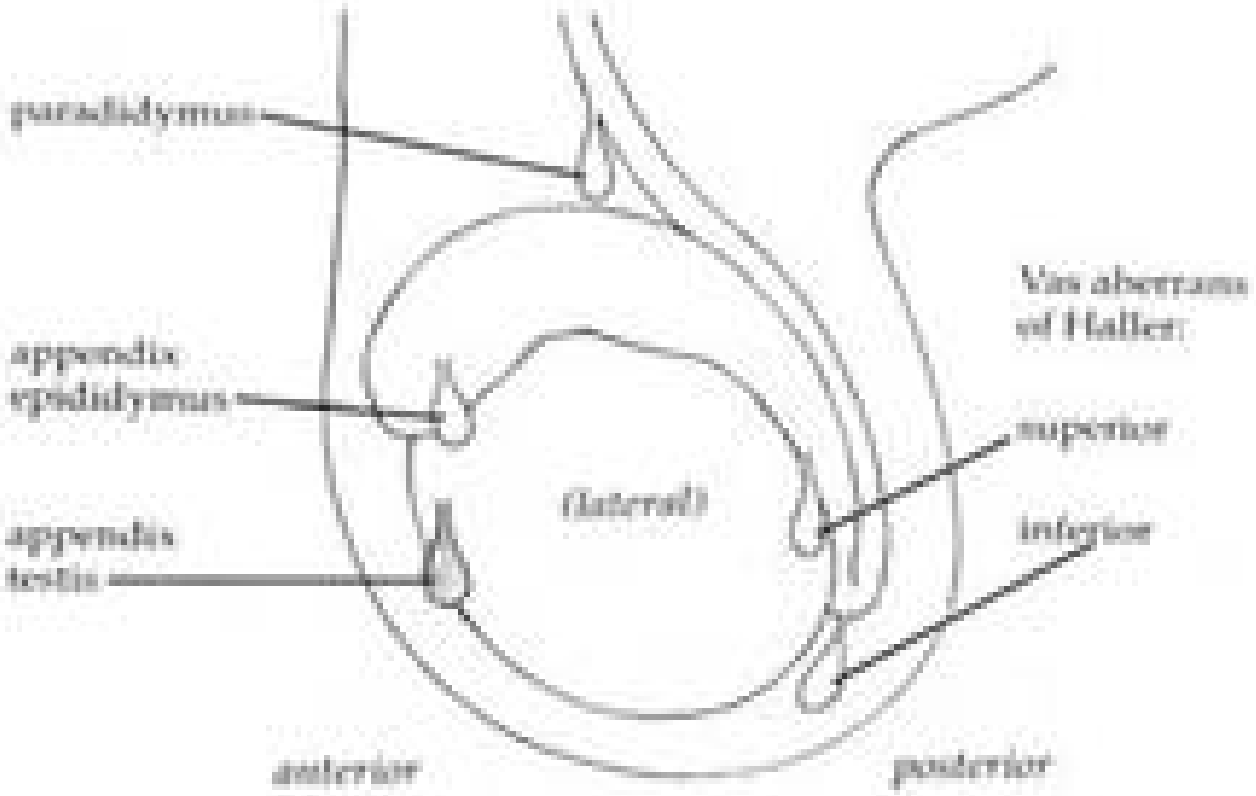

Normal
Bell-clapper



History & Physical Exam

- TAT (Testicular Appendicular Torsion) gradual onset of pain ,less nausea/emesis
- Cremasteric reflex ?
- Tenderness ?
- Blue dot ? % ?

- TOT vs EO
  - Dysuria and tender epididymis ?
  - Positive blue dot ?
  - Fever ?


paradidymus
appendix epididymus
appendix testis
vas aberrans of Haller
superior
inferior
(lateral)
anterior
posterior

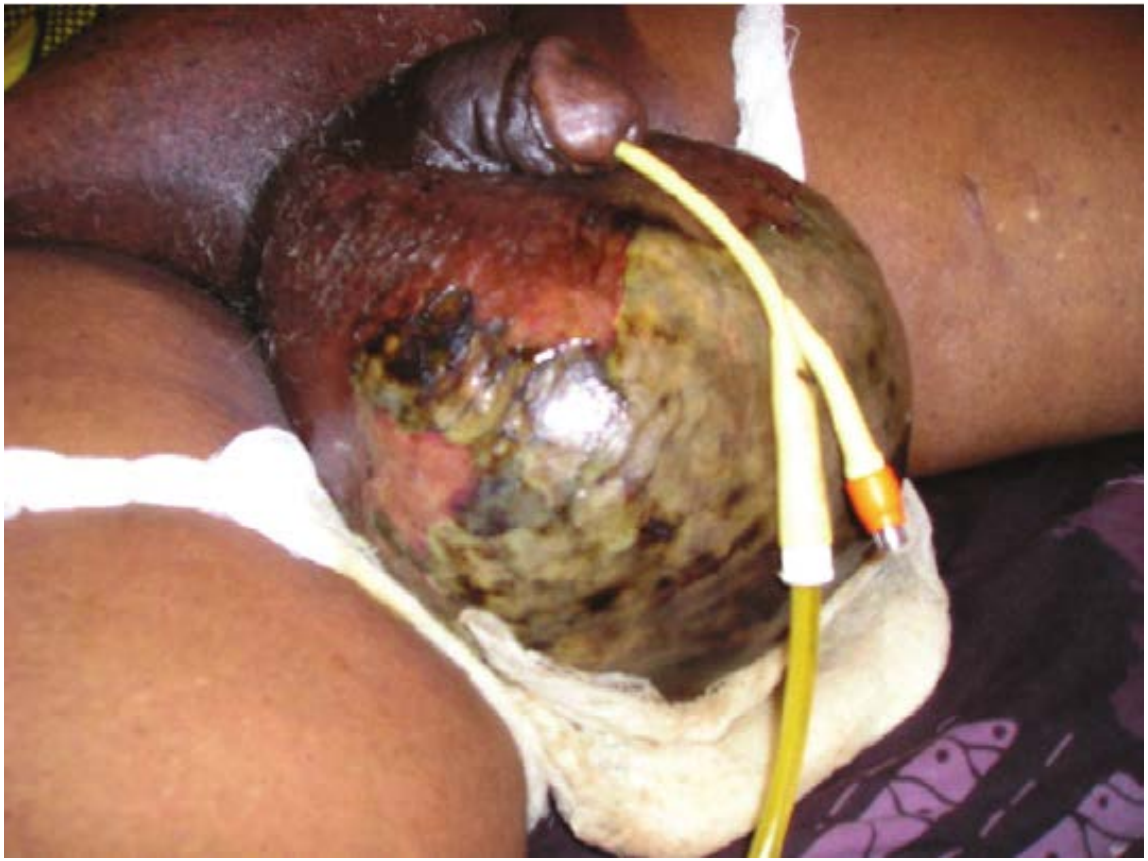
History & Physical Exam

- Inguinal reducible hernia might present with scrotal pain
- Non reducible hernia ?!

- Testicular Mass & Scrotal pain ?!

- Haematocele & Trauma ?!
- Hydrocele & pain ?!

- Skin & soft tissue infection ?!

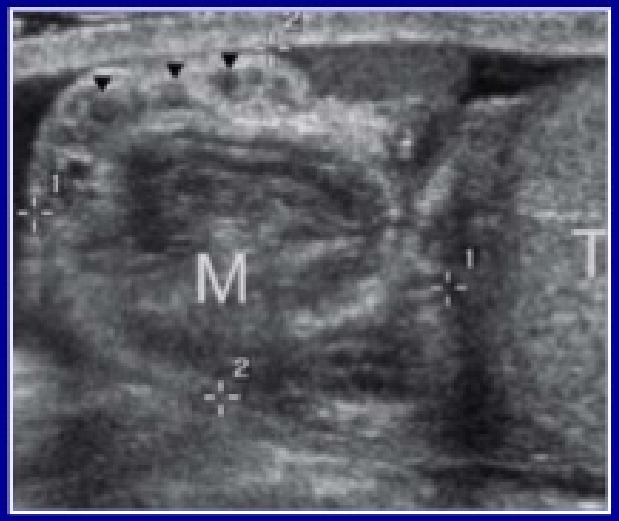


Diagnostic Evaluation

- DUS is the single most adjunct to Hx & P.E in Acute Scrotum evaluation
  - Confirms emergencies (TT ,ruptured albuginia)
  - Confirms urgencies (Masses)
  - Blood flow (sens. 70-100% ,spec. 88-100% ,PPV 100% ,NPV 97%)
  - Expertise dependent
  - Equivocal result ?!

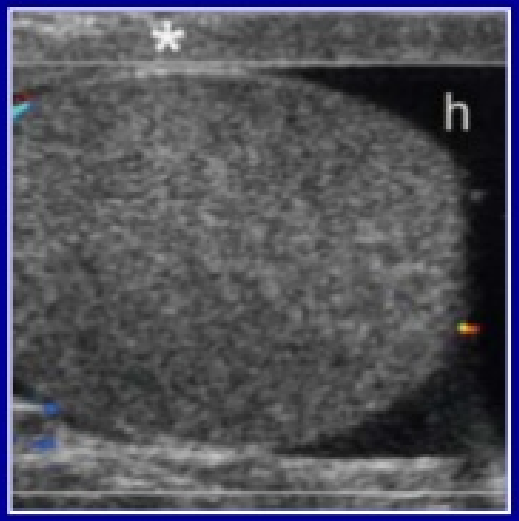
Acute torsion / whirlpool sign of spermatic cord

Right spermatic cord



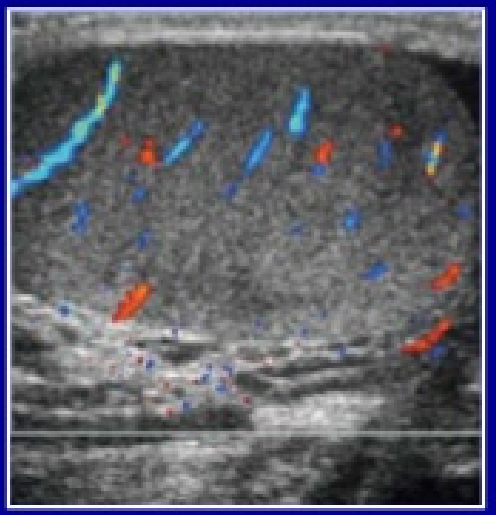
Edematous spermatic cord
with anechoic structures
"dilated lymphatic vessels"

Right testis



Absence of color flow
Reactive hydrocele
Scrotal wall thickening

Left testis



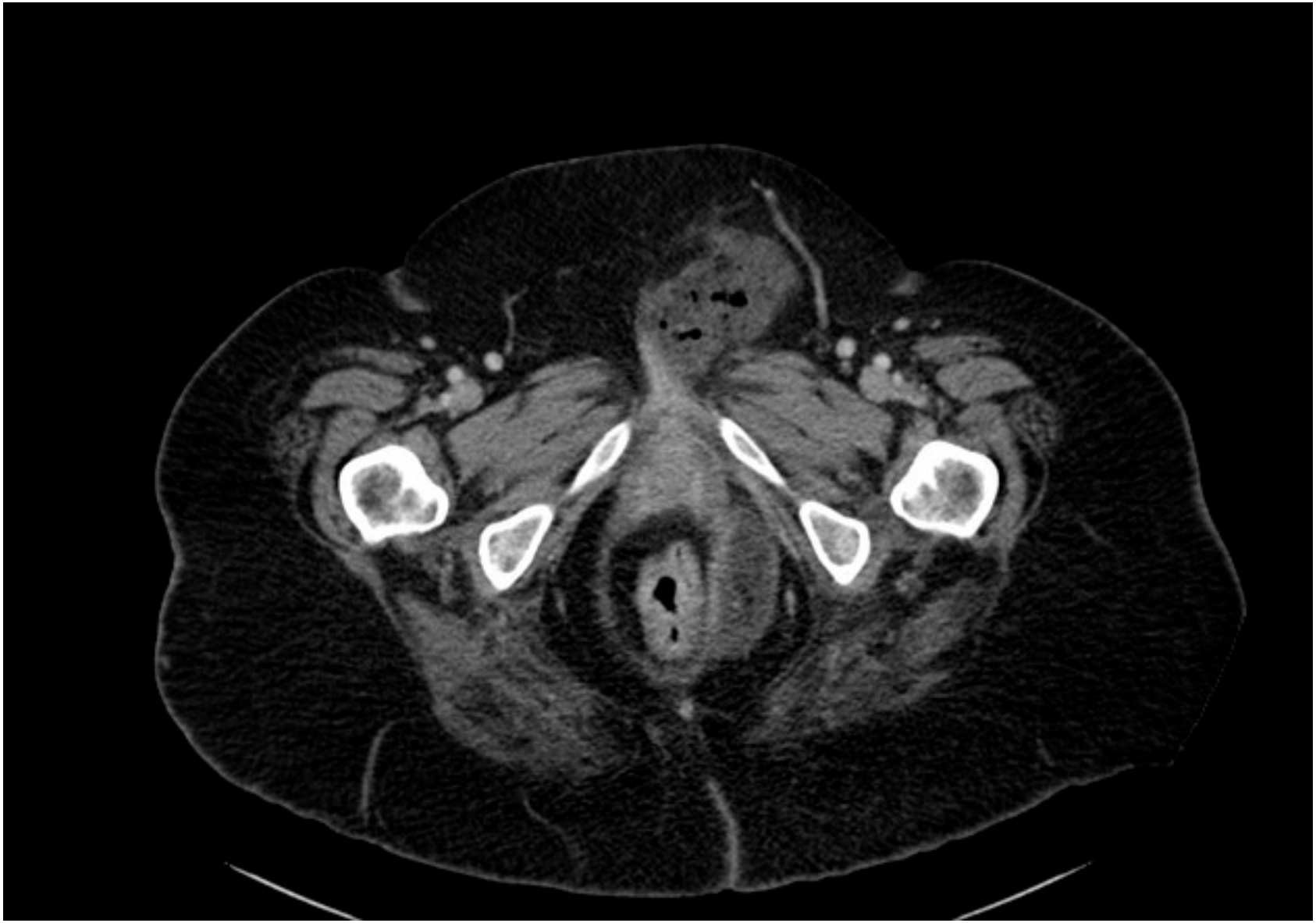
Normal color flow

Aso C et al. RadioGraphics 2005 ; 25 : 1197 – 1214.

Diagnostic Evaluation

- CT scan in Fournier suspected
- Testicular or Paratesticular mass ?! Labs?!
- Suspected referred pain ? Imaging ?

- Labs are used to identify Acute Bacterial EO from Uropathogens and STD



Diagnostic Evaluation

- U.A & U.Cx should be performed in pediatrics to identify bacterial infections ,GU anomalies & Enteric communications
- Viral serology & Haematologic examination in Viral & Vasculitis associated Orchitis
- Nucleic acid amplification tests in sexually active patients

Operative management

- Testicular torsion
- Fournier gangrene
- Testicular rupture
- Testicular trauma ?!
- Testicular/Paratesticular mass ?

Operative management

- Surgical exploration confirms :
  - TT 51-77 %
  - TAT 23-25 %
  - EO 4-9 %

- TT with exploration in > 12 hrs had salvage rate < 60% ,Atrophy >40%

- Salvaged testicle should be monitored 6-12 months for atrophy documentation

Operative management

- Torsed Testis :
  - Ischaemic appearence
  - Bluish hue
  - Swelling
  - Bell clapper deformity

- Warm vs Ice appliance
- Orchiectomy & Orhiopexy ?

Operative management

- TAT ?
- Hernias ,Hydrocele
- Trauma ,Gunshots ,large or expanding Haematoma
- Haematomas < vs > 5cm ?!
- Abscesses ?
- Infection spreads along fascial planes
- Testicular masses staging can be delayed in normal tumor markers

Non-Operative management

- Manual De-Torsion evident by
  - Relief pain
  - Testicular return to its position
  - Blood flow return on DUS
- 1/3 will retain a degree of torsion
- Scrotal exploration has to be done

Non-Operative management

- EO treatment is age dependent
  - **Sexually active** :250 mg ceftriaxone IM once ,100 mg Doxycycline po bid/10 days
  - **>35 yrs** 500 mg Levofloxacin po daily/10 days OR 300 mg Ofloxacin po bid/10 days
  - **Anal course** engaged ?!

Non-Operative management

- EO in prepubertal rarely bacterial ,mainly supportive
- Positive urine cultures , 7-10 days po Abx
- 47 % of children with EO had GU anomalies
- TAT
- Viral ,vasculitis associated orchitis ,scrotal idiopathic edema

Testicular torsion

- Px. : acute pain ,nausea ,vomiting ,high riding testicle
- Dx. : absent flow on DUS
- Tx :surgical exploration ,bilateral orchiopexy ,possible orchiectomy

Appendage torsion

- Px. : gradual pain ,focal tenderness ,blue dot sign
- Dx. : testicular flow on DUS
- Tx : observation ,activity restriction ,NSAID’s

Epididymo-orchitis

- Px :gradual pain ,epididymal tenderness ,srotal erythema

- Dx : testiculat flow on DUS ,U/A & U/Cx ,age < 35 ,STD testing

- Tx :

1. Prepubertal : scrotal support ,NSAID’s
2. Age < 35 : Ceftriaxone/Doxycycline
3. Age > 35 : Levofloxacin

Fournier Gangrene

- Px : fever ,scotal erythema ,crepitus
- Dx :abscess on DUS ,wound cultures ,CT
- Tx : wide local debridment(s) ,parenteral antibiotics ,close monitoring

Orchitis (viral ,vasculitis ,TB)

- Px : fever ,testicular pain ,scrotal erythema ,Parotits (mumps) ,Purpura (Henoch-schonlein)
- Dx : testicular flow on DUS ,viral serology
- Tx : activity restriction ,NSAID’s (if viral),Glucocorticoids (vasculitis),antibiotics (TB)

Inguinal hernia

- Px : gradual pain ,hernia on exam
- Dx : hernia sac without/with omentum or bowel on DUS
- Tx : manual reduction ,surgical repair

Trauma

- Px : traumatic event ,scrotal swelling
- Dx : DUS with testicular flow ,hematoma
- Tx : scrotal exploration for testicular rupture or large hematoma

Hydrocele/hematocele

- Px : scrotal swelling
- Dx : fluid or blood filled sac on DUS
- Tx : observation ,surgical correction

Varicocele

- Px : bag of worms
- Dx : large veins on DUS
- Tx : surgery for symptomatic cases or Infertility

Testicular/Paratesticular mass

- Px : mass on exam ,gradual onset
- Dx : mass on DUS ,tumor markers
- Tx : orchiectomy ,surgical excision

Idiopathic scrotal edema

- Px : scrotal swelling ,gradual onset
- Dx : normal DUS
- Tx : observation ,scrotal support

Referred pain

- Px : non focal exam ,non tender scrotum
- Dx : normal DUS ,consider CT scan
- Tx : evaluation for retroperitoneal pathology


Thank
You