

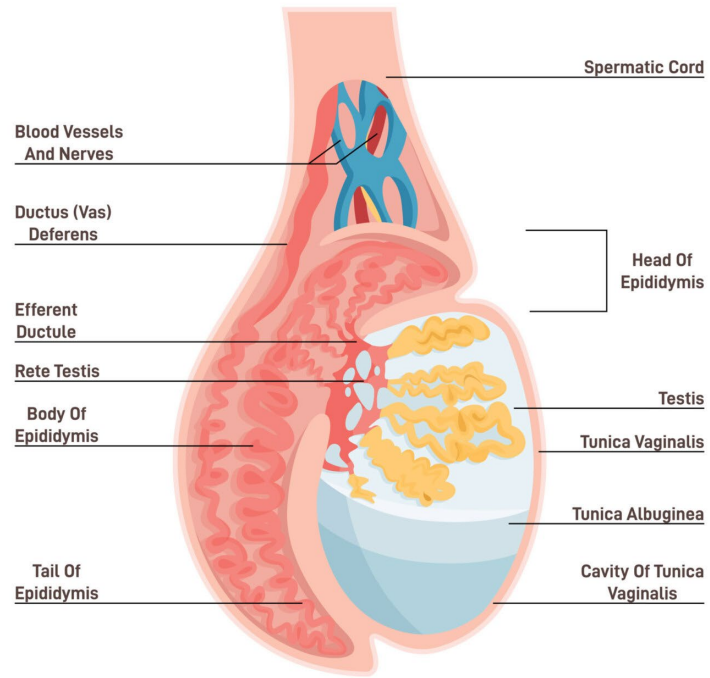
# Scrotal Pain

Presented by  
Dr Ayah Elayan

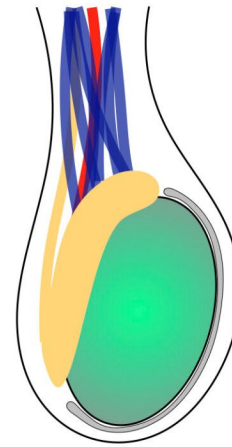
# Clinical Approach to Acute Scrotal Pain

- **Objective:** To differentiate between surgical emergencies (Torsion) and medical conditions (Epididymitis/Orchitis) using history, examination, and targeted investigations.
- **Key Concept:** "Time is Tissue"—A delay in diagnosing torsion leads to testicular loss.

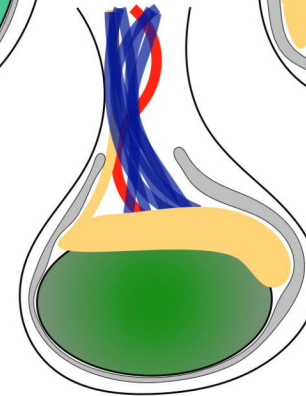
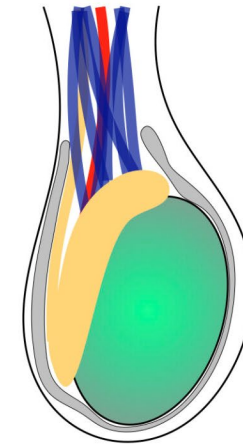
# Testicular Structure



## Normal



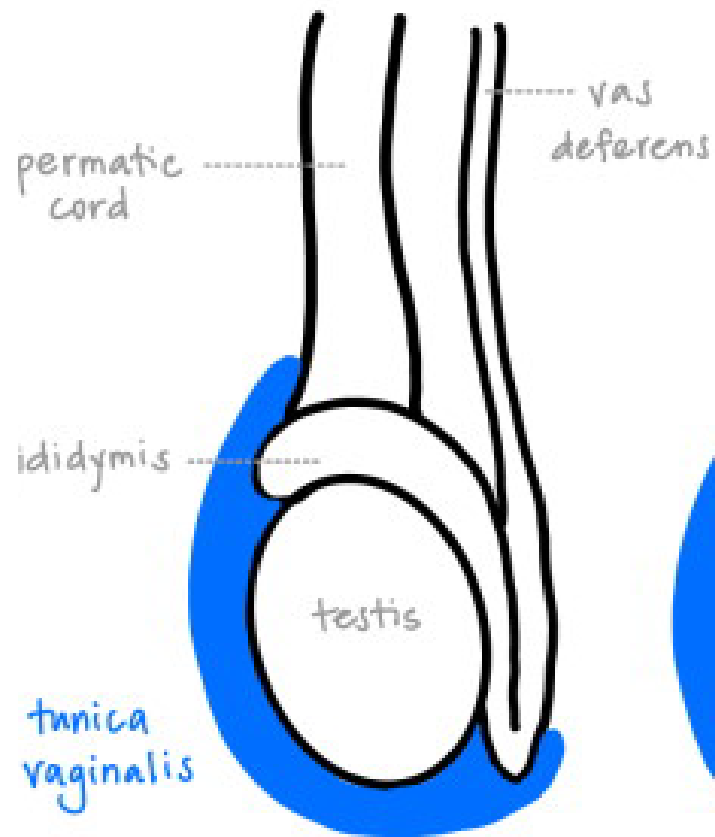
## Bell clapper



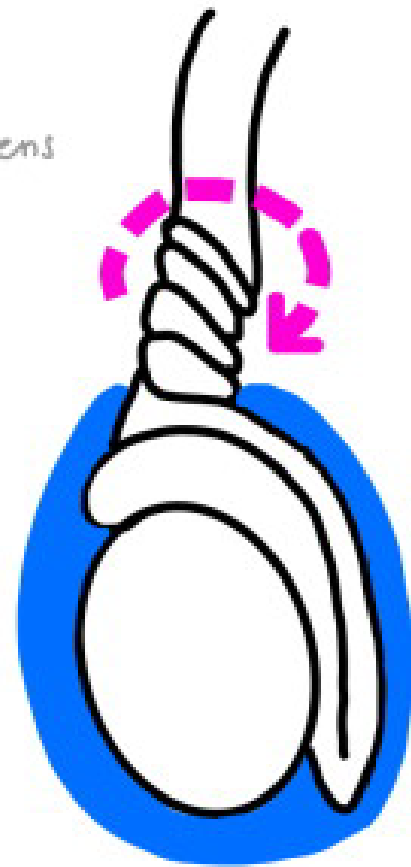
## Bell clapper with torsion

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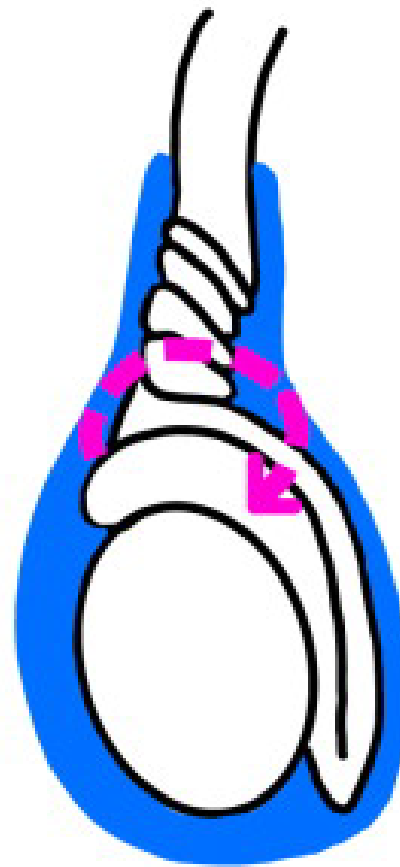
- In the **'bell-clapper' deformity**, there is high investment of the tunica vaginalis, leading to a horizontal lie and increased free space for the testicle to move . This can then lead to **testicular torsion** as the spermatic cord twists cutting of the blood supply to the testicle. It is thought approximately 10% of the male population have this deformity, but torsion happens less frequently, with no clear triggering event identified



A. NORMAL



B. EXTRAVAGINAL TORSION



C. INTRAVAGINAL TORSION



D. BELL-CLAPPER DEFORMITY

Feature	Intravaginal Torsion	Extravaginal Torsion
Primary Age	Adolescents (Puberty)	Neonates (Newborns)
Location of Twist	Inside the tunica vaginalis	Above/Outside the tunica vaginalis
Anatomical Cause	Bell-clapper deformity	Lack of tunica-scrotal fusion
Salvage Rate	High (if caught within 6 hours)	Very Low (often occurs in utero)
Bilateral Risk	High (Fix both sides)	Low (Usually sporadic)

# The Initial Clinical Assessment

- **The Focused History:**
  - **Onset:** Sudden (Torsion) vs. Gradual (Inflammation).
  - **Associated Symptoms:** Nausea/Vomiting (Common in Torsion), Dysuria/Discharge (Common in Infection).
  - **Age Factor:** Puberty/Adolescents (High risk for Torsion), Sexually active <35 (STI risk), >35 (Enteric UTI risk).
- **Past Medical History:** Previous episodes (intermittent torsion) or recent instrumentation/catheterization.

# Physical Examination

- **Inspection:** Assess testicular lie (horizontal lie suggests torsion) and skin changes (erythema/edema).
- **Palpation:** Locate the maximal point of tenderness (Testis vs. Epididymis).
- **Specific Clinical Signs:**
  - **Cremasteric Reflex:** Stroke the inner thigh. **Absence** is highly suggestive of Torsion (Sensitivity 88%).
  - **Prehn's Sign:** Elevation of the scrotum relieves pain in Epididymitis but **not** in Torsion.
  - **Blue Dot Sign:** Pathognomonic for Torsion of the Appendix Testis.

# Testicular Torsion

- **The Mechanism:** Spontaneous twisting of the spermatic cord (usually medially) within the tunica vaginalis.
- **Ischemic Cascade:** Venous occlusion occurs first → congestion and edema → arterial occlusion → irreversible hemorrhagic infarction.
- **The "Bell-Clapper" Deformity:** A congenital abnormality where the tunica vaginalis high-attachment allows the testis to rotate freely (often bilateral).

# Torsion of the Appendix Testis

- Infarction of a vestigial remnant of the Mullerian duct (located at the superior pole).
- Causes localized inflammation but does not threaten the viability of the testis.

# Detailed Clinical History

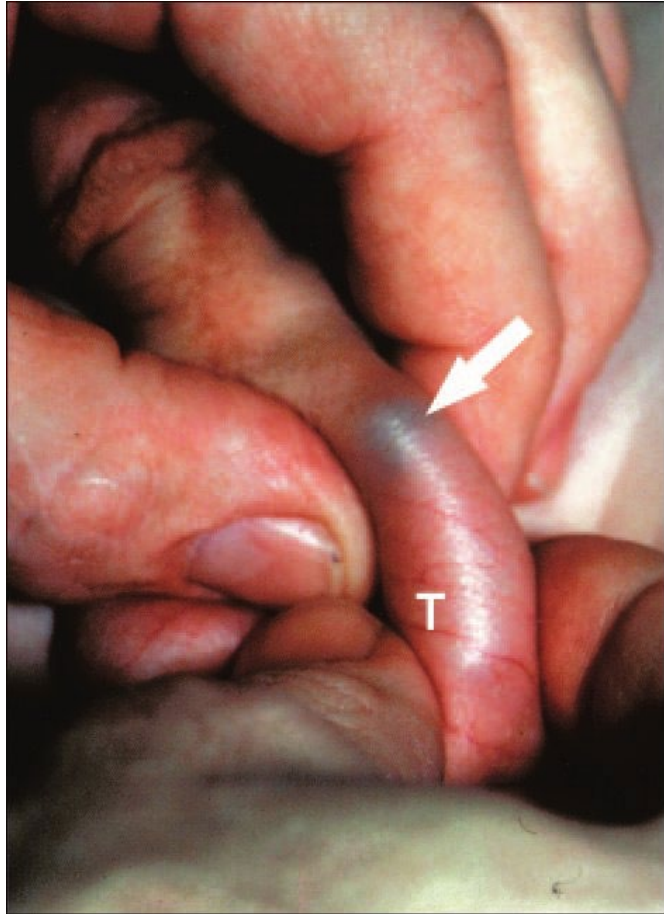
- **Inspection (Position & Lie):**
  - **Horizontal Lie:** The testis rotates from vertical to horizontal.
  - **High-Riding Testis:** The shortening of the cord pulls the testis toward the inguinal canal.

# Detailed Clinical History

- **Palpation (Localization):**
  - **Epididymal Tenderness:** Tenderness localized *posterior* to the testis (early Epididymitis).
  - **Global Tenderness:** Generalized pain making the testis indistinguishable from the epididymis (Advanced Torsion or Orchitis).

# The "Blue Dot Sign"

- A small, tender, blue-tinged nodule at the superior pole (Diagnostic for Appendix Testis Torsion).



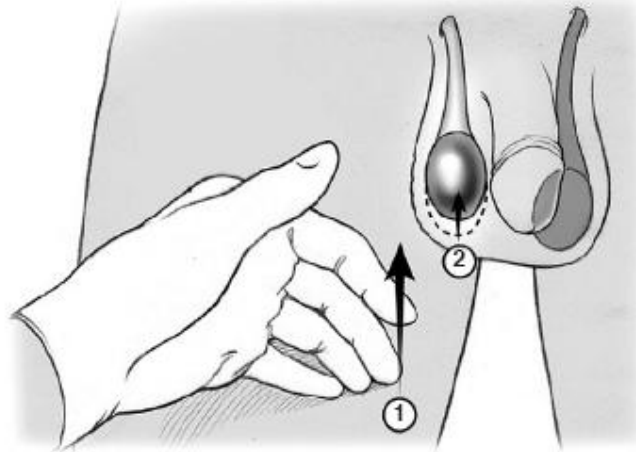
# Validated Clinical Signs

- **Cremasteric Reflex (Sensitivity 88%):**
  - *Technique:* Stroke the medial thigh.
  - *Mechanism:* L1-L2 nerve root reflex.
  - *Interpretation:* If **absent**, assume Torsion until proven otherwise.

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**Figure 3. Cremasteric Reflex**

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The reflex is elicited by (1) stroking the ipsilateral inner thigh with a tongue depressor or gloved hand, resulting in (2) the elevation of the testicle through contraction of the cremasteric muscle.

*From: Davis JE. Chapter 31: Scrotal Pain, in Mahadevan SV, Garmel GM, eds. An Introduction to Clinical Emergency Medicine: Guide for Practitioners in the Emergency Department. New York: Cambridge University Press; 2005:p466. Reprinted with the permission of Cambridge University Press.*

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# Prehn's Sign

- *Technique*: Elevate the scrotum toward the symphysis pubis.
- *Interpretation*: Relief of pain = **Positive** (suggests Epididymitis). Persistent pain = **Negative** (suggests Torsion).
- *Caveat*: Not 100% reliable; never use it to exclude Torsion in a young patient.

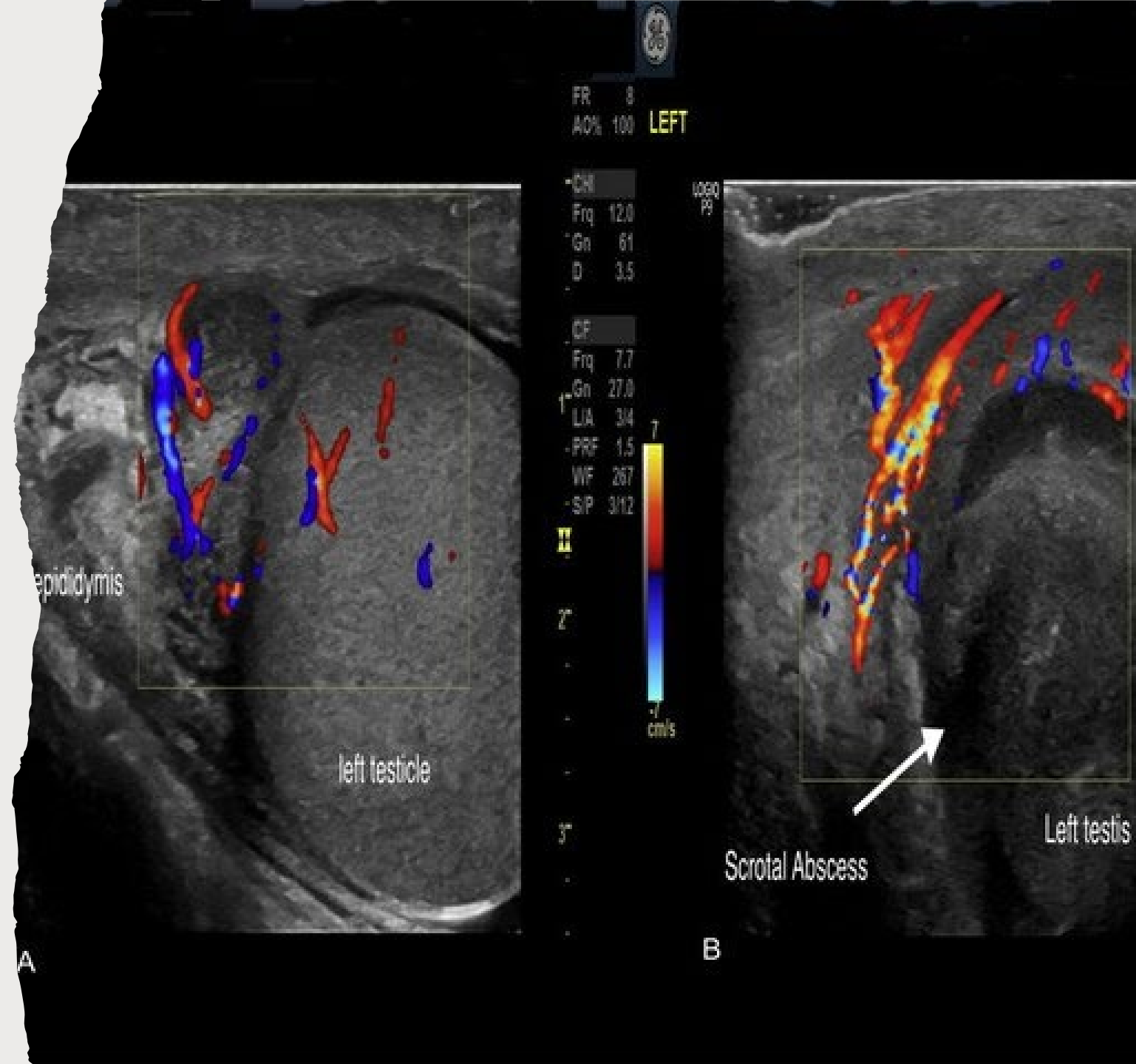
# Differential Diagnosis by Age Group

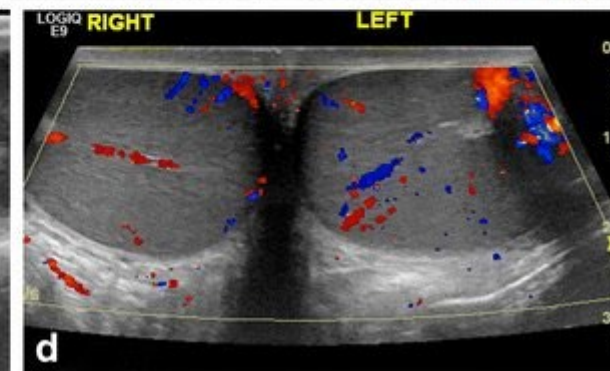
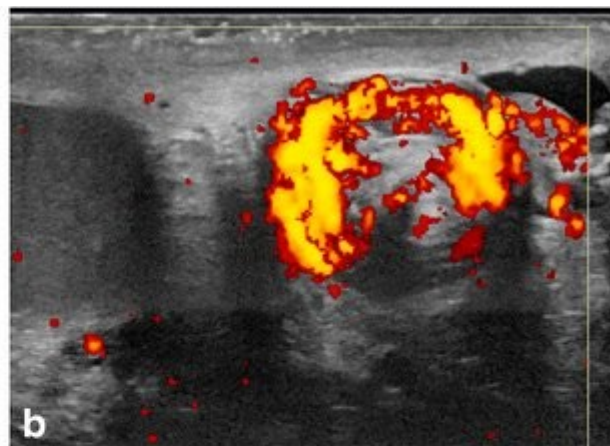
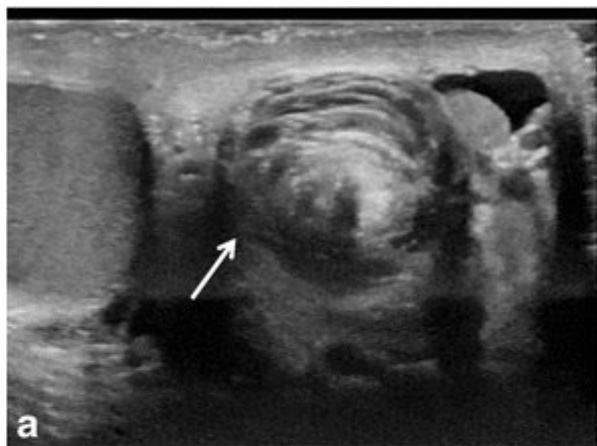
- **Neonates:** Extravaginal torsion (twisting of the cord *outside* the tunica vaginalis).
- **Pre-pubertal (7–12 years):** Torsion of the Appendix Testis (most common cause in this age group).
- **Adolescents (12–18 years):** Testicular Torsion (highest incidence).
- **Adults (<35 years):** Epididymitis secondary to *Chlamydia* or *Gonorrhoea*.
- **Older Adults (>35 years):** Epididymitis secondary to *E. coli* (often associated with BPH or UTIs).

# Investigation & Imaging Protocol

- **Urinalysis:** Look for pyuria or bacteriuria. (Note: 15% of Torsion cases may have abnormal urine, so it doesn't exclude it).
- **Doppler Ultrasound:**
  - **Torsion:** Shows decreased or absent "Whirlpool Sign" (twisting of the cord) and absent arterial flow.
  - **Epididymitis:** Shows **Hyperemia** (increased blood flow) and an enlarged, hypoechoic epididymis.

- a. Initial doppler ultrasound showing enlarged left epididymis with heterogeneous echopattern and increased vascularity suggesting epididymitis and intact testicular blood flow. b. Follow-up ultrasound showing absent blood flow to the left testicle as well as development of scrotal abscess.





**Crucial Rule:** If the clinical suspicion is high and the "Golden 6 Hours" are passing, **skip the ultrasound** and go straight to the Operating Theatre.

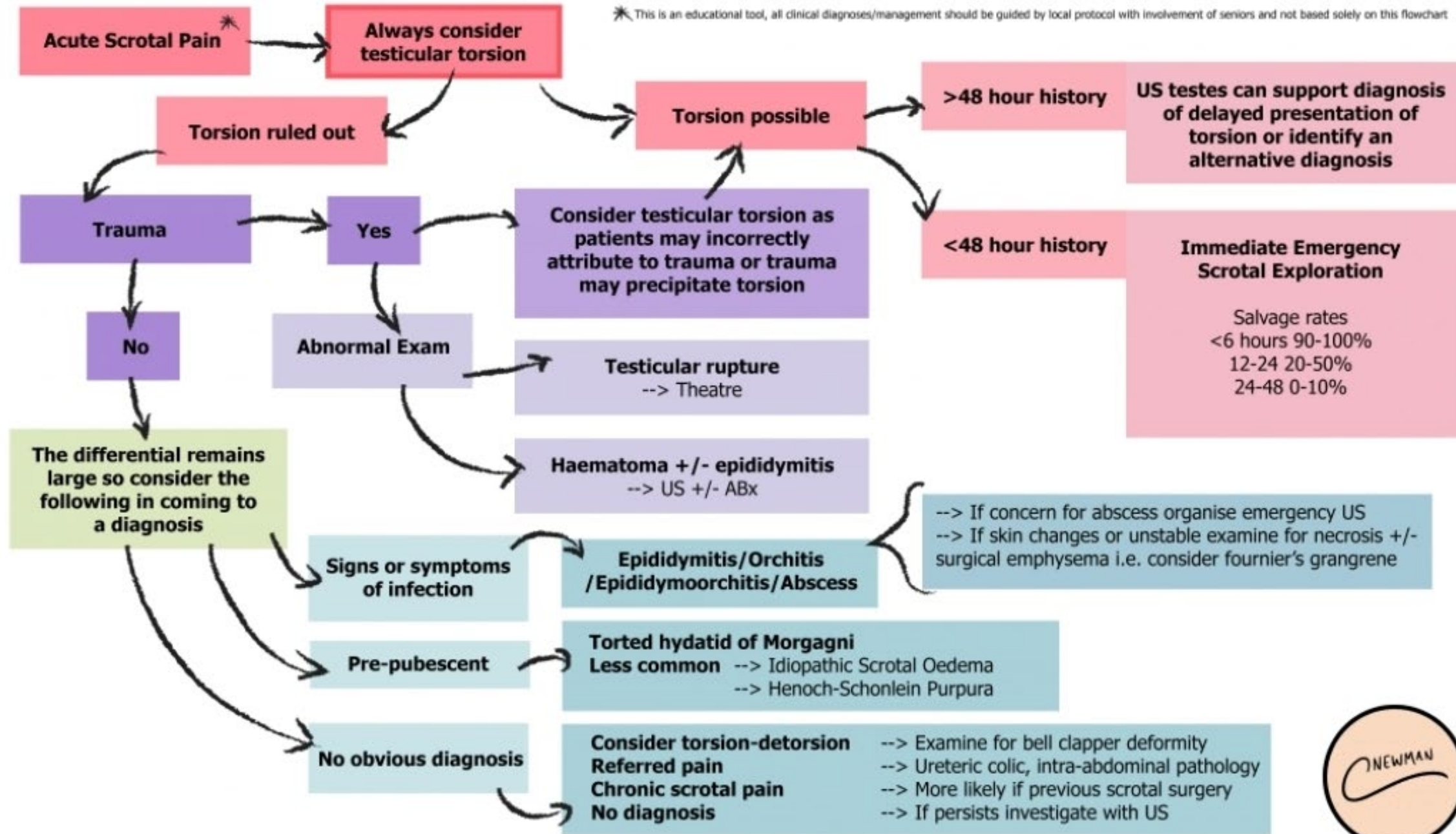
# Management & Surgical Principles

- **Surgical Exploration:**
  - Inguinal or Scrotal incision.
  - **Intra-operative Manual Detorsion:** Untwist (usually "opening a book" motion—medial to lateral).
  - **Assessment of Viability:** Wrap in warm saline-soaked gauze for 10-20 mins. If pinks up → Save; if black/necrotic → Orchidectomy.
- **Orchidopexy**

# Non-Urological

- **Incarcerated Inguinal Hernia:** Bowel in the scrotum; patient may have bowel obstruction signs (vomiting, distension).
- **Fournier's Gangrene:** A life-threatening necrotizing fasciitis. Look for:
  - Sepsis/Toxemia.
  - **Crepitus** (crunching sensation under the skin due to gas).
  - Severe pain out of proportion to skin findings.
- **Henoch-Schönlein Purpura (HSP):** Vasculitis in children. Look for the classic purpuric rash on the buttocks/legs.

\* This is an educational tool, all clinical diagnoses/management should be guided by local protocol with involvement of seniors and not based solely on this flowchart



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