



Episode 144 Testicular Torsion

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Testicular torsion occurs via twisting of spermatic cord leading to impaired blood flow to the testicle, causing ischemia and potentially tissue necrosis. A bell clapper deformity is a predisposing factor in testicular torsion where the tunica vaginalis attaches high on the spermatic cord, leaving the testis free to rotate within the tunica vaginalis.

Time is Testes

Historically, we thought the time window for possible salvage and survival of a torsed testicle is 6-8 hours. However, more recently it has been recognized that survival percentages are significant beyond the commonly held 6 to 8-hour time frame and even after 24 hours. During this time, there may be intermittent torsion detorsion, leading to the variable spectrum of salvageability and difficulty in predicting the precise onset of irreversible ischemia.

Bottom line: Duration of symptoms should not guide management decisions. All cases of suspected testicular torsion must be treated as a surgical emergency, even if the time from onset is beyond 6-8 hours. The sooner the testicle is de-torsed, the more likely salvageability.

Epidemiology

Testicular torsion can occur at any age, but it is primarily associated with a bimodal distribution in the first year of life and in adolescence. Although exceedingly rare, there are case reports of testicular torsion occurring in men over the age of 40. We should therefore still maintain an index of suspicion for testicular torsion in older men.

Classic Signs and Symptoms of Testicular Torsion

1. Acute unilateral pain
2. Scrotal erythema, edema and swelling
3. Absent cremasteric reflex
4. Position: high, horizontal lie
5. Nausea and vomiting

Acute unilateral pain

Most patients with testicular torsion will present with sudden onset of severe unilateral testicular pain, often radiating to the groin/abdomen/flank. However, there are subsets of patients who will present with gradual onset of pain, minimal or no pain, intermittent pain caused by intermittent torsion/detorsion or resolution of their initial severe pain followed by reduced pain. Up to 20% of patients with testicular torsion will present with isolated lower abdominal pain. All male patients presenting with lower abdominal pain should have a gentle examination for signs of torsion.

Swelling

Scrotal erythema, edema and testicular swelling are commonly reported in patients with torsion. However, these findings also overlap in patients with epididymitis and torsion of the appendix testis. Swelling is a sensitive but not specific sign.

Absent Cremasteric Reflex

The cremasteric reflex is elicited by lightly stroking the skin of the inner thigh. Normally, this causes the cremaster muscle to contract and elevate the testicle. Studies report varying sensitivities as low as 60%. **The presence of a cremasteric reflex presence does not rule out torsion.**

Position of testis

While the presence of an elevated testicle (OR = 58.8) and a horizontal testicular lie increases the likelihood of testicular torsion, it is often difficult to palpate the testicle discretely and determine the position.

Prehn's Sign

Prehn's sign is the relief of pain with elevation of the testis commonly seen in patients with epididymitis. It does *not* distinguish epididymitis from torsion. One cross section study of 120 patients found the Prehn's sign was present in 91% of patients with torsion and 21% of those with epididymitis.

TWIST (Testicular Workup for Ischemia and Suspected Torsion) Score

Proposed score for assessing testicular torsion in patients < 18 years of age (Barbosa 2013) and (Frohlich 2017)

Finding	Points
Testicular swelling	2
Hard testicle	2
Absent cremasteric reflex	1
Nausea or vomiting	1
High-riding testicle	1

- PPV 100% when 7 points
- NPV 96% when <5 points

Our experts recommend *against* using the TWIST score to rule *out* torsion, however a score of 7 may warrant urgent urology consult without further imaging. The TWIST score requires further multi-center validation (SGEM 2018).

Bottom line:

“No discriminating features, in either history or examination conclusively differentiate the correct diagnosis when it comes to testicular torsion” (Sidler 1997)

Diagnosis

In patients where there is a high index of suspicion for torsion, urgent surgical consultation should not be delayed by diagnostic imaging. Our experts recommend parallel expert consultation and ultrasound imaging when feasible.

Scrotal Doppler Ultrasound

Diagnostic characteristics

- Sensitivity: 88 – 100% (+LR = 8.8-10)
- Specificity: 90%

Diagnostic findings

- Enlarged, hyperemic testicle
- Increased echogenicity
- “Whirlpool sign” spiral like pattern of the spermatic cord
- Decreased doppler flow compared to contralateral side

Color Doppler ultrasound is not always accurate and is subject to false negatives. A partially-torsed testicle may exhibit arterial flow but no venous flow, or may show an abnormal high-resistance pattern of arterial flow. When an ultrasound is non-diagnostic, and the clinical presentation remains concerning, urology consultation remains warranted.

Testicular torsion vs. torsion of testicular appendage

Although a relatively rare phenomenon, the appendix testis is responsible for 92% of testicular appendage torsion with the appendix epididymis accounting for the remainder. These appendages have no physiological function. These presentations are often prepubertal, with sudden onset pain (usually more moderate in severity) and located midline in the scrotum.

A “blue dot sign” is considered pathognomonic, although very rarely clinically seen. This is an area less than 3mm with a pale bluish discoloration present on the scrotum at the superior pole caused by the cyanotic appendage beneath the scrotal wall.

Diagnosis can be confirmed by color Doppler ultrasound. Treatment relies on supportive care with analgesia and scrotal support. The appendage autoamputates in roughly one week.

Management of Testicular Torsion

All patients with suspicion for testicular torsion should have immediate urology consultation for potential operative exploration and repair. **Manual detorsion** using the *open book technique* should only be attempted in instances where there is a significant delay to definitive surgical management due to unforeseen circumstances or in remote locations. Manual detorsion has a poor success rate as up to 1/3 of patients will be torsed in the opposite direction that is assumed by the open book technique.

Take Home Points

- Consider the diagnosis of testicular torsion in all patients with acute testicular pain irrespective of age
- Duration of symptoms should not guide urgency of management. All cases of suspected testicular torsion must be treated as a surgical emergency
- The presence of a cremasteric reflex does not rule out torsion
- History, physical examination and ultrasound all have significant limitations in making the diagnosis. The gold standard is surgical exploration

- Torsion of the testicular appendage has similar presentation but only requires supportive care. The diagnosis is confirmed with ultrasound

Top 3 urology pearls from the urologist's perspective

1. For suspected penile fractures (a tear in the tunica albuginea), a penile ultrasound in the ED can optimize surgical outcomes and planning for definitive OR. Fixation is *not* a surgical emergency.
2. Unilateral kidney stones rarely cause AKI if the patient has a functional contralateral kidney. IV fluid rehydration will often correct renal function obviating the need for admission to hospital.
3. A KUB X-ray and urine pH can help guide treatment of kidney stones (monitor passage, help with dissolution and guide if the patient is a candidate for shock wave lithotripsy)

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