STEPS

STANDARIZED TOOLBOX OF EDUCATION FOR PEDIATRIC SURGERY

Testicular Torsion

APSA Education Committee
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History

- 13 year old male presents to ED with sudden right-sided scrotal pain that happened as he got up from the couch at home this afternoon, about 3 hours ago.
- 2 episodes of emesis after he starting feeling the pain. No fevers or diarrhea.
- Lying down helps the pain a little. Nothing makes the pain resolve.
- No sick exposures, no recent illnesses.
- Otherwise healthy, no significant past medical or surgical history.

Discussion of History Elements

- Unremitting, unilateral scrotal pain includes testicular torsion as well as infectious diagnoses in the differential (orchitis, epididymitis)
- Sudden pain onset can often rule out infectious etiologies.
- Fevers rare in setting of testicular torsion.
- Emesis with torsion is due to high pain experience.
- Lack of any interventions improving the pain also points to torsion as the diagnosis.

Physical Exam

- Afebrile, HR 105, BP 120/70, RR 18, 100% RA
- Perform complete physical exam, focusing on lower abdomen and genital exam.
- Testicle on side of pain will be high-riding and often transversely-positioned.
- Edema, erythema, or both of the affected hemi-scrotum.
- No cremaster reflex.
- Pain improvement with upward scrotal support.

Pitfalls

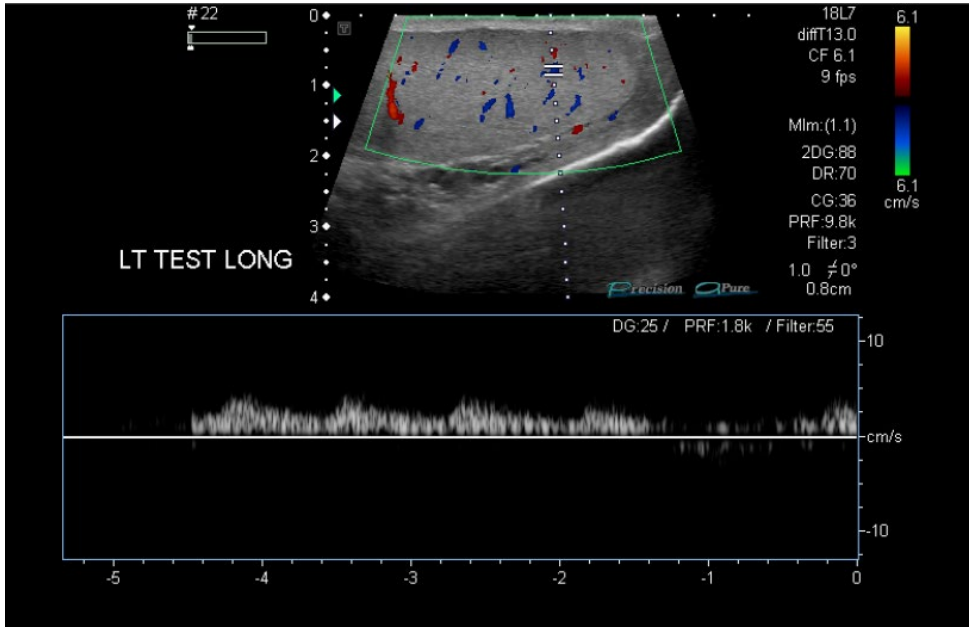
- Not doing scrotal exam if patient's complaint is described as lower-abdominal.
- Delay in time to patient assessment or diagnosis increases risk for testicular loss due to prolonged ischemic time.

Studies (Labs, Imaging)

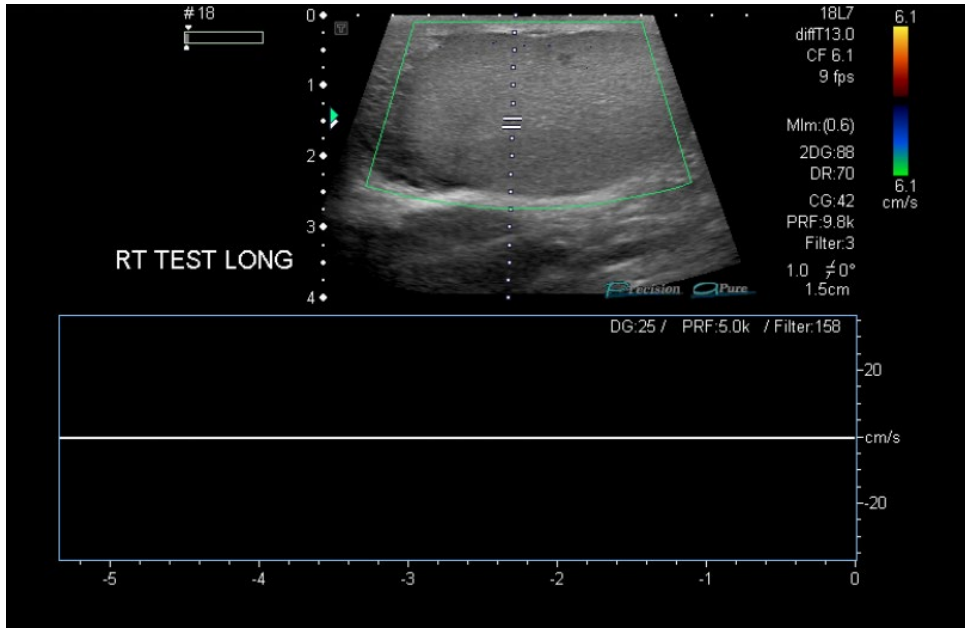
- What labs are needed?
  - Urinalysis for assessing inflammatory/infectious cause
- What imaging is needed?
  - Color Doppler ultrasound of scrotum
    - Acute torsion → slower venous drainage
    - Late torsion → no arterial or venous flow
    - “Whirlpool sign” → testicular torsion finding, not always captured on ultrasound

Study Results

- Scrotal ultrasound with color Doppler



Above: left testicle with normal internal vascular flow.



Above: right testicle with no internal flow.
Below: associated reactive hydrocele of torsed right testicle.

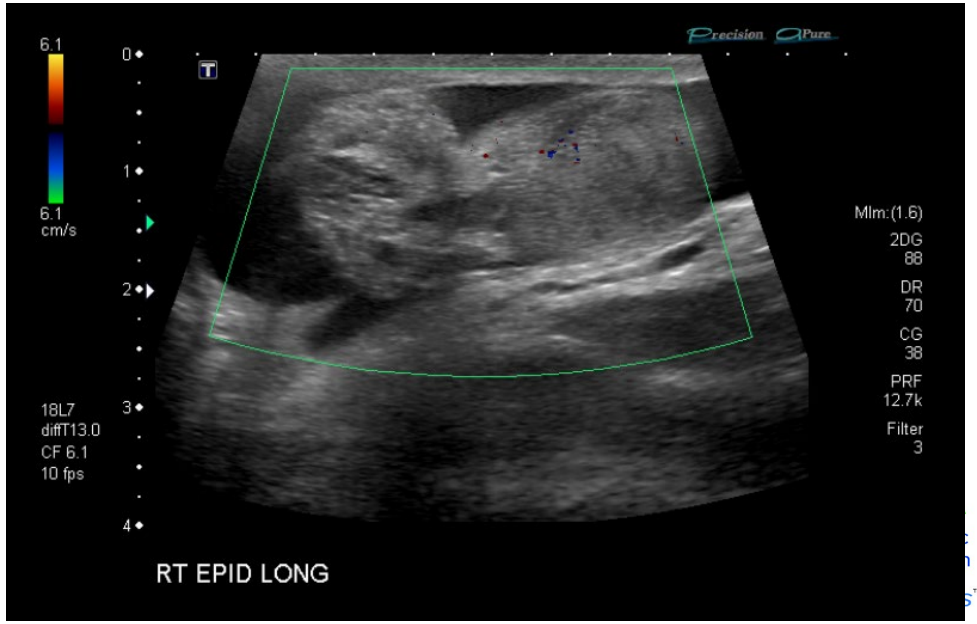


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Image credits: Janice Taylor

Case Discussion

- Diagnosis – testicular torsion (intravaginal)
  - **Intravaginal torsion:** aka bell-clapper deformity. Most commonly 12-18-year-olds. Testis does not have normal fixation within the scrotum, so has higher risk of twisting in the processus vaginalis.
  - **Extravaginal torsion:** seen in neonatal torsion. Entire spermatic cord twists, including the processus vaginalis.

- Management
  - Preoperative: NPO, IV fluids, post the case as emergent.
  - Operative: orchiopexy, possible orchiectomy; contralateral scrotal exploration with orchiopexy as indicated.

Alternatives to Surgery

- Manual detorsion/reduction
  - Medial-to-lateral rotation of the testis out of torsion.
  - May not completely reduce the torsion.
    - Can provide symptom relief and help prevent longer ischemic time if there is a delay to the OR.
  - Not considered definitive management. Patient still needs orchiopexy.

Operation

- Incision may be made through midline scrotal raphe or in transverse rugal fold in each hemiscrotum.
- Enter torsed side first. Deliver testis out of incision and reduce torsion. Doppler ultrasound may be helpful to assess vascular flow after reduction. May allow time to re-perfuse while explore contralateral side.
- Explore contralateral side to assess need for prophylactic fixation.
- Fix testes into scrotum at 3 points through the tunica albuginea using non-absorbable suture.
  - Perform orchiectomy if torsed testis is confirmed to not be viable.
- Close scrotal incision(s) with absorbable suture.

Post-Op Management

- Peri-operative
  - Admission is usually less than 24 hours.
  - Opioids not typically needed. NSAIDs/acetaminophen appropriate for pain control.
  - Scrotal support as needed.
- Long Term
  - Post-operative wound check at surgeon discretion.
  - Interval follow-up usually not required, may be indicated in setting of long ischemic time to assess for testicular atrophy.

Complications and Management

- Risk of orchiectomy
  - Risk of testicular loss increases with ischemic time over 6 hours. ~50% viability at 12 hours of ischemia.
  - Keep testicle if there is any evidence of viability, and have close follow-up after discharge.
- Orchiectomy effect on fertility
  - No major effect on fertility with loss of one testicle.
  - Effects of ischemia from torsion may affect spermatogenesis, but is not a significant cause of future infertility.

Questions

Which of the following is part of operative management of testicular torsion?

- A – Biopsy of torsed testicle
- B – Exploration of contralateral scrotum
- C – Inguinal incision for ideal exposure
- D – Aspiration of sperm from torsed testicle
- E – Manual reduction may avoid operation

Questions

Which of the following is part of operative management of testicular torsion?

- B – Exploration of contralateral scrotum

This is done as there may be a congenital predisposition for lack of bilateral scrotal fixation. Exploration may be done after operatively reducing the affected side, while waiting for that testicle to re-perfuse. There is no indication for biopsy or for sperm aspiration. Inguinal approach is not superior to scrotal approach. Manual reduction needs to be followed with surgery to confirm complete reduction and tissue viability.

Questions

- The main distinguishing feature between intravaginal and extravaginal testicular torsion is:

- A – Need for urgent/emergent intervention
- B – Bilateral testicular involvement
- C – Abnormal vs. normal scrotal exam
- D – Future fertility outcomes
- E – Age of presentation

Questions

- The main distinguishing feature between intravaginal and extravaginal testicular torsion is:

- E – Age of presentation

Extravaginal torsion is most often a neonatal diagnosis. The intravaginal torsion occurs more in the teenage years. Urgent/emergent intervention is recommended for both, to preserve testicular viability. There may be no pain associated with the neonatal torsion if it was a prenatal event, but the scrotal exam will be abnormal. Bilateral torsion is very rare in both types, and the fertility outcomes are similar.

Final Discussion/Review

- Testicular torsion is a surgical emergency.
- Testicular preservation ~100% when reduction performed within 6 hours of symptom onset.
- Thorough history and exam can rule-out infectious source of scrotal pain, but edema and pain can make exam challenging.
- Scrotal ultrasound with Doppler is study of choice to confirm diagnosis.
- Perform contralateral scrotal exploration when operating for testicular torsion.
- No apparent link with future infertility.

References

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