AMSER Case of the Month October 2024

6-year-old male with acute onset, rapidly progressive left testicular pain

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Patient Presentation

- HPI: 6-year-old male with no PMHx presents to the ED at 5PM with sudden onset, rapidly progressive left testicular pain. Patient reports he fell off his bed at ~6am and landed directly on his testicles. Told his mother he hurt his back initially because he was embarrassed that he hurt his private parts. Reports both testicles are painful and swollen; the left testicle more than the right. Indicates pain is worse with walking. Denies nausea, vomiting, dysuria, or hematuria.

- Developmental & Birth History: No significant birth history. Met all developmental milestones.

Patient Presentation

- Vital Signs: BP 113/77, Pulse 81, Temp 98.5F, Resp 22, SpO2 99%

- Physical Exam: Right testicle descended. Left testicle descended with pronounced swelling and redness. Left testes firm to palpation. Unable to elicit cremasteric reflex on the left.

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1: **Adult or child. Acute onset of scrotal pain. Without trauma, without antecedent mass. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler scrotum	Usually Appropriate	O
US scrotum	Usually Appropriate	O
MRI pelvis (scrotum) without and with IV contrast	Usually Not Appropriate	O
MRI pelvis (scrotum) without IV contrast	Usually Not Appropriate	O
CT pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without IV contrast	Usually Not Appropriate	☢☢☢
Nuclear medicine scan scrotum	Usually Not Appropriate	☢☢☢
CT pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the ER physician

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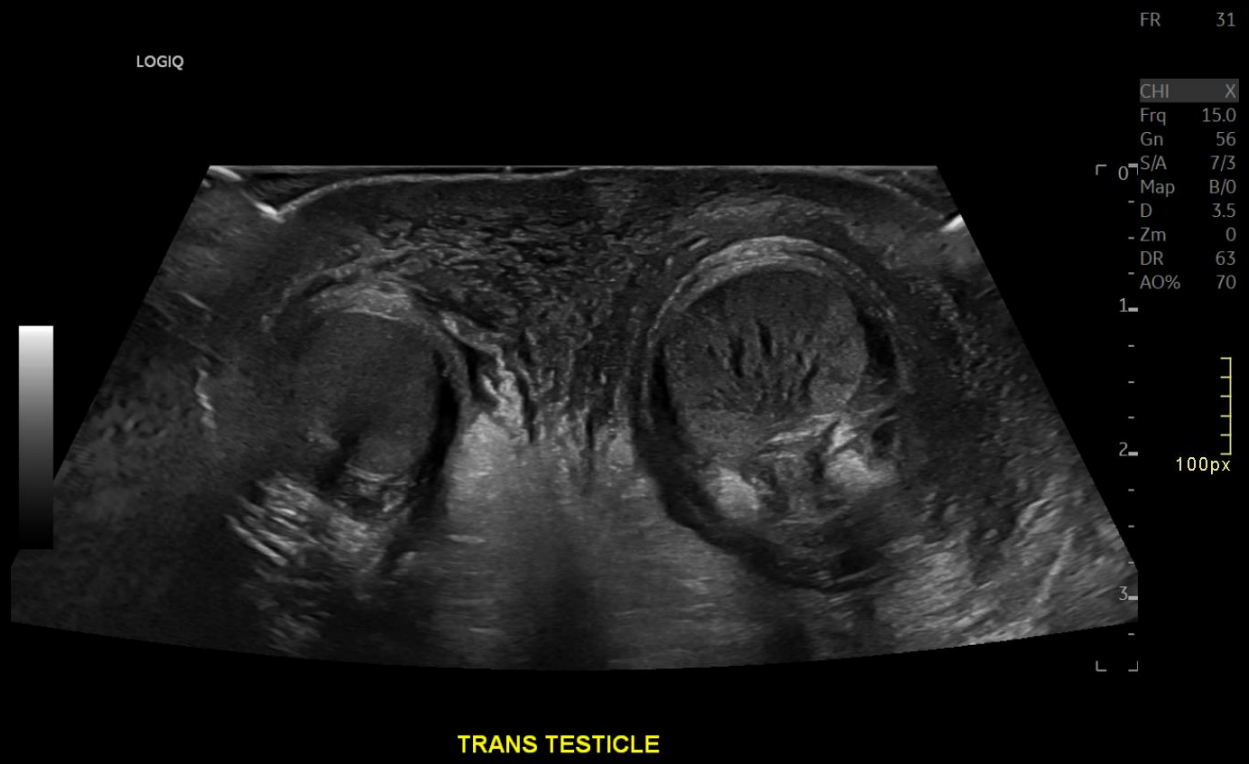
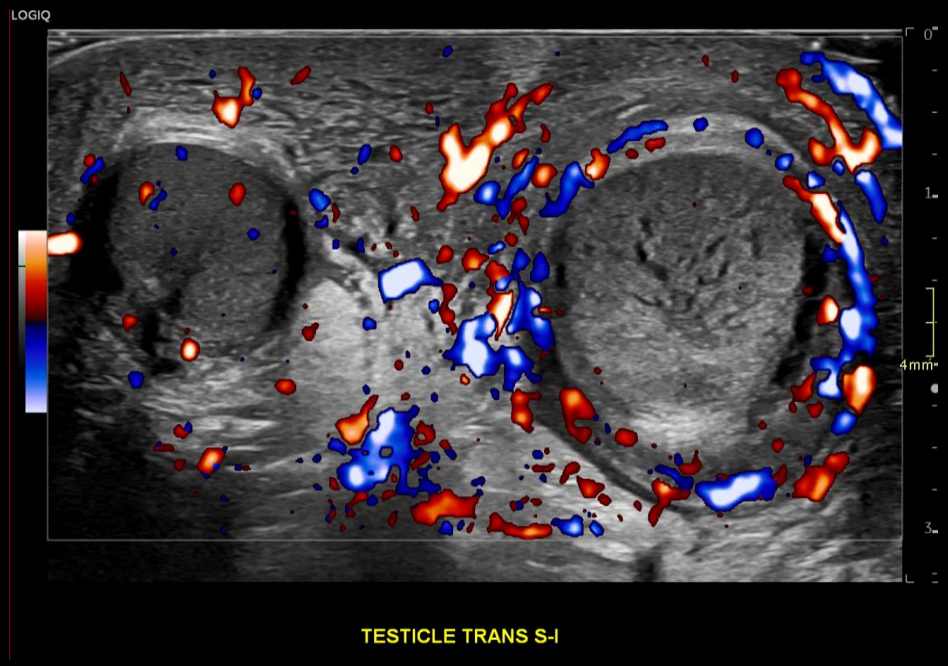
Findings (unlabeled)





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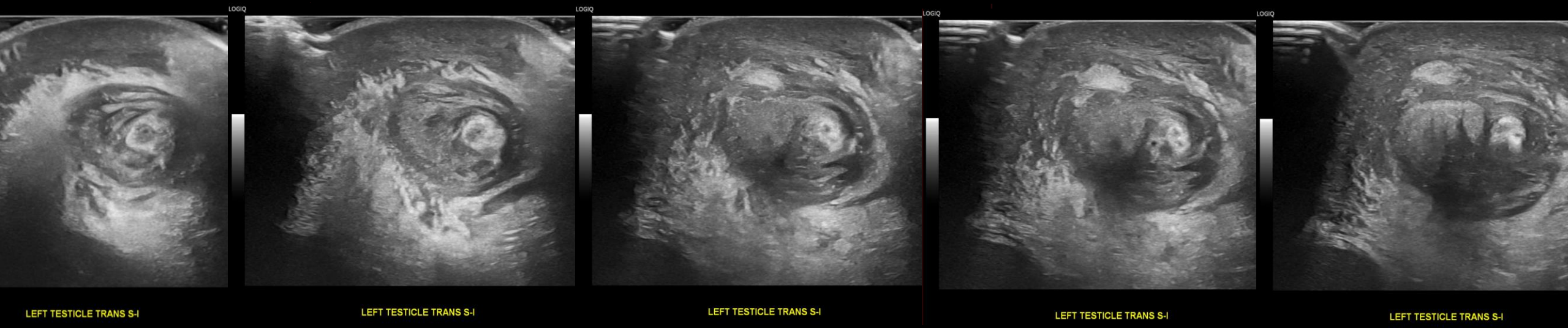
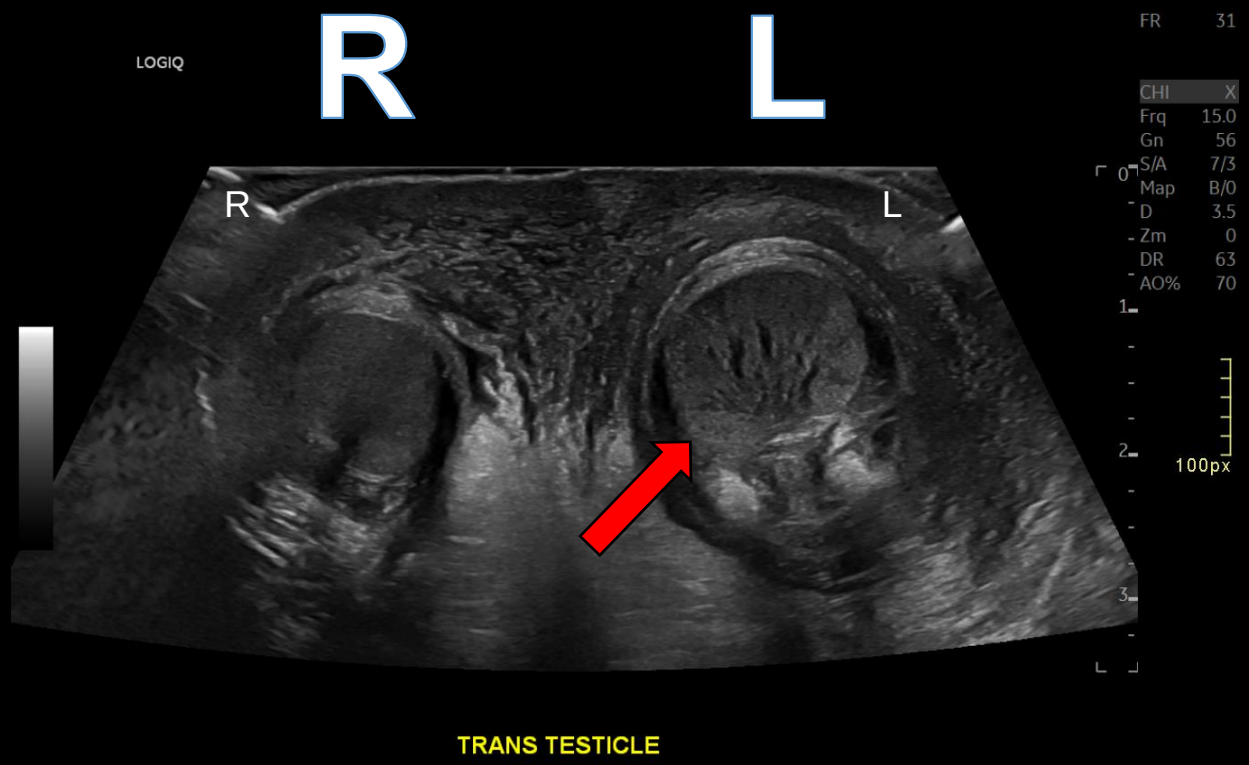
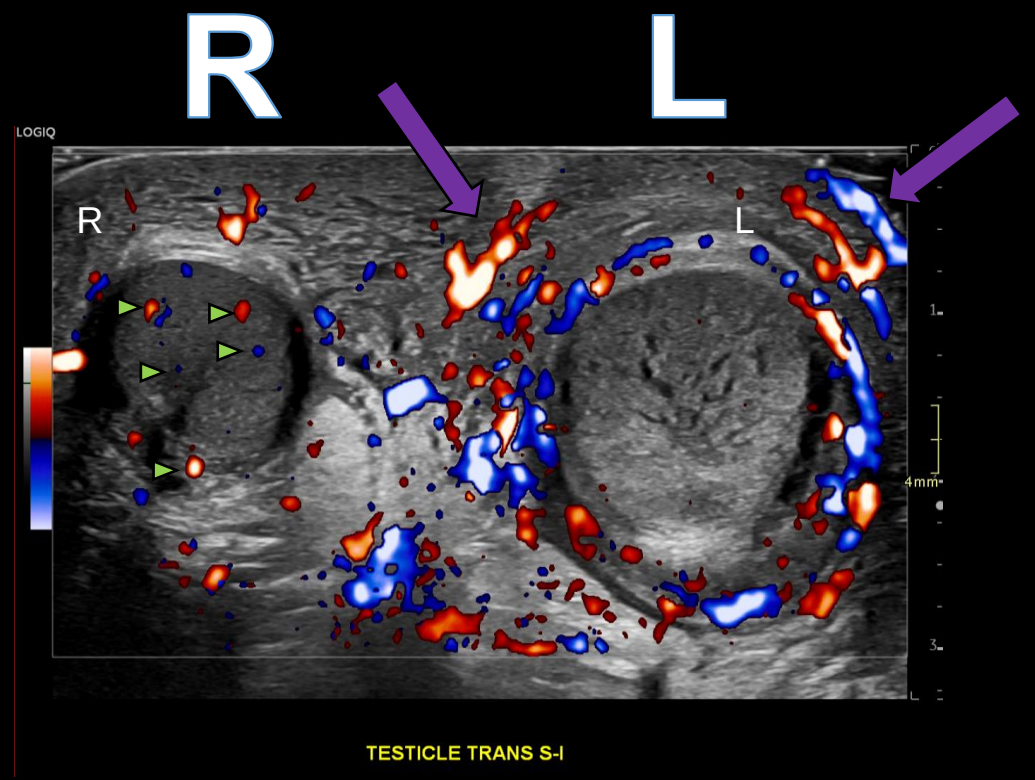


Superior → Inferior

Findings (labeled)





Asymmetric increased size of the left testicle

Heterogenous echotexture of the left testicle

Blood flow in right testicle vs. ***absent*** blood flow in left testicle

Reactive scrotal skin thickening with hyperemia, L >R

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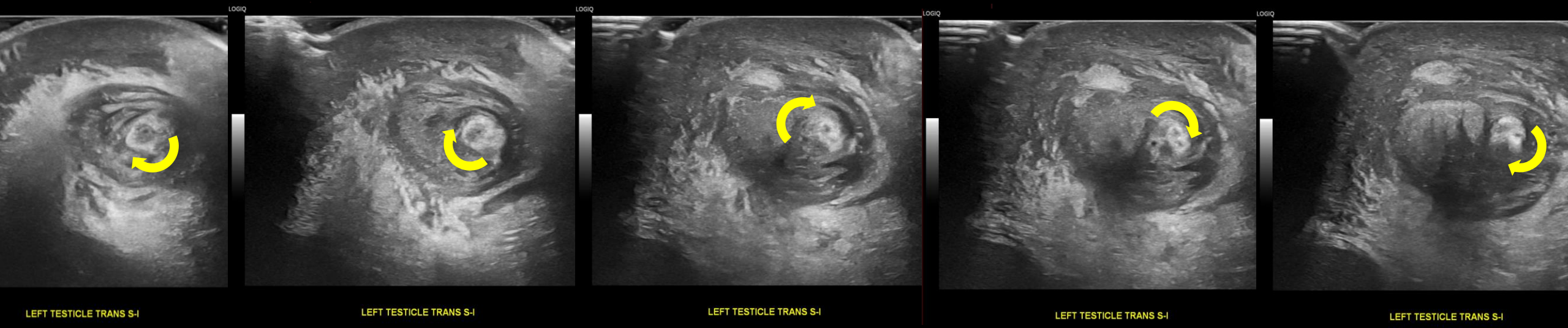
Findings (labeled)



Superior → Inferior

Lamellated mass with concentric layers cephalad to the testis (*Whirlpool Sign*)

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Final Dx:

Left Testicular Torsion

Testicular Torsion

- Definition: Sudden twisting of the testis and spermatic cord within the scrotum leading to vascular occlusion and infarction
- Epidemiology: Peak incidence in neonatal period (first 30 days of life) and during puberty (10-14 years)
- Etiology: Two types of torsion depending on age group
  - **Neonate:** extra-vaginal torsion, occurring above the attachments of the tunica vaginalis commonly at the level of the external inguinal ring
    - Most often idiopathic
  - **Young Adult:** intra-vaginal torsion, often due to a bell-clapper deformity
    - Bell-Clapper Deformity: abnormally high attachment of the tunica vaginalis to the spermatic cord
      - Predisposes to torsion in setting of vigorous physical activity or trauma
      - Torsion may still occur in absence of this deformity

Testicular Torsion

- Clinical Features:
  - Abrupt onset severe testicular pain and/or lower abdominal pain
  - Swollen and tender testis and/or lower abdominal tenderness
  - Nausea and vomiting
  - Scrotal elevation w/ transverse positioning
  - Absent cremasteric reflex
  - Negative Prehn sign (no relief on scrotal elevation)

Testicular Torsion

- Imaging Findings:
  - **Ultrasound** is the modality of choice:
    - *Whirlpool sign:* lamellated mass with concentric layers cephalad to testis
      - Most specific and sensitive finding, reflecting twisting of the spermatic cord
    - Increased size of the testis and epididymis
    - Heterogenous echotexture (late finding, usually >6-12 hours)
  - **Color Doppler:**
    - Reactive thickening of the scrotal skin with hyperemia and increased flow
    - Diminished to complete absence of blood flow to the testes and epididymis
  - Make sure to compare with the contralateral side

Testicular Torsion

- Treatment:
  - Manual Detorsion:
    - Attempted prior to surgery for immediate pain relief or if surgery is unavailable
  - Surgical Detorsion:
    - Recommended for all patients with suspected torsion, even if manual detorsion is performed, due to risk of recurrence and infertility
    - Recommended within 6 hours of onset

Testicular Torsion

- Our patient:
  - Underwent emergent surgical intervention. Intraoperatively, intra-vaginal torsion of the left testicle with 360 degree clockwise rotation was found. Surgical detorsion and bilateral orchiopexy (for presumed bell clapper deformity) was performed with some return of blood flow noted to the left testicle.

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