

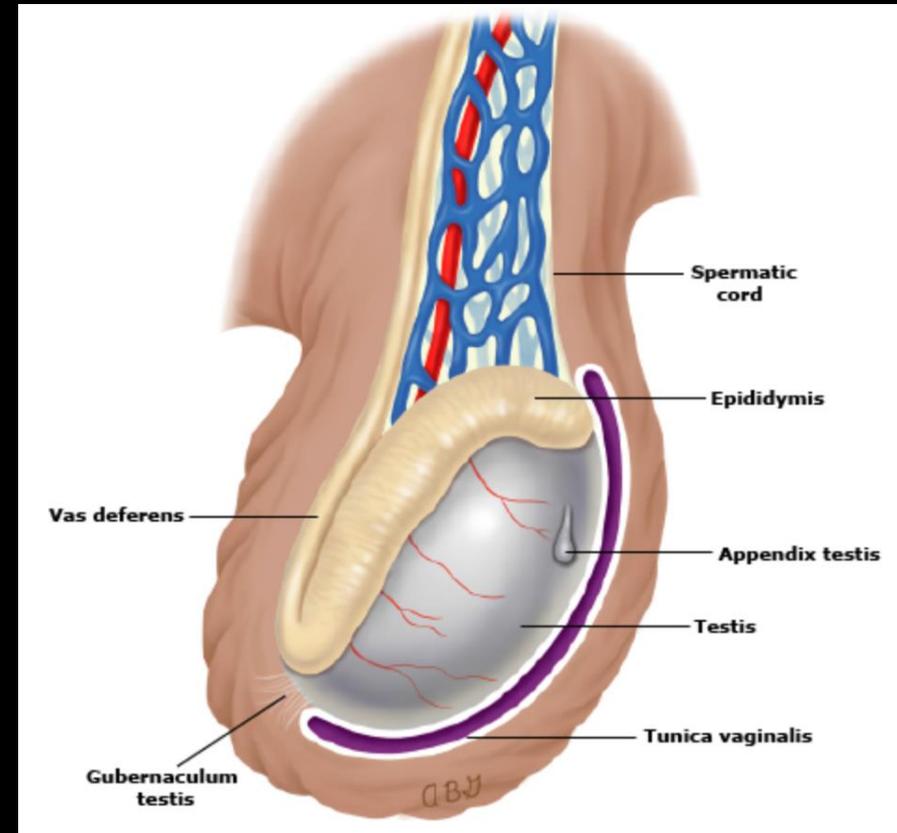
RADY 403 Case Presentation

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Focused patient history and workup

- 11 y.o. M with no significant PMHx presents with 2 days of gradually worsening left testicular pain and swelling. He's had nausea and 1 episode of vomiting. No hx of trauma. Exam notable for high-riding left testicle with horizontal lie and loss of cremasteric reflex.
- DDX for non-traumatic acute testicular pain:
testicular torsion, epididymitis, orchitis, incarcerated inguinal hernia, torsion of appendix testis
- Testicular torsion is a **medical emergency**! Diagnose quickly and call urology.

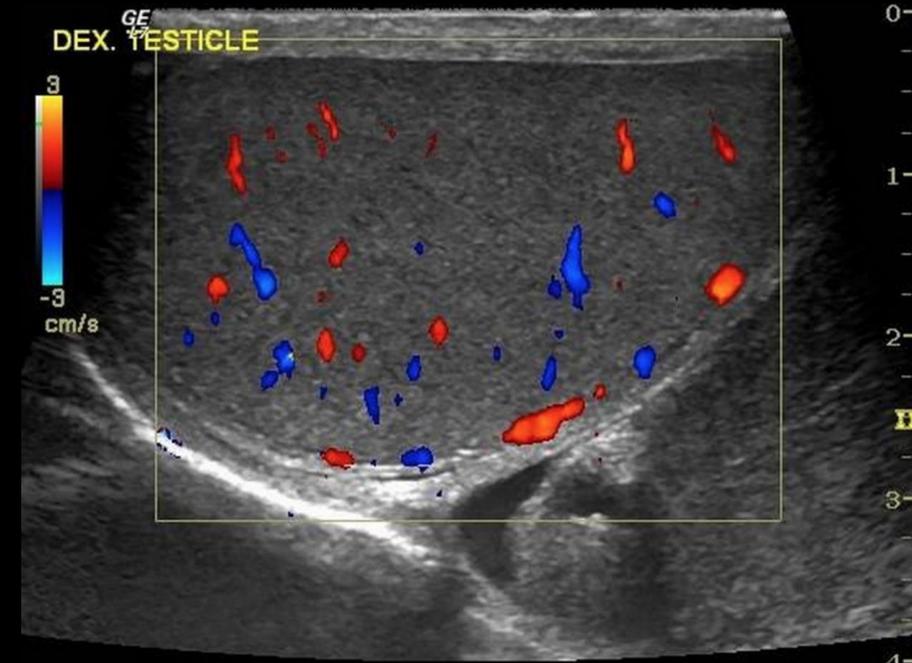


Normal testicular anatomy

List of imaging studies

- Color Doppler ultrasound of the scrotum

Example of normal color doppler signal in the testicle.



ACR Appropriateness Criteria

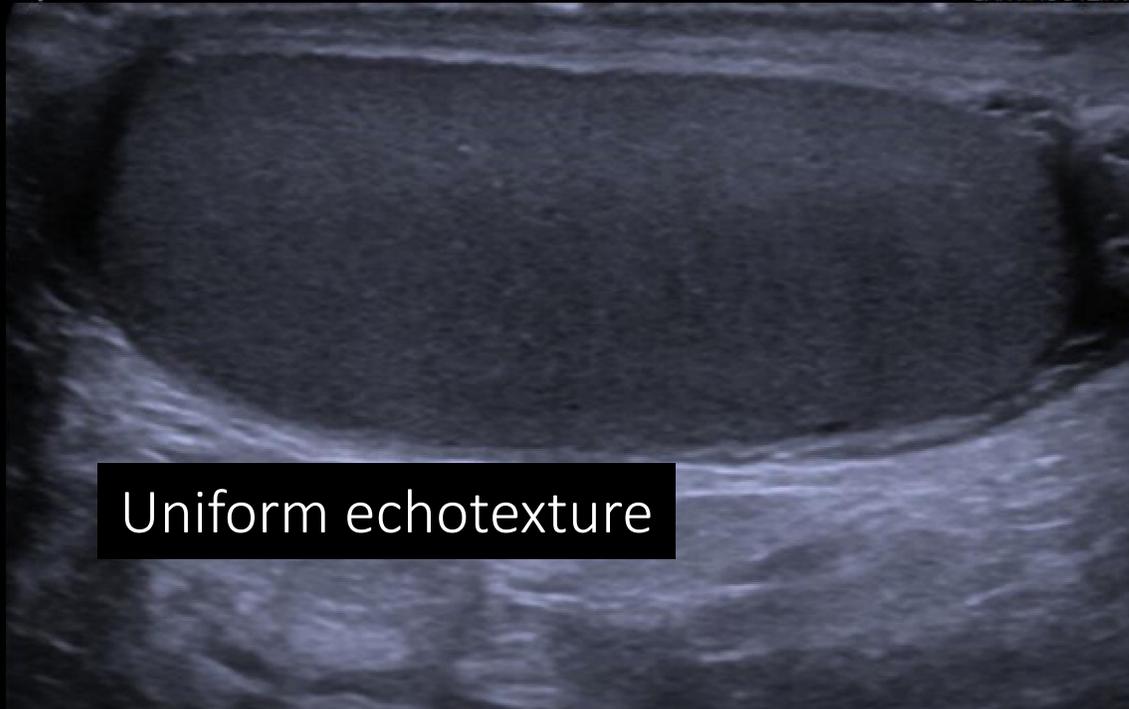
Scenario	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Scrotal pain, acute, nontraumatic	US duplex Doppler scrotum	0 mSv ○	0 mSv [ped] ○	Usually appropriate ●
	MRI pelvis (scrotum) without and with IV contrast	0 mSv ○	0 mSv [ped] ○	May be appropriate ●
	Nuclear medicine scan scrotum	1-10 mSv ○○○○	0.3-3 mSv [ped] ○○○○	Usually not appropriate ●
	MRI pelvis (scrotum) without IV contrast	0 mSv ○	0 mSv [ped] ○	Usually not appropriate ●

- Nuclear medicine scans no longer used due to relatively long scan times

Imaging studies from PACS

Long View

Right Testicle



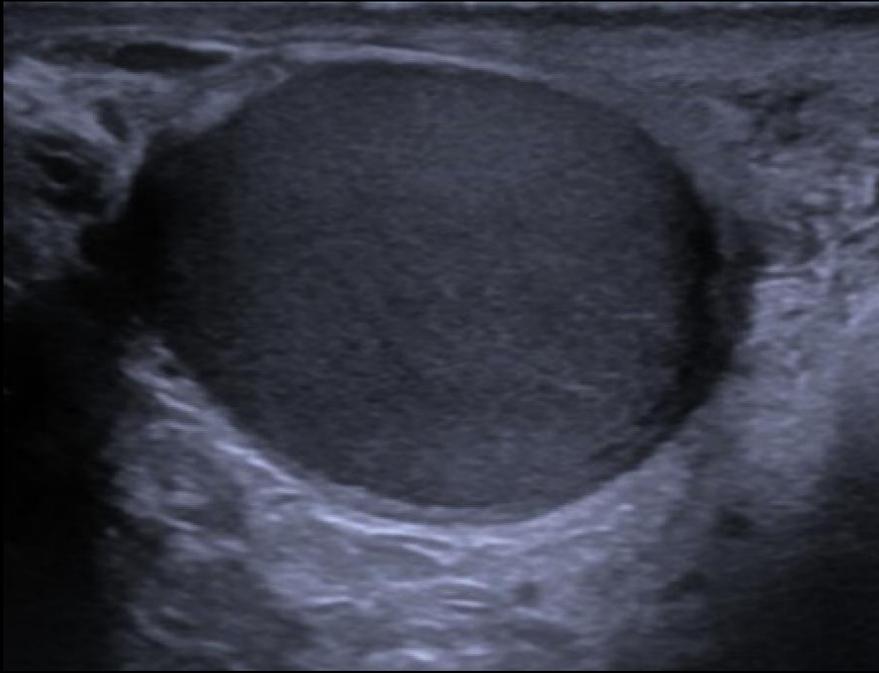
Left Testicle



Imaging studies from PACS

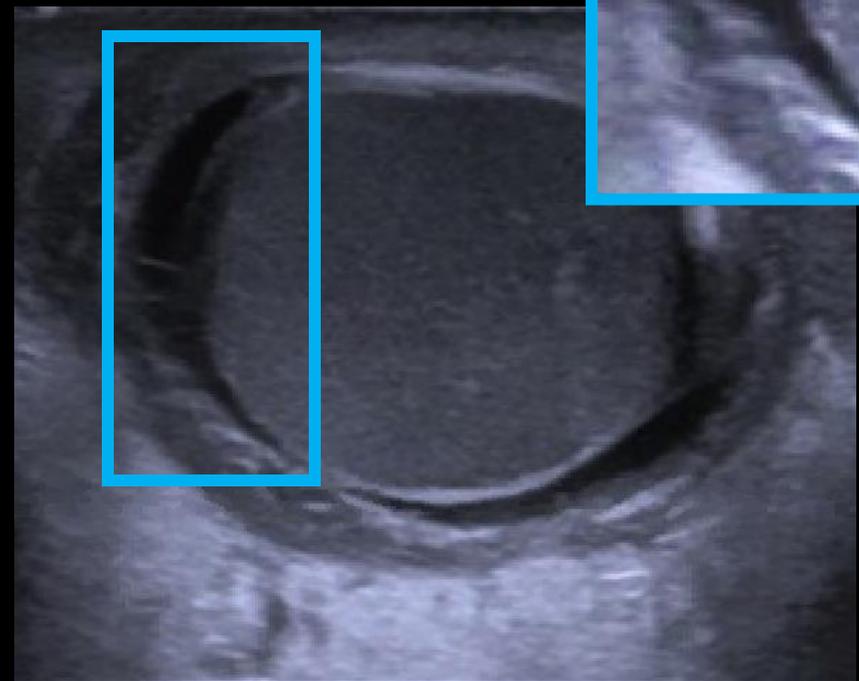
Transverse View

Right Testicle



Complex left hydrocele
with septations

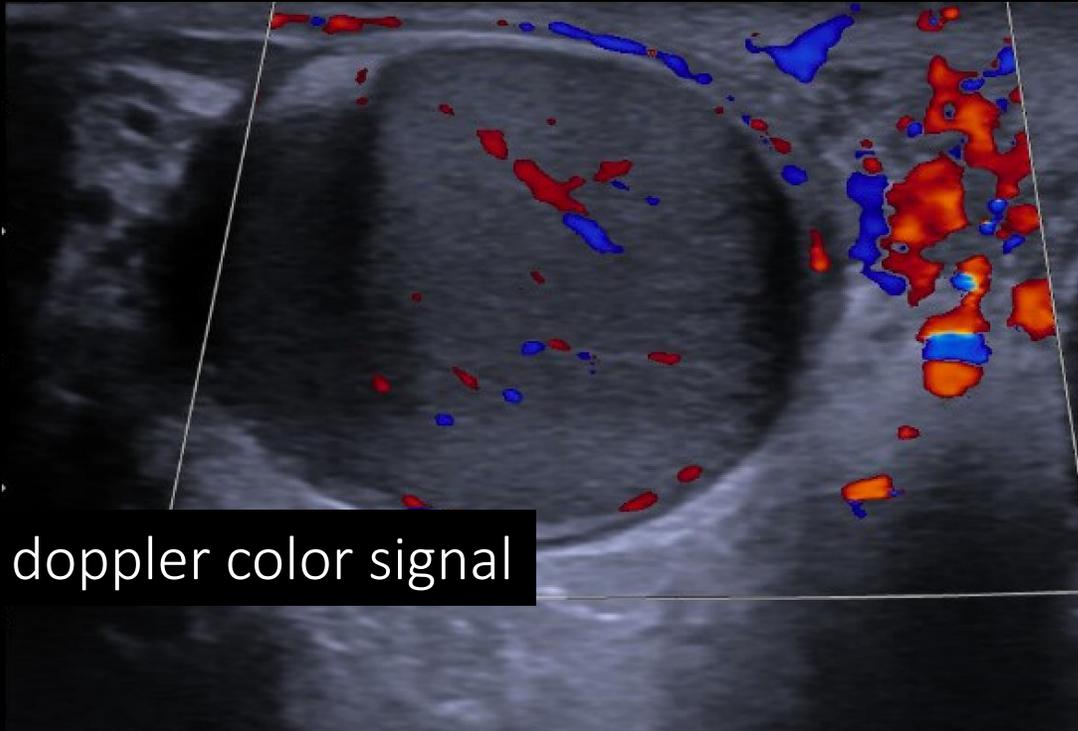
Left Testicle



Imaging studies from PACS

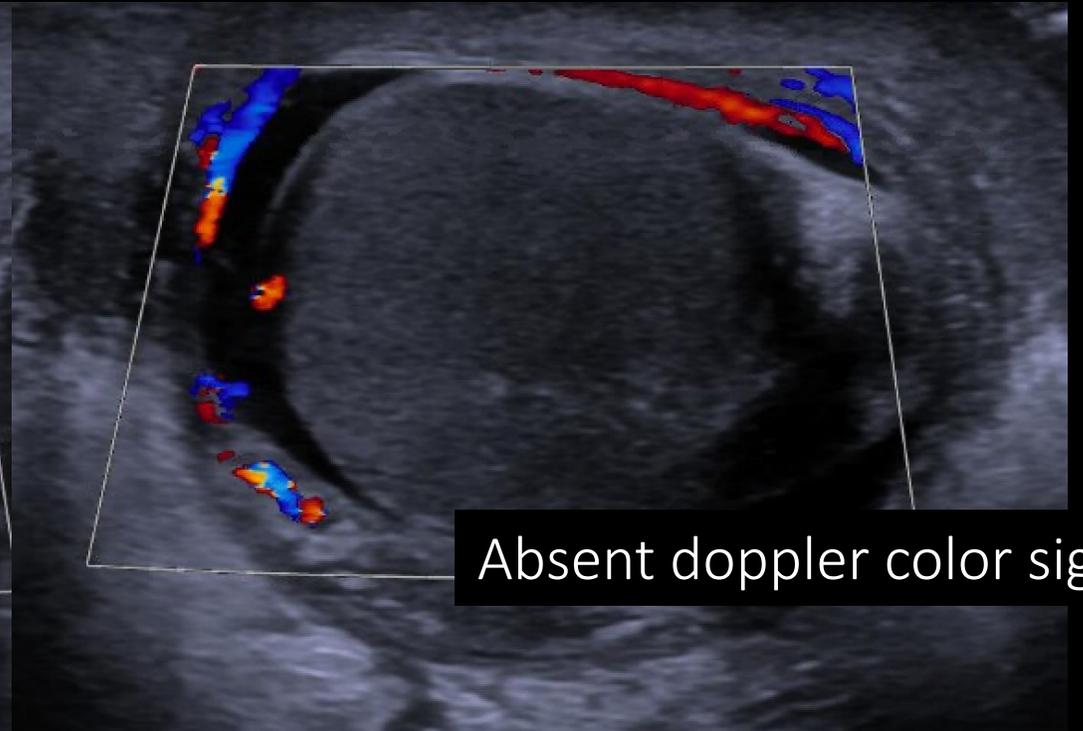
Transverse View

Right Testicle



Normal doppler color signal

Left Testicle

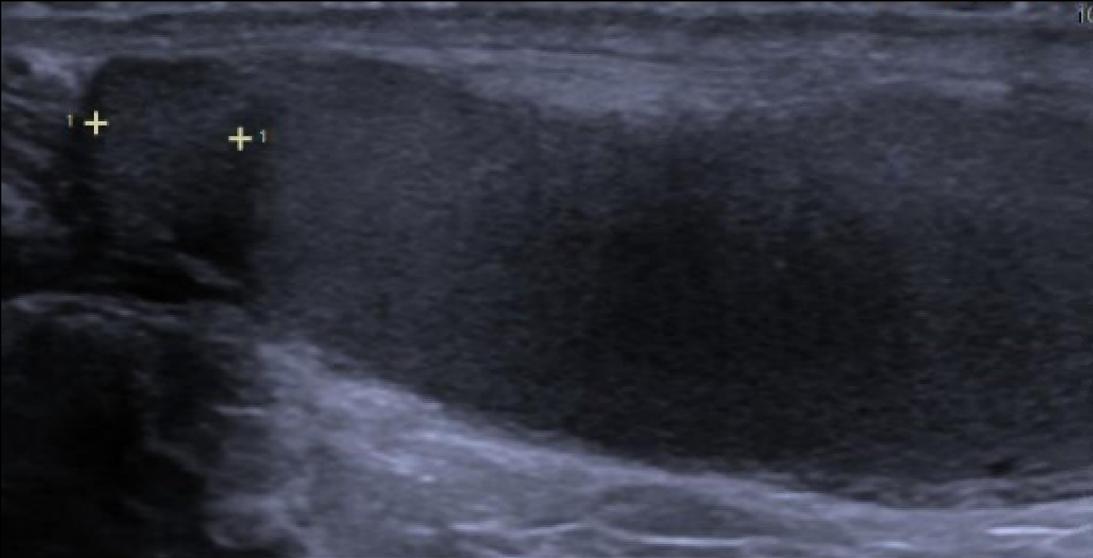


Absent doppler color signal

Imaging studies from PACS

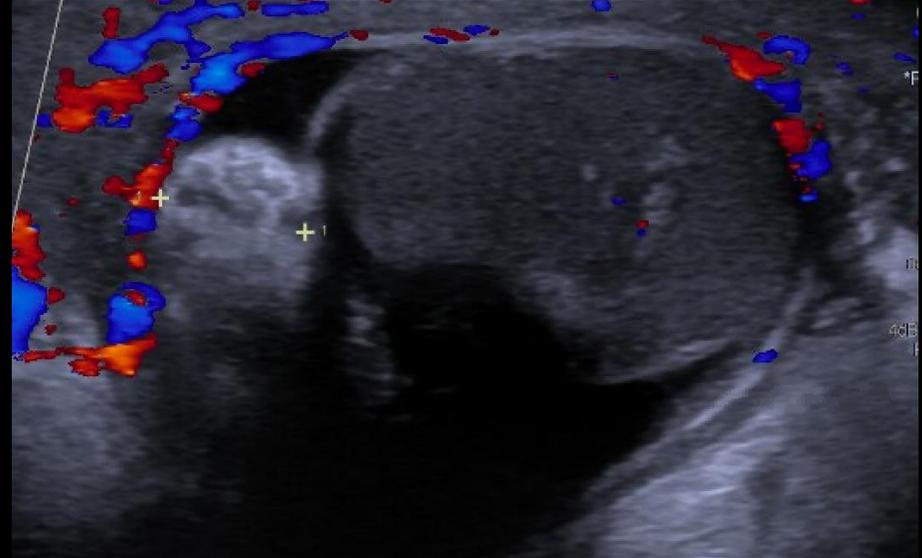
Epididymal Size

Right Testicle



Right epididymis: 5.5 mm

Left Testicle



Left epididymis: 8.0 mm

Separate patient - example of the “whirlpool sign”

Left Spermatic Cord



Whirlpool Sign
(coiled spermatic cord)

Patient treatment and outcome

- Immediately taken to OR for bilateral scrotal exploration
- Left spermatic cord had a 540 degree distal torsion
- Left testicle dark/dusky with no improvement after detorsion

- Left orchiectomy (L testicle surgically removed)
- Right orchiopexy (R testicle anchored to scrotal wall)

- Pt tolerated the procedure well and had no post-op complications

Imaging discussion

- Testicular torsion can be diagnosed clinically – call urology immediately if definitive clinical signs are present:
 - acute severe testicular pain, N/V, absent cremasteric reflex, testicular tenderness/swelling, high-riding/transverse testicle position
- Color Doppler scrotal ultrasound obtained if clinical findings are not definitive
 - Sensitivity: 69 – 100%
 - Specificity: 77 – 100%

Imaging discussion

- Sonographic findings of testicular torsion on Doppler ultrasound:
 - Decreased/absent testicular perfusion
 - Twisting of the spermatic cord (“whirlpool sign” – most specific finding)
 - Increased testicular and epididymal size
 - Heterogeneous echotexture (late finding that indicates necrosis)
 - Reactive hydrocele
 - Thickening of scrotal skin with hyperemia
 - Peripheral testicular neovascularization (after several days)
- Epididymitis can be a close mimic. Torsion excluded if all abnormalities are confined to the epididymis

Management discussion

- Early diagnosis and detorsion is essential for salvaging a viable testicle
- Approximate viability rates based on the time to detorsion:
 - 4 – 6 hours: 97 to 100% viability
 - > 12 hours: 20 to 61% viability
 - > 24 hours: 0 to 24%
- Never assume non-viability based on duration as there may be only intermittent or partial torsion
- Manual detorsion can be attempted if surgical care is not quickly available

Test Yourself

1. Is imaging required to diagnose testicular torsion?

No. Testicular torsion can be diagnosed clinically.

2. If necessary, what is the best imaging modality to diagnose testicular torsion?

Color Doppler ultrasound of the scrotum.

3. What is the most important next step once testicular torsion is identified?

Immediate urologic consultation for surgical exploration and detorsion.

References

- ACR Appropriateness Criteria. Acute onset of scrotal pain-without trauma, without antecedent mass. American College of Radiology. Accessed 22 April 2021. <https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria>
- Bhatt S, Dogra VS. Role of US in testicular and scrotal trauma. Radiographics. 2008;28 (6): 1617-29.
- Brenner JS, A Ojo. Causes of scrotal pain in children and adolescents. UpToDate. Eds: Middleman AB, Fleisher GR, Baskin LS. Accessed 21 April 2021. <https://www.uptodate.com/contents/causes-of-scrotal-pain-in-children-and-adolescents>
- El-Feky M, et al. Testicular torsion. Radiopaedia. Accessed 21 April 2021. <https://radiopaedia.org/articles/testicular-torsion?lang=us>
- Mellick LB, Sinex JE, Gibson RW, Mears K. A Systematic Review of Testicle Survival Time After a Torsion Event. Pediatr Emerg Care 2019; 35:821.
- Nikolic O, Mrdanin T, Nikolic MB, Stojanovic S, Petrovic K, Cirilovic VV, Govorcin M, Senicar S. Ultrasonography of Acute Scrotum. European Society of Radiology. 2012.
- Vijayaraghavan SB. Sonographic differential diagnosis of acute scrotum: real-time whirlpool sign, a key sign of torsion. J Ultrasound Med. 2006;25 (5): 563-74.