

# Give it a whirl: Sonographic signs to look out for in testicular torsion



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## Introduction

Testicular torsion is a medical urological emergency and one of the most common causes of acute paediatric scrotal pain (Esposito et al, 2014). Testicular torsion is defined as twisting of the spermatic cord resulting in testicular perfusion disruption. There are different types of torsion: complete, partial or intermittent (Munden et al, 2013). For intermittent testicular torsion, clinical presentation includes acute unilateral scrotal pain with spontaneous resolution. In contrast, for complete and partial torsion there is no spontaneous resolution of symptoms. (Bandarkar and Blask, 2018).

## Pathophysiology

Testicular torsion is often described to have a bimodal distribution, peaking during the 1<sup>st</sup> year and again during adolescence (Bandarkar and Blask, 2018). The cause of testicular torsion is usually intravaginal and caused by the “bell clapper deformity”. The bell clapper deformity is a condition where the tunica vaginalis envelopes the testicle, epididymis and distal spermatic cord. As a result, there is no posterolateral attachment of the testicle to the scrotal wall allowing the testicle to freely twist (Esposito et al, 2014).

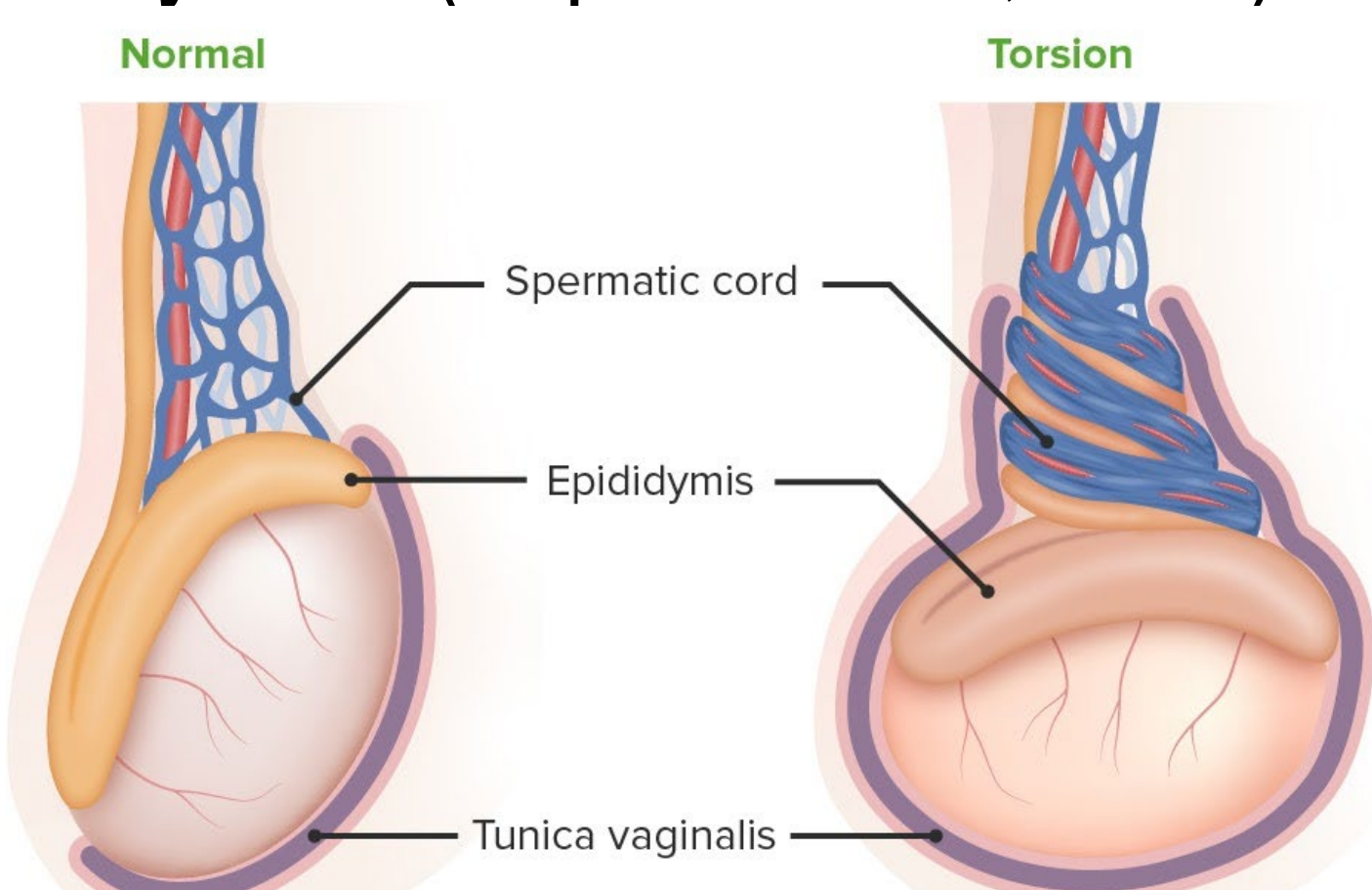


Figure 1. A labelled illustration showing the process of testicular torsion

## Technical considerations

The correct depth and focus should be selected to assess each testis. The use of colour is an adjunct for diagnosis of testicular torsion. The settings should be optimized on the normal testes and then the symptomatic testis should be examined under the same settings (Bandarkar and Blask, 2018). Cine clips can be useful to review findings (Munden et al, 2013).

## Sonographic appearances

Sonographic appearances suggestive of testicular torsion include the “whirlpool sign”, heterogenous echotexture and presence of a pseudomass. The “whirlpool sign” is highly suggestive of torsion even in a testicle with normal blood flow. It can be seen in all three types of torsion and defined as a spiral twist of the spermatic cord. The pseudomass is also referred to as the “epididymal-cord complex”. It is composed of the oedematous epididymis and convoluted spermatic cord (Bandarkar and Blask, 2018). It is often difficult to assess the epididymis separately. Sonographic diagnosis of testicular torsion using colour Doppler proves very difficult as a patient may have preserved or only subtly decreased intratesticular blood flow. A testicular volume discrepancy or horizontal lie of the testicle along with the patient’s clinical history can additionally raise suspicions even with normal flow.



Figure 2. B Mode image showing both testicles. The echotexture is comparable and there are no obvious ischemic changes evident. The right testes has a horizontal lie. A changing lie during the ultrasound examination is a critical finding suggesting mobile testis within the tunica (Bandarkar and Blask, 2018).



Figure 3 and 4. B mode image and illustration depicting the classic “Whirlpool sign” suggestive of testicular torsion.

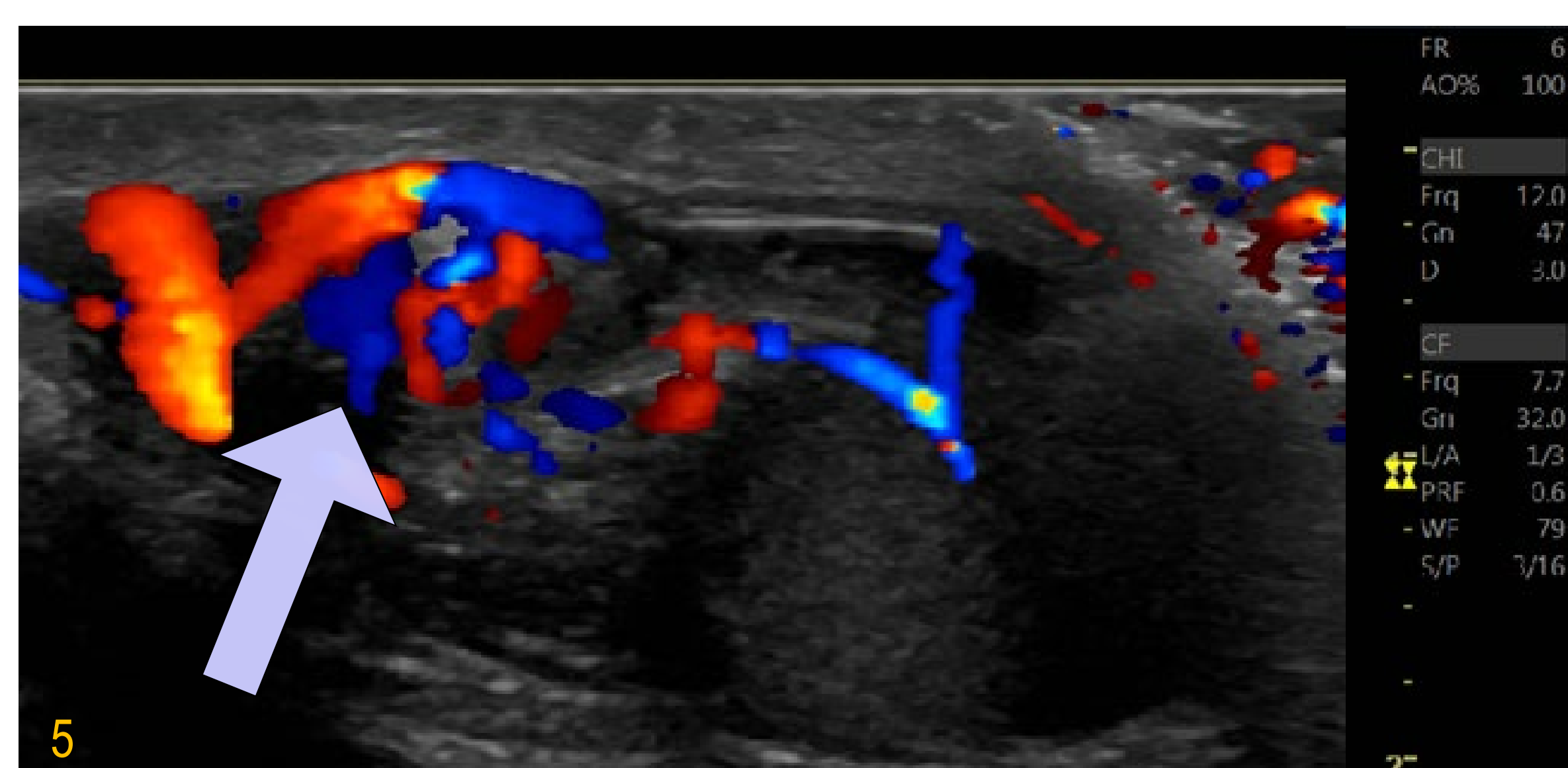


Figure 5. Colour Doppler image depicting the classic “Whirlpool sign” in a patient with intermittent torsion.

**Whirlpool sign**  
The “whirlpool sign” is defined as **twisting of the spermatic cord**. It is highly suggestive of testicular torsion regardless of Doppler findings.

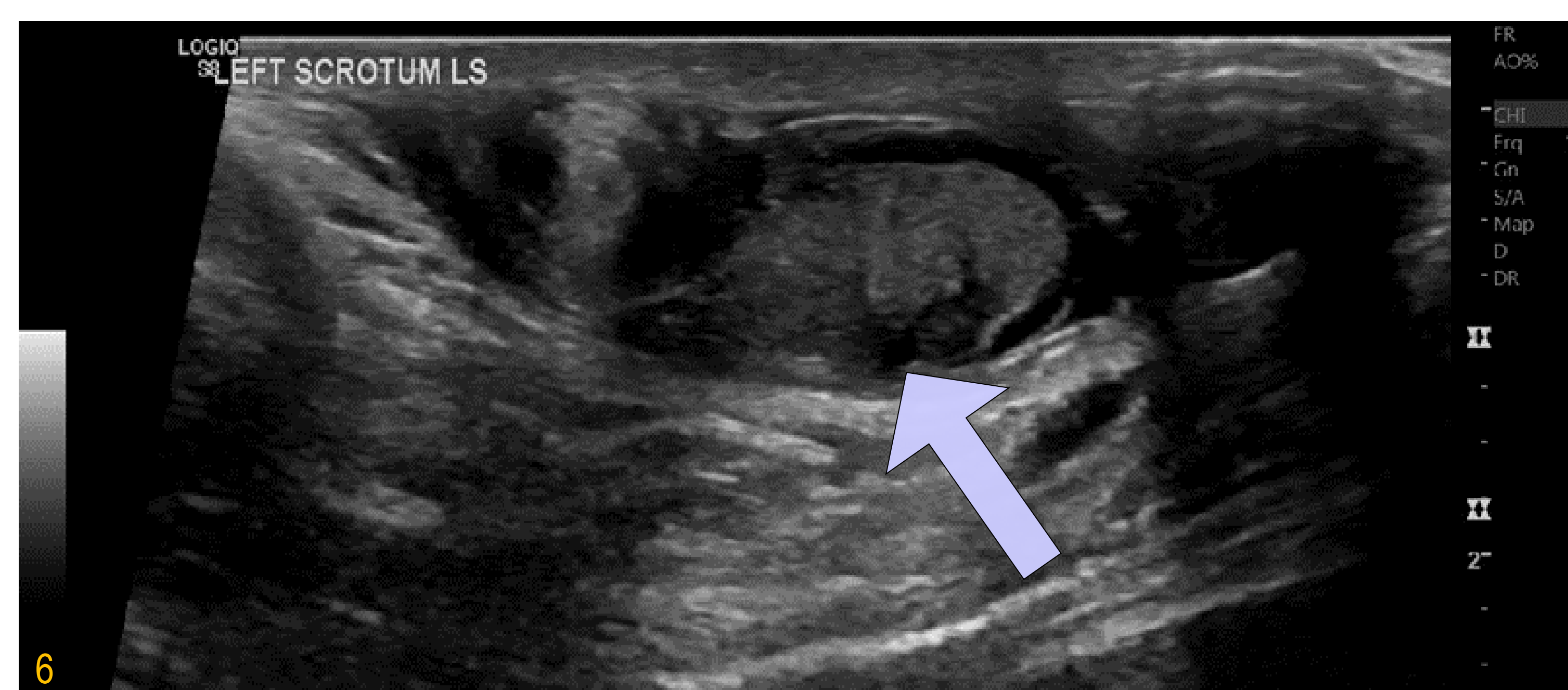


Figure 6. On examination of the left scrotum, a pseudomass is evident. In cases of testicular torsion, a pseudomass represents the redundant spermatic cord. It is usually lying at the superior aspect of the testis or in the scrotal sac surrounded by a small hydrocele. It is heterogenous, extra testicular and ovoid. It is usually difficult to identify the epididymis separately.

## Further Investigations

Patients who are suspected of having any type of testicular torsion with/without ultrasound findings undergo surgical exploration and where appropriate detorsion and orchiopexy (Nishizawa et al, 2021). It is deemed a medical emergency as the probability of salvaging the testicle and sonographic appearances are directly proportional to the onset of clinical symptoms (Esposito et al, 2014).

## Discussion

Ultrasound is utilised as the primary imaging tool for testicular torsion, but it also has a useful role in differential diagnoses. Differentials include epididymitis or torsion of a testicular or epididymal appendage. In paediatrics with acute paediatric scrotal pain, examination of the spermatic cord can help diagnose all types of torsion. Sonographic signs such as the “whirlpool sign”, presence of a pseudomass and horizontal lie are often seen in patients with normal testicular flow. It is also essential to look beyond Doppler findings because low velocity blood flow makes it difficult to assess intratesticular flow (Esposito et al, 2014).

### Sonographic appearances for testicular torsion

Most <b>reliable</b>	<b>Concerning</b> but can be seen in other conditions
“Whirlpool sign”	Heterogenous echotexture
Pseudomass	Testicular enlargement or volume discrepancy
Horizontal lie	Epididymal enlargement-mimics pseudomass

The bell clapper deformity is the primary risk factor for developing torsion and during the dynamic ultrasound scan, a testis changing lie can prove it is mobile within the tunica. It is important for sonographers to be able to identify testicular torsion or secondary signs as rapidly as possible due to resultant ischemic changes and testicular damage.

## References

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