



## Society of Radiologists in Ultrasound 2012 Toshiba Residents Program

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### **Clinical History**

A 14 year old boy presented with acute onset of left testicular pain associated with nausea and vomiting for one and a half hours. He arrived at the emergency department at 3:30 a.m. Gray scale, color, and pulsed Doppler sonography was performed.

### **Diagnosis**

Left testicular torsion and manual detorsion.

### **Discussion**

Acute testicular torsion is a common urologic emergency which affects up to 3.8 per 100,000 males younger than 18 years annually.<sup>1</sup> The vast majority of cases are intravaginal torsion and are associated with the Bell clapper deformity, an abnormally high attachment of the tunica vaginalis resulting in a freely mobile testis.<sup>2</sup> Patients classically present with acute scrotal pain, swelling, and erythema associated with nausea and vomiting. Physical exam may show a tender high-riding testis with a transverse lie and an absent cremasteric reflex.

Twisting of the spermatic cord initially causes obstruction to venous outflow, subsequent compromised arterial inflow, and eventually testicular infarction. Surgical detorsion to relieve ischemia and orchiopexy of both testes (as the Bell clapper deformity is typically bilateral) to prevent future torsion is the current “gold standard” treatment. The chance of testicular salvage falls rapidly with delay of treatment, from greater than 90% at 6 hours since onset of symptoms to less than 25% after 12 hours.<sup>3-5</sup> Lesser degrees of torsion have also been associated with improved salvage rate.<sup>3</sup>

Manual detorsion, first described in 1893, is an older noninvasive technique which can be helpful by both relieving pain and “buying time” until definitive surgical treatment can be performed.<sup>2</sup> The twist is usually medial, therefore untwisting should be first attempted in the lateral direction. The “open book” is often quoted as an easy way to remember the direction, with the spine of the book at the midline, and untwisting the affected testicle as if opening the book. The lack of resistance when untwisting is an useful indicator that one is proceeding in the correct direction.<sup>6</sup> Manual detorsion can be performed with local anesthesia or sedation, given that one would be handling an already tender testicle.<sup>7</sup>

While ultrasound has become the diagnostic modality of choice in helping to rapidly diagnose testicular torsion, it can also be immensely useful to confirm the restoration of blood flow after manual detorsion. There are several pitfalls which can be avoided with ultrasound confirmation. Although the direction of twist is generally medial, it can be lateral in up to a third of cases.<sup>8</sup> The number of turns in the twist is also variable, with up to 1080° having been reported.<sup>7</sup> Finally, the administration of local anesthesia or sedation can make it more difficult to clinically assess pain relief after attempted manual detorsion.

In our case, testicular torsion was confirmed on US by the lack of demonstrable vascular flow within the left testicle on color Doppler interrogation, associated with twisting of the spermatic cord. (Figures 1 and 2)

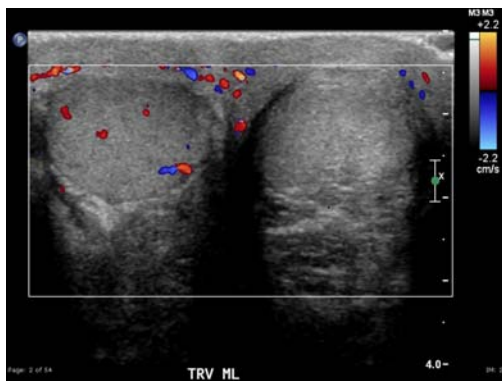
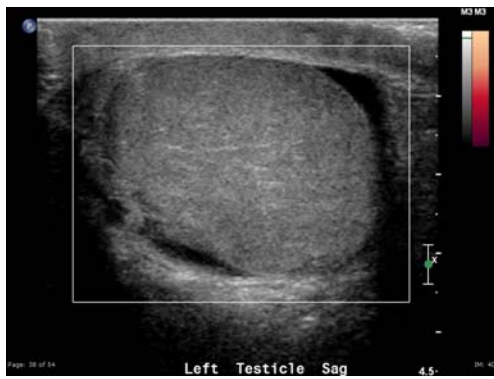


Figure 1A Midline color Doppler image demonstrates intratesticular blood flow in the right testicle and no flow in the left testicle.



Figures 1B & C Power and pulsed Doppler ultrasound confirm the lack of vascular flow in the left testicle.

Figure 2 Cine clip of twisted left spermatic cord

After alerting our urology colleagues, manual detorsion was initiated. It was not until the third turn of the testicle, at 4 hours since onset of symptoms, that restoration of blood flow was seen on color Doppler ultrasound. (Figure 3) The spermatic cord remained twisted on ultrasound. Intraoperatively, it was noted that there remained an approximately 90-180 degree twist. The testicle was otherwise viable and was pexied surgically.

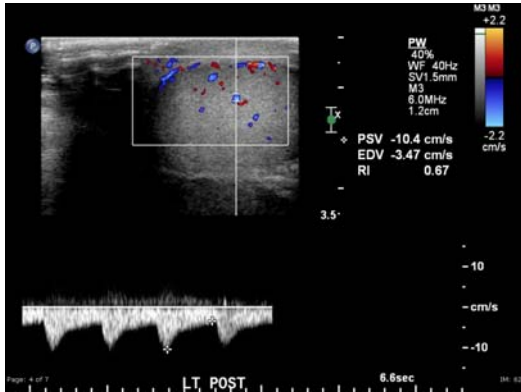


Figure 3 Restoration of blood flow on duplex Doppler imaging following manual detorsion.

## 6. References

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