**Case 11193**

**Testicular torsion**

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**Section:** Uroradiology & genital male imaging  
**Area of Interest:** Genital / Reproductive system male  
**Procedure:** Diagnostic procedure  
**Imaging Technique:** Ultrasound  
**Imaging Technique:** Ultrasound-Colour Doppler  
**Imaging Technique:** Ultrasound-Spectral Doppler  
**Special Focus:** Acute Inflammation  
**Case Type:** Clinical Cases

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**Patient:** 13 years, male

**Clinical History:**

13-year-old boy with sudden onset of acute scrotal pain. Physical examination in the ER revealed left scrotal swelling and tenderness. Laboratory findings were negative.

**Imaging Findings:**

An ultrasound was performed, showing an enlarged left testicle (Fig. 1). The presence of a reactive hydrocele and thickened spermatic cord were also seen (Fig. 2). Doppler evaluation showed a high-resistance arterial pattern associated with reversed diastolic flow (Fig. 3). Spiral twist of the spermatic cord was also apparent - Whirlpool sign (Fig. 4 and 5).

**Discussion:**

Testicular torsion is defined as the rotation of the testis along the longitudinal axis of the spermatic cord [1]. It has two incidence peaks: the neonatal period and puberty, 65% of cases occurring between 12 and 18 years [2]. In puberty, torsion occurs outside the tunica vaginalis due to a "bell clapper" deformity (intravaginal torsion), whereas in the newborn torsion occurs outside the tunica vaginalis, when the testicles and gubernacula are not fixed (extravaginal torsion) [3]. The pathologic process begins with twisting of the spermatic cord, eventually leading to venous obstruction, followed rapidly by obstruction of arterial inflow and testicular ischaemia [4]. Testicular viability depends on the duration of torsion and number of twists of the spermatic cord. If the degree of torsion is low (180°-360°), testes can remain viable for more than 24 hours. However, in higher degrees of torsion (>360°), infarction can occur as soon as 4 hours post-onset of scrotal pain [4]. This is why surgeons try to operate within the first 6 hours (salvage rate 80-100%) [1]. Patients usually present with sudden onset of severe scrotal pain, often at night. Nausea and vomiting are associated in 90% of cases. Fever can also occur. On physical examination, the affected testicle is often swollen and tender. Sometimes intermittent torsion can occur, with acute and intermittent testicular pain and scrotal swelling, with rapid resolution and long intervals without symptoms. The diagnosis of testicular torsion can be made clinically. However, imaging plays an important role, especially when it comes to differentiating torsion, which is a surgical emergency, from epididymo-orchitis [3]. Gray-scale and Doppler ultrasound findings are key to the diagnosis. However, they vary with the duration and degree of torsion and gray-scale findings are mostly non-specific. These include a swollen and hypoechoic (4-6 hours) or a heterogeneous (24 hours-infarcted) testicle, thickened epididymis and spermatic cord, and reactive hydrocele. The Whirlpool sign, translating a twist of the spermatic cord at the external inguinal ring, is a specific finding [3]. At colour Doppler, differences in perfusion, like
absence or reduction of blood flow are found. If blood flow is present (partial torsion), spectral waveforms demonstrate high-resistance flow and decreased diastolic flow or diastolic flow reversal [5]. As the salvage rate drops quickly, with most testes not viable after 10 hours, surgery should never be delayed (bilateral orchidopexy and detorsion of the effected side if viable or orchiectomy if not) [2].

**Differential Diagnosis List:** Testicular torsion, Epididymo-orchitis, Torsion of testicular or epididymal appendage, Trauma

**Final Diagnosis:** Testicular torsion

**References:**


**Figure 1**

**Description:** Enlarged left testicle (arrow)  
**Origin:** Department of Radiology, Hospital Prof. Doutor Fernando Fonseca, Amadora, Portugal
**Description:** Reactive hydrocele (large arrow) and thickened spermatic cord (long arrow)

**Origin:** Department of Radiology, Hospital Prof. Doutor Fernando Fonseca, Amadora, Portugal
**Figure 3**

**Description:** High-resistance arterial flow pattern and reversed diastolic flow. **Origin:** Department of Radiology, Hospital Prof. Doutor Fernando Fonseca, Amadora, Portugal
Description: 360º torsion of the spermatic cord

Origin: Department of Radiology, Hospital Prof. Doutor Fernando Fonseca, Amadora, Portugal
Figure 5

Description: 360° torsion of the spermatic cord

Origin: Department of Radiology, Hospital Prof. Doutor Fernando Fonseca, Amadora, Portugal