Case 8951

Eurorad

Testicular ischemic necrosis following blunt trauma

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Section: Uroradiology & genital male imaging
Area of Interest: Genital / Reproductive system female
Imaging Technique: Ultrasound
Imaging Technique: MR
Special Focus: Trauma Case Type: Clinical Cases
Authors: Tonolini M, Campari A.
Patient: 11 years, male

Clinical History:

A boy initially presented to Emergency Department shortly after bicycle trauma to his scrotum, and was dismissed on the basis of negative clinical examination. Three days later, he returned with a painful, hardened right hemiscrotum.

Imaging Findings:

Scrotal ultrasound (US) was immediately performed, and on the painful right side a fairly large (24 mm maximum diameter) mixed hyperechoic peritesticular lesion was seen, dislocating and compressing the adjacent testis, which appeared slightly enlarged and hypoechoic compared to the left one. The lesion, avascular at colour and power-Doppler US, was interpreted as an extratesticular haematoma. No significant hydrocele was present.
Emergency MR examination was requested to further investigate this finding, with confirmation of T1- and T2-hyperintense subacute extratesticular haematoma, associated with abnormal signal intensity involving the entire ipsilateral testis. After intravenous gadolinium contrast administration, both the haematoma and the compressed right testis did not enhance.
Diagnosis of testicular ischemic necrosis due to compression by haematoma was confirmed at surgical exploration and pathology on orchiectomy specimen.

Discussion:

Blunt trauma to the scrotum is relatively rare thanks to its anatomic location and mobility. Peak incidence is in the age range 10-30, and most cases result from athletic injuries, motor vehicle collisions, and violence.
Usual consequences of scrotal blunt trauma include intra- and extratesticular haematomas, hydrocele, haematocele, testicular fracture or rupture. Rarely, testicular ischemic necrosis may result from blood collections through a mechanism of decreased blood flow because of extrinsic compression on the vessels. More commonly, spontaneous infarction of the testis is usually due to spermatic cord torsion, or sometimes secondary to vasculitis, postsurgical changes (most usually after inguinal hernia repair) or embolisation.

US is invariably the first-line imaging modality after clinical examination in patients with scrotal blunt trauma, with colour Doppler helpful to assess testicular perfusion and viability. Acute hematomas are usually hyperechoic or heterogeneous, and lacking vascularity, whereas chronic hematomas tend to become hypo- or even anechoic over time. Ischemic testes appear normal on early stages, then hypoechoic with absent or diminished flow signals.
Recently, MRI has been reported as the ideal second-line investigation in unclear or complex cases of scrotal disease. Normal testes show low signal intensity on SE-T1 sequences, and hyperintense signal on FSE-T2

sequences. Intra- or peritesticular hematomas are identified as T1 hyperintensities due to methaemoglobin content. Global or segmental testicular infarcts appear as T1-isointense, T2-hyperintense lesions, without enhancement after intravenous gadolinium contrast.
Immediate surgical exploration is warranted when the tunica albuginea is violated, when the testis is hypoperfused or with haematocele. The testis may be saved in a large proportion of patients, but delay in intervention decreases the salvage rate and orchiectomy may become necessary.

In conclusion, timely clinical and imaging evaluation of patients with scrotal trauma is critical because emergency surgery may result in salvage of the testis. Familiarity with the imaging appearances of different post-traumatic testicular abnormalities is necessary. As this case exemplifies, rarely testicular ischemia may occur after blunt trauma through compresssion of blood vessels by extratesticular haematoma.
Differential Diagnosis List: Testicular ischemic necrosis., testicular rupture, testicular hematoma, hematocele

Final Diagnosis: Testicular ischemic necrosis.

References:

Hamm B (1997) Differential diagnosis of scrotal masses by ultrasound. Eur Radiol 7:668-679 (PMID:9166564)
Strauss S, Gottlieb P, Kessler A, Graif M, Heyman Z, Manor H (2000) Non-neoplastic intratesticular lesions mimicking tumour on ultrasound. Eur Radiol 10:1628-1635 (PMID:11044937)
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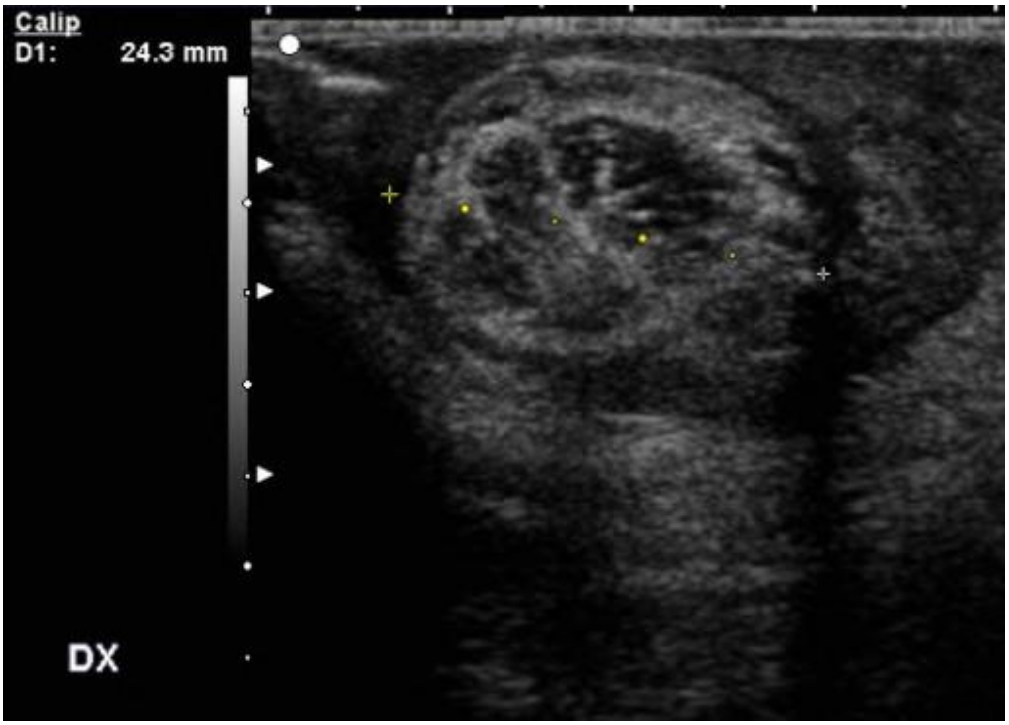
Deurdulian C, Mittelstaedt CA, Chong WK, Fielding JR (2007) US of acute scrotal trauma: optimal technique, imaging findings, and management. Radiographics 27:357-369 (PMID:17374858)
Bhatt S, Dogra VS (2008) Role of US in testicular and scrotal trauma. Radiographics 28:1617-1629 (PMID: 18936025)
Parenti GC, Feletti F, Brandini F, et al. (2009) Imaging of the scrotum: role of MRI. Radiol Med 114:414-424 (PMID: 19333712)

Figure 1

a

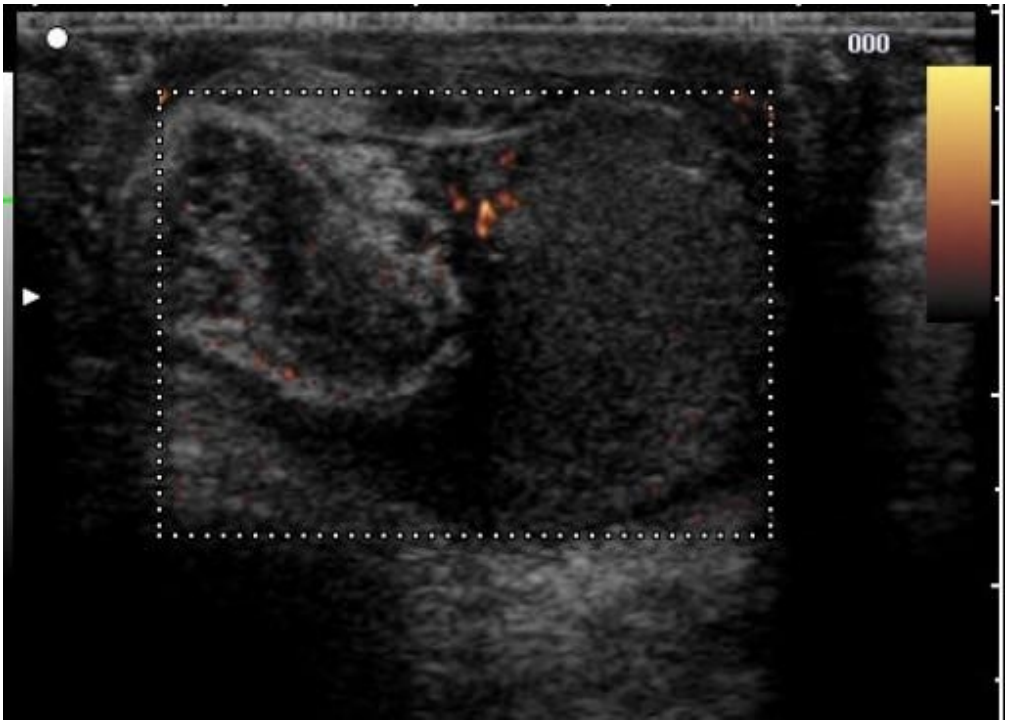


Description: Longitudinal (a) and trasversal (b) ultrasound images show a large (nearly 2,5 cm) mixed hyperechoic extratesticular mass consistent with hematoma, compressing and dislocating the right testis. **Origin:**

b

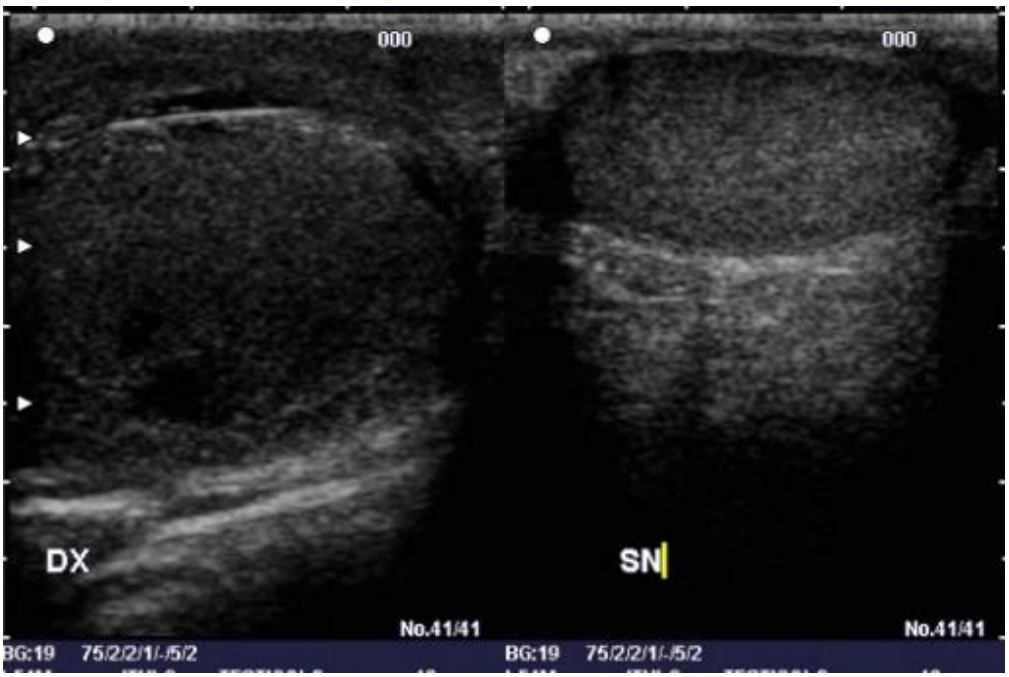
Description: Longitudinal (a) and trasversal (b) ultrasound images show a large (nearly 2,5 cm) mixed hyperechoic extratesticular mass consistent with hematoma, compressing and dislocating the right testis. **Origin:**

c



Description: At power Doppler US both the extratesticular hematoma and the right testis show no appreaciable vascularity. **Origin:**

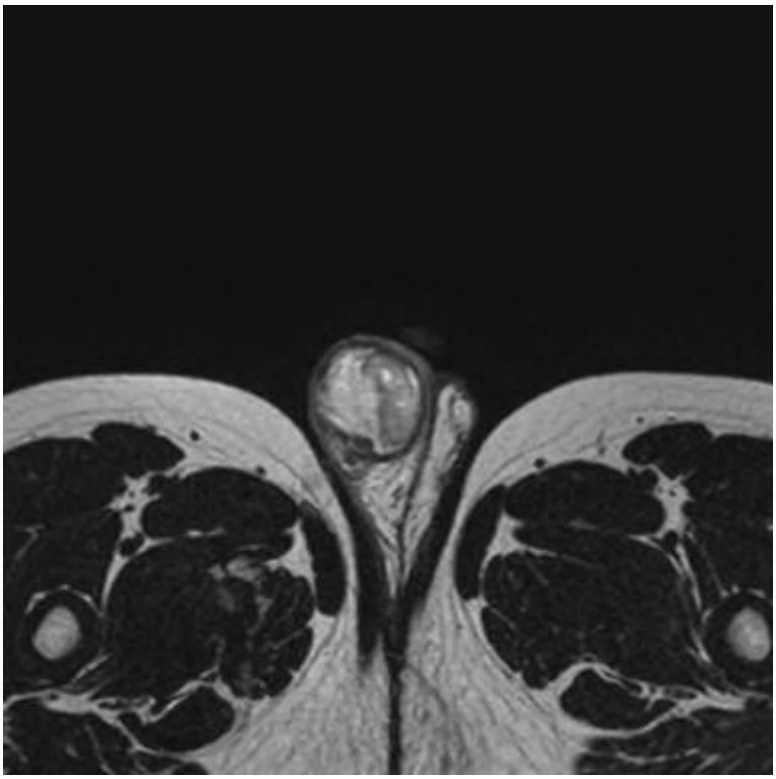
d



Description: The right testis appears enlarged and hypoechoid compared to the contralateral one.
Origin:

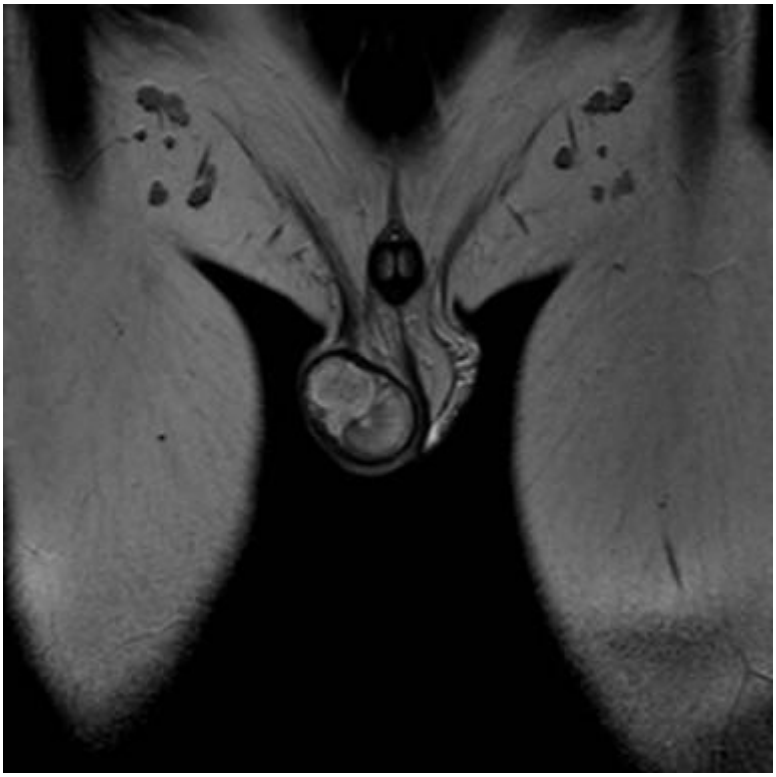
Figure 2

a



Description: On axial (a) and coronal (b) T2-weighted images the right hemiscrotum is occupied by a large mass, consisting in hyperintense extratesticular hematoma and medially-compressed testis with abnormal signal compared to the left one (c). **Origin:**

b



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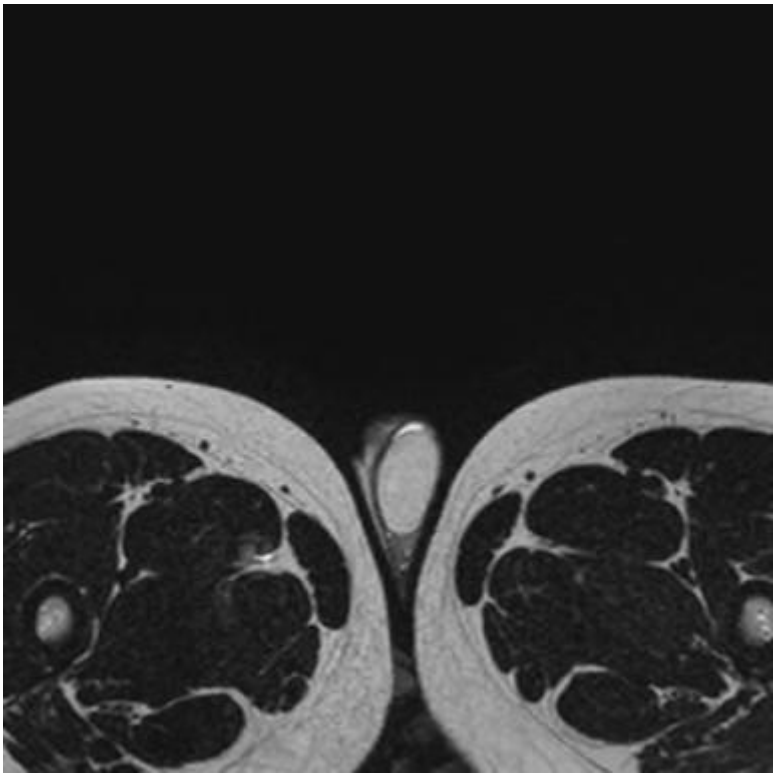
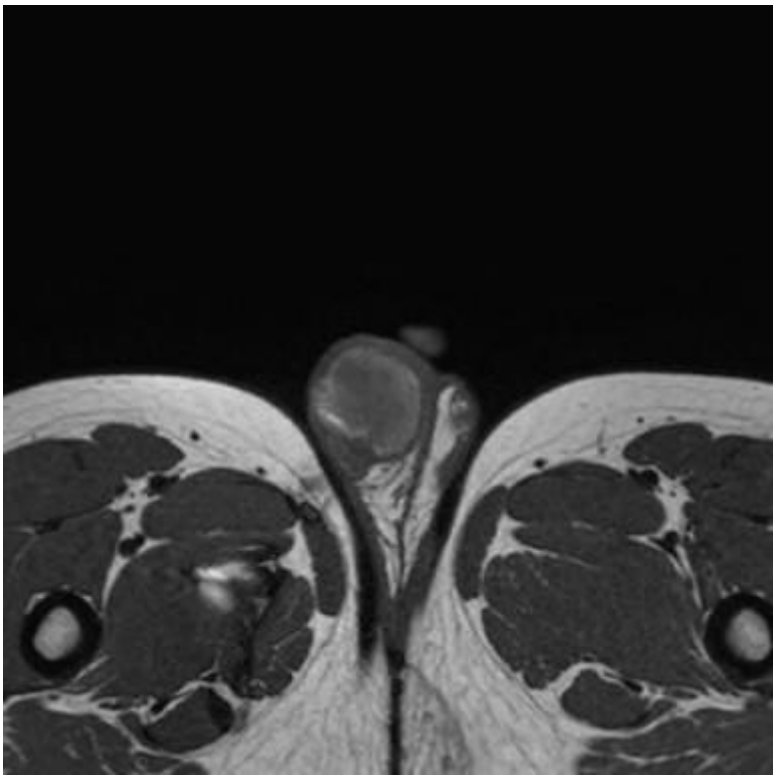
c



Description: On axial (a) and coronal (b) T2-weighted images the right hemiscrotum is occupied by a large mass, consisting in hyperintense extratesticular hematoma and medially-compressed testis with abnormal signal compared to the left one (c). **Origin:**

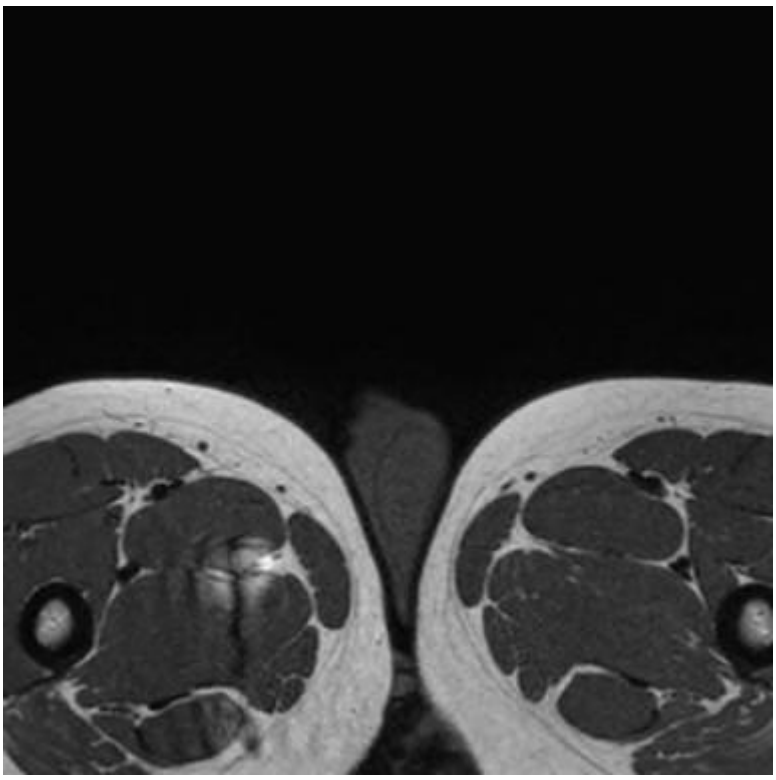
Figure 3

a



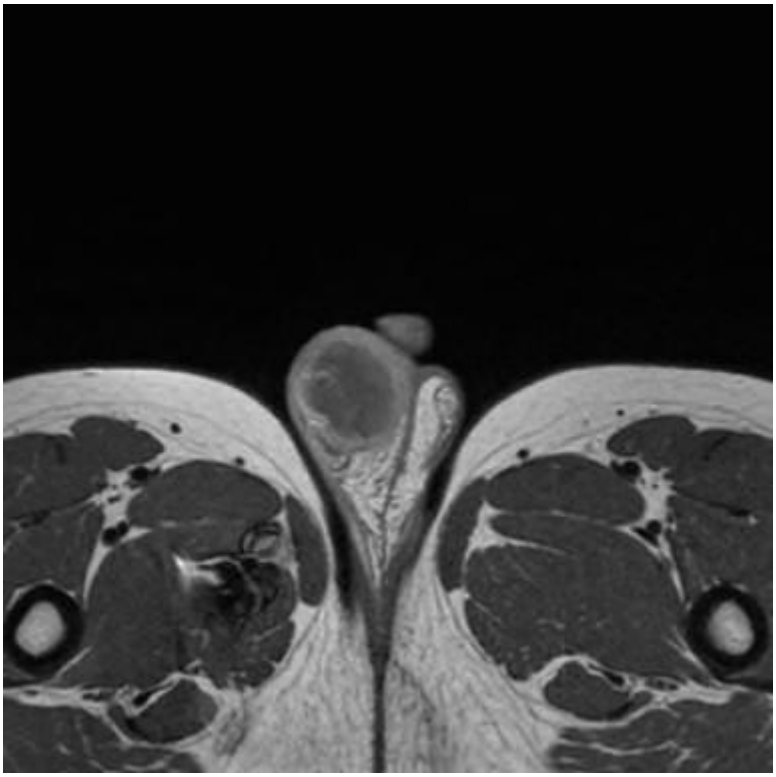
Description: Unenhanced axial (a) image show mixed hyperintense signal in the right hemiscrotum consistet with the presence of extratesticular hematoma and compressed testis with abnormal signal compared to the left one (b). **Origin:**

b



Description: Unenhanced axial (a) image show mixed hyperintense signal in the right hemiscrotum consistet with the presence of extratesticular hematoma and compressed testis with abnormal signal compared to the left one (b). **Origin:**

c



Description: After iv gadolinium, on axial (c) and coronal (d) postcontrast T1-weighted images the right testis and extratesticular hematoma do not enhance. **Origin:**

d

Description: After iv gadolinium, on axial (c) and coronal (d) postcontrast T1-weighted images the right testis and extratesticular hematoma do not enhance. **Origin:**