

Testicular rupture is associated with immediate pain, nausea, vomiting, and sometimes fainting. The hemiscrotum is tender, swollen, and ecchymotic. The testis itself may be difficult to palpate.

Blunt vulvar or perineal trauma in women may be associated with bleeding, pain and voiding problems, bladder catheterisation is usually required.

In genital trauma, a urinalysis should be performed. The presence of visible haematuria requires a retrograde urethrogram in males. In females, flexible or rigid cystoscopy is recommended to exclude urethral and bladder injury [336, 338]. In women with genital injuries and blood at the vaginal introitus, further gynaecological investigation is needed [336].

In cases of suspected penile fracture cavernosography, US or contrast-enhanced MRI [313, 340-342] can identify lacerations of the tunica albuginea in unclear cases [343] or provide reassurance that the tunica is intact. Magnetic resonance imaging is superior to US in diagnosing penile fracture [344, 345]. If a concomitant urethral injury is suspected, manage as outlined in section 4.4.

Intra-operative flexible cystoscopy can be performed during surgical exploration of penile fracture to rule out associated urethral injuries [263, 264].

Ultrasound should be performed to determine intra- and/or extra-testicular haematoma, testicular contusion, or rupture [332, 346-354]. However, the literature is contradictory as to the usefulness of US compared to clinical examination alone. Some studies have reported convincing findings with a specificity of up to 98.6% [355]. Heterogeneous echo pattern of the testicular parenchyma with the loss of contour definition is a highly sensitive and specific radiographic finding for testicular rupture [344]. Others reported poor specificity (78%) and sensitivity (28%) for the differentiation between testicular rupture and haematocoele, while accuracy is as low as 56% [347]. Colour Doppler-duplex US may provide useful information when used to evaluate testicular perfusion. If scrotal US is inconclusive, testicular CT or MRI may be helpful [356]; however, these techniques did not specifically increase the detection rates of testicular rupture [357].

4.5.3 Disease management

4.5.3.1 Animal bites

Local wound management depends on the extent of tissue destruction. Antibiotics should be prescribed in accordance with local resistance patterns [358]. The possibility of rabies infection must be considered, considering the geographical location, animal involved, specific nature of the wound and the type of attack (provoked/unprovoked). Elderly and immunosuppressed patients should be vaccinated with human rabies immunoglobulin and human diploid cell vaccine [359, 360].

4.5.3.2 Human bites

In cases of human bites, apart from wound management, infection should be considered since transmission of viral diseases may occur, Hepatitis B vaccine/immunoglobulin and/or immunodeficiency virus (HIV) post-exposure prophylaxis should be offered. For further details, see Guidelines for the Management of Human Bite Injuries [361].

4.5.3.3 Blunt penile trauma

Blunt trauma to the flaccid penis does not usually cause tearing of the tunica. Subcutaneous haematoma after sexual intercourse, without associated rupture of the cavernosal tunica albuginea, does not require surgical intervention. In these cases, non-steroidal analgesics and ice-packs are recommended [362].

4.5.3.4 Penile fracture

The thickness of the tunica albuginea in the flaccid state (approximately 2 mm) decreases in erection to 0.25-0.5 mm and is therefore more vulnerable to traumatic injury [355, 363]. When a penile fracture is diagnosed, surgical intervention with closure of the tunica albuginea is recommended; it ensures the lowest rate of negative long-term sequelae and has no negative effect on the psychological wellbeing of the patient [364]. The approach is usually through a circumferential incision proximal to the coronal sulcus which enables complete degloving of the penis. Increasingly, local longitudinal incisions centred on the area of fracture or ventral longitudinal approaches are currently used [365]. A recent SR on the management of penile fractures concluded that immediate repair should be within 24 hours of presentation [366]; however, delayed presentation should not prevent exploration [316]. Further localisation may be gained with a flexible cystoscopy performed prior to incision, if urethral trauma is suspected and eventually proven [244]. Surgical closure of the tunica should be carried out using absorbable sutures.