INTRODUCTION
Penile Fracture (PF) is an infrequent but possibly under-reported urological emergency that may have distressing physical, functional and psychological consequences. PF is defined as discontinuity of the tunica albuginea surrounding the corpus cavernosum. Its etiology is commonly blunt trauma that occurs when the penis is erect. Physically bending an erect penis, some forms of sexual intercourse, masturbation, and falling out of bed can cause PF. The diagnosis of PF can usually be made clinically on the basis of the physical examination and the patient's history.

A large penile hematoma can be seen on the physical examination. Other physical examination findings are development of swelling and penile deformity. According to hospital statistics in the United States, the incidence of PF is 1/175,000 men per year. In total, 1,331 PF cases were reported in 183 papers between 1935 and 2001 and most were reported from countries of the Mediterranean and Middle East. Coitus as the etiological factor of PF was reported in 33% and 60% of cases. Although it is perceived as a relatively rare condition, the incidence of PF might be increasing. Therefore, the true incidence of PF is perhaps much higher due to under-reporting. Ultrasonogram (USG), Magnetic Resonance Imaging (MRI) and cavernosography are the methods used for imaging of PF. The penis is an ideal structure for imaging by USG. It is able to detect the site of the tear as an interruption of the echogenic line of the tunica albuginea and can be used for detection and determining the location of the tear. High frequency linear array probes are used and provide a high definition image quality. In 1983, Dierks and Hawkins first described the use of USG for the evaluation of corpus cavernosum rupture.

CASE REPORT
A 23-year-old unmarried male presented to Emergency Room (ER) with penile shaft swelling and deformity. There was no history of sexual intercourse or blunt trauma to penis. The patient stated that his penis was caught in his underwear during changing of clothes and after approximately 30 minutes he noticed significant swelling and change of shape of penile shaft. On physical examination, there was a large hematoma/swelling overlying the left lateral aspect of glans penis extending to the left side of the penile shaft. There was deformity of the penile shaft. There was no urinary retention, dysuria or macroscopic hematuria. There was mild tenderness on palpation. Due to this vague history, the attending doctor of ER referred the patient for USG of penis and testes.

USG of the penis was performed with high resolution linear array transducer (7 - 10 MHz) on Xario™ 200 ultrasound scanner by a consultant radiologist (WMN) and findings were confirmed by second consultant radiologist (AKV). It showed large isoechoic area adjacent to left tunica albuginea which was reported as large penile shaft hematoma. There was a suspected breach in the tunica albuginea on left side, and the hematoma was in close proximity of this defect. Both corpora cavernosa and right tunica albuginea appeared unremarkable (Figure 1). The diagnosis of PF and associated penile shaft hematoma was made. The patient was then referred to consultant urologist (SIA) of our hospital which confirmed the diagnosis by clinical examination and USG findings. The patient was admitted to surgical ward and underwent surgery after the swelling subsided. The surgical findings confirmed the USG findings. There was a defect in the tunica albuginea and corpus cavernosum on left side measuring approximately 2.0 cm which was repaired using vicryl 2.0 and vicryl 3.0 sutures. Two clotted...
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hematomas were also aspirated from the penile shaft. The patient responded well to surgical repair without any complications and the penile shape returned to normal. On 3 - 4 months follow-up, the patient reported normal erection and voiding function.

DISCUSSION

The rupture of the tunica albuginea of the corpora cavernosa is defined as PF that occurs with the organ in an erectile position. Diagnosis is made by history and clinical examination, and the classic triad of an audible “cracking” sound, followed by immediate detumescence and pain, is usually present. Radiological modalities can be helpful when clinical diagnosis proves to be difficult and also to exclude urethral injury when it is clinically suspected. USG is a noninvasive, cost effective and widely available modality and it can be considered useful in the diagnostic investigation of penile trauma. USG is an examiner-dependent method whose interpretation depends on the examiner's experience. Because of the rarity of this lesion, few radiologists are trained to make an accurate diagnosis of PF. The examination is hindered by the presence of blood clots and edema at the site of the fracture, so that small lesions of albuginea may be missed by inexperienced radiologists. Nevertheless, some authors support USG as an ideal technique for the assessment of patients with penile trauma. Doppler USG is an adjunct to grey scale USG for the diagnosis of PF but the studies on the diagnosis of PF by using Doppler ultrasound, reported as a valuable diagnostic tool, are limited in number.

Other radiological modalities which may be helpful are MRI and/or urethrogram if urethral injury is suspected. MRI is able to identify disruption of the corpus cavernosum due to excellent tissue contrast. The disadvantage of MRI is that it is unable to diagnose PF when the penis is in flaccid state. Injection of alprostadil is necessary before MRI examination in order to achieve erection. Due to intracavernosal injection of 10 µg of alprostadil MRI is considered as an invasive technique for the diagnosis of PF. In the past, conservative treatment was the standard treatment for PF. However, such an approach was associated with a high incidence of complications, such as curvature, palpable nodule and erectile dysfunction in up to 50% of patients. Immediate surgical repair is now the standard of care and is superior to a non-operative management due to excellent long-term outcomes.

PF is a rare but potentially treatable entity. In typical cases it is diagnosed clinically but in equivocal cases, USG examination leads to immediate diagnosis of this condition. In conclusion, ultrasound is a noninvasive, cost effective and widely available modality and it can be considered useful in the diagnostic investigation of penile trauma.

REFERENCES