

Intra-abdominal testicular dislocation with vas deferens rupture in an open-book pelvic fracture: a case report

Ahmet Anıl Karakaya^{1,*} Talip Safa Kemikli¹ Mustafa Tekdemir¹
and Ömer Can Ünlü¹

¹Department of Orthopedics and Traumatology, University of Health Sciences Kayseri City Training and Research Hospital, 38080, Kayseri, Türkiye

***Corresponding author:** Ahmet Anıl Karakaya, Department of Orthopedics and Traumatology, University of Health Sciences Kayseri City Training and Research Hospital, 38080, Kayseri, Türkiye; leukothea23@gmail.com

Received: 10 February 2026; Accepted: 16 June 2026; Published: 01 August 2026

Abstract

Open-book pelvic fractures represent high-energy injuries associated with significant instability and a high incidence of concomitant visceral trauma. Although genitourinary injuries are commonly reported in anteroposterior compression-type pelvic ring disruptions, testicular dislocation with an associated vas deferens rupture is exceptionally rare. In this case report, we present the case of a 19-year-old male who sustained an unstable open-book pelvic fracture following a motor vehicle collision. This rare case underscores the importance of meticulous intraoperative assessment and comprehensive evaluation of soft-tissue structures in unstable pelvic ring injuries, highlighting that rare but clinically significant genitourinary injuries may be encountered during definitive orthopedic management.

Keywords: Open-book pelvic injury, vas deferens rupture, testicular dislocation, genitourinary injury, intra-abdominal, anteroposterior compression (APC) pelvic injury, INFIX

Introduction

Pelvic ring fractures are severe orthopedic injuries that typically result from high-energy trauma and are frequently accompanied by life-threatening systemic injuries. Open-book pelvic injuries, primarily caused by an anterior-posterior compression mechanism, are characterized by anterior pelvic ring diastasis and carry a significant risk of concomitant genitourinary system injuries [1]. Testicular dislocation and vas deferens rupture are a rare clinical entity following blunt trauma and may easily be overlooked due to the distracting presence of more severe associated injuries. Delayed diagnosis can lead to serious morbidities, including testicular atrophy, infertility, and chronic scrotal pain [1, 2].

In this case report, we present a rare case of intra-abdominal testicular dislocation and associated vas deferens rupture occurring concomitantly with an open-book pelvic fracture. We aim to highlight the diagnostic challenges and management considerations of this unique injury pattern.

Case report

A 19-year-old male patient was admitted to the emergency department following a motor vehicle collision and was immediately evaluated in the resuscitation unit. On initial assessment, the patient was hemodynamically stable. A physical examination, performed in accordance with the Advanced Trauma Life Support (ATLS) protocol,

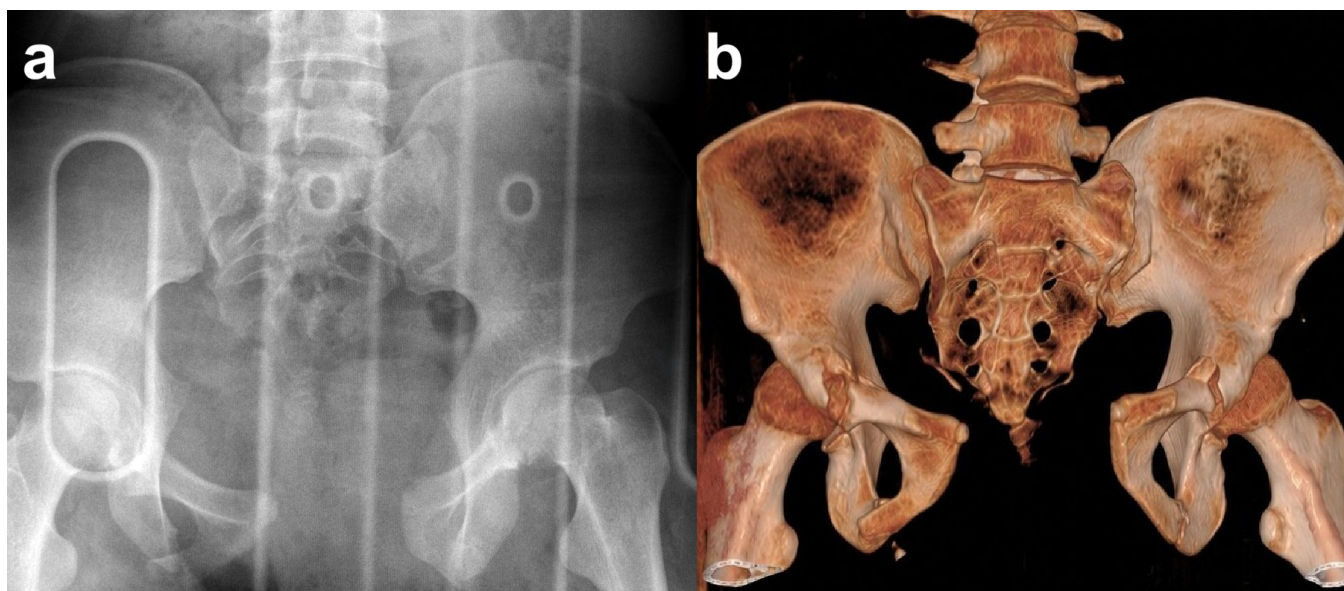


Figure 1. a) X-ray and **b)** 3D computed tomography images of the patient with a Type III anteroposterior compression (APC) pelvic injury.

revealed clinical signs of pelvic instability. Extremity circulation was intact, and there were no neuromotor deficits. Scrotal examination revealed bilateral swelling, prompting further imaging. No macroscopic hematuria was observed. An anteroposterior pelvic radiograph demonstrated marked diastasis of the pubic symphysis. Computed tomography (CT) imaging revealed pelvic ring diastasis accompanied by bilateral pubic and ischial fractures, as well as right sacroiliac joint disruption (Figure 1). After vital signs stabilized, the patient was referred to a urologist. The anatomical position of the testes could not be clearly determined on the initial CT scan. For emergent stabilization, a pelvic binder was applied, and the patient was transferred to the operating room. An external fixator was placed via the iliac wings, and the patient was subsequently admitted to the intensive care unit. Definitive surgical treatment was deferred until complete hemodynamic stability was achieved.

The patient underwent definitive surgery on the fourth day after the trauma. The external fixator was removed, and a pelvic anterior internal fixator (INFIX) was applied via the supra-acetabular corridor. A percutaneous 6.5-mm cannulated screw was inserted to address the right sacroiliac joint dislocation. Due to instability of the right ilium, the right inguinal incision was extended medially for exploration, revealing a disruption of the right rectus abdominis muscle. During this exploration, a testis was incidentally observed within the pelvic cavity (Figure 2). Intraoperative urological consultation confirmed that the left testis had dislocated from the scrotum into the pelvis. In addition, a total rupture of the vas deferens was

detected. Following confirmation of adequate vascularity, the testis was relocated and secured to the scrotum via orchiopexy by the urology team. Rupture of the vas deferens was repaired utilizing vasovasostomy. Following this, the pelvic stabilization was completed (Figure 3).

During the postoperative period, the patient developed a superficial infection at the surgical incision site, which was successfully managed with serial debridements and negative pressure wound therapy (NPWT). The patient was discharged approximately six weeks after admission. Scrotal color Doppler ultrasonography performed 5 months postoperatively revealed that both testes were of normal size, with a homogeneous parenchymal echotexture and normal vascularity. Epididymal vascularity was also normal. The pelvic INFIX system was removed six months after surgery. At the nine-month follow-up, the patient was found to be independently mobile and reported no complaints (Figure 4).

Discussion

Pelvic ring fractures, particularly open-book injuries, are hallmark indicators of high-energy trauma and are frequently associated with multisystem polytrauma [1, 2]. An Anterior-Posterior Compression pelvic injury, commonly known as an “open book” fracture, occurs when a heavy force strikes the pelvis from the front. This impact forces the pelvic bones apart like an open book, tearing supportive ligaments and causing severe, life-threatening internal bleeding [1, 2]. Anteroposterior compression results in diastasis of the pubic symphysis and carries a significantly

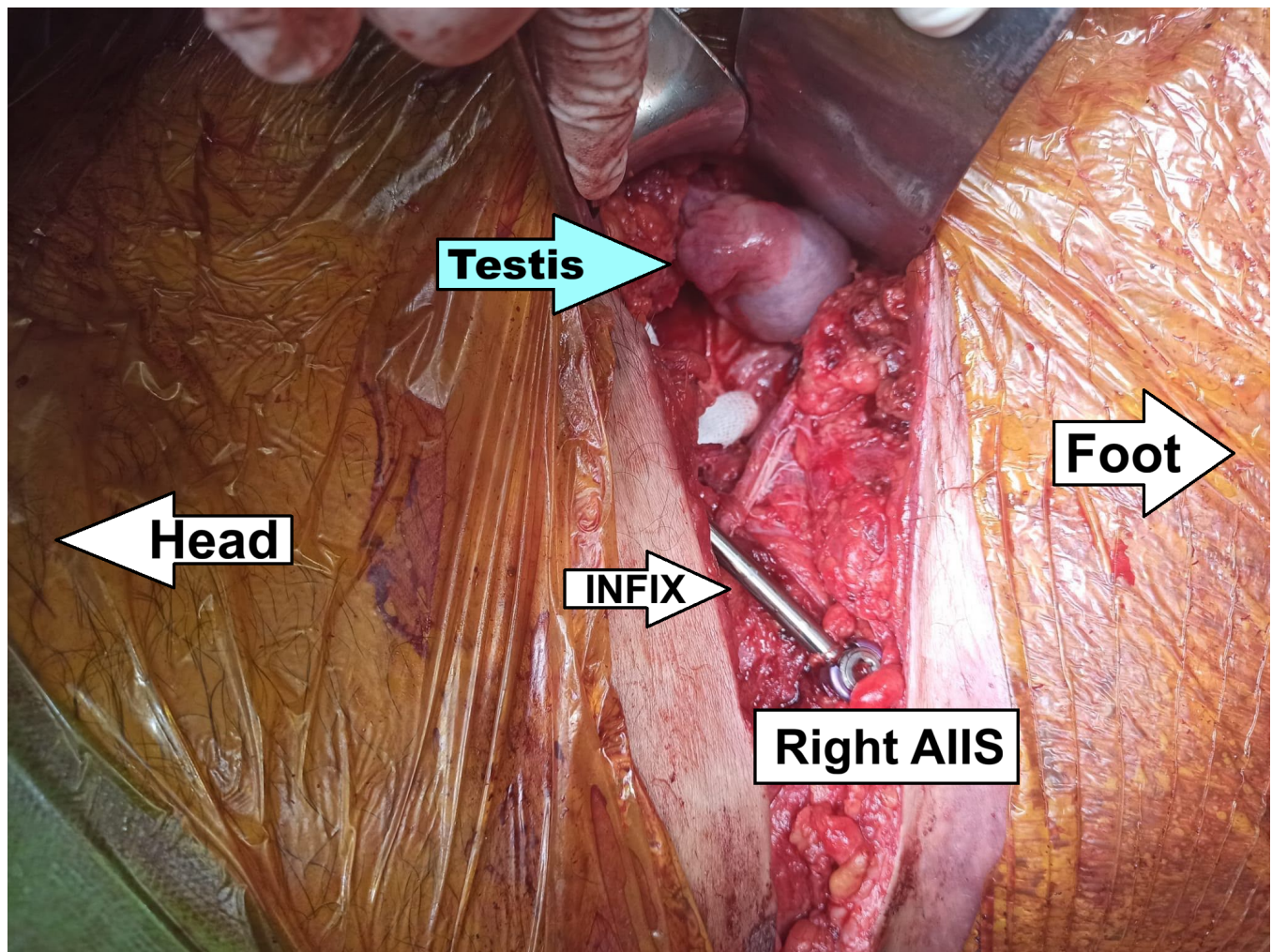


Figure 2. Intraoperative image demonstrating the testis dislocated into the intrapelvic cavity. AIIS: Anterior Inferior Iliac Spine; INFIX: Pelvic Anterior Internal Fixator system

increased incidence of concomitant genitourinary injuries [1-6]. Although urethral and bladder injuries are more commonly encountered, testicular dislocation is an extremely rare entity that is easily overlooked [4-6]. The mean reported patient age is 27 years, with motorcycle accidents accounting for approximately 80% of cases [3-7]. The most common site of dislocation is the inguinal canal (50%) [5]. Less frequent locations include the pubic region (18%), penis (8%), canalicular region (8%), perineum (4%), acetabulum (4%), and thigh (2%) (Table 1). Intra-abdominal displacement, as observed in our case, is reported in only 6% of cases. Bilateral dislocation occurs in approximately 30% of patients [6]. Testicular dislocation is characterized by the displacement of the testis from the scrotum into the inguinal canal, prepubic region, or, rarely, the intra-abdominal cavity following blunt trauma [3-8]. In open-book pelvic injuries, the abrupt disruption

of the anterior pelvic ring, sudden elevations in intra-abdominal pressure, and traction forces acting on the spermatic cord may facilitate the proximal migration of the testis [3-8]. This mechanism has been particularly well-described in seatbelt-related injuries and high-speed motor vehicle collisions [7].

In trauma patients, the immediate prioritization of life-threatening injuries can lead to missed diagnoses of rare but clinically significant conditions such as testicular dislocation [8]. Failure to perform or adequately assess the scrotal examination is a leading cause of delayed diagnosis [7]. Delayed recognition may result in severe long-term complications, including testicular ischemia, atrophy, infertility, and chronic pain [9]. In this case, the patient's condition at presentation and significant scrotal swelling limited accurate initial assessment. Consequently, a definitive diagnosis was established intraoperatively during surgical management of the pelvic fracture.



Figure 3. Postoperative radiograph demonstrates removal of the external fixator and application of an anterior internal fixator (INFIX) in the supra-acetabular region. The right sacroiliac joint dislocation was stabilized using a 6.5 mm percutaneous cannulated screw.



Figure 4. Anteroposterior pelvic radiograph of the patient at 9 months postoperatively.

Despite the relatively delayed reduction, no clinical complications were observed during the follow-up period.

Scrotal color Doppler ultrasonography is recommended as the first-line imaging modality to determine the exact location of the testis, assess the integrity of the arteriovenous supply, and exclude associated injuries such as testicular rupture, spermatic cord torsion, or epididymal disruption [10]. In cases where the testis is

Table 1. Anatomical distribution of traumatic testicular dislocation sites.

Dislocation Site	Incidence (%)	Key Characteristics in Literature
Inguinal Canal	50	Most common site; often palpable on exam
Pubic Region	18	Superficial displacement over the pubic bone
Penile/Canalicular	16	Combined incidence (8% each); rare subcutaneous variants
Intra-abdominal	6	Our case variant; highest risk of delayed diagnosis
Perineum/Acetabulum/Thigh	10	Remaining rare sites combined ($\leq 4\%$ each)

non-palpable within the scrotum, computed tomography (CT) findings can be diagnostic [11]. When evaluating pelvic CT scans, careful attention must be directed not only to osseous structures but also to the soft-tissue envelopes and the anatomical location of the testes. In the present case, the profound disruption of the anterior pelvic ring—evidenced by marked symphyseal diastasis and bilateral pubic fractures—created a massive anatomical defect that facilitated the rare intra-abdominal migration of the testis. The extreme traction forces generated during this open-book mechanism were severe enough to cause a concomitant complete rupture of the vas deferens, a catastrophic urological injury that is exceptionally rare in closed pelvic trauma. To the best of our knowledge, there are no previous reports describing intra-abdominal testicular dislocation and complete vas deferens rupture occurring in conjunction with pelvic diastasis.

Standard pelvic CT protocols in trauma patients often terminate at the level of the pubic rami, which may hinder an accurate assessment of testicular position. In the current case, the limited inferior extent of the initial CT images precluded the preoperative identification of the dislocation, resulting in the diagnosis being established exclusively during surgical exploration. Furthermore, the initial scrotal examination was inconclusive due to the patient's scrotal swelling and unstable vital signs. Therefore, a more rigorous and systematic evaluation of scrotal structures is required during the radiological assessment of male patients subjected to high-energy pelvic trauma.

Conclusion

This case highlights that testicular dislocation, although exceedingly rare, is a clinically significant injury that must be considered in patients presenting with open-book pelvic fractures. Systematic physical examination and careful radiological evaluation are crucial for the early recognition and appropriate management of such

injuries in patients with pelvic trauma. Long-term follow-up focusing on urological and fertility outcomes is ongoing for the present patient.

Author contributions

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by AAK, TSK, MT, and ÖCÜ. The first draft of the manuscript was written by AAK, TSK, MT, and ÖCÜ, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Statements and declarations

Funding

The authors received no financial support for the research and/or authorship of this article.

Conflicts of interest

The authors declare that they have no conflicts of interest.

Ethical statement

The authors confirm that this case report was conducted in accordance with the ethical standards outlined in the 1964 Declaration of Helsinki and its later amendments. Written informed consent was obtained from the patient for the publication of this case report and the accompanying images.

ORCID iD

A.A.K 0009-0008-3069-5591

T.S.K 0009-0000-8038-4611

M.T. 0009-0008-0975-3726

Ö.C.Ü. 0000-0003-0807-7427

Cite this article as

Karakaya AA, Kemikli TS, Tekdemir M, Ünlü ÖC. Intra-abdominal testicular dislocation with vas deferens rupture in an open-book pelvic fracture: a case report. *J Multidiscip Orthop Surg.* 2026;2(2):38-42. doi: 10.64575/0qwad947

References

1. Coccolini F, Stahel PF, Montori G, Biffl W, Horer TM, Catena F, et al. Pelvic trauma: WSES classification and guidelines. *World J Emerg Surg.* 2017;12:5. doi: 10.1186/s13017-017-0117-6.
2. Somdaş K, Yalçın S, Ozan F. From heel to hip: medial buttressing for quadrilateral plate fractures of the acetabulum with a locking calcaneal plate. *J Multidiscip Orthop Surg.* 2026;2(1):1-7. doi: 10.64575/rxq4kx52.
3. Colalillo G, Pletto S, Laudazi M, Asimakopoulos AD. Traumatic testicular dislocation in the abdomen: diagnosis and management. *BMJ Case Rep.* 2023;16(9):e254530. doi: 10.1136/bcr-2022-254530.
4. Hsu MW, Hsieh PF, Tsai LH. A rare and easily overlooked case of bilateral traumatic testicular dislocation and an alternative viewpoint on delayed management. *Medicina (Kaunas).* 2023;59(5):892. doi: 10.3390/medicina59050892.
5. Chiu YC, Lin YK. Traumatic testicular dislocation: a case report and literature review. *Medicine (Baltimore).* 2022;101(18):e29137. doi: 10.1097/MD.00000000000029137.
6. Subramaniam S, Khairil M, Khalil A, Zakaria J, Hayati F. Managing traumatic testicular dislocations: what we know after two centuries. *BMJ Case Rep.* 2020;13:e236801. doi: 10.1136/bcr-2020-236801.
7. Carvalho NMN, Marques ACX, Souza IT, Soares VG, Nascimento FG, Pinto LM, et al. Bilateral traumatic testicular dislocation. *Case Rep Urol.* 2018;2018:1-5. doi: 10.1155/2018/7162351.
8. Sakamoto H, Iwasaki S, Kushima M, Shichijo T, Ogawa Y. Traumatic bilateral testicular dislocation: recovery of spermatogenesis by orchiopexy 15 years after onset. *Fertil Steril.* 2008;90(5):2009.e9-2009.e11. doi: 10.1016/j.fertnstert.2008.02.026.
9. Yoshimura K, Okubo K, Ichioka K, Terada N, Matsuta Y, Arai Y. Restoration of spermatogenesis by orchiopexy 13 years after bilateral traumatic testicular dislocation. *J Urol.* 2002;167(2 Pt 1):649-50. doi: 10.1016/S0022-5347(01)69109-2.
10. Eldore LW, Borries T, Malick H, Mason K, DePrisco G, et al. Testicular rupture following motorcycle accident. *Cureus.* 2023;15(7):e41609. doi: 10.7759/cureus.41609.
11. Naik MN, Shaikh OH, Vijayakumar C, Kumbhar US. Rare case of traumatic bilateral testicular dislocation. *BMJ Case Rep.* 2021;14:e244085. doi: 10.1136/bcr-2020-244085.
12. Tai YS, Chen YS, Tsai PK, Wong WJ. Traumatic testicular dislocation: a rare occurrence of blunt scrotal injury. *Urol Sci.* 2014;25(4):158-60. doi: 10.1016/j.urols.2014.08.001.