Unilateral Traumatic Testicular Dislocation in a Patient of Pelvic Diastasis and Spine Fracture in an Adult: A Case Report and Review of Literature

Sandeep Sehrawat, Vijay Sharma, G Siva Srivastava, Kamran Farooque

Abstract

Introduction: With advancement, the occurrence of road traffic accidents is common. Timely management of fractures of the spine and pelvis is of the utmost importance for survival, ambulation, and maintenance of normal life. Genitourinary complications following pelvic ring injuries are not uncommon; however, testicular dislocation is rare and can cause significant morbidity if not managed appropriately.

Case Report: Our case was a 25-year-old male who was presented to the tertiary trauma center following a motorcycle accident. He had an anteroposterior compression (APC) fracture of the pelvic ring (APC-III, Arbeitsgemeinschaft für Osteosynthesefragen 61–C1.2), D8-D9 vertebra compression fracture, fracture of the left distal radius, and radio-carpal dislocation. However, no concomitant genitourinary injury was noticed at the initial assessment. After resuscitation, the pelvis was planned to be fixed with an anterior symphyseal plate and posterior sacroiliac joint fixation using 2 cancellous screws. While using Stoppa’s approach, surprisingly, the right testicle was observed to be inferior to the pubis. Trauma surgery help was sought and the dislocated testis was reduced and managed with orchidopexy after checking the viability. At the follow-up of 1 year, the pelvic fracture was united without urogenital complication.

Conclusion: In cases of complex pelvic ring injury, a careful genital examination should be performed and a multi-disciplinary team approach with compromising of radiology, traumatology, and orthopedics departments should be adopted for better patient outcomes.

Keywords: Genito-urinary injuries, traumatic testicular dislocation, pelvic fracture.

Introduction

The incidence of pelvic fracture following a high-energy trauma is approximately 1–3% [1]. The overall incidence of combined spinal and pelvis fractures is reported to be around 10.4%. The genitourinary injuries following pelvic fracture are not uncommon. However, the association of testicular dislocation is a rare event. Fewer than 60 cases have been documented in the literature [2]. Testicular dislocation in the setting of pelvic ring injury most commonly occurs as a result of “fuel tank” or “straddle”-type injuries, in motorcycle accidents [3]. Delay in diagnosis and treatment is associated with an increased rate of orchidectomy and loss of testicular and spermatic function, which can lead to impaired fertility.

We present a unique case of missed traumatic unilateral testicular dislocation with a fracture of the spine and pelvic ring that was not diagnosed until surgery. We discuss the review of literature.
about such injuries, their outcomes, and steps that may be taken to prevent any delays in diagnosis.

**Case Report**

A 25-year-old man was presented to the trauma emergency after a motorcycle collision with a heavy four-vehicle. The primary management was done elsewhere and then referred to our center for definitive management. The patient was re-evaluated using advanced trauma life support guidelines and was resuscitated. Upon primary assessment, the patient was Borderline [4].

In the primary survey, there was a lacerated wound of size 3 × 2 cm over the anterior aspect of the left elbow and 10 × 2 cm over the left wrist without distal neuro-vascular deficit. There were bruises on the scrotum and penile base with palpable testis in the scrotum. Upon subsequent radiological evaluation, he was diagnosed with D8, D9 vertebra compression fracture with ASIA E neurology, pubic diastasis, and right sacroiliac joint dislocation (anteroposterior compression-III, Arbeitsgemeinschaft für Osteosynthesefragen [AO] 61–C1.2), gustilo-anderson open grade 3a fracture of the left distal radius and radio-carpal dislocation (AO Type 23-C3) (Fig. 1 and 2). After a secondary survey assessment, the patient was taken to the operation theatre for management of an open grade 3A fracture of the left distal radius and radio-carpal dislocation. Once the patient improved clinically and built up his hematocrit level, he was posted for elective pelvic fracture fixation i.e. on day 4 following trauma. Surgery was planned to apply a reconstruction plate for pubic diastasis through Stoppa’s approach and closed reduction internal fixation for Sacro-Iliac (SI) joint fixation using percutaneous cannulated cancellous screws (CCS). Intra-operatively during deep dissection in Stoppa’s approach, inadvertently an ovoid smooth white swelling was seen protruding out from below the pubis on the right side internally through the inguinal canal into the abdominal cavity (Fig. 3).

On careful examination, the right testis was found to have migrated into the pelvis through the abdominal wall defect. In an operative assessment from the trauma surgeons, it was sought and the dislocated testis was reduced by manual manipulation and orchidopexy was done. This was followed by anterior pubic diastasis fixation with a 5-hole reconstruction plate and the right SI joint close reduction internal fixation was done through two CCS. The associated spine fracture was managed conservatively.

In the post-operative period, retrospective analysis of an abdominal computed tomographic scan confirmed the diagnosis of right testicular dislocation (Fig. 4). The patient did not any history of cryptorchidism, retractile testis, or inguinal hernia. Hence, the diagnosis of missed right testicular dislocation was confirmed. There were no immediate post-operative complications noted. The wound was healed in the follow-up. The patient was followed regularly for up to 1 year. On ultrasonography of the bilateral scrotum, there was adequate blood flow in the bilateral testis during his last visit. However, the patient and his relatives were counseled about the
occurrence of inguinal hernia in the future.

Discussion

Claubry first described this entity in 1818; traumatic testicular dislocation to the extra scrotal migration of one or both testicles as a consequence of direct scrotal trauma [5]. Motorcycle collisions are the most frequent causative mechanism; the sudden deceleration of the motorcycle catapults the rider forward. Because the rider is straddled over the saddle, his perineum and scrotum are struck in the midline by the bike tank, which presses the testes upward, forcibly displacing them in a lateral and upward direction [6]. Boudissa et al. emphasized the importance of initial physical examination, including palpation and inspection [7]. It is important to ask about any history of cryptorchidism, testicular retraction, or previous inguinal hernia. On clinical evaluation, testicular dislocation may appear as an empty scrotum, loose skin (Brockman’s sign), testicular hematoma, and inguinal mass. This physical examination may be hampered by pain, edema, hematoma, hematocoele, deep testicular dislocation, damage to neighboring structures, or obesity of the patient.

Figure 3: It shows the intra-operative findings. (a) The arrow shows the defect in the right lower abdominal wall. (b) Viable right testis with intact spermatic cord. (c) Pubis diastasis fixation through reconstruction plate. (d) Orchidopexy of the right testis with a sutured wound at the right scrotum.
Figure 4: The pre-operative computed tomography scan showed the spot crucial points that were missed initially. (a) Axial section depicting the absence of testis in the rt scrotum at the level of the lower scrotum. (b) Axial section showing right testis at the level of the superficial inguinal ring. (c) Sagittal section demonstrating left testis at the level of the scrotum. (d) The sagittal section in which the arrow depicts the level of the right scrotum near the superficial inguinal ring. (e) A coronal section in which arrow marks right testis at the level of rt superficial inguinal ring.

<table>
<thead>
<tr>
<th>Serial number</th>
<th>Author et al.</th>
<th>Journal/Year</th>
<th>Age</th>
<th>Unilateral/Bilateral</th>
<th>Diagnosis</th>
<th>Fracture</th>
<th>Associated Injury</th>
<th>Treatment</th>
</tr>
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<tr>
<td>2</td>
<td>Ko et al.</td>
<td>Annals of emergency medicine, 2004</td>
<td>17</td>
<td>Left</td>
<td>60 days</td>
<td>Pelvis fracture</td>
<td>Lt femoral shaft</td>
<td>Orchiectomy</td>
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<td>4</td>
<td>Praveenprasit Sin</td>
<td>Journal of medical association of thailand, 2010</td>
<td>27</td>
<td>Left</td>
<td>21 days</td>
<td>Pelvic fracture</td>
<td>-</td>
<td>Orchiopexy</td>
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<tr>
<td>5</td>
<td>Tsurukiri et al.</td>
<td>Images in Clinical Urology, 2011</td>
<td>32</td>
<td>Bilateral (one testis was prolapsed at the perineal region, and the other was dislocated in the superficial perineal region)</td>
<td>Emergency</td>
<td>Pelvis injury</td>
<td>-</td>
<td>Surgically reduced</td>
</tr>
<tr>
<td>7</td>
<td>Bouidissa et al.</td>
<td>Orthopedics and Traumatology, 2013</td>
<td>62</td>
<td>Bilateral</td>
<td>Emergency</td>
<td>Tile B1 pelvic ring fracture</td>
<td>Gustilo 3B open left ilial mid-diaphyseal fracture, Gustilo 3A open left wrist fracture and spontaneously reduced right knee dislocation</td>
<td>Orchiopexy</td>
</tr>
<tr>
<td>8</td>
<td>Gómez et al.</td>
<td>International Urology and Nephrology, 2014</td>
<td>25</td>
<td>Left</td>
<td>Admission</td>
<td>Pelvic fracture</td>
<td>Rupture of the membranous urethra</td>
<td>Surgical debridement and orchiopexy</td>
</tr>
<tr>
<td>9</td>
<td>Kim et al.</td>
<td>Journal of Orthopedic Science, 2016</td>
<td>57</td>
<td>Right (external inguinal ring level)</td>
<td>1 year</td>
<td>Tile C-2 pelvic ring injury</td>
<td>-</td>
<td>Orchiectomy</td>
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<tr>
<td>11</td>
<td>Middleton et al.</td>
<td>Journal of Bone and Joint Surgery, 2019</td>
<td>51</td>
<td>Bilateral (right testicle dislocated more proximally than the left)</td>
<td>Intraoperative swelling</td>
<td>APC type 2</td>
<td>Left pneumothorax, Left 4–6 anterolateral rib fractures, right hemoral shaft fracture with intra-articular extension</td>
<td>Urologist manually reduced both testicles</td>
</tr>
<tr>
<td>12</td>
<td>Morgan et al.</td>
<td>BMJ Case report, 2019</td>
<td>29</td>
<td>Right</td>
<td>Emergency</td>
<td>APC</td>
<td>Subarachnoid hemorrhage</td>
<td>Orchiopexy</td>
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<td>13</td>
<td>Bernhard et al.</td>
<td>Cureus, 2021</td>
<td>29</td>
<td>Left</td>
<td>Intra-operative (inferior to the pubis)</td>
<td>APC type 2</td>
<td>-</td>
<td>Manual reduction</td>
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<td>14</td>
<td>Chouhan et al.</td>
<td>JOCR, 2021</td>
<td>30</td>
<td>Left, intra-pelvic</td>
<td>Emergency</td>
<td>-</td>
<td>-</td>
<td>-</td>
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Table 1: It depicts the reported testicular dislocation in English literature, their associated injuries, and management.
Naseer et al. also mentioned the importance of scrotal examination in a traumatic patient [8]. Doppler ultrasonography is helpful in detecting the blood flow and therefore the viability of the testicle.

In addition, Ezra et al. [9] emphasized the need for computed tomography (CT) for the rapid diagnosis of scrotal trauma, including testicular rupture, torsion, dislocation, hematoma, or contusion, as well as epididymal, scrotal, and urethral injuries, because most polytrauma or pelvic trauma patients are initially assessed by CT. In our case, an initial CT scan (Fig. 4) revealed right traumatic testis dislocation. However, we did not take cognizance because the testis was palpable when the patient had a pelvis binder.

To avoid such mistakes in the future, we must be alert to the feasibility of testicular dislocation in addition to fracture patterns when initial CT scans are performed in cases of pelvic fractures. Surgeons should be aware that inattention to testicular injuries including testis dislocation, rupture, and torsion in cases of polytrauma or pelvic fracture may lead to inevitable testicular resection in the future. Reported cases in English literature are mentioned in Table 1 with their management.

**Conclusion**

This incident highlights the importance of clinically examining the patient’s scrotum in severe injuries to ensure the testis position and it also reminds us to look at CT scans carefully for the same.

**Clinical Message**

Close suspicion should be considered particularly in adults in the case of a pelvic fracture who had a fuel tank type of injury pattern. Orchidopexy can provide good reproductive function if performed at the right time.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Source of support:** None

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5. Claubry EG. Observaciones sur una retrocesion subite des deux testicules dans l0 abdomen, a la suite d’une violente compression de la parte inférieure de la paroi abdominale par une roue de la charrette. J Gen Med Chir Phram 1818;64:325-8.