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Case Report

Open Reduction With Internal Fixation in Locked Pubic Symphysis: A Case Presentation

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ABSTRACT

Regarding the fact that lateral compression is usually not the underlying mechanism of fracture, Locked pubic symphysis is a very rare injury. At most times it can be managed with closed reduction method; however, open reduction with or without internal fixation may sometimes be required. In rare cases, osteotomy is the only choice. Urethral or bladder damage can occasionally be found. In this study, we presented a case of locked pubic symphysis with failed closed reduction who underwent successful open reduction with internal fixation.

1. Introduction

Pelvic injuries are common in trauma practice and contribute for about 10% of all traumatic injuries [1]. Low energy traumas lead to individual bone fractures while the pelvis is usually stable. On the other hand, high energy trauma can lead to multiple pelvis fractures and disruption with an emergent condition due to possible vascular damage and blood loss [2, 3]. The type of injury depends on the force direction on the pelvis dividing traumas into vertical shear injuries, lateral compression injuries, or anteroposterior compression injuries [4]. Locked pubic symphysis is an uncommon pelvic injury following a lateral compression force and occurs when a pubic bone is entrapped behind the contralateral pubis. The tearing force shears the ligaments that usually stabilize the symphysis. It may be associated with an accompanying urethral injury. There are very few case reports in literature regarding locked pubic symphysis [5, 6]. In this case report, we present a patient who was managed with open reduction and internal fixation method.

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Figure 1. Pelvic X-ray of patient at the time of admission

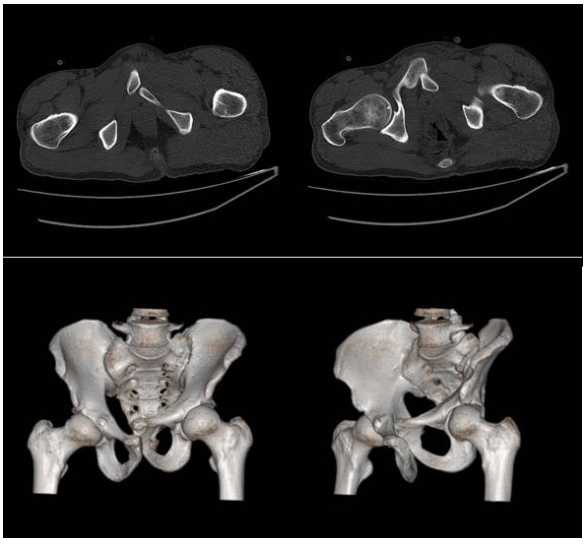

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Figure 2. Pelvic CT scan (3D reconstruction and axial views) at the time of admission

2. Case presentation

The case was a 30-year-old man who had fallen out of a tree (with a 5-m height according to the patient report). He was referred to Rasool Akram Hospital from a primary care center, where he had undergone unsuccessful closed reduction. He was admitted to the Hip Clinic of the hospital 24 hours after the original trauma. He was fully conscious and had stable vital signs. A primary evaluation was performed including abdominopelvic ultrasonography and a systematic physical examination. No sensory or motor function abnormality was detected. He was then healthy, except having a locked pubic symphysis found in pelvic x-ray (Figure 1). A pelvic computerized tomography (CT) scan was also used for better evaluation and planning for an open reduction surgery (Figure 2). A Foley catheter was also inserted and no damage to urethra was noted.

He was then transferred to the operation room. After skin preparation and site draping under general anesthesia, a Pfannenstiel incision was made, linea alba was opened and the Rectus abdominis muscle was divided. The symphysis pubis was found by gently elevating the Rectus abdominis muscle. Pelvic unlocking was done using abduction, flexion and external rotation maneuver (figure-4 and frog-leg positions). Thereafter, a reconstruction plate was placed on the superior aspect of symphysis pubis and fixed using four screws (No. 28 to 38) checked by C-arm fluoroscopy.

Stable reduction with plate was performed; after ensuring an appropriate fixation, hemostasis, and no hematuria, the muscles, subcutaneous tissues and skin were sutured. Early post-operative radiographies are shown in Figure 3. Patient passed an uneventful post-operation period and was discharged after 3 days. He was followed up for one month at the clinic with a normal sensory and motor function and range of motion. He had no hip pain. Surgery site was also healed. He had no urinary or sexual complaint and had normal daily activities.

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Figure 3. Early post-operative pelvic X-ray

3. Discussion

There are very few case reports of locked symphysis pubis in the literature for which different closed or surgical reduction approaches have been proposed. A closed reduction can usually be performed by locking the femur bone in flexion, abduction and external rotation. Care must be provided to prevent the femur fracture by applying force mostly to the iliac crest. However, external iliac vessels or the obturator neurovascular bundle may be at risk of injury during closed reduction. However, lateral force to the pelvis by a concurrent force to the symphysis may help with closed reduction method.

Furthermore, closed reduction method is not always successful; in some cases, open reduction may be necessary. Some studies have reported a successful closed reduction without any urethral or nerve injury [7]. Closed and open reduction methods are sometimes unsuccessful and an additional procedure such as superior pubic ramus osteotomy is necessary as reported by by O'Toole [8]. Some studies [9, 10] also reported simultaneous urethral injury that required secondary repair which was not observed in our patient. Open perineal variant of anterior hip dislocation can lead to a very poor outcome when performed with closed reduction [11].

Locked pubic symphysis was first described in 1952 by Eggers. He introduced two kinds of fracture including hyperextension and hyperabduction fractures [12]. Thulasiraman et al. in 2010 introduced a new type based on the distance of the contralateral pubis from midline (<2.5 cm, type 1; >2.5 cm, type 2) and whether the pubis has entered the opposite obturator foramen (type 3) or not [13]. Our patient had a type 1 injury based on this classification. Locked pubic symphysis can be managed with closed reduction method; however, open reduction with/without internal fixation is needed from time to time. In rare cases, osteotomy may also be needed. Urethral or bladder damage are sometimes found. Keeping these points in mind, it means that this is a rare case that, if managed properly, no problems will occur; with open reduction method and proper access, the patient will return to normal life after one month .

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Review Board of Department of Orthopedics Surgery, Rasool Akram Hospital affiliated to Iran University of Medical Sciences, Tehran, Iran. The study also observed the Helsinki Declaration and its later amendments.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interests.

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