CASE REPORT

Locked pubic symphysis into the obturator foramen:
A rare case presentation and literature review

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Summary

Locked pubic symphysis is a rare form of pelvic injury. It occasionally occurs after a lateral compression injury of the pelvis. We described an overlapping pubic symphysis dislocation that was locked into the contralateral obturator foramen. To the best of our knowledge, there are about seventeen similar cases reported in the literature. The pubic symphysis was finally reduced by means of a superior pubic ramus osteotomy to unlock the incarcerated pubic body out of the contralateral obturator foramen. As the reduction was unstable, the pubic symphysis was fixed with a reconstruction plate. The patient recovered completely and returned to normal activities within 4 months. At 1 year’s follow-up she reported no discomfort in the pubic symphysis region and was able to void urine normally.

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Introduction

Irreducible overlapping pubic symphysis dislocation is an uncommon form of pelvic injury [1—13]. It occurs when the affected pubic becomes trapped behind the contralateral pubis. Urethral injuries are frequently associated [1—8,14]. We report one such case with an overlapping pubic symphysis dislocation locked into the contralateral obturator foramen that was refractory to closed or open reduction. A superior pubic ramus osteotomy was required to facilitate reduction. The patient gave her consent for the publication.

Case presentation

A 42-year-old previously healthy female was involved in an industrial accident. A heavy load hit the patient from the right side and turned her over on the left side. The patient was secondary referred to our department. On admission, the patient was conscious and hemodynamically stable. The neurological and vascular systems of the lower extremities were normal except for slight diminished sensation on the posterior-lateral aspect of the left leg. The rectal examination was normal. She had no blood at the urethral meatus, but there was a bladder distension attesting of an obstacle and the urology specialist placed a suprapubic catheter.

An anteroposterior radiograph (Fig. 1a) revealed an overlapping pubic symphysis dislocation. CT scan (Fig. 1b) with 3D-reconstruction (Fig. 1c) showed a posterior and medial displacement of the right pubis that was locked into the left obturator foramen, entrapped by the right pubic tubercle.
and revealed a left zone-2 sacral fracture (AO classification type-B2) through the left foramina (Fig. 2). There was no other associated injury.

Because closed reduction was impossible, an open reduction was performed through a Pfannenstiel incision 7 days after injury. The right pubic ramus was found posterior to the left pubis and locked into the left obturator foramen. Trials to reduce the incarcerated pubis instrumentally remained unsuccessful. Subsequently, two 3.5 mm cortical screws were placed on the left superior pubic ramus, and a pelvic reduction forceps was used to pull the left pubis whilst the right pubis was pushed through the obturator foramen, but it also failed. Finally, a superior pubic ramus osteotomy was required to release the trapped right pubis with the help of a manual external rotation applied on the injured side. After reduction, the symphysis was unstable and was stabilized with a 8-hole reconstruction plate, which also fixed the osteotomized fragment. Then the patient was repositioned prone on a radiolucent operating-table for fixation of the left sacral fracture with a shaped limited-contact dynamic compression plate. A Foley catheter was put in place immediately after surgery, which drained clear urine. The suprapubic cystostomy was removed two days later.

Postoperative period was uneventful (Fig. 3). The patient was allowed a partial weight bearing at 8 weeks and full weight bearing at 4 months. The fracture healed with no secondary displacement (Fig. 4). Although there still exists a slight sensitive alteration of the posterior-lateral surface of the left leg, the patient had a normal urinary frequency and continence. Otherwise, she was painless and walked normally.
<table>
<thead>
<tr>
<th>Study</th>
<th>Radiologic manifestation</th>
<th>Posterior sacral injury</th>
<th>Neurologic lesions</th>
<th>Urethral injury</th>
<th>Reduction method</th>
<th>Type of fixation</th>
<th>Sequellae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanmugasundaram [3] (1970)</td>
<td>OPSD</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Open</td>
<td>Double hip spica cast</td>
<td>Urethral strictures; osteitis pubis</td>
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<tr>
<td>Webb [8] (1977)</td>
<td>OPSD</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Closed</td>
<td>No</td>
<td>Sexual dysfunction; pain</td>
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<tr>
<td>Robinson et al. [10] (1989)</td>
<td>OPSD</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Closed</td>
<td>No</td>
<td>Heterotopic ossification</td>
</tr>
<tr>
<td>Gordon et al. [5] (1991)</td>
<td>Locked OPSD</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Open</td>
<td>Internal fixation</td>
<td>No</td>
</tr>
<tr>
<td>Dorai and Kareem [6] (1991)</td>
<td>OPSD</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Closed</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Catonne et al. [2] (1996)</td>
<td>Locked OPSD</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Open</td>
<td>Internal fixation</td>
<td>No</td>
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<tr>
<td>Ansari et al. [13] (2003)</td>
<td>OPSD</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Open</td>
<td>Internal fixation</td>
<td>No</td>
</tr>
<tr>
<td>O’Toole et al. [4] (2006)</td>
<td>Locked OPSD</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Open</td>
<td>External fixation</td>
<td>Urethral strictures; sexual dysfunction</td>
</tr>
<tr>
<td>Cannada et al. [7] (2009)</td>
<td>Locked OPSD</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Open</td>
<td>External fixation</td>
<td>dysfunction</td>
</tr>
<tr>
<td>Tadros et al. [9] (2009)</td>
<td>OPSD</td>
<td>Yes</td>
<td>Two: no; One: yes</td>
<td>No</td>
<td>Open</td>
<td>Internal fixation</td>
<td>Two: no; One: osteitis pubis</td>
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<tr>
<td>Thulasiraman et al. [1] (2010) (Three cases)</td>
<td>Two: OPSD; One: Locked OPSD</td>
<td>Two: yes; One: no</td>
<td>No</td>
<td>One: no; Two: yes</td>
<td>Open</td>
<td>Internal fixation</td>
<td>No</td>
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<tr>
<td>Maqungo et al. [12] (2010)</td>
<td>OPSD</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Open</td>
<td>Internal fixation</td>
<td>No</td>
</tr>
</tbody>
</table>

OPSD: overlapping pubic symphysis dislocation; locked OPSD: overlapping pubic symphysis dislocation with displaced pubic bone is incarcerated inside the opposite obturator foramen.
sensation to light touch on the medial aspect of the right thigh; in the left lower extremity, the power of the tibialis anterior and extensor hallucis longus was slightly diminished (grade 4 of 5), and there was reduced sensation in the fourth and fifth lumbar dermatomes. All these neurologic deficits recovered completely within 6 months. Also a slight alteration in sensation on the planter surface of the left foot was noticed by Tadros et al. in one of their patients [9].

Three fractures were managed by closed reduction [6,8,10]. The remaining fractures required an open reduction, obtained by mean of instrumental manoeuvres in 13 cases [1—3,5,7,9,11—13] and of a suprapubic ramus osteotomy in one case [4]. Fixation was performed using anterior plates in 11 cases [1,2,5,9,11—13], an external fixator in two cases [4,7] including the case with a bladder rupture [4] and double hip spica cast in one case [3]. An infection developed in one patient [11], in whom fixation had been achieved with a plate. It healed after removal of the plate at 6 weeks, with no secondary displacement.

Posterior sacral injury was associated in 13 cases [1,2,4—7,9,10,12,13], but only two sacral fractures required a specific fixation. One was fixed by two AO cancellous screws because of an unusual injury to the obturator nerve with gross internal-rotation deformity of the left hemipelvis [5], the other was fixed with a fully threaded cannulated screw [12]. In our case, a shaped limited-contact dynamic compression plate was applied for fixation of the displaced zone-2 sacral to avoid further injuries to the left S1 nerve, and also because we had some concern regarding instability of the posterior ring after reduction and fixation of the anterior injury.

Locked pubic symphysis is commonly associated with a high incidence of urethral or bladder injuries. Some authors used an external fixator for stabilising the lesion [4,7]. Other authors did not hesitate to associate suprapubic catheters and anterior plate fixation and reported no secondary infection [1,2,5,9,11—14].

In conclusion, an overlapping pubic symphysis dislocation is a rare injury. Urethral and bladder injuries are frequent. In emergency, temporary suprapubic drainage must be installed and will allow urine drainage until reduction. Open or closed reduction and early internal or external fixation of the pubic ramus allow healing with no residual deformity. We provide a simple method involving an osteotomy of the contralateral superior pubic ramus to facilitate reduction of locked overlapping pubic symphysis dislocation. The associated complications include urethral strictures, sexual dysfunction, heterotopic ossification, pain and non-infective osteitis pubis.

Discussion and literature review

In the radiologic classification of Thulasiraman et al. [1], type 1 consists of a locking behind the contralateral pubis within 2.5 cm from midline; type 2 involves a displacement of more than 2.5 cm with no obturator foramen penetration by the opposite pubis; in type 3, the pubis penetrates the opposite obturator foramen. To the best of our knowledge, seventeen similar cases have been already reported (Table 1).

In all 17 cases, urinary tract lesions occurred in nine times [1—8]. They consisted of urethral disruption, eight of them required bladder drainage by mean of a suprapubic catheter [1—7]. Three lesions required delayed urologic reconstruction surgery [2,3,8]. In one case, a bladder rupture healed spontaneously on a Foley drainage [4]. All patients finally recovered a normal urinary function.

A neurologic deficit of both lower limbs was reported in only one case [5]. The symptoms were as follows: adduction of the right hip was absent, and there was diminished

In Figure seventeen 3).


