CASE REPORT

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

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KEYWORDS
Overlapping pubic symphysis dislocation;
Superior pubic ramus osteotomy;
Pelvis ring fractures

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.

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Figure 1  Anteroposterior (a), CT (b), and 3D-reconstruction (c) radiographs showed overlapping pubic symphysis dislocation and the right pubis was locked into the left obturator ring.

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 1  Reported cases of overlapping pubic symphysis dislocation.

<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>
</tr>
<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>
</tr>
<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>Locked 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>
</tr>
<tr>
<td>Ansari et al. [13] (2003)</td>
<td>Locked 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>Internal fixation</td>
<td>Urethral strictures</td>
</tr>
<tr>
<td>Sreesobh et al. [11] (2006)</td>
<td>Locked OPSD</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Open</td>
<td>External fixation</td>
<td>Pain; heterotopic ossification; 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>No</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>
</tr>
<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>
</tr>
<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>
<tr>
<td>Current study</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>
</tbody>
</table>

OPSD: overlapping pubic symphysis dislocation; locked OPSD: overlapping pubic symphysis dislocation with displaced pubic bone is incarcerated inside the opposite obturator foramen.
锁骨联合

图3  髋部矢状位术前开放复位及内固定。

图4  髋部矢状位术后1年。

讨论和文献回顾

在放射科分类中，Thulasiraman et al. [1]，类型1是锁骨的对侧骨与子宫颈尖及骨盆底之间的锁骨；类型2是在一个方向上的位移大于2.5 cm，没有移位的骨盆底；类型3，骨盆底穿透了对侧骨盆底。

在17例中，尿道或膀胱损伤发生在9次[1–8]。它们是由尿道损伤引起的，8例需要膀胱引流及上尿道导管。[1–7]。三例需要延迟的上尿道重建手术[2,3,8]。在1例中，膀胱破裂后，尿道引流在 Foley导管上。[4]。所有患者最终恢复了正常的尿道功能。

神经康复是指轻触右髋部的神经功能缺失，有明显的肌肉无力和痛觉减退。在左下肢，屈肌力量减弱，而伸肌力量未受累。所有这些神经功能障碍在6个月内完全恢复。也有轻微的感觉障碍在患者的左脚。


后骶骨损伤在13例[1,2,4–7,9,10,12,13]中出现，但只有2例后骶骨骨折需要特定的固定。一个固定器使用了AO骨科内固定板，因为这个不寻常的尿道损伤导致了骨盆底的位移和整体旋转的不正常。[5]，另一个固定器使用了完全头内固定板[12]。在我们例中，一个限位的接触式动态压缩板被应用于固定了移位2例后骶骨骨折，以避免进一步的不正常。[3]。尿道损伤发生在1例中[11]，在固定后被恢复到一个钢板。它被留在6周，没有二次位移。

锁骨联合损伤通常与高尿道或膀胱损伤有关。一些作者使用了外固定器来稳定该损伤[4,7]。其他作者并不犹豫将上尿道导管和骨盆底固定器，及报告了没有二次感染[1,2,5,9,11–14]。

总之，叠合后骶骨脱位是一个罕见的损伤。尿道和膀胱损伤是高频率的。在紧急情况下，临时上尿道引流必须安装，并允许尿道引流到减少尿道。开放或关闭复位和早期内固定或外固定，防止后骶骨允许与无残余的位移。我们提供了一个简单的方法，包括骨盆底的骨折，以逃避后骶骨的间隙。尿道狭窄，性功能障碍，异位骨化，疼痛和非感染骨盆底。

利益冲突

作者声明，他们没有利益冲突。

参考文献


