Locked pubic symphysis—A case series

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1. Introduction

Pelvic injuries are quite common in the clinical practice. These may be divided into low energy injuries, which typically result in fracture of individual bones, or high energy fractures, which may result in pelvic ring disruption.8 Based on the mechanism of injury pelvic fractures are described as anteroposterior compression injuries, lateral compression injuries, or vertical shear injuries. Locked pubic symphysis is a type of lateral compression injury.9

Locked pubic symphysis is an unusual form of pelvic injury. In this the intact pubis gets trapped against contralateral pubis. Closed reduction can be attempted though often requires open reduction and internal fixation. This paper is presented for its rarity and probably first case series on locked pubic symphysis from single institute.

Materials and methods: Three cases are presented from the Institute of Orthopaedics and Traumatology, Government General Hospital and Madras Medical College, Chennai from February 2007 to July 2009. Initially closed reduction was attempted but was not possible, so open reduction was planned. Open reduction was successful in all cases with some difficulty and fixed with symphysial plating. All patients were followed up for functional outcome for a mean follow-up of 15 months.

Discussion: This is the first time in the literature a case series of locked pubic symphysis is presented. In all cases it was found that anterior superior iliac spine on the affected side had moved closer to the midline compared to the opposite side. Though suprapubic cystostomy is a contraindication for pfannenstiel incision, we have reduced three cases by this incision and done internal fixation with no postoperative wound infection. We were able to reduce the locked pubis with simple maneuvers and with no special distraction instruments. We did not require any osteotomy for the reduction which is a disadvantage as it may produce healing problems.

Conclusion: Locked pubic symphysis is a rare form of pelvic injury. Though conservative closed reduction maneuvers have been described open reduction is often required. Internal fixation helps not only in stabilizing the anterior rim of pelvis but also the posterior aspect by stabilizing the sacro iliac joint which improves pelvic stability and promotes recovery.

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reduction was planned. Open reduction was successful in all cases with some difficulty and fixed with symphysial plating.

3. Case 1

A twenty-year-old man was admitted to emergency room 3 h after a road traffic accident. He was caught in between two moving buses, when he travelled in footboard in one of the bus. He was unable to stand or walk after injury. On examination he was hemodynamically stable, his right anterior superior iliac spine was elevated anteriorly and displaced medially. There was bruising on the lateral aspect of right proximal thigh. Urinary retention and blood at meatus was noted. Radiograph of pelvis showed disruption of symphysis pubis with overlapping of right pubis in the left obturator foramen. It was diagnosed as locked pubic symphysis (Figs. 1–3).

Closed reduction was attempted but was not successful. Trocar suprapubic cystostomy was done for suspected urethral injury. Three days later, patient was taken up for open reduction. Through a pfannenstiel incision, symphysis pubis exposed. Right superior pubic ramus which was lying behind the left was found locked underneath the left obturator foramen. The right superior pubic ramus was further medially and inferiorly pushed in and levered out with difficulty, after which the right hemi pelvis recoiled itself facilitating reduction. Symphseal plating was done. Urethral catheterization was attempted immediately after surgery which was successful with draining of clear urine. Suprapubic cystostomy was removed two days later. Postoperative period was uneventful. Patient was allowed to walk after 6 weeks. At two years follow-up the patient is fully ambulant with no functional impairment.

4. Case 2

A twenty-six year male was presented to emergency room with history of RTA 6 h after injury. He fell from his tractor side on and rolled over the ground. Patient was presented to us in a state of shock. Patient was stabilized with fluids and blood transfusion. He had swelling and tenderness over the pubis. Pelvic compression and distraction test were negative. There was no urinary retention, bladder was catheterized per urethra. Radiograph showed overlapping displacement of right pubis behind the left pubis but was not lodged in the obturator foramen. This was associated with right iliac wing fracture and sacroiliac disruption (Figs. 4–6).

Closed reduction was attempted but was unsuccessful. Open reduction was done through a pfannenstiel incision, and symphysis pubis was exposed. Right pubis was levered out from behind the left pubis. Reduction was achieved and held with a
pointed reduction clamp, it was fixed with reconstruction plating. Through a separate incision the iliac wing fracture was exposed. Fracture was reduced and fixed with reconstruction plate, and sacroiliac joint was also fixed. Postoperative period was uneventful. Patient was allowed to bear weight at 6 weeks. At 4 months follow-up patient is continuing his routine activities with no disability.

5. Case 3

A twenty-six-year-old male was presented to the emergency room with history of RTA 4 hrs after injury. He was hit from behind whilst riding a bicycle by a lorry and he hit a bus side on. Patient was hemodynamically stable and had no other associated injuries. He had swelling and tenderness over the pubis. There was bladder distension and blood at urethral meatus. Radiograph showed the right pubis to be locked into the left obturator foramen. It was associated with right sacral ala fracture as shown by CT.

Initial attempt at closed reduction was not successful so open reduction was planned. But patient developed infection around supra pubic cystostomy and pus per urethra. Appropriate antibiotics were started and we waited for infection to settle. We took the patient for open reduction three weeks after injury once the infection settled. Through a pfannensteil incision, symphysis pubis was exposed. The right pubic ramus was found to be locked into the left obturator foramen. The soft tissue attachments of right pubis were released. The left obturator foramen opened to expose the tip of right pubis. With the limb in abduction, flexion and external rotation, a downward and outward force was applied to right iliac crest whilst the right pubis was pushed through the obturator foramen with rocking movement. With some difficulty it was released. But the anatomical alignment was not obtained in the sagittal plane hence appropriate release of sacroiliac joint was done through a separate incision. Alignment was achieved and fixed with symphysial plating and tricortical bone grafting was done as there was laceration of pubic cartilage. Postoperative period was uneventful and patient was made to walk after 6 weeks (Figs. 7–10).
6. Discussion

This is the first time in the literature a case series of locked pubic symphysis is presented. In all cases it was found that anterior superior iliac spine on the affected side had moved closer to the midline compared to the opposite side. In all these cases right side was affected. They are usually associated with sacroiliac joint disruption and sacral fractures.

Egger described the locking of symphysis pubis without injury to other part of the pelvic ring. He described two types: the hyperabduction type and the hyperextension type. Shanmugasundaram in 1970 reported a case of symphysis pubis dislocation without locking into obturator foramen. The dislocation involved hyperextension, adduction and internal rotation, with posterior displacement of pubic bones. It was associated with posterior urethral injury which was repaired later. Closed reduction was not possible so open reduction without internal fixation was done.

Webb also described a similar case of overlapping pubic symphysis. It was associated with urethral injury but sacroiliac joint was not damaged. Urethral injury required delayed repair. Patient had problems of impotence and groin pain on squatting at long-term follow-up. Robinson et al. described a successful closed reduction of locked pubic symphysis without urethral injury. Patient was asymptomatic at follow-up.

Sreeshob described a similar injury where the pubis had entered the obturator foramen. Sacroiliac joints were involved whilst urethra and bladder were normal. Patient developed delayed urethral stricture for which he was operated later. Robert described a locked pubic symphysis fracture with a bilateral minimally displaced sacral ala fracture and bladder rupture. Patient needed suprapubic osteotomy for reduction and internal fixation as all the closed and open reduction methods were unsuccessful. No major neurovascular injury was described by any author in their case report either preoperatively or during surgery.

The pubic symphysis is considered a midline structure. The pubic symphysis which has moved across the midline is to be considered as the side of lesion. Based on the mechanism of injury we would like to classify locked pubic symphysis radiologically into three types. First type is where locking is just behind the contralateral pubis within 2.5 cm from midline. Second type is where the displacement is more than 2.5 cm but the pubis has not entered the obturator foramen. Third type is where the pubis enters into opposite obturator foramen. Sacroiliac joint disruption and sacral fracture are found to have an inverse relation to the type of locked symphysis pubis.

The nature of injury makes us feel that there is a rotational violence along with a lateral compression to produce a locked symphysis pubis as seen in the nature of violence of above three cases.

Two of the three cases presented with suspected urethral injury for which supra pubic cystostomy was done as emergency. Nature of the urethral injury encountered in the series had very limited correlation with type of locking.

Though supra pubic cystostomy is a contraindication for pfannensteil incision, we have reduced three cases by this incision and done internal fixation with no postoperative wound infection. We were able to reduce the locked pubis with simple maneuvers and with no special distraction instruments. We did not require any osteotomy for the reduction which is a disadvantage as it may produce healing problems.

There is always a possibility of vascular injury whilst attempting reduction. The obturator neurovascular bundle is at risk during injury and whilst reduction. The external iliac vessels are probably at less risk from the injury, but care must be taken not to damage it during retraction.

7. Conclusion

Locked pubic symphysis is a rare form of pelvic injury. These three cases make us to think when the violence continues, it may go to the extent of locking into opposite obturator foramen. Though conservative closed reduction maneuvers have been described open reduction is often required. Pfannensteil incision can be done with supra pubic cystostomy in situ. Internal fixation helps not only in stabilizing the anterior rim of pelvis but also the posterior aspect by stabilizing the sacro iliac joint which improves pelvic stability and promotes recovery.

References