Rent in the Vent: A Rare Event

Parturition-Induced Rupture of Pubic Symphysis and Dislocation of Sacroiliac Joint After Spontaneous Vaginal Delivery

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Introduction

Reported incidence of mild diastasis of the pubic symphysis (i.e. <10 mm) varies from 1 in 300 to 1 in 30,000 deliveries [1]. It is considered to be physiological in pregnancy and is thought to be caused by the excess production of the hormone relaxin during pregnancy, and greater separation can lead to tenderness on palpation and disability to ambulate. Parturition-induced rupture of pubic symphysis (pubic symphysis separation >25 mm) is an uncommon event after vaginal delivery with great controversy about mode of treatment. Worldwide only around 150 cases are reported with pubic symphysis separation >40 mm and managed successfully.

Patients experiencing pubic symphysis diastasis notice pubic bone pain generally any time a pregnant woman moves her knees or legs apart. These motions result in the pelvic joint shifting on one side more than the other, causing severe pain localized in the middle of the pubic bone area directly above the mons pubis. Patients may also

notice pain in the lower back, hips and/or buttocks because the sacroiliac joints (located in the back of the pelvis) are also affected by the pregnancy hormone relaxin. Diastasis of >2.5 cm represents ligamentous damage at sacroiliac (SI) joint [2].

Factors that contribute to a rupture of pubic symphysis are rarely defined. Nevertheless, it seems clear that multiparity, macrosomia accompanied by cephalopelvic disorder, McRobert's maneuver, forceps, maternal connective tissue disorders, prior pelvic trauma and hyperflexed legs may predispose to pubic symphysis diastasis [3, 4]. One recent study mentions that twin gestation and primiparity are statistically significant risk factors [5].

Diagnosis can be confirmed rapidly by pelvic X-ray. Additionally, MRI serves to exclude soft tissue injury. However, there is no consensus on the optimal therapy [6, 7]. Typically, a conservative treatment is performed comprising pelvic girdle, analgesia, bed rest in lateral decubitus and physical therapy [8–10]. In cases of extreme pubic symphyseal rupture with pelvic instability or persistent pain after conservative therapy, operative treatment is a successful alternative method, which has been reported in several cases [11–13].

Case Report

A 26-year-old PIL1 who delivered at other hospital 2 days back was referred to our tertiary care hospital with complaints of severe pain in pubic and suprapubic area, which started immediately after delivery and any attempts to move legs were associated with extreme pain in pubic, suprapubic area and also in lower back and both hips resulting in inability to sit, stand or walk.

Two days before term, patient was admitted in the other hospital in prelabour. Pelvic adequacy was confirmed on per vaginal examination. Patient was not short statured (height 173 cm) and not obese (weight 74 kg). The patient had no previous medical or surgical history. Her antenatal course had been uncomplicated. After normal progression of first stage of labour, a shoulder dystocia occurred. By performing extension of mediolateral episiotomy, McRobert's maneuver and suprapubic manual pressure, baby of birthweight 3.41 kg, length of 48 cm and a cranial circumference of 33.5 cm was delivered. Baby had APGAR score of 7/10 and 10/10 at 1 min and 5 min postpartum consecutively.

Immediately postpartum, the mother developed strong suprasymphysial pain and was unable to move her legs as any movement resulting into severe pain. On the physical examination, the patient had a painful and palpable dehiscence of the pubic symphysis. Pelvic horizontal instability was identified but no sign of vertical instability.

There were no symptoms of active bleeding or lesions of urinary tract or neurologic deficits. In addition, a pelvic X-ray revealed a pubic symphysis separation of 54 mm (5.4 cm) with left sacroiliac joint dislocation, i.e. open book type of pelvic fracture. This gap is shown in Fig. 1a. The CT scan, shown in Fig. 2a, b, confirmed the findings. All blood investigations were done and were found normal except "Total 25-hydroxy vitamin D" levels were found low (7.09). USG (abdomen + pelvis) revealed no significant abnormality.

Starting the therapy with a pelvic binder, bed rest and adequate analgesia, the patient underwent closed reduction and internal fixation by means of percutaneous anterior internal fixator (titanium pedicle screws and rods) and sacroiliac screw (titanium) under C-arm guidance on the sixth postpartum day. With the help of physiotherapy and walker, patient could ambulate on the third postoperative day. Patient was discharged on the fifth postoperative day. After 2 weeks, the patient was able to ambulate without complaints and to take care of her child. A postoperative radiographic control determined the correct position of the implant, which can be seen in Fig. 1b.

Discussion

Although the initial clinical examination and diagnostic investigation are straightforward, the optimal way of treating a peripartum pubic symphysis rupture is discussed controversially. Several reports have shown that a conservative therapy is a reasonable approach [1, 8–10]. Even in cases of large symphyseal ruptures measuring 5 cm [8] and 9 cm including iliosacral joint rupture [7], a successful conservative therapy has been reported. However, other works have demonstrated the limitations of a conservative treatment like persistent pubic and posterior pelvic pain, i.e. persistent pubic symphysis dysfunction remained for >2 years [4] and persistent gap >25 mm between pubic symphysis [3, 5]. Finally, surgical treatment by means of an open reduction and internal fixation yielded optimal results [11, 13]. Chang and Wu showed that, in case of contraindication of a plate fixation due to a contaminated pelvic environment, an external fixation can be an equivalent surgical method of pubic symphysis diastasis [12]. Dunivan et al. [7] also underlined the advantages of an immediate external fixation in a case of a gap of pubic symphysis measuring 62 mm. As a consequence, these works suggest the high chances of failure of conservative treatment and henceforth indication of an operative approach if a gap of the pubic symphysis is larger than 40 mm [4, 6]. As we highlight in our case report, we agree with this threshold. There are many fixation methods for treatment of pubic symphysis diastasis, but minimally

Fig. 1 **a** X-ray of the pelvis showing pubic symphysis separation of 54 mm and dislocation of left sacroiliac joint. **b** X-ray of the pelvis after surgical fixation separation (closed reduction and internal fixation)

Fig. 2 **a** CT scan 3D imaging showing pubic symphysis separation of 54 mm and left sacroiliac joint dislocation, i.e. open book type of fracture. **b** CT scan axial image showing public symphysis rupture and left sacroiliac joint dislocation, i.e. open book type fracture

invasive technique is undeniable trend. Percutaneous cannulated screw and locking plates are the recent techniques which have advantages of less trauma, less bleeding and good stability so, good choice of treatment for pubic symphysis diastasis [14].

Conclusions

Pubic symphysis rupture is an uncommon but often underestimated injury after vaginal delivery that can lead to significant chronic disability. Therefore, in case of peripartum suprapubic pain, it is important to consider a

pubic symphyseal diastasis that requires interdisciplinary treatment. In cases of a gap greater than 40 mm, a surgical intervention rather than conservative treatment may result in better outcome including shorter hospitalization, earlier ambulation and the opportunity to cope with the new circumstances of her motherhood. Recent minimally invasive techniques like percutaneous cannulated screws and locking plates for treatment of pubic symphyseal diastasis have many advantages. Multiparity, macrosomia accompanied by CPD, McRobert's maneuver, forceps, maternal connective tissue disorders, prior pelvic trauma and hyperflexed legs may predispose to pubic symphysis diastasis.

Compliance with Ethical Standards

Conflict of interest All the authors declare that there is no conflict of interest.

Ethical Statements Patient has given consent for publishing photographs, clinical history and management of the same and was assured that anonymity will be preserved.

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