

# Spontaneous Obstetric Pubic Symphysis Diastasis: Presentation and Management Strategies

Johnbosco Emmanuel Mamah<sup>1</sup>, Chigozie Geoffrey Okafor<sup>2,\*</sup>, Chichetaram Ruth Otu<sup>1</sup>, Chidinma Charity Okafor<sup>3</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Alex-Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria

<sup>2</sup>Department of Obstetrics and Gynaecology, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria

<sup>3</sup>Department of Psychiatry, Leicestershire Partnership NHS Trust, Leicester, United Kingdom

\*Corresponding author: [chigolz@yahoo.com](mailto:chigolz@yahoo.com)

Received September 03, 2023; Revised October 04, 2023; Accepted October 11, 2023

**Abstract** Obstetric pubic diastasis is a rare but significant complication that can occur during childbirth. This literature review explores the existing body of knowledge on obstetric pubic diastasis, including its incidence, risk factors, aetiopathogenesis, clinical presentation, diagnostic methods, management strategies, and outcomes. By examining the available literature, we aim to enhance our understanding of this condition and provide insights into its optimal management. During pregnancy and childbirth, there is a physiologic widening of the pubic symphysis; these changes are often reversible postpartum. Abnormal separation of the pubic symphysis (pubic symphysis diastasis- PSD) due to ligamentous rupture is an infrequent complication of labor and delivery that may impair the parturient general health and lead to a problematic puerperium. Postpartum pelvic pain is often ascribed to labor and childbirth; hence the diagnosis of pubic diastasis might be delayed and sometimes missed altogether. In this article, we discuss the presenting features, aetiopathogenesis, the management of the condition, and outcomes of obstetric pubic diastasis. Awareness of this condition is crucial for early recognition and appropriate treatment to ensure optimal patient outcomes. Ultimately, conservative management, including analgesics, physical therapy, and activity modification, is generally effective in achieving favorable outcomes.

**Keywords:** *diastasis, pubic symphysis, spontaneous obstetric diastasis, vaginal delivery*

**Cite This Article:** JE Mamah, CG Okafor, CR Otu, and CC Okafor “Spontaneous Obstetric Pubic Symphysis Diastasis: Presentation and Management Strategies.” American Journal of Clinical Medicine Research vol. 11, no. 2 (2023): 25-28. doi: 10.12691/ajcmr-11-2-1.

## 1. Introduction

Obstetric pubic diastasis is characterized by the separation of the pubic symphysis during childbirth [1,2,3,4,5]. It occurs due to the relaxation of the pelvic ligaments associated with significant pain and functional impairment [3,4,5,6]. Although relatively uncommon, with an incidence of 1/300-1/30,000 [1-10] reported in the literature, obstetric pubic diastasis requires prompt recognition and appropriate management to alleviate symptoms and promote recovery [7,8,9].

The pubic symphysis is a midline non-synovial joint that connects the right and left superior pubic rami [1,7,9]. It stabilizes the right and left halves of the pelvis, thereby cushioning tension, shearing, and compression forces. However, it is also the weakest point of the pelvic ring and is subject to hormonal influence during pregnancy [7]. It has interposed fibrocartilaginous tissue reinforced by a series of ligaments attached. The joint allows limited movement of about 0.5-1 mm, but under the hormonal influence during pregnancy and labor, there is a widening of the symphysis pubis and the sacroiliac joints [1,7]. Symphysis pubis widening in pregnancy and delivery up

to 10 mm is considered physiologic, but a gap of more than 10 mm on radiologic imaging is considered pathologic and diagnostic of PSD [8,9,10].

Spontaneous PSD occurs during the second stage of labor during pushing or assisted delivery, and symptoms follow shortly after delivery due to severe pelvic pain or inability to mobilize [3-10]. It can lead to long-term debilitating sequelae if not recognized early and timely interventions are provided. PSD was considered rare in the past, but a recent literature review shows a rising trend which might be attributed to increased recognition among clinicians and practitioners [9].

Pubis symphysis diastasis is when there is a total spontaneous disruption of the symphysis joint ligaments/cartilages, leading to atraumatic separation of the pubic bones greater than 10 mm [11]. Patients can present with pubic symphysis diastasis before delivery, during delivery, or, most commonly, postpartum. Most cases can be treated conservatively. Although loosely used interchangeably, this should not be confused with Pubic Symphysis Dysfunction or pelvic girdle pain is the situation when there is increased movement at the symphysis pubis joint associated with severe pain and functional limitations but with widening no greater than 10 mm [11]. This condition poses significant challenges in

diagnosis, management, and patient care. Understanding the clinical presentation and appropriate management strategies is essential to minimize complications and improve patient outcomes.

## 2. Search Strategy

We reviewed several databases, namely PubMed, Scopus, Web of Science, and Google Scholar, and protocols and guidelines of several professional societies and organizations using the following keywords and phrases: "pubic symphysis," "pubic diastasis," "obstetric pubic diastasis," and "pubic symphysis dysfunction." Our search focused on case series/reports, case-control studies, metaanalysis, and prospective studies. We further scrutinized the reference list of selected articles to examine other relevant articles. At the end of the search, we had a total of thirty-five relevant literature. We subsequently reviewed the identified literature and selected nineteen of the recent articles for the review article.

## 3. Incidence and Risk Factors

PSD is a rarely encountered and often under-reported complication of pregnancy [3]. The incidence varies across studies, with reported rates ranging from 1 in 300 to 1 in 30,000 deliveries [1-18]. Several risk factors have been identified. Mechanical factors include fetal macrosomia, narrow pelvic outlet, McRoberts position, assisted vaginal delivery (the use of forceps or vacuum extraction), the prolonged second stage of labor, malposition, previous pelvic trauma or surgery, and maternal biological factors such as increased maternal age, multiparity, pathological bone conditions, prior history of PSD, connective tissue disorders, may also contribute to the development of pubic diastasis [1-18]. Some authors have reported nulliparity, advanced maternal age, and multiple pregnancies as significant risk factors [3,19,20]. Other risk factors may include epidural anesthesia, osteomalacia, chondromalacia, and previous infections of symphysis [1,9].

## 4. Pelvic Anatomy and Aetiopathogenesis

The exact etiology remains unclear, but it is postulated to involve ligamentous laxity and hormonal changes during pregnancy [1,2,3,4,5,6]. The pelvis is a spatially closed structure formed by the pelvic bones and sacrum. The anterior part of the ring includes the pubic bones and the pubic symphysis. The pubic symphysis is a synchondrosis made of a fibrous cartilage disc between the two surfaces of the pubic bones covered by hyaline cartilage, which slowly decreases in thickness with age. Ligaments strengthen it: upper pubic, lower pubic (arcuate, subpubic), posterior pubic, and anterior pubic [1]. It also includes fibers from the aponeurosis of the abdominal muscles (rectus abdominis and oblique external muscle), gracilis muscle, and adductor longus muscle, significantly increasing the effectiveness of locking the sacroiliac joints

[1]. Strong and thick upper pubic ligaments and lower arches provide the primary stability of symphysis.

Additionally, minimal mobility is ensured by a slight rotation of 1 to 3° [1,3]. The width of the pubic symphysis changes with age. In a newborn, it is about 9–10 mm and gradually decreases with age. The average width of the pubic symphysis in adults is 3-6 mm and is more prominent in the anterior part than the posterior [23]. Under physiological conditions, the pubic symphysis may become loose up to 1-2 mm (during lower limb abduction) and may also be rotated by 1°. During pregnancy, relaxation of the structures of the pubic symphysis occurs because of hormone activity [1-19]. The antenatal and intrapartum dilation of the symphysis by 3–5 mm is physiological and returns to its original size within five months [1]. As a result of hormonal changes occurring during pregnancy, especially under the influence of progesterone, estrogens, and relaxin, water is retained in the body. Remodeling of the collagen fiber structures occurs, leading to the relaxation of tendon and ligamentous structures [7,15]; this softens the cartilage of intervertebral discs, pubic symphysis, and sacroiliac joints. Most noticeable changes occur in the pubic symphysis, which during pregnancy and childbirth is most prone to stretching [15,16,17,18]. The whole point of these physiological changes is to enhance the pliability of the birth canal to facilitate a safe delivery [1].

Urinary retention is a recognized postpartum complication, with an incidence between 1.7 and 17.9% [16]. Predisposing factors include physiologic changes of pregnancy and possible bladder hypotonia due to elevated progesterone levels, instrumental delivery, epidural analgesia, primiparity, and protracted deliveries, which may all be associated with postpartum urinary retention [16,17,18]. Pelvic trauma, such as PSD, may result in mechanical outlet obstruction due to direct bladder trauma with retropubic hematoma pressing on the bladder neck, causing perineal edema [16].

## 5. Clinical Presentation and Diagnosis

Prompt recognition of this condition is essential, as it may mimic other pelvic injuries or obstetric complications [6,7]. Clinical diagnosis is possible based on the history and physical examination, but radiological assessment will aid treatment planning and monitoring resolution [9,10]. The typical symptoms of PSD are usually immediate and include severe pain localized in pubic bones that worsens when the patient tries to walk, lift something heavy, or climb stairs. Pain most often occurs in the first and subsequent days after childbirth [13,14,15,16]. The patient may also feel well and generally do not correlate minor pain with pathological changes in the pelvic girdle. During the disruption, the patient may often feel or report an audible 'pop'/'give' [9,10,11,12,13]. Standing on one leg is very painful, and the patient may exhibit swaying while walking, a phenomenon called 'duckling' [1-15]. Urine and fecal incontinence is an uncommon symptom but may occur if there is a bladder or neurological injury [9].

Imaging studies for the diagnosis of PSD may include non-invasive tests (ultrasonography and MRI), as well as those that involve the use of ionizing radiation (X-ray,

Computerized tomography scan). Ultrasound and magnetic resonance imaging should form the diagnostic tool of choice during pregnancy to avoid radiation exposure to the fetus [1,2,3,4,5]. At the same time, X-ray and computed tomography can be considered after childbirth [1,4]. A simple and quick way to determine the width of a symphysis pubis is using conventional radiological diagnostics in the form of an X-ray image in the Anterior-posterior plane. Physiologically, the width of the pubic symphysis during pregnancy may reach nine millimeters. A diagnosis can be made when the intrapubic gap is greater than ten millimeters at the narrowest point [5-15]. However, the extent of the widening does not correlate with the severity of the symptom [7].

Furthermore, to illustrate the instability of the pubic symphysis, a functional test could be performed, during which the patient assumes the "flamingo" position [9]. It involves loading one limb while simultaneously flexing the knee and hip joints. Vertical displacement of the pubic bones about each other by one centimeter indicates instability.

Ultrasound scans in the evaluation of PSD are considered the gold standard tool for precisely measuring the distance between the upper branches of the pubic bones [9]. It is non-invasive, fast, and can be performed in every stage of pregnancy and childbirth, but it may not be readily available, especially at odd hours. In complicated cases of PSD, CT and MRI scans should be considered, especially where there is suspicion of soft tissue injuries. These studies provide detailed information on the anatomy of the pubic symphysis area and the involvement of the sacral joints and pelvic organs, which is essential for adequately diagnosing pelvic pain. Radiographic evaluation, including anteroposterior and lateral pelvic X-rays, is commonly used to confirm the diagnosis by demonstrating the separation of the pubic symphysis of more than 10 mm [10-16].

## 6. Management Strategies

Treating symphysis pubis is often long-lasting, and the main goal is restoring pelvic stability and function [1,2,3]. In the initial stage, the therapy of choice remains non-surgical management. Conservative management, including pain control, activity modification, physical therapy, pelvic binders, occupational therapy, and multidisciplinary team (obstetricians, physiotherapists, occupational therapists, radiologists, and urogynaecologists) approach is the mainstay of treatment. Surgical intervention is preferred for severe cases or those unresponsive to conservative measures [18,19]. Assistive devices, such as crutches or pelvic belts, may be recommended to alleviate stress on the pubic symphysis. Surgical interventions, such as pubic symphysis stabilization procedures, may be considered in refractory cases or when significant instability persists [12]. Some authors have reported that a pelvic binder would not be required if the gap was less than 25mm, but the evidence level for this recommendation is not strong [14]. The patient we managed made an excellent clinical recovery based on bed rest (lateral decubitus position), physiotherapy, and adequate pain management. She was placed on prophylactic Low Molecular weight Heparin to reduce the risk of Venous thromboembolism, a potential

complication in patients with reduced mobility [13]. Also, the painful area around the pubis should be cooled using ice packs [1]. Functional improvement should occur within six weeks; however, in some patients treated conservatively, pain may persist for up to 6 months [1].

Physiotherapy is an essential component of management [1-17]. The goal of physical therapy should be to strengthen the deep muscles of the torso and pelvic muscles. Physiotherapy should include isometric, passive, and active exercises and not cause unilateral pelvis overload [1,6]. In cases of significant restrictions on the mobility of patients, it is advisable to use crutches and wheelchairs. Overall, mobilization and unloading added to conservative treatment seem to improve results, resolving symptoms within three months [1] [6,7,8,9].

Surgical management is often reserved for severe cases, especially when conservative measures have failed [2-7]. Furthermore, the puerperal pelvis may exhibit distorted anatomy, increased pelvic vascularity, and peripartum hypercoagulability, further complicating surgical intervention [7]. However, separation of more than 4 cm is usually associated with a rupture of the sacroiliac joint, and instability of the pelvic ring necessitates a surgical intervention; in such cases, there may be concomitant urinary tract, neurological or vascular injuries necessitating urgent surgical intervention [7-12]. If surgical intervention is required, open reduction and internal fixation with plates are recommended [18]. External fixators are rarely used because of the risk of infection at the pins' insertion point [1]. An advantage of early surgical intervention is that it decreases the recovery time and improves the overall functional outcome [1]. In a case series reported by Yoo et al. [18], nineteen of the 21 patients they reported had good results with conservative management. In a meta-analysis of Gesto-Urraca et al. [4], most studies analyzed reported using bed rest (in the lateral decubitus position) as the primary approach in managing their patients with good outcomes.

## 7. Outcomes and Prognosis

With appropriate and timely management, most patients with obstetric pubic diastasis experience a favorable prognosis. Pain and functional impairment typically improve over time, and the pubic symphysis often shows a progressive reduction in the gap on follow-up imaging. Long-term complications, such as chronic pain or persistent instability, are rare but can sometimes occur. Multidisciplinary care involving obstetricians, orthopedic specialists, physical therapists, and pain management experts can improve outcomes and patient satisfaction. This decision needs to be individualized depending on the patient's complication and management regarding future pregnancy and delivery. However, labor and delivery may lead to the recurrence of PSD or worsening of existing or residual symptoms. A balance should be reached considering risks versus benefits in consultation with the patient; more research is required to determine the best approach for such patients. The literature on obstetric pubic diastasis is limited, primarily consisting of case reports, case series, and retrospective studies. There is a need for more extensive prospective studies to investigate

further this condition's incidence, risk factors, and optimal management strategies. Additionally, long-term follow-up studies focusing on functional outcomes and quality-of-life measures would provide valuable insights.

## 8. Conclusion

Obstetric pubic symphysis diastasis is a rare complication of childbirth that can cause significant pain and functional impairment. Early recognition, accurate diagnosis, and appropriate management are crucial for achieving favorable outcomes. Conservative approaches, including analgesics, physical therapy, and activity modification, form the cornerstone of treatment. Surgical interventions are reserved for severe or refractory cases. Further research is needed to enhance our understanding of this condition and optimize its management to improve patient outcomes. Healthcare providers should maintain a high index of suspicion for this condition and promptly refer patients for appropriate evaluation and management.

## References

- [1] Stolarczyk A, Stepinski P, Sasinowski L, Czarnecki T, Debinski M, Maciag B. Peripartum pubic symphysis diastasis-Practical guidelines. *J Clin Med*. 2021, 10: 2443-58. 10.3390/jcm10112443.
- [2] Heim JA, Sandy BA, Lips E, Asche SE, Ly T, Das K. Pubic symphysis separation and regression in vaginal versus cesarean delivery. *J Obstet Gynaecol Can*. 2022, 44: 42-7. 10.1016/j.jogc.2021.07.015.
- [3] Chawla JJ, Arora D, Sandhu N, Jain M, Kumari A. Pubic symphysis diastasis: a case series and literature review. *Oman Med J*. 2017, 32: 510-514. 10.5001/omj.2017.97.
- [4] Urraca-Gesto MA, Plaza-Manzano G, Ferragut-Garcia A, Pecos-Martin D, Gallego-Izquierdo T, Romero-Franco N. Diastasis of symphysis pubis and labor: systematic review. *J Rehab Res Dev*. 2015, 52: 629-640. 10.1682/JRRD.2014.12.0302.
- [5] Graf C, Sellei RM, Schrading S, Bauerschlag DO. Treatment of parturition-induced rupture of pubic symphysis after spontaneous vaginal delivery. *Case Rep Obstet Gynecol*. 2014, 2014: 485916. 10.1155/2014/485916.
- [6] Howell ER. Pregnancy-related symphysis pubis dysfunction management and postpartum rehabilitation: two case reports. *J Can Chiropr Assoc*. 2012, 56: 102-111. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3364059/>.
- [7] Mahajan A, Gupta I, Verma P. Split apart postpartum: a case report of postpartum pubic symphysis diastasis. *Int J Med Rev Case Rep*. 2019, 3: 555-557. 10.5455/IJMRCR.Split-apart-postpartum.
- [8] Norvilaite K, Kezeviciute M, Ramasauskaite D, Arlauskiene A, Bartkeviciene D, Uvarovas V. Postpartum pubic symphysis diastasis-conservative and surgical treatment methods, incidence of complications; two case reports and review of literature. *World J Clin Cases*. 2020, 6: 110-119. 10.12998/wjcc.v8.i1.110.
- [9] Palvia V, Kim S, Warholc H, Anasti J. Severe pubic symphysis diastasis managed conservatively: a case report and review. *Case Rep Clin Med*. 2017, 6: 120-126. 10.4236/crcm.2017.64010.
- [10] Tseng KY, Lin KC, Yang SW. The radiographic outcome after plating for pubic symphysis diastasis: does it matter clinically? *Arch Orthop Trauma Surg*. 2023, 143: 1965-72. 10.1007/s00402-022-04411-7.
- [11] Pires REZ, Labronici PJ, Giordano V, et al.: Intrapartum pubic symphysis disruption. *Ann Med Health Sci Res*. 2015, 5: 476-479. 10.4103/2141-9248.177980.
- [12] Buitendyk M, Brennan B, Vora P, Smith P, Winsor S. Acute intrapartum rupture of the pubic symphysis requiring resuscitation and surgical intervention: a case report. *J Obstet Gynaecol Can*. 2017, 40: 68-71. 10.1016/j.jogc.2017.05.028.
- [13] Seidman AJ, Siccardi MA: Postpartum pubic symphysis diastasis. (2023). Accessed July 07, 2023: <https://www.ncbi.nlm.nih.gov/books/NBK537043/>.
- [14] Sonmez MM, Ugurlar M, Ugurlar OY, Keles A, Eren OT. Symphysis pubis diastasis after difficult birth: a case report. *Tip Bulletin*. 2017, 51: 88-90. 10.5350/SEMB.20160315015014.
- [15] Sung J, Kang M, Lim S, Choi S, Oh S, Roh C. A case-control study of clinical characteristics and risk factors of symptomatic postpartum pubic symphysis diastasis. *Sci Rep*. 2021; 11: 3289. 10.1038/s41598-021-82835-8.
- [16] Valsky DV, Anteby EY, Hiller N, Amsalem H, Yagel S, Drorith H. Postpartum pubic separation associated with prolonged urinary retention following spontaneous delivery. *Acta Obstet Gynecol*. 2006, 85: 1267-75. 10.1080/00016340600608501.
- [17] Wang Y, Li Y, Tian M, Wang N, Zheng Z. Role of relaxin in diastasis of the pubic symphysis peripartum. *World J Clin Cases*. 2021, 9: 91-101. 10.12998/wjcc.v9.i1.91.
- [18] Yoo JJ, Ha Y, Lee Y, Hong JS, Kang B, Koo K. Incidence and risk factors of symptomatic peripartum diastasis of the pubic symphysis. *J Korean Med Sci*. 2014, 29: 281-86. 10.3346/jkms.2014.29.2.281.
- [19] Hashem G, Zhang Q, Hayami T, Chen J, Wang W, Kapila S. Relaxin and  $\beta$ -estradiol modulate targeted matrix degradation in specific synovial joint fibrocartilages: progesterone prevents matrix loss. *Arthritis Res. Ther*. 2006; 8: R98. 10.1186/ar1978.

