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Postpartum diastasis of the pubic symphysis: case report and literature review

Dubens sąvaržos diastazė po gimdymo: atvejo pristatymas ir literatūros apžvalga

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Postpartum diastasis of the pubic symphysis has the incidence from 1 in 300 to 1 in 30,000 deliveries. Under the action of progesterone and relaxin, a 1 cm widening of pubic symphysis is considered to be physiological and necessary for normal delivery. However, any higher widening is always pathological, involving the damage of pubic and sacroiliac ligaments. Multiparity has been identified as the only independent risk factor. Because this pathology often manifests as chronic pain in the pubic symphysis region, it is often mistakenly stated as a normal postpartum occurrence. It is only later when the symptoms of pelvic instability and pubic osteitis appear. Postpartum symphysiolysis is a clinical challenge to a physician due to low awareness and the postpartum period important to both the patient and the newborn.

Key words: post partum, diastasis, symphysiolisis

Simfiziolizės po gimdymo dažnis yra nuo 1 iš 300 iki 1 iš 30 000 gimdymų. Dubens sąvaržos prasiskyrimas iki 1 cm pločio yra laikomas fiziologiniu ir būtinu gimdymui natūraliais takais. Šį procesą lemia nėštumo metu padidėjusios progesterono ir relaksino koncentracijos moters kraujyje. Tačiau bet koks didesnis prasiskyrimas yra laikomas patologiniu ir siejamas su dubens sąvaržos ir dubeninių kryžmens raiščių pažeidimu. Daugiavaisis nėštumas yra vienintelis nustatytas nepriklausomas rizikos veiksnys. Ši kliniškai sudėtinga patologija dažniausiai pasireiškia lėtiniu skausmu dubens sąvaržos srityje, kas dažnai yra palaikoma normaliu reiškiniu po gimdymo. Tik vėliau išryškėja dubens nestabilumo, simfizito simptomai. Dėl dažnai pavėluotos diagnostikos, pogimdyminio etapo svarbos pacientei ir naujagimiui, operacinio gydymo rizikos veiksnių simfiziolizė tampa iššūkiu gydančiam gydytojui.

Reikšminiai žodžiai: po gimdymo, diastazė, simfiziolizė.

Introduction

The diastasis of the pubic symphysis (PS) is an uncommon peripartum complication that might become a serious medical condition to the patient [1–5]. The incidence of diastasis is from 1 in 300 to 1 in 30,000 deliveries [2, 3, 6–8]. This pathology is considered to be associated with hormonal changes in the third semester of gestation [9]. A normal radiological gap between the pubic bones is defined as 4 mm. Under the action of progesterone and relaxin, this distance could be widened by 3–4 mm because of the relaxation of pubic and sacroiliac ligaments and is known as a physiological pubic diastasis [10]. This feature is necessary for a normal vaginal delivery. However, the physiological separation has the upper limit of 10 mm; a higher widening of PS is considered to be pathological. It could be divided into three groups: 1) separation from 1 to 2.5 cm, which is treaded non-operatively, 2) separation over 2.5 cm, considered to be associated with damage to sacroiliac ligaments, and surgical treatment should be considered, 3) extreme cases of an over 4 cm diastasis are accompanied with a damage to sacroiliac joints, which often requires a surgical approach [1–4, 11].

Literature speculates numerous risk factors: primagravida, multiparity, forcep-assisted delivery, shoulder dystocia, prior pelvic trauma, epidural anesthesia, macrosomic fetus, small pelvis of mother, rapid progression of the second stage of labor, rapid descent of presenting part, cephalo-pelvic disproportion, osteomalacia, chondromalacia, McRobert's position [4, 8, 12–14]. Because of rarity of this condition, only multiparity was found as an independent risk factor [4].

The clinical manifestation of PS diastasis may occur in the third semester of pregnancy, during delivery or after labour. In all cases, these symptoms are common: swelling of the PS area, limping, acute pain of the anterior pelvic ring, pain in the sacral region, "crack" sound during delivery, painful abduction / adduction of hips, inability to climb stairs or stand on one leg [1, 4, 8, 15–17]. In some cases, PS separation is associated with the retention of urine and infection of the peripubical tissue [6, 18].

Case report

A 28-year-old gravida 1 delivered twins vaginally without fetal complications. Before the delivery the patient had complained about pubic region pain which became more severe after the labour. Three months after giving birth, the patient was consulted by an orthopaedist because of a persistent pubic pain. Pelvic X-ray showed a 1.5 cm symphyseal separation with signs of secondary pubic osteitis (Figure 1). It was decided to manage the situation conservatively with oral NSAIDs and the intrasymphysial injection of steroids. The patient had symptom remission for a few months.

However, tree months later she came back for another consultation. This time the patient was complaining of limping, severe pain in the pubic region spreading to legs and increasing when walking, sitting or lying on a side. Pelvic X-ray showed a 2.5 symphysial disruption with increased signs of secondary pubic osteitis and vertical pubic bones displacement (Figure 2). Clinical examination revealed a painful palpation of the pubic region. Furthermore, pubic pain was provoked by the pressure applied on iliac crests in antero-posterior and medial directions. There was no neurological pathology. Because of the conservative treatment failure, it was decided to perform an internal pubic synthesis. The operation was performed under spinal anesthesia. The PS was reached layer by layer through the Phannestiel incision. The surgery revealed the vertical and horizontal instability of the pelvis and 0.5 mm of inflammatory fluid present in the PS. Debridement and reposition were performed. In the end, six hole plates and six screws were used for superior SD fixation. After the operation, the patient was allowed partial bearing with the assistance of crutches for three months. The post-operative period passed with no complications.

A few months later, a fistula opened in the post-operative scar. Since there were no signs of pelvic instability and implants infection, it was decided to apply antibiotic treatment. The treatment gave a temporary effect, and the fistula reopened. Nine months after the initial fixation, because of an intermittent fistula and a slight pain in the pubic region, it was decided to remove the implants. During the clinical examination, there were no signs of the post-operative site infection or fistula, a minimal infiltration of the surrounding tissues was present, pelvic X-ray showed four loose crews (Figure 3). The operation was performed under spinal anesthesia. The constructions were reached layer by layer through post-operative

Figure 1. 1.5 cm diastasis of symphysis pubis and signs of secondary pubis osteitis

Figure 2. 2.5 cm symphysiolysis, increased signs of pubis osteitis, and vertical dislocation of pubic rami

Figure 3. Nine months after the initial fixation. No signs of infection. Four middle screws are loose

Figure 4. Twelve months after hardware removal. Signs of pubis osteitis, no signs of instability

scars. After implant removal, a careful debridement was performed. Furthermore, no evidence of infection was found. Twelve months after the implant removal, the patient did not have any complaints, and there was no clinical evidence of pelvic instability or infection (Figure 4).

Discussion

Literature overview is presented in Table 1.

The cause of this condition is polyetiologic. The laxity of ligaments from increased serum levels of progesterone and relaxin, increasing load to the joint from weight of the fetus and the uterus, mechanical forces to the pelvic ring during labor contribute to the physiological separation of the symphysis. Addition of risk factors creates favorable circumstances for a pathological pubic separation. As risk factors in our case we identified multiparity and primigravia. Fidan et al. [17], Cowling and Rangan [3], Graf et al. [2] reported three cases of PS diastasis associated with McRobert's maneuver. In the first two cases, this maneuver was used because of the shoulder dystocia and in the third one because of the foetus arm positioned over its head. McRobert's maneuver is the removal of the gravida's legs from holders and sharply flexing them up to the abdomen. This action causes the straightening of the sacrum relative to the lumbar vertebrae, decreasing the angle of pelvic inclination, and increasing the saggital diameter of the pelvis. Furthermore, distraction forces are applied on PS. Cowling and Rangan [3] reported an audible "pop" or "crack" sound when the maneuver was performed. In addition, Snow and Neubert [19] reported this sound in three out of nine PS separation cases. In our case, we were unable to find out if McRobert's maneuver was performed.

Table 1

Author	Year	Age	Number of babies	Number of delivery	Diastatic gap (cm)	Final diastatic gap (cm)	Follw up (month)	Treatment
Yoo et al. [4]	2014	32	Twin	Primigravia	4.6	1.3	12	Conservative
		31	Twin	Primigravia	1.5	0.7	36	Conservative
		34	Single	Primigravia	1.4	0.7	47	Conservative
		31	Single	Primigravia	1.2	0.8	19	Conservative
		34	Single	Primigravia	3.0	1.3	24	Conservative
		32	Twin	Primigravia	5.6	0.6	15	Internal Fixation
		38	Single	Primigravia	1.3	0.7	22	Conservative
		29	Single	Multigravia	1.2	0.5	20	Conservative
		30	Twin	Primigravia	4.5	0.9	18	Internal Fixation
		36	Single	Primigravia	1.3	0.6	15	Conservative
		37	Single	Primigravia	2.4	1.3	16	Conservative
Najibi et al. [8]	2010	32	NR	NR	2	Range from 0.2 to 0.9	Range from 5 to 160	Internal fixation
		37	NR	NR	5			
		31	NR	NR	3.4			
		24	NR	NR	1.2			
		34	NR	NR	3.4			
		36	NR	NR	4			
		31	NR	NR	2.5			
		33	NR	NR	5			Internal fixation + fusion
		32	NR	NR	7			
		29	NR	NR	0.6			
Idrees [7]	2012	39	NR	NR	2.1	NR	NR	Spinal cord stimulation after failure of conservative and internal fixation methods
Valsky et al. [6]	2006	37	Single	Multigravia	5	<1	4	Conservative
Graf et al. [2]	2014	20	Single	Primigravia	6	NR	2 weeks	Internal fixation
Cowling et al. [3]	2010	38	Single	Primigravia	5.4	2.5	6	Conservative
Fidan et al. [17]	2013	41	Twin	Multigravia	5	NR	3	Conservative
Pedrazzini et al. [9]	2005	30	Single	Multigravia	2.8	1.2	3	Conservative
Hou et al.	2011	26	Single	Multigravia	8.8	NR	12	Internal fixation
		29	Single	Multigravia	4	1.5	10	Conservative

As it was mentioned in the introduction, the incidence of peripartum PS separation varies from 1 in 300 to 1 in 30,000. Yoo et al. [4] reported the incidence as 1 in 388 and has concluded that the detection rate depends on the physician's concern about this condition. The rate is low if both the physician and the patient neglect the symptoms considering them as transient normal peripartum signs. In case of this study, the doctor's awareness of this condition was higher during the study period. This factor might have the main role in finding the high rate of incidence.

Weil et al. [16] conducted a retrospective study of 19 patients who were suffering from a persistent postpartum pelvic pain. Degenerative changes in PS were found in 11 patients and arthrosis of sacroiliac joints in 8. If pelvic pain is present, the author recommends to perform pelvic X-rays. In cases of pelvic instability, surgery should be considered. If there are no signs of pelvic instability, the conservative treatment (including physiotherapy, mobilization, pain management, and NSAIDs) is the method of choice. The physician should do clinical follow-up at regular intervals for up to one year. If there is no improvement, persistent separation or instability is present, there is evidence of pubic osteitis or sacroiliac degeneration, and surgical approach should be considered.

There are few very rare complications associated with PS separation. Valsky et al. [6] described PS diastasis associated with a prolonged urinary retention. In this case, the physician performed MRT scans of the patient's pelvis and found a 5 × 5 cm hematoma in the area of the symphysis. The author hypothesises that the hematoma could have a direct pressure on the cervix of the bladder and act together with urinal infection and pain in increasing the period of urinary retention. A Foley catheter was necessary for 8 weeks until normal bladder function returned. Athanassopoulos et al. [18] reported PS separation associated with the necrotizing fasciitis of PS surrounding the soft tissue. The patient required two operations: debridement and the following reconstruction of the abdominal wall.

To conclude, the physician should be always alert of PS separation when the following circumstances are present: 1) multiparity, 2) a "crack" or a "pop" sound during delivery, 3) McRobert's maneuver, 4) a sudden and strong pain in the pubic or the sacral region. If PS diastasis is suspected, aterio-posterior X-ray and the consultation of an orthopedist are required. If the diastasis is below 2.5 cm wide and pelvic instability is absent, conservative treatment is the method of choice. If there is a PS separation wider than 2.5 cm and pelvic instability is present, surgical approach should be considered. Patients undergoing conservative treatment should be followed up for one year at least. After this period, if PS or sacroiliac pain, symptoms of instability are present, X-ray or CT scans should be performed. When degenerative changes (PS or sacroiliac joint) or pelvic instability are found, surgical approach is indicated. In case of the absence of these symptoms, other causes of chronic pain should be considered.

REFERENCES

1. Hou Z, Riehl JT, Smith WR, Strohecker KA, Maloney PJ. Severe postpartum disruption of the pelvic ring: report of two cases and review of the literature. Patient Saf Surg. 2011; 5(1): 2.

2. Gräf 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.

3. Cowling PD, Rangan A. A case of postpartum pubic symphysis diastasis. Injury. 2010 Jun; 41(6): 657–659.

4. Yoo JJ, Ha Y-C, Lee Y-K, Hong JS, Kang B-J, Koo K-H. Incidence and risk factors of symptomatic peripartum diastasis of pubic symphysis. J Korean Med Sci. 2014 Feb; 29(2): 281–286.

5. Moral Turiel M, Ruiz Abascal R, Alonso Mateos M, Márquez Garrido G, Odriozola Feu JM. [Two cases of postpartum pubis diastasis mistaken for neurological complications of epidural analgesia]. Rev Esp Anestesiol Reanim. 2004 Oct; 51(8): 448–451.

6. Valsky DV, Anteby EY, Hiller N, Amsalem H, Yagel S, Hochner-Celnikier D. Postpartum pubic separation associated with prolonged urinary retention following spontaneous delivery. Acta Obstet Gynecol Scand. 2006; 85(10): 1267–1269.

7. Idrees A. Management of chronic symphysis pubis pain following child birth with spinal cord stimulator. JPMA J Pak Med Assoc. 2012 Jan; 62(1): 71–73.

8. Najibi S, Tannast M, Klenck RE, Matta JM. Internal fixation of symphyseal disruption resulting from childbirth. J Orthop Trauma. 2010 Dec; 24(12): 732–739.

9. Pedrazzini A, Bisaschi R, Borzoni R, Simonini D, Guar-

doli A. Post partum diastasis of the pubic symphysis: a case report. Acta Bio-Medica Atenei Parm. 2005 Apr; 76(1): 49–52.

10. Parry LJ, McGuane JT, Gehring HM, Kostic IGT, Siebel AL. Mechanisms of relaxin action in the reproductive tract: studies in the relaxin-deficient (Rlx-/-) mouse. Ann N Y Acad Sci. 2005 May; 1041: 91–103.

11. Parker JM, Bhattacharjee M. Peripartum Diastasis of the Symphysis Pubis. N Engl J Med. 2009 Nov 5; 361(19): 1886–1886.

12. Gillaux C, Eboue C, Herlicoviez M, Dreyfus M. [History of pubic symphysis separation and mode of delivery]. J Gynécologie Obstétrique Biol Reprod. 2011 Feb; 40(1): 73–76.

13. Osterhoff G, Ossendorf C, Ossendorf-Kimmich N, Zimmermann R, Wanner GA, Simmen H-P, et al. Surgical stabilization of postpartum symphyseal instability: two cases and a review of the literature. Gynecol Obstet Invest. 2012; 73(1): 1–7.

14. Nouta K-A, Van Rhee M, Van Langelaan EJ. [Symphysis rupture during partus]. Ned Tijdschr Geneeskd. 2011; 155: A2802.

15. Bonnin M, Bolandard F, Storme B, Sibaud F, Rabishong B. [Pelvic pain by acute symphysis pubis separation after vaginal delivery]. Ann Fr Anesthèsie Rèanimation. 2006 Jun; 25(6): 644–647.

16. Weil YA, Hierholzer C, Sama D, Wright C, Nousiainen MT, Kloen P, et al. Management of persistent postpartum pelvic pain. Am J Orthop Belle Mead NJ. 2008 Dec; 37(12): 621–626.

17. Fidan U, Ulubay M, Keskin U, Fıratlıgil FB, Karaşahin KE, Ege T, et al. Postpartum symphysis pubis separation. Acta Obstet Gynecol Scand. 2013 Nov; 92(11): 1336–1337.

18. Athanassopoulos A, Creagh T, McMillan W. Necrotizing fasciitis after the post partum diastasis of the symphysis pubis. NZ Med J. 2006; 119(1247): U2366.

19. Snow RE, Neubert AG. Peripartum pubic symphysis separation: a case series and review of the literature. Obstet Gynecol Surv. 1997 Jul; 52(7): 438–443.