

Review Symphysis pubis dysfunction: a practical approach to management

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Symphysis pubis dysfunction is a relatively common and debilitating condition affecting pregnant women. It is painful and can have a significant impact on quality of life, which can lead to potentially serious complications such as depression. Effective management remains difficult to determine because of a variation in reported occurrence rates and symptomatology. There is little published assessment of treatments and no standardised management protocols are available. This article describes recent developments and discusses the controversies surrounding its treatment. With an improved knowledge of the condition and incorporation of the recommendations in this article it is hoped that healthcare professionals will be able to reduce the severity of the symptoms in those women affected.

Keywords pelvic pain / physiotherapy / pregnancy / pubic bone / symphysis pubis dysfunction

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Introduction

The symphysis pubis joint is a fibrocartilaginous structure which holds the two innominate bones of the pelvis together and keeps them steady during activity. The joint is further strengthened by external oblique fibres and the rectus abdominus muscle. Of the four ligaments enveloping the joint, the inferior or arcuate ligament is strongest and contributes most to joint stability but, together, all four neutralise shear and tensile stresses. The non pregnant woman's symphysis pubis gap is 4–5 mm and it is normal for it to widen 2–3 mm, without discomfort, during the last trimester of pregnancy. This increases the diameters of the pelvic brim and cavity outlet to facilitate delivery of the fetus. The average symphysis pubis gap during the last two months of pregnancy is 7.7 mm with a range of 3–20 mm; 24% of women have a gap greater than 9 mm.¹

Symphysis pubis dysfunction (SPD) occurs where the joint becomes sufficiently relaxed to allow instability in the pelvic girdle. In severe cases of SPD the symphysis pubis may partially or completely rupture. Where the gap increases to more than 10 mm this is known as diastasis of the symphysis pubis (DSP).

Snelling² provided the first clear description of this condition in 1870. Despite being recognised for more than 130 years there is still no conformity on either objective or subjective diagnostic criteria to enable practical estimates of prevalence and, thus, no means of accurately assessing intervention.

Incidence

The reported incidence of SPD varies from 1:36 to 1:300 in the British population.³ The incidence of true diastasis of the symphysis pubis is around 1:800.

Aetiology and pathophysiology

The corpus luteum in early pregnancy secretes relaxin and progesterone in high concentrations.

Box 1 Possible aetiological factors for SPD

Pelvic instability	Pelvic asymmetry, lordosis, increased load
Enzymatic	Increased hyaluronidase, decreased collagen synthesis
Hormonal	Increased estrogen, increased progesterone, increased relaxin
Metabolic	Decreased calcium, decreased vitamin D
Traumatic	Parturition
Inflammatory	Pubic symphysis, sacroiliitis
Degenerative	Arthritis of pubic symphysis

Box 2 Symptoms of SPD

- Pain localised to pubic symphysis: shooting, stabbing, burning, grinding, audible clicking, persistent discomfort
- Pain radiating to lower abdomen, groin, perineum, thigh, leg and back
- Locomotor difficulty: walking, ascending or descending stairs, rising from a chair, impaired weight bearing activities, e.g. standing on one leg or lifting/parting the legs, turning in bed

This function is continued by the placenta and decidua from around 12 weeks of pregnancy. Relaxin is known to break down collagen within the pelvic joint, causing softening and laxity. Progesterone is also believed to exert a similar effect.⁴ However, relaxin levels have not been shown to correlate with the degree of symphyseal distension or SPD symptoms.⁵ Relaxin and progesterone levels peak at 12 weeks. This does not correlate with the onset of joint loosening and symptoms which peak at term and this further weakens the argument for their causal relationship. However, the high prevalence of pregnancy initiated pelvic joint pain noted in Norwegian women and developmental dysplasia of the hip in their children was thought to be due to a genetic susceptibility to joint dysfunction, possibly caused by an aberration of relaxin physiology.⁶ Metabolic, enzymatic,⁷ traumatic⁸ and degenerative factors have also been implicated (Box 1).^{6,8} In summary, it would seem that the presence of laxity as the result of a hormonal link is undisputed, but the direct pathogenic mechanism is not fully demonstrated.

Other factors contributing to SPD include physically strenuous work during pregnancy and fatigue with poor posture and lack of exercise. Weight gain, multiparity, increased maternal age and a history of difficult deliveries, including shoulder dystocia, may also play a role.⁹

Pregnancy leads to an altered pelvic load, lax ligaments from hormonal and biochemical alterations and a weakening of musculature. In combination these lead to spino-pelvic instability, most commonly manifest as SPD.¹⁰

Clinical presentation

The classic symptoms of SPD are described in Box 2. Worldwide experience appears to differ markedly. In one Norwegian study⁶ around three-quarters of the women who developed SPD did so in the first trimester of pregnancy. In a UK based study,³ 9% developed pain in the first trimester but 89% did so in the second and third trimesters combined. Occasionally, *de novo* onset may occur in labour or in the puerperium. The start of pain may be gradual and on a visual analogue scale is most commonly described as scoring 7 out of 10 for intensity. It is usually relieved by rest.

Symptoms commonly disappear shortly after giving birth. However, some women can suffer for several months afterwards and in a few cases pain can persist for much longer. At six months postnatally the reported proportion of women with classic SPD symptoms varies from 0–25%.^{3,11} The degree of discomfort often causes the woman significant difficulty in caring for her family and can lead to social isolation. She is also at greater risk of developing severe anxiety and depression.¹²

Diagnosis

Tenderness over the symphysis pubis and sacroiliac joints are the commonest clinical signs of SPD. The range of hip movements may be limited by pain, particularly during abduction and lateral rotation. A waddling gait may result from a tendency of the gluteus medius to lose its abductor function, which is further exaggerated by the natural lumbar lordosis of pregnancy. Fry *et al.*¹³ explain how the clinician may be able to palpate the widening of the symphysis pubis but stress that the woman's own description of discomfort is sufficient to diagnose SPD; this opinion is also supported by Wellock.¹⁴

Continuous or disabling pelvic pain, especially when turning in bed, walking, climbing stairs, rising from a chair, standing on one leg or weight bearing unilaterally, is typical. In determining the presence of this condition it is helpful to conduct further examination assisted by an obstetric physiotherapist. No single test is diagnostic. However, the following tests¹⁵ for symphyseal pain in pregnancy have high sensitivity, specificity and inter-examiner reliability (Kappa coefficient >0.40). Palpation of the entire anterior surface of the symphysis pubis, with the woman supine, typically elicits pain that persists for more than five seconds after removal of the examiner's hand (60% sensitivity, 99% specificity, 0.89 Kappa coefficient). Commonly, when the woman stands on one leg she is unable to maintain the pelvis in a horizontal plane and the opposite buttock drops (Trendelenburg's sign; 60% sensitivity, 99% specificity, 0.63 Kappa coefficient). A Patrick's fabere sign may be elicited. With one iliac spine held in a fixed position by the examiner, the woman lies in a supine position, placing her opposite heel on the ipsilateral knee with the leg falling passively outwards. The test is positive if pain occurs in either sacroiliac joint (40% sensitivity, 99% specificity, 0.54 Kappa coefficient).

On palpation, anteroposterior or superoinferior displacement of the upper border of the pubic symphysis or pubic tubercle can be felt. Active straight leg raising (ASLR) may be limited or impossible to perform, yielding pain as well as palpable displacement of the symphysis pubis joint. This is less painful if the pelvis is stabilised by manual compression and the ASLR test then becomes easier to perform. Bilateral trochanteric compression may also increase pain.

Other tests shown to have high reproducibility include the pelvic girdle relaxation test for pain at the symphysis with the woman standing on one leg with the other hip flexed to 90°; and testing for unilateral or bilateral tenderness of the iliopsoas muscle, sacrotuberous ligaments and sacroiliac joints.¹⁶

The differential diagnosis includes lumbago and sciatica, urinary tract infection, osteitis pubis and osteomyelitis. These need to be firmly excluded to ensure the diagnosis of SPD.

Imaging is the only way to confirm diastasis of the symphysis pubis. It may also prove a useful tool for monitoring progress of SPD and assisting in the exclusion of other differential diagnoses. Plain radiographs (anteroposterior view in the 'flamingo position' or single leg standing position to assess vertical mobility: **Figure 1**), computerised tomography (CT), magnetic resonance imaging (MRI) and ultrasound scans have all been used to assess the misalignment of the pelvic bones.^{17–19}



(a)



(b)



(c)

Figure 1

X-ray pictures of pelvis showing widening symphysis pubis in SPD: (a) separation of the symphysis pubis; (b) misalignment of pubis when standing on right leg; (c) standing on left leg

Two small Swedish studies^{5,10} have shown ultrasound to be simple, safe and as precise as X-rays at assessing symphyseal widening in pregnancy and the puerperium but without the concerns of fetal radiation exposure. However,

several studies have failed to show any correlation between the symphyseal gap and severity of SPD.²⁰ More studies using ultrasound are needed to investigate further joint widening in this condition.

Management

The midwife is the most likely health professional to whom a woman will first report her symptoms of SPD. Early recognition and treatment of SPD will help to slow down development of the condition.

It is important that the woman believes her midwife to be supportive and an advocate. The same is true of friends and family. Occasionally, the involvement of social services is required. Aids to stability and pain relief include pelvic support, a bath board and an elevated toilet seat.

Physiotherapy

A specialist obstetric physiotherapy review should be arranged.³ The physiotherapist can advise on back care and strategies to avoid activities that put undue strain on the pelvis, leading to excessive hip abduction, as well as on safe exercise in pregnancy (**Box 3**). Some hospitals provide physiotherapy services for pregnant women in the setting of a specialist musculoskeletal clinic. Young and Jewell²¹ found that there was a measurable reduction in back and pelvic pain in pregnancy with both physiotherapy and acupuncture – more so with acupuncture (OR 6.58, 95% CI 1.0–43.16). However, a cautionary note suggested that this may, at least in part, be a reflection of the personal care given by the acupuncturist compared with group physiotherapy. Water gymnastics (aqua natal classes) from 20 weeks of gestation appeared to reduce back pain in pregnancy and were cost effective in terms of reduced rates of absence from work when compared with no treatment (OR 0.38, 95% CI 0.16–0.88). The review also found that a special Ozzlo pillow for support of the pregnant abdomen at night provided better pain relief than a standard pillow and improved sleep (OR 0.32, 95% CI 0.18–0.58).

Elden *et al.*²² reported a controlled trial of acupuncture versus stabilising exercises versus

standard treatment for women with pelvic girdle pain. Control and treatment groups were given advice, a pelvic belt and muscle strengthening exercises. After treatment, pelvic pain was reduced significantly in the stabilising exercises group compared with the control groups. There was a median difference of 9 points ($P = 0.0312$) for pain in the morning and 13 points ($P = 0.0245$) in the evening. The greatest pain reduction was seen in the acupuncture group (12 in the morning and 27 in the evening, both $P < 0.001$). In another survey,²³ physiotherapy was found to be an effective treatment for antenatal back and pelvic pain, with 75–80% reporting an improvement in their symptoms. Pelvic supports in the form of a trochanteric belt, Tubigrip® (a firm stocking-like support) worn over the lower abdomen and pelvic area just cranial to the greater trochanters, or a sacro-iliac support are often prescribed. They exert a relatively small amount of force and aid in the restoration of stability of the pelvic ring. Even though SPD is frequently treated with these devices, there is almost no published evidence of their efficacy.

Elbow crutches may be provided where weight bearing is painful. A walking frame or wheelchair may become necessary if mobility is severely compromised. Occupational health referral is required for assistance, particularly with acquiring aids. Similar help may be obtained from social services.

Pelvic floor exercises from early pregnancy are thought to reduce the risk of developing SPD. Deep abdominal exercises increase core stability, preventing the onset of pelvic and lower back pain. These exercises and others such as Pilates may prevent complications of SPD if performed before or early in pregnancy.²⁴ In a randomised trial, Stuge *et al.*²⁵ compared physiotherapy and a 20 week course of specific stabilising exercises, aimed at improving stability through forced closure of the pelvis, with physiotherapy alone in postnatal women. From baseline to two years postpartum, there were significant improvements in pain, functional status and physical health in both groups, although physiotherapy performed significantly better.

Analgesia

Regular analgesia in the form of paracetamol and codeine-based preparations may be prescribed during pregnancy, with close monitoring of effectiveness and side effects. Non-steroidal anti-inflammatory drugs (NSAIDs) should only be used after delivery. Referral to the hospital pain team is an option for intractable cases. There are case reports of epidural morphine/bupivacaine/fentanyl usage for 24–72 hours to break the vicious cycle of pain and muscle spasm; the benefits of which were

Box 3 Advice to women with SPD

- Avoid activities which cause discomfort, e.g. lifting, carrying, prolonged standing, walking and strenuous exercise
- Rest more frequently
- Mild to moderate exercise, including abdominal wall and pelvic floor exercises, is allowed
- Avoid straddling and squatting movements (hip abduction), e.g. when getting in and out of a car or bath
- Adopt good posture, avoid bending and twisting
- Roll in and out of bed
- If swimming, avoid the breast-stroke
- Take regular painkillers, such as paracetamol ± codeine
- Ice packs can be used for five minutes at a time on the lower back and sacroiliac joints or an ice cube can be rubbed on the symphysis pubis for 20–30 seconds

noted throughout pregnancy and after delivery.²⁶ Intrasymphyseal injection of steroids and local anaesthetic have also been reported with variable success.⁷

In all cases, reassurance that SPD is not dangerous to mother or fetus is essential.

Alternative therapies

In a questionnaire survey²⁷ of women with SPD treated by a chiropractor ($n = 23$), all women experienced improvement in their pain; 25% described complete recovery but 62.5% only moderate recovery. Public health services have limited access to this therapy, although interest is rising, particularly in the primary care setting. Transcutaneous electrical nerve stimulation, ice, external heat or massage may also be of value.

Women suffering with SPD are encouraged to contact self-help groups run by volunteers who have experienced SPD themselves. They provide support through personal contact, written information and meetings with others who have experience of SPD and can give practical solutions to the everyday problems presented.^{12,28}

Delivery

For most women with SPD, spontaneous vaginal delivery is recommended. Induction of labour is occasionally offered to those who are in extreme pain or who are severely limited in their daily activity or mobility. The risks of induced labour often outweigh the benefits. There is no evidence that caesarean section is beneficial for women with SPD. However, very rarely, when hip abduction is severely restricted, this may be necessary. Adequate analgesia should overcome this difficulty unless there is mechanical obstruction, in which case the diagnosis of SPD should be questioned. Interestingly, women delivered by caesarean section report less discomfort postnatally. This may, however, be due to the regular analgesia received rather than the mode of delivery.²⁹

The range of pain free movement available in the lower spine and hips should be assessed before labour and clearly documented. It is important not to restrict mobility and not to place the woman in vulnerable positions outside her normal comfortable range for prolonged periods. The SPD pain may markedly worsen under these conditions during labour and persist postnatally for longer. During labour and delivery leg separation should be kept to a minimum. Excessive forced hip abduction that puts strain on the pubis, such as placing the woman's feet on the attendants' hips, should be avoided. Lithotomy, if required, should only be used for a short period of time and both legs should be moved passively and simultaneously into and out of the position.¹³ Otherwise, the

midwife should encourage the woman to adopt any comfortable position (more often than not left or right lateral recumbent or kneeling, upright and supported). Use of epidural and spinal anaesthesia have been discouraged on account of masking SPD pain, although there is no evidence to support this view. One-to-one support and the use of birthing pools for pain relief will reduce the need for epidural analgesia, although specific handling issues may arise.

Postpartum

Women with SPD have greater needs and often have longer hospital stays. Continuity of care from community midwives to health visitors is important, as is active involvement of the general practitioner. It has been recommended that women with SPD rest in bed for 24–48 hours until discomfort subsides. Thromboembolism is a risk of immobilisation and in selected women with added risk factors a policy of regular analgesia, thromboembolism deterrent stockings and heparin, along with gradual mobilisation and physiotherapy, should be instituted early.

If symptoms persist, imaging may be required to exclude diastasis of the symphysis pubis and referral to an orthopaedic surgeon arranged. Very occasionally, operative fixation of the pelvis is required to regain stability.

Although difficult to predict, adequate information on the expected course of recovery and the high recurrence rates of 68–85% in future pregnancies must be made available.^{3,30}

Conclusion

Long-term morbidity can be reduced if pregnant women presenting with SPD are diagnosed early, given accurate information and managed appropriately. There is a need for increasing the awareness about this condition among healthcare professionals who care for pregnant women, particularly given the high incidence of recurrence in subsequent pregnancies. There is also a need to standardise terminology, agree on diagnostic criteria and produce better scientific evaluation of imaging techniques and treatment modalities.

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