

# Pubic Symphysis Diastasis

Subjects: **Orthopedics**

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A pubic symphysis diastasis (PSD, diastasis symphysis pubis) is defined as excessive widening of the system of anatomical structures that make up the pubic symphysis (above the physiological norm of 10 mm), occurring during pregnancy or postpartum. It is total separation or instability of the symphysis without breaking the pubic bones. It is a rare disease with incidences ranging from 1/300 to 1/30,000 .

pubic symphysis separation

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pregnancy

PSD

## 1. Introduction

The proper development of a fetus is made possible due to numerous adaptive changes in women's bodies, including such complicated systems as: endocrine, nervous and musculoskeletal. With regard to the latter, those changes can be observed particularly in osteoarticular and musculo-ligamento-fascial structures. Almost all of those changes have an aim to broaden space inside the pelvic ring, especially to increase the transverse diameter to provide the best conditions for fetal development and safe delivery <sup>[1]</sup>.

Weight gain of a pregnant woman and a shift in the center of gravity forwards causes mechanical changes mainly in the pelvic girdle and lower limb joints. There is a tendency for deepening of lordosis in the lumbar spine, forward inclination of the pelvis, and formation of flexion contractures in the hip joints <sup>[2][3]</sup>

As a result of hormonal changes occurring during pregnancy, especially under the influence of estrogens and relaxin, water is accumulated in the body and remodelling of the collagen fiber structures occurs, which in turn leads to relaxation of tendon and ligament structures. A few weeks before delivery, the uterus and the fetus move downwards towards the pelvic inlet, further increasing the relaxation of the ligamentous structures located in the lower areas of the pelvic girdle. The process of water retention in the pregnant woman's body leads to greater hydration of cartilage and bone tissue. This results in the softening of cartilage of intervertebral discs, pubic symphysis, and sacroiliac joints.

The phenomenon of separation of the pubic symphysis often causes pain and impairs normal life activities <sup>[4]</sup>. Because of the rare occurrence of this pathology, there is a lack of therapeutic algorithms in the literature. The creation of guidelines for the diagnosis and treatment of pubic separation is aimed to make diagnosis easier and enables faster decision-making, which may result in better therapeutic outcomes.

## 2. Pubic Symphysis Diastasis—Incidence and Preliminary Characteristics

A pubic symphysis diastasis (PSD, diastasis symphysis pubis) is defined as excessive widening of the system of anatomical structures that make up the pubic symphysis (above the physiological norm of 10 mm), occurring during pregnancy or postpartum. It is total separation or instability of the symphysis without breaking the pubic bones. It is a rare disease with incidences ranging from 1/300 to 1/30,000 [1][4]. In the current literature, many synonyms for the separation of the pubic symphysis can be found, such as: “Pubic rupture of the pelvis”, “Pubic diastasis”, or “Postpartum symphysis pubis diastasis”, which all refer to pain associated with childbirth or pelvic instability after childbirth [2].

## 3. Anatomy and Pathophysiology of Pubic Symphysis

The posterior part of the ring is formed by the posterior parts of the hip bones, sacroiliac joints, and sacral bone. It is strengthened by ligaments: upper pubic, lower pubic (arcuate, subpubic), posterior pubic, and anterior pubic. It also includes fibers from the aponeurosis of the abdominal muscles (rectus abdominis and oblique external muscle), gracilis muscle, and adductor longus muscle, which significantly increases effectiveness of locking the sacroiliac joints [5]. The greatest stability of symphysis is provided by strong and thick upper pubic ligaments and lower arches.

The pubic symphysis disc is made of fibrous cartilage, in which apart from regularly arranged, thick, type I collagen fibers, chondrocytes are deployed. An additional feature of this tissue is the low content of glycosaminoglycans (2% dry weight). The arrangement of collagen fibers reflects the forces acting on the disc. The width of the pubic symphysis changes with age.

Shear forces act on the joint while bending, standing, and while standing with the leg raised, known as tensile and frictional (sliding) forces, which have different values and vectors. While walking, pubic symphysis absorbs shock from the pelvic ring. Under physiological conditions, the pubic symphysis may become loose in the range of 1–2 mm (during lower limb abduction) and may also be rotated by 1°.

During pregnancy, especially in the first trimester and during childbirth, relaxation of the structures of the pubic symphysis can be observed as a result of hormone activity [2][6][7]. The perinatal dilation of the symphysis by 3–5 mm is physiological, and returns to its original size within 5 months [5]. With soft tissue relaxation comes: anterior pelvic tilt, accentuated low-back curvature, hyperextension of the upper back, forward tilting of the neck, and backward extension of the neck [7].

## 4. Physiotherapy in the Dissolution of the Pubic Symphysis

Physiotherapy should include isometric, passive, and active exercises and should not cause unilateral overload of the pelvis. In cases of significant restrictions on the mobility of patients, it is advisable to use crutches and/or

wheelchairs [8]. Overall, mobilization and unloading added to conservative treatment seems to improve results. Because very few studies have included exercise programs in their conservative approaches, clear recommendations for particular exercises as part of PSD treatment are difficult to develop.

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