

## **A DIAGNOSTIC PROCEDURE IN ANTERIOR PELVIC PAIN (OSTEITIS PUBIS)**

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### **INTRODUCTION**

Osteitis pubis was first described in 1924. Since that time many theories concerning the cause of the disease have been developed.<sup>1</sup> The key symptom is pain in the midline at the level of the pubic symphysis and may be felt also perineal, in the scrotum, suprapubic and along the adductors of the hip.<sup>1,17</sup> The pain can be exacerbated by walking, running, climbing stairs, coughing, sneezing, kicking, pivoting on one leg, and specific exercises.<sup>1</sup> The disease is considered to be caused by trauma (direct trauma, stress injury, straddle injury, diastasis), pelvic surgery, childbirth or overuse.<sup>1,2,3,7,9,13,15,21,22</sup> Driessen gave a description of Apoptartum pelvic arthropathy with unusual features.<sup>5</sup> In fact the patients had symphyseal osteoarthropathy or osteitis pubis.

Diagnosis is largely based on medical history. Tenderness over the symphysis may be found.<sup>8,21</sup> Some patients have a waddling gait, and in some cases crepitus is felt.<sup>9,13</sup> In longstanding severe cases radiographic abnormalities may support the diagnosis. On plain films and CT-scans the following findings has been described: broadening or widening of the pubic symphysis, sclerosis, irregular joint margins, erosions, osteofytes and avulsion of cortical bone at the site of the insertion of the adductors. In many cases degenerative changes are found at the sacroiliac joints also. With MRI abnormal signal intensity of the pubic bones and/or fluid within the pubic symphysis may be found. On bone scans increased radio nucleotide uptake at the pubic symphysis and/or the sacroiliac joint is possibly found.<sup>4,6,8,13,14,21</sup> Stress radiographs (>flamingo view radiographs=) may show enlarged vertical displacement.<sup>24</sup>

In many cases no therapy seems to be necessary. Osteitis pubis has been described as a self-limiting disease.<sup>1,14</sup> In many situations rest is advised<sup>1,7,11,13,14,22</sup> and physical therapy.<sup>11,14,17,22</sup> Physical therapy consists of exercises to strengthen the anterior pelvic floor and/or stretching of the hip muscles. Anti-inflammatory drugs are advocated: nonsteroid<sup>7,11,13,22</sup>, systemic corticosteroids,<sup>13,22</sup> as well as intra-articular corticosteroid injections<sup>11,12,14</sup> Some authors describe the healing effect of anticoagulants.<sup>10,20,23</sup> In stubborn cases surgery has been tried: adductor release, (wedge) resection of the pubic symphysis.<sup>8,13,17,19,22</sup> arthrodesis of the pubic symphysis or bilateral sacroiliac arthrodesis.<sup>8,24</sup>

The exact mechanism of the development of osteitis pubis seems to be unknown. Diagnosis is largely based on medical history and by exclusion of other well known diseases. A need exists for a simple, specific and sensitive diagnostic test. Moreover, better understanding of pathogenesis is needed to find out better methods to treat the disease.

Our setting provides the opportunity to examine a large group of patients with pain around the pubic symphysis and/or the sacroiliac joints. In most of our patients pain has been caused by pregnancy. It was noticed that, in many patients with pelvic pain symptoms could be provoked when the hip muscles were tensed. Many patients felt relieve of pain when using a pelvic belt. The aim of the present study was to investigate the possibility to use the effect of the pelvic belt on adduction strength as indicator for the presence of osteitis pubis.

## **METHODS**

### **subjects**

1. Five patients were included who had interrupted their sport because of pain in the groin, the symphysis area and/or along the hip adductors for at least one month. Patients were excluded when pain started after a severe trauma, or in case the patient suffered from a systemic neurologic and/or rheumatic disease and in case the complaints could be explained by other well-known diseases (inguinal herniation, hip diseases etc).
2. Controls were 16 soccer players without any restriction to play sports during at least one month and without any pain during the test procedure.

## **MEASUREMENTS**

The method to measure adduction strength was based on a former study.<sup>16</sup> The measurement took place with a handheld dynamometer (MicroFET7 , Hoggan Health Industries Inc., Draper, Utah, USA) in the supine position, the knees at 90° and the feet placed on the couch. The display of the device showed the maximum performed peak value (in newton). The examiner placed the dynamometer with his right hand against the medial aspect of the right knee. The patient was asked to squeeze the device (and the right hand of the examiner) between the knees, during 5-7 seconds as forcefully as possible. After 5-7 seconds rest the measurement was repeated twice. When the score of the last measurement was the highest an extra measurement was performed, etc. The highest value of all measurements was used for analysis. The same procedure was then performed with two firm pelvic belts (Rafys, Hengelo, the Netherlands, type 3222) fastened as firmly as possible around the pelvis. The belts were placed one over the other at the level of the pubic symphysis. In a pilot study it was shown that the support of one belt was to less to be effective. In healthy subjects, and in patients with pelvic pain reliability of adduction measurement was good.<sup>16,18</sup> In a former study (unpublished data), hip adduction strength was measured in a group of 55 health men (sportsmen as well as sedentary subjects). The mean value was 348 newton (∇ 74).

## ANALYSIS

Differences between scores of patients and healthy subjects were measured using the two sample t test.  $P < 0.05$  was considered significant.

## RESULTS

Adduction strength, measured without a pelvic belt was 199 newton ( $\nabla$  68) in the patient group and 353 ( $\nabla$  47) in the control group ( $p = 0.00002$ ). The adduction strength, measured with a pelvic belt was 339 newton ( $\nabla$  77) and 363 ( $\nabla$  61), respectively ( $p = 0.48$ ). The pain decreased and strength increased in every patient when the pelvic belt had been applied. The mean increase was 140 newton in patients and 10 newton in controls ( $p = 0.013$ ). The mean increase in percentages of the measurement without a pelvic belt was 80% and 3% respectively ( $p = 0.03$ ).

## CONCLUSION

The hypothesis that osteitis pubis is caused by strain on the ligaments of the pubic symphysis was substantiated by this pilot study. A large part of the weakness subsided when a pelvic belt had been fastened, so the weakness was probably not caused by a lesion of the adductors, but because tensing the adductors caused pain.

The study suggests that osteitis pubis should be treated with the use of a pelvic belt in combination with exercises to reinforce the transverse abdominal muscle, the pelvic floor and relaxation of the hip adductors.

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