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Chronic Anterior Pelvic Instability

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Learning Point of the Article:

"Pelvic instability hardly ever requires surgery, but it is a rarely condition that should be ruled out when persistent abdominal or lower back pain are present".

Abstract

Introduction: Chronic anterior pelvic instability means pathologic movement of the symphysis pubis with axial load. It is not a common pathology and its diagnosis is often delayed and difficult increasing the disability of affected patients. The pain is localized in the suprapubic area or groins, increasing with physical activity, direct palpation or compression. Main known causes are pregnancy, delivery, trauma, fractures, intense physical activity, infection, or previous surgeries. Treatment algorithms have not been standardized. Initially, it is managed with an orthosis, physical activity modification, medication, and rehabilitation. Surgical treatment with symphyseal arthrodesis is the last option. The literature on symphyseal plating for chronic instability found is sparse.

Case Report: We report the case of a 33-year-old female presenting lower abdominal pain after her third delivery. Several months after, magnetic resonance imaging and scintigraphy suggested chronic symphysitis. Single leg stance pelvic X-rays indicated chronic anterior pelvic instability. Pain-relievers, physical rehabilitation, and local corticosteroid injection were noneffective; surgery was indicated, performing a double plate symphyseal arthrodesis with iliac bone graft.

Conclusion: Pelvic instability should be ruled out when persistent abdominal or lower back pain are present. Thorough physical examination and specific provocative maneuvers need to be assessed. In our presented case, symphyseal arthrodesis was performed without complications. After a two-year follow-up, the patient has recovered her previous functional status and bone scintigraphy is negative. Radiologic controls rule out loosening or material breaking as a complication. We hope this case report may give a clue in surgical options management.

Keywords: Arthrodesis, pelvic instability, symphysis.

Introduction

Chronic anterior pelvic instability is the pathologic movement of the symphysis pubis with axial load. Pelvic stability requires a competent soft tissue structure. Stabilizing structures include the pelvic floor as well as the anterior and posterior symphysis ligaments. Anteriorly, pubic symphysis is formed by a thin layer of hyaline cartilage covering the pubic bodies with an interposed fibrocartilage disk. Normal motion at the pubic symphysis is minimal.

Detailed patient history should identify predisposing factors for anterior pelvic ring instability. Known causes are pregnancy, delivery, trauma, fractures or previous surgeries, and intense physical activity or infection.

Chronic anterior pelvic instability presents as pain located to the suprapubic area or groins and may be radiated to lower limbs. It may increase with physical activity, direct palpation or compression, standing on one leg, side-lying, or engaging in activities that stress muscles with attachments close to the symphysis. Low para-spinal back or buttock pain is often present even without posterior ring pathology. Some patients have grinding of the anterior pelvic ring that is palpable on examination.

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Author's Photo Gallery


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Figure 1: First pelvis X-ray available shows impingement and erosion of the edges of the pubic symphysis.

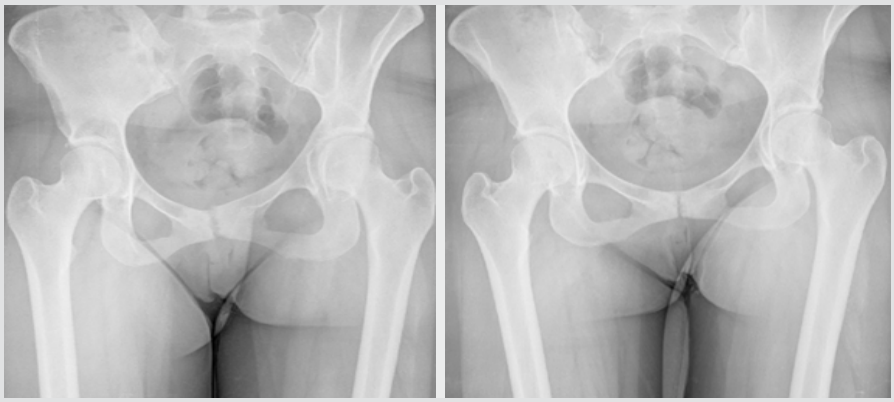

Figure 2: (a and b) Standing single leg stance radiographs (flamingo views) of the right and left legs demonstrating relative craniocaudal translation >5 mm of the two pubic bodies in a patient with chronic osteitis pubis, indicating the presence of anterior pelvic ring instability.

We report the case of a 33-year-old female diagnosed with chronic anterior pelvic instability.

Case Report

A 33-year-old female patient presented in December 2016 at the Rheumatology outpatient department from our hospital with a one-year history of gradual pain localized to the suprapubic area and inner thigh, radiated to lower limbs. The pain started during pregnancy, and it increased with walking and physical activity. The patient required assisted walking with crutches and daily use of NSAIDs.

Medical history included an anxiety-depression syndrome, recurrent cystitis, with follow-up and medical treatment during each episode. In 2014, one urine culture was positive for Staphylococcus saprophyticus. Her medical record showed she was the mother of three children. The first one weighed 4200 g, the second 4000 g, and the third 3200 g. The pain started 1 year after the third delivery. It was an uncomplicated delivery and neither infections nor fevers were observed during pregnancy. No other medical conditions were reported.

Physical examination showed pain located at the suprapubic area and groins. Palpation of the pubic symphysis and anterior pelvic ring, physical activity, or passive mobilization of the symphysis exacerbated the symptoms. Lateral compression maneuvers of the anterior pelvic ring were painful. She did not present sacroiliac pain upon palpation or provocative maneuvers.

Complementary studies were performed. Urine cultures were negative. Blood tests showed absence of white blood cell count, acute phase reactants such as erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP). Leukocyte scintigraphy was negative and bone scintigraphy was consistent with pubic symphysitis.

Magnetic resonance imaging (MRI) (Fig. 3) showed irregularity, sclerosis, fat deposit, and slight hypertrophy at the pubic symphysis, consistent with chronic pubic osteitis, as well as bone edema at both pubic bones in accordance to an acute inflammatory component. Both femoral heads showed no alterations.

Physical therapy resulted ineffective. Ultrasound-guided joint puncture showed neither drainable abscesses nor liquid for culture. An ultrasound-guided infiltration of local anesthetic and corticosteroid was performed, showing some improvement at rest within the 1st 48 h but the pain persisted with movement. After 1 year and a half with pain, she was still using opioids daily.

Considering non-surgical management non-effective, surgery was proposed. First, rekindling of symphysis pubis was performed and anterior iliac crest graft was harvested. Through an anterior surgical approach an arthrodesis with double plate was performed. Dissection of the cartilage was observed. One plate was placed superior and the other was placed anterior with autologous bone graft. Symphyseal fixation was performed without surgical complications. Intraoperative samples cultures were negative. One month after surgery, she had neither symphyseal pain nor sacroiliac pain. Walking was permitted

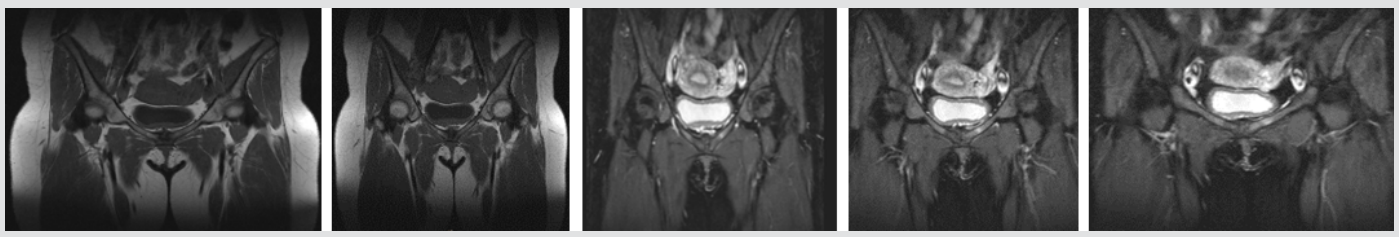

Figure 3: (a-e) Magnetic resonance imaging of the pelvis, first one available, showed irregularity, sclerosis, fat deposit and slight hypertrophy at the pubic symphysis, consistent with chronic pubic osteitis, as well as bone edema at both pubic bones in accordance to an acute inflammatory component. Both femoral heads showed no alterations.

Figure 4: Immediate pelvis post-operative X-ray.

Figure 5: Last available follow-up X-ray.

assisted by a walker, but single leg stance was not allowed.

Two years after surgery, she does not have any low back or symphyseal pain and she has recovered to her previous functional level. X-rays showed arthrodesis with no evidence of material loosening or rupture. No pathological signs were observed in both CT and bone scintigraphy.

The patient regained total load and single-leg stance with no pain. No further complications were reported.

Discussion

Chronic anterior pelvic instability is a scarcely studied condition. Multiple etiologies have been suggested. Known causes are pregnancy, delivery, trauma, fractures or previous surgeries, and intense physical activity or infection.

The pelvic ring may remain stable despite the loss of anterior stabilizers, as the posterior pelvic ring contributes most of the pelvic ring resistance to deformation under load [1].

Normal motion at the pubic symphysis is minimal. Parturition may affect symphyseal motion; healthy multiparous women exhibit >3 mm of craniocaudal motion at the symphysis when standing on one leg [2]. Normal anteroposterior radiographs of the pelvis have a mean symphyseal clear space of 4.4 mm.

Rheumatologic disorders and prior urologic or gynecologic procedures are also associated with osteitis pubis and should be ruled out on differential diagnosis. A complete study was performed to rule out osteitis of an infectious etiology. Urine culture was negative. Blood tests showed absence of white blood count and acute phase reactants such as ESR and CRP. Leukocyte scintigraphy was negative and bone scintigraphy was consistent with pubic symphysitis.

Patients in whom anterior pelvic ring instability is suspected should undergo a thorough physical examination of the hip. Deep palpation to the pubic symphysis and/or anterior pelvic ring may elicit tenderness if degeneration of the symphysis is present. Furthermore, a posterior ring exploration helps to rule out its affection. Low para-spinal back or buttock pain is often present even without posterior ring pathology.

It is of the utmost importance to perform exhaustive provocation maneuvers. Furthermore, radiologic study should include dynamic views, as standard physical examination can be inconclusive.

Various provocative maneuvers could guide us in diagnosis. Our reported case showed pain upon manual stress of the pelvic ring by applying downward pressure on the bilateral anterior superior iliac spine with the patient in the supine position and by applying downward pressure on the iliac crest with the patient in the lateral position. The Patrick test used to assess the sacroiliac joint [3] was negative in this case. Asking patients to perform an active straight leg raise may elicit pain or weakness in those with posterior pelvic ring instability. A single leg stance also may elicit pain.

In our case, the pain was localized in the lower abdominal area and inner thigh, radiated to lower limbs. Palpation to the pubic symphysis and lateral compression maneuvers were also painful. She did not present any posterior back pain, sacroiliac pain to the palpation or provocative maneuvers.

Single leg standing radiographs (flamingo views, as described by Chamberlain [4]) were performed in our case to expose instability, as dynamic instability that is elicited only with the loading of each hemipelvis may be missed. The relative vertical displacement between the two pubic bodies on each single-leg stance radiograph is summed to determine the total displacement. The normal value was 0'5 mm in men and 1'5 mm in women; however, other studies found that >3 mm is common in multiparous women [2, 4, 5]. Higher values than 5 mm indicate an unstable symphysis [6]. Radiographic images are annexed at the end.

Advanced imaging may be useful in assessing posterior pelvic ring involvement. CT is best for evaluation of bony anatomy, but MRI can reveal inflammation, cyst formation, and edema that may form around affected joints. In our case, we did not perform any additional image study to specifically evaluate posterior ring stability, as the patient never showed any clinical evidence of its affection. MRI scan images showed irregularity, sclerosis, fat deposit and slight hypertrophy at the pubic symphysis, all findings consistent with osteitis pubis with chronic signs. Bone edema was present at both pubic bones explaining acute inflammatory component. Both femoral heads showed any alterations, which helped in the differential diagnosis.

Specific treatment algorithms for chronic anterior pelvis instability have not been established. Nonsurgical treatment modalities include medication, activity modification, and physical therapy that are focused on core and hip muscle strengthening and pelvic floor stabilization. We scheduled oral NSAIDs and intrasymphyseal corticosteroid injections for diagnosis and therapeutic purposes. Assisted ambulation with crutches was encouraged [7, 11].

Ecoguided puncture in this case could not observe drainable

abscesses. Injection of local anesthetic and corticosteroid was performed, but the pain persisted with movement. The injection effect lasted just 48 h. After 1 year and a half with pain, she was still using opioid medication daily.

Although in the majority of cases nonsurgical modalities are successful, when they are not effective surgery should be considered. Scarce evidence exists to guide treatment. In patients with no clearly defined inciting event or a remote event, symphyseal arthrodesis is recommended after the failure a 3-month appropriate nonsurgical treatment [8]. Symphyseal instability defined as >5 mm of cranial displacement on flamingo views and/or symphyseal diastasis of >10 mm on an AP pelvic radiograph is required for consideration of surgical intervention [3, 7].

Surgical technique may include internal fixation alone in selected patients, or symphyseal arthrodesis with addition of bone graft. The literature on symphyseal plating for chronic instability is sparse. Data on plating for acute trauma may help guide the technique. In this case, an anterior surgical approach to the pubic symphysis was chosen. First, rekindling of symphysis pubis was performed and open reduction and double plate pubic symphysis arthrodesis with autologous bone graft. Double plating with multiplanar plates theoretically improves the rigidity of fixation.

In some patients, additional stabilization or arthrodesis of the posterior pelvic ring may be required. Before proceeding with surgery for anterior instability, the posterior pelvic ring should be evaluated. The decision to perform posterior ring fixation is based on the presence of sacroiliac joint widening most times [8]. Sacroiliac arthrodesis is reserved for patients with evidence of degenerative SI joint changes found on advanced imaging.

Few studies have reported outcomes of symphysiodesis. Olerud and Walheim [9] studied eight patients with symphyseal pain and/or pelvic instability treated with symphyseal fusion. All patients had stable arthrodesis and symptom resolution. The report by Najibi et al. [3] included three patients with chronic pain resulting from labor-induced symphyseal ruptures who were treated with symphyseal fusion. All three symphysis were successfully fused, one patient with excellent outcome and two with fair-poor outcome [3]. In a study of 58 patients with pregnancy-related pelvic pain treated with symphysiodesis and bilateral sacroiliac joint screw fixation, van Zwienen et al. [10] reported a nonunion rate of 8'6% in those treated with iliac crest bone grafting, compared with a rate of 27'3% in those without bone graft. At final follow-up, 42 patients improved functionally.

In this case report, at 2 years after surgery, our patient does not have any lumbar nor symphyseal pain and she has recovered to her previous functional level. In the last X-ray controls, there were no evidence of material loosening or rupture evidence and no pathological signs have been observed in both CT and bone scintigraphy. Non-weight-bearing was recommended by some authors, but in this case, 1 month after surgery, walking was permitted assisted by a walker, avoiding single leg stance for 3 months.

Patient regained total load and single-leg stance. No further complications were reported. Longer follow-up is needed to assess posterior pelvic ring.

Conclusion

Anterior pelvic instability is a rare condition. It refers to the pathologic movement of the symphysis pubis with axial load. Known causes are delivery, fractures, intense physical activity, or infection. It is of the utmost importance an exhaustive physic examination, with provocation maneuvers and radiologic study performing dynamic views. Furthermore, posterior ring exploration should be included. Initial management requires orthosis, physical activity modification, medication intake, recovery workouts, and leaving symphyseal arthrodesis as last option.

Clinical Message

Chronic anterior pelvic instability should form the differential diagnosis of chronic lower abdominal pain.

References

1. Tile M. Acute pelvic fractures: I. Causation and classification. J Am Acad Orthop Surg 1996;4:143-51.
2. Garras DN, Carothers JT, Olson SA. Single-leg-stance (flamingo) radiographs to assess pelvic instability: How much motion is normal? J Bone Joint Surg Am 2008;90:2114-8.
3. Najibi S, Tannast M, Klenck RE, Matta JM. Internal fixation of symphyseal disruption resulting from childbirth. J Orthop Trauma 2010;24:732-9.
4. Chamberlain WE. The symphysis pubis in the roentgen examination of the sacroiliac joint. AJR Am J Roentgenol 1930;24:621-5.
5. Elden H, Hagberg H, Olsen MF, Ladfors L, Ostgaard HC. Regression of pelvic girdle pain after delivery: Follow-up of a randomised single blind controlled trial with different treatment modalities. Acta Obstet Gynecol Scand

2008;87:201-8.

6. Siegel J, Templeman DC, Tornetta P. Single-leg-stance radiographs in the diagnosis of pelvic instability. J Bone Joint Surg Am 2008;90:2119-25.
7. Hagen R. Pelvic girdle relaxation from an orthopaedic point of view. Acta Orthop Scand 1974;45:550-63.
8. Stover M, Edelstein A, Matta J. Chronic anterior pelvic instability: Diagnosis and management. J Am Acad Orthop Surg 2017;25:509-17.
9. Olerud S, Walheim GG. Symphysiodesis with a new compression plate. Acta Orthop Scand 1984;55:315-8.
10. van Zwienen CM, van den Bosch EW, Snijders CJ, van Vugt AB. Triple pelvic ring fixation in patients with severe pregnancy-related low back and pelvic pain. Spine (Phila Pa 1976) 2004;29:478-84.
11. Gamble JG, Simmons SC, Freedman M. The symphysis pubis: Anatomic and pathologic considerations. Clin Orthop Relat Res 1986;203:261-72.

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