

## Case Report

## Adult female patient with osteitis pubis and pelvic instability requiring surgery: A case report

Khalil Nasrallah<sup>b</sup>, Mahmoud Jammal<sup>a,\*</sup>, Amal Khoury<sup>a</sup>, Meir Liebergall<sup>a</sup>

<sup>a</sup> Hadassah Medical Center of the Hebrew University, Kiryat Hadassah, POB 12000, Jerusalem 91120, Israel

<sup>b</sup> Western Galilee Medical Center, 9 Nahariya-Cabri, Nahariya 22100, Israel

## ARTICLE INFO

**Keywords:**

Osteitis pubis  
Pelvic instability  
Wedge-shaped resection  
Symphysis pubis  
Tri-cortical iliac bone graft

## ABSTRACT

**Background:** Osteitis pubis (OP) is an inflammatory condition of the symphysis pubis (SP) characterized by focal pain and local tenderness. Pelvic instability (PI) is commonly associated with this condition. It is still not clear if OP leads to PI or it is PI that leads to OP. The exact cause of osteitis pubis is not yet known, although several predisposing factors have been suggested to contribute to this condition. In most cases, it is self-remitting and rarely needs surgical intervention.

**Case presentation:** A 63-year old woman presented with a 12-month history of persistent pain at the symphysis pubis and non-responsive to analgesics. The pain was aggravated by physical activity such as standing and walking. Physical examination showed focal tenderness at the symphysis pubis with no tenderness over the sacroiliac joints or lumbar region. The diagnosis was confirmed by characteristic findings on radiographs, CT and MRI. Surgery was considered after all conservative measures failed. The patient underwent a wedge-shaped resection of the symphysis pubis; the bone defect was filled autologous tri-cortical bone and fixed with dual plating. The outcome was satisfactory with radiologic union and symptom resolution postoperatively.

**Conclusions:** Osteitis pubis due to pelvic instability can cause chronic and persistent pain. In cases where conservative treatment fails, surgery should be considered. We recommend wide surgical resection of all non-viable bone at the symphysis pubis with the addition of tri-cortical iliac bone graft. Double plating should be considered in order to maximize the rate of fusion and further stabilize the fixation.

### Background

Osteitis pubis (OP) is a relatively common condition characterized by inflammation of the symphysis pubis. Although it is commonly described to affect young athletic patients, osteitis pubis also affects other patient groups due to varying etiologies, rheumatologic disorders, pregnancy and parturition [1,2].

Young patients can develop OP mostly due to pregnancy or sport activities. In pregnancy relaxation of the pelvic girdle is considered a physiologic change associated with pregnancy. Most symptoms resolve within several weeks after birth. Some studies have shown that 10–75% of women have persistent pelvic girdle pain 1–3 months after delivery [3,4]. However, complete regression occurs in 99% of cases at 12 weeks after delivery [5].

In the athletic group (20–40 years of age), it is usually associated with repetitive micro trauma, especially during sport activities

\* Corresponding author.

E-mail address: [Jammalm@hadassah.org.il](mailto:Jammalm@hadassah.org.il) (M. Jammal).

(soccer, rugby, ice hockey and distance running) [6,7]. Our patient belongs to the older group, at this age it has frequently been reported following urological and gynecological procedures or idiopathic [1,2]. We will primarily limit our discussion to the non-athletic older age group of patients as related to our reported case.

OP symptoms include recurring pain in the groin region especially during ambulation. Pain over the sacroiliac joints and buttocks may also be present [8]. Clinical examination is characterized by focal tenderness over the symphysis pubis and pain with provocative maneuvers [9–11]. Other associated findings include restricted range of motion of the hip, positive FABER test (to evaluate pathology of the hip or sacroiliac joint) and weakness of adductor muscles.

Characteristic radiographic findings usually include sclerosis, erosions and either widening or narrowing of the symphyseal joint [12]. Pelvic instability can be assessed radiographically with “flamingo view” radiographs [1]. MRI is still considered the gold standard for diagnosing osteitis pubis. Additionally, it is a useful method for assessing sacroiliac (SI) joint or sacral pathologies contributing to posterior pelvic instability. SI joint widening suggests compromise of SI ligaments. Characteristic findings in acute cases include hyper-intense signal on T2-weighted images within the symphysis pubis and adjacent region. In chronic cases, findings are characterized by sclerosis, erosions, irregular bony margins with pubic beaking and adjacent osteophytes [13].

It is important to consider the differential diagnosis of pain at the symphysis pubis (SP) with special attention paid to ruling out pubic osteomyelitis [14]. Besides osteomyelitis, the differential diagnosis includes muscle strain, inguinal or femoral hernias, connective tissue diseases, prostatitis, orchitis, urolithiasis, urethritis, pelvic procedures and neoplastic disease [1,2,11].

It is of utmost importance to look for signs of pelvic instability as it is commonly associated with OP [12]. A “flamingo” view is a reliable modality for assessing vertical pelvic instability [11]. An AP view of the pelvis is done with the patient standing on one leg, a vertical subluxation greater than 2 mm is considered a positive sign for instability [15]. Other studies have extended the definition to 3 mm for multiparous women [16]. CT scan or MR imaging should be done to assess the sacroiliac joint for congruity, widening degenerative changes, and to assess the hip joints as they are highly related and can affect the pelvis [12]. Hip impingement characterized by reduced internal rotation and pain with FADIR (flexion, adduction and internal rotation) can occur with pubic symphyseal degeneration [17,18]. To date, it is still unknown whether the inflammatory process results in instability or it is the other way around.

Most cases of osteitis pubis respond well to conservative measures. Nonetheless, some cases fail to respond to conservative treatment, thus, surgical intervention should be considered. There are four surgical interventions described: curettage, wedge resection, wide resection or arthrodesis of the symphysis pubis [11]. Arthrodesis of the sacroiliac joint is only considered in cases where evidence of degenerative SIJ changes are found on advanced imaging. In this study, we review the literature and report a rare case of OP and PI, requiring surgical intervention following failure to respond to conservative treatment.

## Case presentation

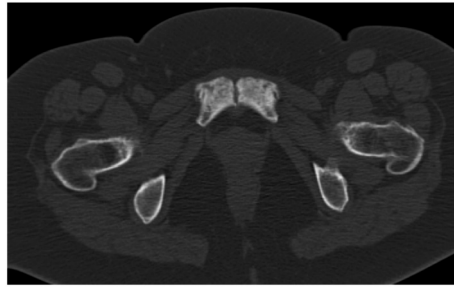
A 63-year old woman (gravida III, para III) who worked in a kindergarten, presented with a 12-month history of persistent pain at the symphysis pubis and non-responsive to analgesics. Over the previous 5 years she had several similar episodes of acute pain that were treated with analgesics and rest. The pain was aggravated by physical activity such as standing and walking. Physical examination showed focal tenderness at the symphysis pubis with no tenderness over the sacroiliac joint or lumbar region. There was full and painless range of motion in both hip joints. The diagnosis was confirmed by characteristic findings on radiographs, CT and MRI (Figs. 1–3). A lidocaine test was performed by injecting lidocaine plus depo-medrol to the symphysis pubis under fluoroscopic guidance resulting in immediate and temporal relief of symptoms. Surgery was considered only after all conservative measures failed.

By using the pfannenstiel approach, both pubic rami were exposed and gross instability was demonstrated by applying vertical forces to each side. A wedge-shaped block of bone was resected from all nonviable bone, tissue was sent for Gram staining and cultures. The bone defect was measured and a slightly larger size of tri-cortical bone was taken from the iliac crest to fill-in the bone defect at the symphysis pubis. This was followed with a 3.5 pre-contoured plate that was applied on the superior part of the symphysis pubis and fixated with 4 screws. Another anterior plate was added to achieve more rigid fixation (Fig. 4).

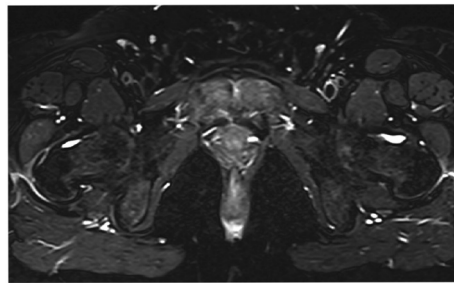
The post-operative course was normal without any extra ordinary events. Post operatively the patient was treated with pain killers



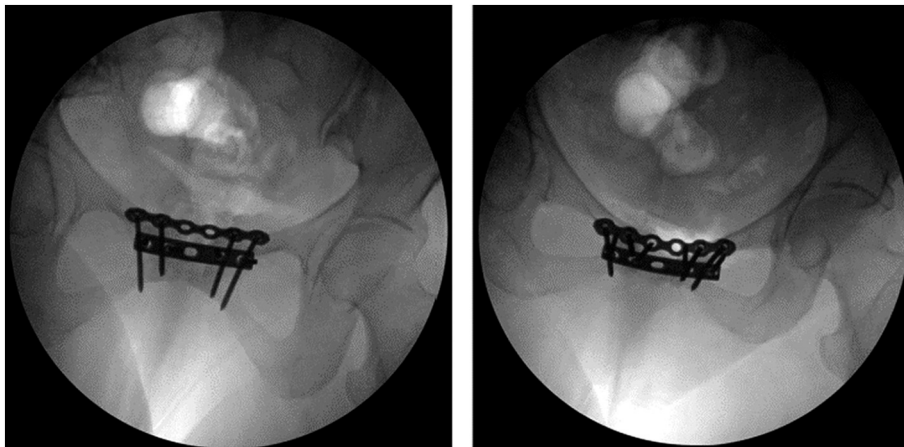
**Fig. 1.** Standing AP plain film of the pelvic illustrating characteristic radiologic signs of osteitis pubis: sclerosis, irregular margins of the cortex and cystic changes at the symphysis pubis. (Case I).



**Fig. 2.** CT scan with axial slices showing characteristic signs of osteitis pubis: hypo-density of bone and irregular cortices at the symphysis pubis. (Case I).



**Fig. 3.** Axial T2-section of MRI showing bilateral bone marrow edema, periarticular edema, symphyseal fluid and symphyseal gap. (Case I).



**Fig. 4.** Intra-operative fluoroscopy showing the symphysis pubis after wide resection and the addition of a tri-cortical iliac bone graft that was fixated with two orthogonal plates as described in the text.

and thrombo-prophylaxis, immediate mobilization with weight bearing as tolerated. Immediate post-operative X-rays were done (Fig. 4a) showing stable fixation of the symphysis pubis. Gram staining and cultures came back negative; no antibiotic treatment was needed in the post-operative care. At 6 weeks of intensive physiotherapy course the patient started full weight bearing without any assistance. At three months the patient was pain free with full range of motion on both hips and without any tenderness over the symphysis. Follow up carried out for one year with satisfactory radiologic (Fig. 5) and clinical outcome.

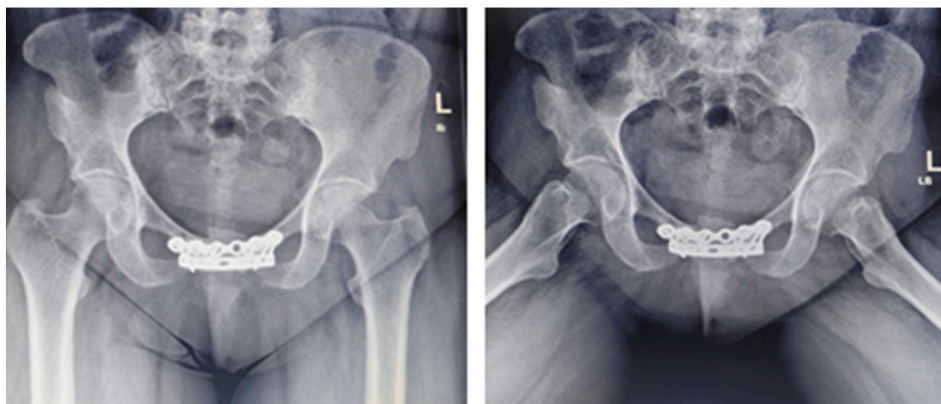
## Discussion

Although it is not clear whether the inflammatory process in osteitis pubis results in pelvic instability or it is the other way around, PI might be the underlying condition responsible for the clinical manifestations in patients suffering from OP and non-responsive to conservative treatment.

Grace et al. [7] evaluated ten patients with osteitis pubis with failed conservative treatment. Most patients were women with osteitis pubis related to obstetric and gynecologic etiologies. The patients underwent wedge resection of the symphysis pubis resulting in considerable relief of the symptoms with no limitation of activities. Three patients were not satisfied with the results of the



**Fig. 4a.** Immediate post-operative AP, Inlet and Outlet pelvic views showing symphyseal fusion with double plating after wide resection and the addition of tri-cortical bone graft.



**Fig. 5.** Follow up X ray 1 year after the surgery showing healed OP with bone union over the arthrodesis site. (Case 1).

procedure at an average of 92 months post-operatively and one patient needed bilateral sacroiliac arthrodesis due to persistent pain caused by posterior pelvic instability. Another study conducted by Moore et al. [19] reported two cases of a 42 and 61-year-old women diagnosed with osteitis pubis. The patients were treated with wedge resection of the symphysis pubis. Post-operatively, they developed posterior pelvic instability that was treated with bilateral sacroiliac arthrodesis. It was postulated that wedge resection alone may result in increased symphyseal instability due to increased vertical shear forces at the symphysis pubis during walking.

Rommens et al. [20] reported on three women who underwent internal fixation of the symphysis pubis due to puerperal symphyseal rupture. All patients had their hardware removed 6 months postoperatively and were pain free. Their findings were consistent with those of Najibi et al. [21] who evaluated seven women with puerperal symphyseal rupture. All seven underwent internal fixation with good to excellent results reported by the authors.

Olerud and Walheim et al. [22] evaluated seven women and one man suffering from osteitis pubis (five of them had pelvic instability demonstrated in radiographs), all of which had undergone symphysiodesis with plating and addition of iliac bone graft. Williams et al. [15] treated seven rugby players suffering from osteitis pubis and vertical instability with arthrodesis of the pubic symphysis by bone grafting supplemented by a compression plate. Results showed successful arthrodesis with no residual instability at a mean follow-up of 52.4 months. Complete relief was obtained in seven patients with evident radiologic osseous union [22]. Van Zwienen et al. [23] studied 58 patients with pregnancy-related pelvic pain and treated them with symphysiodesis and bilateral SI joint screw fixation, with or without adding bone graft to the symphysis pubis. The results showed an 8.6% nonunion rate when bone grafting was added, as compared with a 27.3% nonunion rate in those who did not have bone graft added. This finding was also consistent with other studies [24].

A systematic review conducted by Mehin et al. [25] to assess the success rate of surgical treatment of osteitis pubis found that non-athletic patients who required surgical intervention had a 60–80% chance of satisfactory outcome. The authors recommend using wedge resection rather than fusion when conservative treatment fails, obviating the need for another invasive procedure for taking tricortical bone graft from the iliac crest.

In our case, gross instability was confirmed intraoperatively and was believed to be the source of persistent pain and disability. We chose to stabilize the anterior pelvic ring with arthrodesis and plating after wide resection of the symphysis pubis until bleeding and viable bone was exposed. Tricortical iliac bone graft was added to augment the fusion. Double plating was used as it was thought to improve the rigidity of fixation [26]. However, this was not confirmed in biomechanical studies [27]. The outcome was satisfactory with radiologic osseous union and full symptom resolution postoperatively, our patient's Majeed pelvic score at one year of

follow up is 90 [28] (Fig. 5).

## Conclusion

We believe that this condition is greatly affected by the presence of pelvic instability as the cause of pain and disability. Thus, a stable and rigid fixation is justified in cases when conservative treatment fails. We recommend the addition of tricortical iliac bone graft and to consider double plating to maximize the rate of fusion and further stabilize the fixation construct. This safe procedure is considered to be the only and last resort to alleviate pain of the patient and to restore pelvic stability with satisfactory radiological and clinical outcome.

## Acknowledgments

None of the authors had received any funding or financial support in preparing this manuscript.

## References

- [1] P.A. Fricker, J.E. Taunton, W. Ammann, Osteitis pubis in athletes, Infection, inflammation or injury? *Sports Med* 12 (4) (1991) 266–279.
- [2] C. Vincent, Osteitis pubis, *J Am Board Fam Pract* 6 (5) (1993) 492–496.
- [3] C.C. Rost, J. Jacqueline, A. Kaiser, A.P. Verhagen, B.W. Koes, Prognosis of women with pelvic pain during pregnancy: a long-term follow-up study, *Acta Obstet. Gynecol. Scand.* 85 (2006) 7717.
- [4] H.C. Ostgaard, G.B. Andersson, Previous back pain and risk of developing back pain in a future pregnancy, *Spine* 16 (1991) 4326.
- [5] H. Elden, H. Hagberg, M.F. Olsen, L. Ladfors, H.C. Ostgaard, Regression of pelvic girdle pain after delivery: follow-up of a randomised single blind controlled trial with different treatment modalities, *Acta Obstet. Gynecol. Scand.* 87 (2) (2008) 201–208.
- [6] M.B. Coventry, W.C. Mitchell, Osteitis pubis. Observations based on a study of 45 patients, *J Am Med Assn* 178 (1961) 898–905.
- [7] J.N. Grace, F.H. Sim, T.C. Shives, M.B. Coventry, Wedge resection of the symphysis pubis for the treatment of osteitis pubis, *J. Bone Joint Surg. Am.* 71 (3) (1989) 358–364.
- [8] P.G. Hanson, M. Angevine, J.H. Juhl, Osteitis pubis in sports activities, *Phys and Sports Med* 6 (1978) 111–114.
- [9] M.A. Holt, J.S. Keene, B.K. Graf, D.C. Helwig, Treatment of osteitis pubis in athletes. Results of corticosteroid injections, *Am. J. Sports Med.* 23 (1995) 601–606.
- [10] S. Eylon, R. Wishnitzer, M. Liebergall, Chronic lateral compression of the pelvis, *IMAJ* 7 (3) (2005) 204–205.
- [11] E.J. Hegedus, B. Stern, M.P. Reiman, D. Tarara, A.A. Wright, A suggested model for physical examination and conservative treatment of athletic pubalgia, *Phys Ther Sport* 14 (1) (2013) 3–16.
- [12] N.H. Harris, R.O. Murray, Lesions of the symphysis in athletes, *Br. Med. J.* 4 (5938) (1974) 211–214.
- [13] I.M. Omar, A.C. Zoga, E.C. Kavanagh, G. Koulouris, D. Bergin, A.G. Gopez, W.B. Morrison, W.C. Meyers, Athletic pubalgia and “sports hernia”: optimal MR imaging technique and findings, *Radiographics* 28 (5) (2008) 1415–1438.
- [14] S.M. Knoeller, M. Uhl, G.W. Herget, Osteitis or osteomyelitis of the pubis? A diagnostic and therapeutic challenge: report of 9 cases and review of the literature, *Acta Orthop. Belg.* 72 (5) (2006) 541–548.
- [15] P.R. Williams, D.P. Thomas, E.M. Downes, Osteitis pubis and instability of the pubic symphysis. When nonoperative measures fail, *Am. J. Sports Med.* 28 (3) (2000) 350–355.
- [16] J.T. Carothers, S.A. Olson, D.N. Garras, Single-leg stance (flamingo) radiographs to assess pelvic instability: how much motion is abnormal? Poster Presentation (P470) at the Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, 14–18 Feb 2007, 2007.
- [17] J.G. Williams, Limitation of hip joint movement as a factor in traumatic osteitis pubis, *Br. J. Sports Med.* 8;12 (3) (1978) 129–133.
- [18] P.M. Birmingham, B.T. Kelly, R. Jacobs, L. McGrady, M. Wang, The effect of dynamic femoroacetabular impingement on pubic symphysis motion: a cadaveric study, *Am. J. Sports Med.* 40 (5) (2012) 1113–1118.
- [19] R.S. Moore Jr., M.D. Stover, J.M. Matta, Late posterior instability of the pelvis after resection of the symphysis pubis for the treatment of osteitis pubis. A report of two cases, *J. Bone Joint Surg.* 80A (1998) 1043–1048.
- [20] P.M. Rommens, Internal fixation in postpartum symphysis pubis rupture: report of three cases, *J. Orthop. Trauma* 11 (4) (1997) 273–276.
- [21] S. Najibi, M. Tannast, R.E. Klenck, J.M. Matta, Internal fixation of symphyseal disruption resulting from childbirth, *J. Orthop. Trauma* 24 (12) (2010) 732–739.
- [22] S. Olerud, G.G. Walheim, Symphysiodesis with a new compression plate, *Acta Orthop. Scand.* 55 (3) (1984) 315–318.
- [23] C.M. van Zwienen, E.W. van den Bosch, C.J. Snijders, A.B. van Vugt, Triple pelvic ring fixation in patients with severe pregnancy-related low back and pelvic pain, *Spine* 29 (4) (2004) 478–484.
- [24] D.C. Mears, J.H. Velyvis, In situ fixation of pelvic nonunions following pathologic and insufficiency fractures, *J. Bone Joint Surg. Am.* 84 (5) (2002) 721–728.
- [25] R. Mehin, R. Meek, P. O'Brien, P. Blachut, Surgery for osteitis pubis, *Can. J. Surg.* 49 (2006) 170–176 (PMID: 16749977).
- [26] J.M. Matta, Indications for anterior fixation of pelvic fractures, *Clin. Orthop. Relat. Res.* 329 (1996) 88–96.
- [27] P.T. Simonian, J.R. Schwappach, M.L. Routt Jr., S.G. Agnew, R.M. Harrington, A.F. Tencer, Evaluation of new plate designs for symphysis pubis internal fixation, *J. Trauma* 41 (3) (1996) 498–502.
- [28] S.A. Majeed, Grading the outcome of pelvic fractures, *J Bone Joint Surg Br* 71 (2) (1989) 304–306.