

## Case Report

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# Post-partum low-back pain of an uncommon origin: A case report

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**Abstract.** Low-back pain is a common complaint during pregnancy and the post-partum period, and it may be due to a variety of conditions. Among these, a frequently overlooked cause is a sacral fracture. We report the case of a 37 year old woman, suffering from post-partum low-back pain which had not responded to treatment. Though rare, a sacral stress fracture must be considered in cases of prolonged low-back or sacral pain in pregnant or post-partum women. Plain radiographs are frequently inconclusive and MRI is the imaging technique of choice. Capacitive coupling electric fields (CCEF) seemed to be effective in treating pain and in reducing the patient's recovery time.

Keywords: Low-back pain, stress fractures, sacrum, pregnancy, capacitive coupling electric field

## 1. Introduction

Low back and sacral pain is a common complaint during pregnancy and the post-partum period. It is usually a consequence of a wear and tear mechanism on the pelvic soft tissues or ligaments [1], although its origin seems to be multi-factorial [2]. Stress fractures are a relatively uncommon cause of low back pain, as shown by the few cases reported in the Literature [3]. They can be defined as either fatigue fractures occurring in a bone with normal resistance under abnormal stress, or insufficiency fractures occurring in a weakened bone under normal stress [4]. However, in the last trimester of pregnancy, a clear differentiation between these two diagnoses may not be possible, due to transient osteoporosis. The pathogenesis is probably multi-factorial and includes quick vaginal delivery with intense contractions during labour, and hyperlordosis [5].

## 2. Case report

A 37 year old woman with no significant past medical history was referred to our clinic after she had a sudden fall due to a failure of her right lower limb. Four days before, she had had a quick vaginal delivery of a healthy 3.5 kg baby after a 39-week pregnancy. Two days after the birth, she complained of a sensation of impairment during walking. Since the 32nd week of pregnancy she had complained of lower back and right buttock pain, which had been cured with relative bed rest. This was her second pregnancy and she was breastfeeding her baby. She had no history of trauma or strenuous physical activity, nor of metabolic bone disease. No risk factors were evident such as smoking or alcohol consumption, either before or during pregnancy. She reported an 11.5 kg weight gain during pregnancy. On physical examination, the patient showed altered gait pattern with antalgic limping. There was tenderness at the right buttock and relevant pain after sacral and iliac compression, and she resulted positive to the squish test. No neurological deficit was evident. On analysis, serum levels of calcium, phosphorus, alkaline phosphatase, thyroid-stimulating and parathyroid hormone were normal,

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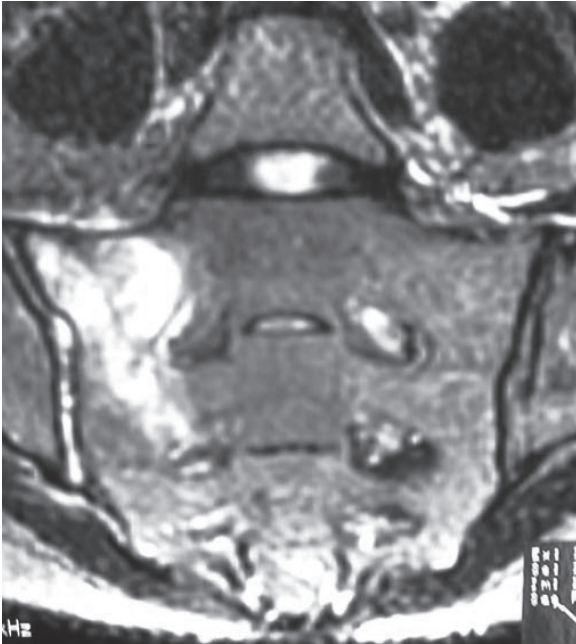


Fig. 1. Pelvic MRIs showing significant bone marrow edema in the superior aspect of the right sacral ala. On T2-weighted coronal images, the fracture line is seen as an oblique, vertically oriented, low-signal line involving the first sacral foramen.

with the exception of a slight reduction of the serum level of 25-(OH) vitamin D3. Radiographs of the lumbar spine and of the pelvis were also substantially normal. Therefore a magnetic resonance imaging (MRI) was performed. The MRI showed a vertically oriented type 2 Denis fracture of the sacral ala surrounded by a diffuse bone marrow edema with low signal intensity on T1-weighted and high signal intensity on T2-weighted images (Figs 1 and 2). No intervertebral lumbar disk pathologies were observed. Dual-energy X-ray absorptiometry examination performed 2 months after delivery showed normal bone mineral density values with T-scores of + 0.07 and + 0.25 at the lumbar and femoral regions, respectively. The following treatments were prescribed: bed rest – which the patient did not observe due to the demands of looking after her two children; calcium (1 g/day) and vitamin D (12 mcg/day) supplements; analgesics (paracetamol); and a 45 day course of non-invasive biophysical treatment with capacitive coupling electric fields (CCEF, Osteospine, Igea Spa, Italy), 8 hours per night, with the two adhesive electrodes positioned 10 cm apart and centered over the fracture site. In the second week of CCEF treatment she began gentle kinesitherapy to treat muscle contracture.



Fig. 2. Pelvic MRIs showing significant bone marrow edema in the superior aspect of the right sacral ala. On T2-weighted coronal images, the fracture line is seen as an oblique, vertically oriented, low-signal line involving the first sacral foramen.

The clinical outcome of this treatment was favorable. After 2 weeks, the patient had already seen a significant improvement in her symptoms, and by the end of the third week the pain had disappeared. At this point, the patient began walking again with the help of a walking aid, and gradually returned to full weight-bearing as tolerated. At 40 days, the limp had disappeared and function was fully recovered.

### 3. Discussion

The prevalence of chronic low back and pelvic pain (LBPP) post-partum varies from 5% to 43% at 6 months after delivery [6]. Although several aetiological hypotheses have been advocated, including hormonal, biomechanical, traumatic, metabolic, genetic and degenerative causes, the accumulated evidence seems to be in favour of a multifactorial condition [2].

Sacral stress fractures are probably underestimated as a cause of LBPP because of their non-specific symptoms and the relative inability of conventional radiographs to show this type of fracture. These fractures are rarely identifiable as they may be obscured by bowel gas, or they are often too subtle to be clearly evident on plain films [7]. MRI is perhaps the exam of choice in osteomalacic insufficiency fractures of the pelvis because of its excellent sensitivity to highlight iliac and

sacral bone involvement [8]. However, as the condition is often not suspected before imaging, patients may undergo a routine lumbar spine MR rather than a targeted examination of the sacrum [9]. Overlooking a sacral fracture can lead to a generic diagnosis of low-back pain, for which functional core strengthening and stabilising exercises are generally prescribed. In the presence of sacral stress fractures, this type of rehabilitation is not appropriate, and indeed may be deleterious for bone healing.

Currently, there is no established best treatment for sacral stress fractures. Therapy is limited to conservative management, including pain control and prolonged bed rest. Recently, new methods to promote fracture healing are under study, and the efficacy of biophysical techniques for accelerating the healing of bone tissue is now well-accepted in orthopaedic practice [10]. The main advantages of the non-invasive biophysical treatment with CCEF include: the lack of side-effects; the rapid improvement in symptoms; and the simplicity of treatment, as it can be administered at home.

According to the generally accepted criteria, our case could be defined as a fatigue stress fracture. As the patient was so slender (BMI 17.8), the increase in weight during pregnancy, although normal in itself, as a proportion of her bodyweight could have exerted an abnormal stress on the pelvic structures. We did not insist on bed rest as its importance in the treatment of sacral fractures is still open to debate [11, 12]. As in most of the cases described by the Authors, we advised that the patient reacquired mobility as soon as possible once the fracture had stabilized, given that weight-bearing stimulates the osteoblasts to repair the fracture and avoids complications such as the loss of muscle tone, deep vein thrombosis, osteoporosis, cardio-respiratory damage and negative calcium balance [11]. Comparing our results with those in other reports where only bed rest and treatment with analgesics were prescribed, we observed a significant reduction in the recovery time. In our case, the disabling pain had been resolved within 20 days which compares favorably with the time periods in the Literature which vary from 4 to 12 weeks [7], with an average of 6 weeks [13].

In conclusion, we reiterate the recommendations in the Literature that clinicians should take particular care in diagnosing the causes of low-back or pelvic pain in pregnant and post-partum women. Sacral MRI seems to be the most reliable examination. In our experience CCEF stimulation revealed itself to be effective and could be an appealing therapeutic option for sacral stress fractures in pregnant or post-partum women.

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