CASE REPORT

A minimally-invasive technique for the treatment of pyogenic sacroiliitis

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We report the management of an adult patient with septic sacroiliitis. This is an uncommon condition. Debridement, decompression and spontaneous fusion are the treatment of choice when symptoms do not resolve with routine initial intravenous antibiotic therapy. A percutaneous technique is described, using the principles of sacroiliac screw insertion commonly used for pelvic reconstruction surgery. After successful evacuation of the infected joint, fusion was observed in our patient.

Pyogenic infection of the sacroiliac joint is uncommon. The reported incidence varies between 1.5% and 10% of all cases of osteomyelitis.1,2 The diagnosis is often delayed because of low clinical suspicion, a vague clinical picture and poorly defined localisation of symptoms. The history and clinical examination are often misleading, mimicking other more common disorders of the hip, lumbosacral spine or abdomen.3 Treatment with antibiotics alone is often unsuccessful in osteomyelitis of the pelvic bones.4 Some authors prefer surgical debridement with appropriate antibiotic therapy. 5,6 Drainage of the abscess, sequestrectomy and obtaining tissue5 for histological examination usually requires extensive surgery with considerable morbidity and a long period of rehabilitation.1,7

We present a minimally-invasive technique for the treatment of sacroiliac osteomyelitis using the percutaneous sacroiliac screw-insertion method. To the best of our knowledge, this technique has not been used to treat osteomyelitis of the sacroiliac joint.

Case report
A previously healthy 30-year-old caucasian woman presented with a one week history of pyrexia, malaise and pain in the left buttock. The pain was constant and dull, well-localised and not relieved by rest or analgesics. There was no history of recent illness and no significant past medical history. On examination, the patient was pyrexial (37.9°C). There was left sacroiliac joint tenderness. Gaenslen’s test8 (hyperextension of the ipsilateral hip) and the FABER test8 (flexion abduction and external rotation of the ipsilateral hip) reproduced and exacerbated the local pain. There was a full pain-free range of movement of both hips. Active straight leg raising was to 80° on the left. Sciatic and femoral stretch tests were negative.

Initial laboratory tests showed a leucocyte count of 11 700/mm³, C-reactive protein level of 86 mg/l and an erythrocyte sedimentation rate (ESR) of 29 mm/hour. Blood cultures were negative. Radiographs of the pelvis and the sacroiliac joints were normal. MRI of the sacroiliac joints showed a focus of infection on the left side (Fig. 1).

She was treated initially with bed rest and intravenous antibiotics, flucloxacillin 500 mg four times daily for 14 days. As her symptoms did not improve, she underwent percutaneous drainage of the left sacroiliac joint.

Operative treatment. The patient was positioned supine on the operating table. A small stab incision was made over the lateral aspect of the ilium. A guide wire was passed to the sacroiliac joint under image-intensifier control. The sacroiliac joint is L-shaped and care is required when introducing the guide wire. The safe zone lies between the alar cortex supero-anteriorly and the sacral neural foramen posteriorly. Using inlet and outlet views, the guide wire was inserted just laterally to the sacral 1 body (S1) foramen. A lateral view helped to direct the wire into the sacroiliac joint. The dynamic hip screw drill (triple drill; Synthes, Oberdorf, Switzerland) was then used to debride the joint and to create a channel for drainage (Fig. 2). A curette was used to complete the debridement. The body of sacral 2 (S2) was also drilled over a second guide wire.
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using the 6.5 mm cannulated drill. The tissue obtained from the drill was sent for histological and microbiological examination. Gram staining showed Gram-positive cocci and Staphylococcus aureus was identified from the culture.

The post-operative recovery was uneventful. She was mobilised as her pain permitted. The organisms were sensitive to flucloxacillin which she received intravenously (500 mg qds) for 1.5 weeks and orally thereafter (500 mg qds) for a further six weeks. There were no post-operative complications. She was reviewed regularly. At the last follow-up, two years after the initial presentation, she was free from symptoms. Radiographs showed fusion of the left sacroiliac joint (Fig. 3).

Discussion
Pyogenic infection of the sacroiliac joint is relatively uncommon, with most descriptions being case reports.\(^1\)\(^9\)

The natural history of an untreated infection begins with widening of the joint space on radiographs, later progressing to blurring of the subchondral bone. The hyaline cartilage of the sacrum is thicker than that of the ilium and therefore the iliac bone is affected sooner than the sacrum. These changes may be followed by spontaneous fusion of the sacroiliac joint.\(^10\)

Aspiration of the sacroiliac joint should be considered in patients with clinical and radiological features suggestive of pyogenic infection, but with negative blood cultures.\(^11\)

Aspiration is difficult to achieve because the joint is deeply seated. A reliable aspiration technique was first described by Miskew, Block and Witt,\(^12\) with 88% of cases successfully yielding positive cultures. A higher success rate has been reported under general anaesthesia.\(^13\)

Optimal treatment consists of early diagnosis, bed rest and antibiotic therapy. Empirical antibiotics suitable for the treatment of infection with Staphylococcus aureus should be used until other specific pathogens are identified and sensitivities are known.\(^14\) Antibiotic therapy alone may be inadequate due to poor penetration of many antibiotics into bone especially in the presence of abscesses, sequestra and foreign bodies.\(^15\) Once the clinical diagnosis has been made, a tissue biopsy and aspiration should be undertaken to confirm the diagnosis.\(^7\)

Surgical options include debridement and arthrodesis. The former may be required in addition to antibiotic therapy for unresponsive cases and if large bone or cartilage sequestra are present.\(^5\) In the case of large local abscesses,
surgical drainage is indicated. The choice of the appropriate technique depends on experience and the accessibility, number and size of the abscesses. Surgical intervention should also be considered if there is a poor response to antibiotic therapy. Hodgson suggested surgical drainage in most cases supplemented with appropriate antibiotic therapy.

We used the percutaneous sacroiliac screw-insertion technique, a single procedure which aids diagnosis and provides therapy. The equipment needed is commonly available and the technique is relatively straightforward. Draining the joint with decompression of the surrounding bone prevents secondary osteonecrosis. Local bleeding at the site of drilling allows the penetration of antibiotics. Drilling produces cancellous autograft which aids fusion and filling up of the drilling canal.

Sacroiliac joint infection is a frequently missed diagnosis which requires a high index of suspicion. We have described a safe and minimally-invasive technique for decompression and debridement of the sacroiliac joint which gave an excellent outcome in this case.

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References