Late sacroiliac fracture fixation implant-related infection through haematogenous spread

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DESCRIPTION

A female in her 40s was referred to our institution having undergone right-sided percutaneous sacroiliac (SI) screw fixation of a pelvic fracture 28 years prior, following a road traffic collision. She had made a complete recovery and was engaging in an active lifestyle. She presented to her local primary care physician with non-specific symptoms of fevers and chills. A urinary tract infection was diagnosed, and the patient was treated empirically with antibiotics to which she responded.

However, over the following months, she reported an insidious onset of right-sided pelvic pain, both on weightbearing and while lying at night. On clinical examination, she exhibited tenderness at the site of her previous scar over the lateral part of iliac wing and tested positive for Flexion ABduction External Rotation test. She was then referred to the regional orthopaedic department for further investigation.

Initial workup consisted of a pelvic X-ray, demonstrating the SI screws in situ ([figure 1](#)), and laboratory investigations, which showed leucocytosis, neutrophilia and elevated inflammatory markers, including a C reactive protein (CRP) of 106. The patient proceeded for an MRI of the pelvis which reported a right SI joint septic arthritis and osteomyelitis predominantly involving the iliac margin of the SI joint and an evolving abscess within the right piriformis muscle ([figure 2](#)). No growth was demonstrated on repeated blood cultures.

The patient was transferred to our institution which is a national pelvic orthopaedic centre. Following consultation with the patient, the

Figure 2 MRI of the pelvis: T2-weighted inversion recovery pulse sequence, axial: high signal change and increased fluid within the right sacroiliac joint, allowing for metallic artefact in keeping with septic arthritis and osteomyelitis.

decision was made to proceed for surgical removal of screws, to reduce the bacterial burden and obtain samples to guide microbiological therapy. Surgical removal was accompanied by curettage and debridement of the screw tract. There were nil intraoperative complications, and extended incubation of the screw sample displayed growth of the gram-negative rod *Pseudomonas aeruginosa*, which was piperacillin/tazobactam and ciprofloxacin sensitive.

The patient proceeded to make a full recovery following completion of an antibiotic regimen, consisting of 1 week of intravenous piperacillin/tazobactam, followed by 6 weeks of oral ciprofloxacin. Clinically she returned to normal levels of activity and reported a cessation of pain. Laboratory follow-up, 3 months later, showed a normalisation of CRP to 2.

Deep implant-related infection is a serious complication of orthopaedic surgery with high related morbidity and mortality. Presentation symptoms are often subtle and may include

Figure 1 X-ray of pelvis: patient status after past screw fixation of the right sacroiliac joint.

Patient's perspective

I am happy to report that 6 months on I am feeling well, with no further back or pelvic pain. I was delighted to return to walking and my other hobbies. Unfortunately, I suffered an unrelated injury to my shoulder which has me recuperating at present, but I am looking forward to getting back outside, once the current COVID-19 restrictions ease.

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Images in...

stress-dependent pain, compromised functionality or sinus tract formation. Typical management consists of debridement and implant removal to reduce the bacterial burden and antibiotic therapy guided by samples.¹

The causative organism in our case was *P. aeruginosa*. This is a gram-negative rod typically associated with nosocomial infections of the respiratory and urinary tracts,² which displays a predilection towards biofilm formation. This contributes towards its pathogenicity, reducing bacterial efficacy,³ and often mandates the physical removal of metallic implants.⁴ Implant-related infections most commonly occur early following fracture fixation; however, in rare cases, late infections may occur via haematogenous seeding.⁵ It is thus worth considering implant

infection as part of the differential for clinicians when investigating patients with localised pain and symptoms at the site of previous fracture fixation.

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Learning points

- Quiescent metalwork may, in the setting of acute bacterial infection, become a site of bacterial seeding
- In such cases, removal of metalwork reduces bacterial burden, halts the spread of osteomyelitis, guides antibiotic therapy via culture and sensitivity, and serves to facilitate a full recovery following completion of the appropriate microbiological treatment course

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