



Case Report

Percutaneous drainage as a novel approach for the treatment of Brodie's abscess

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Introduction

Brodie's abscess is an insidious, localized, subacute osteomyelitis, typically caused by *Staphylococcus aureus*. Typically seen in the metaphyses of long bones in a young male patient, the diagnosis is frequently challenging. There are often mild clinical symptoms and radiographic features are frequently similar to primary bone tumours such as osteoid osteoma.^{1,2}

Although the imaging features of Brodie's abscess are well established, histopathological diagnosis is indicated to establish a diagnosis and guide treatment. Conventional treatment is curettage, biopsy, and culture followed by immobilization and a prolonged period of antimicrobial therapy.^{3–6} We describe a case of percutaneous computed tomography (CT) drainage as a novel adjunct in the treatment of Brodie's abscess with diagnostic and therapeutic value.

Case report

A 17-year-old Caucasian student was referred to our institution with 3 year history of progressively worsening right distal thigh and knee pain of insidious onset. There was no history of trauma or past medical history of note. Initial plain radiography showed a lucent lesion in the medial aspect of the distal right femur, initially thought to be an osteoid osteoma (Fig 1). A CT examination performed shortly afterwards demonstrated an intramedullary radio-lucent lesion in the distal femoral metaphysis with an

eccentrically sited sclerotic nidus, which may have represented a sequestrum. (Fig 2). Two months later, contrast-enhanced magnetic resonance imaging (MRI) of the right knee was performed. It demonstrated a multi-loculated fluid signal structure lying within the distal right femoral metaphysis measuring 13 × 18 × 29 mm proximal to the growth plate (Fig 3) with the typical features of a Brodie's abscess. On the T1-weighted sequence, there was a perilesional hypointense ring (the “penumbra sign”), and on T2-weighted imaging, an outer sclerotic rim and high signal inner rim surrounding the cavity (the “double line” sign). On a contrast-enhanced fat-saturated T2 sequence, there was ring enhancement with florid periosteal oedema along the medial aspect of the femoral metaphysis. The lesion had also slightly increased in size since the previous CT.

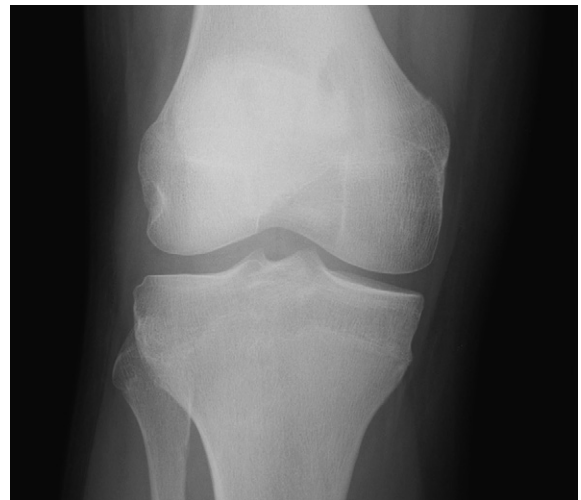


Figure 1 Plain radiograph showing radio-lucent lesion with a well-defined border in the medial aspect of the distal right femur.

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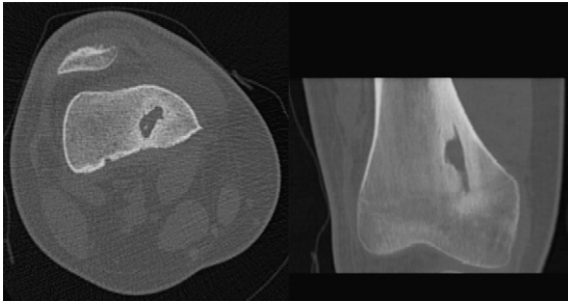


Figure 2 CT image from December 2010 showing a well-defined radio-lucent lesion in the distal right femur with a dense sclerotic margin.

Two weeks later after the MRI, the patient underwent elective CT-guided percutaneous bone biopsy and aspiration. It was performed under general anaesthetic because of the painful nature of the procedure. The cavity within the medial aspect of the distal right femoral metaphysis was targeted under CT guidance. Two Bonopty bone biopsy needles (RADI Medical systems, Uppsala, Sweden) were guided into the cavity (Fig 4). Blood-stained pus was aspirated. This was sent for urgent Gram staining and microbiology culture. The cavity was irrigated with 50 ml sterile normal saline. No immediate complication resulted from the procedure. The patient described an instant and marked

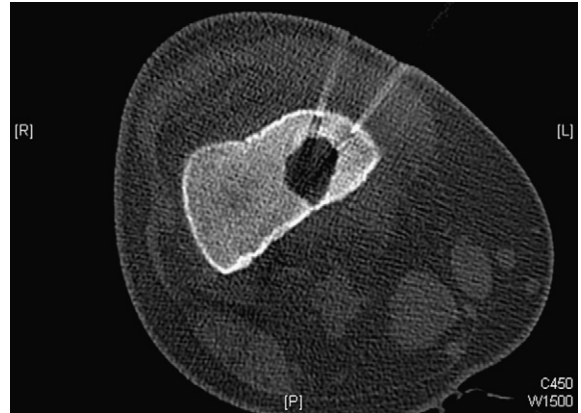


Figure 4 CT image showing two Bonopty needles in the abscess cavity.

improvement in his lower limb pain and pressure symptoms immediately after the procedure.

Microbiology results showed Gram-positive *Staphylococcus aureus*. The patient was sent home the next day with a 7 day course of intravenous ceftriaxone and a 6 week course of oral fucidin. He was able to mobilize and fully weight-bear on the affected side after 10 days. There was a complete resolution of pain by 4 weeks. Currently, at 6 months after percutaneous drainage, he is pain-free, back to

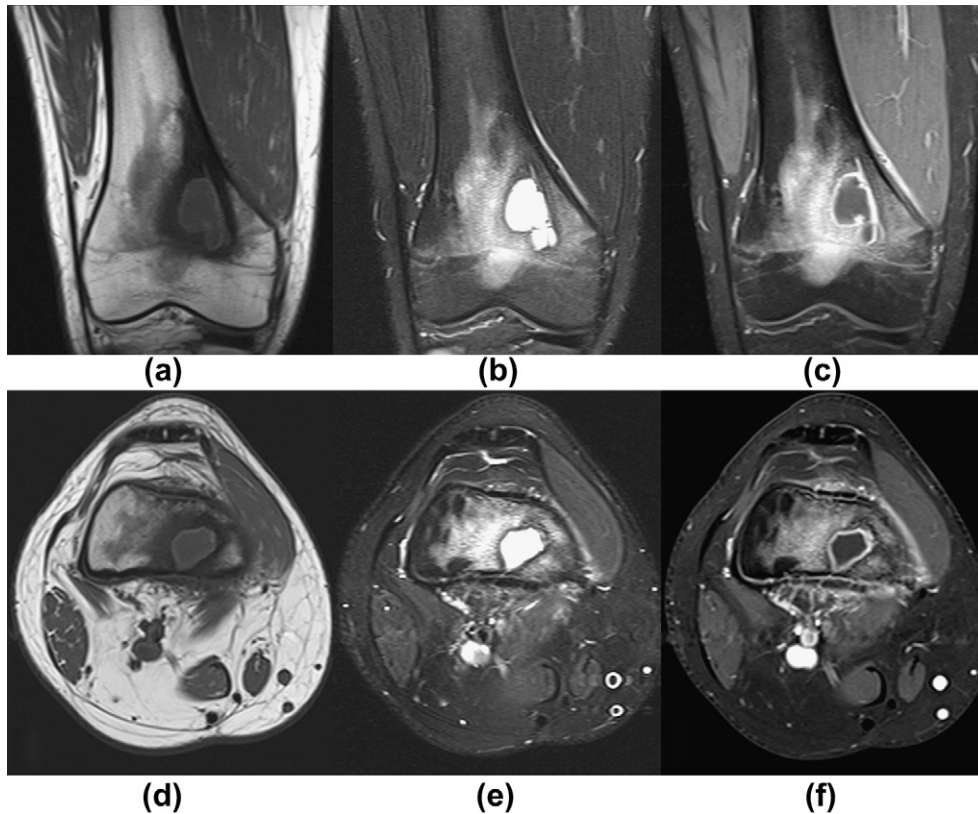


Figure 3 MRI image showing the Brodie's abscess. Coronal, (a) T1, (b) T2, (c) fat-saturated and contrast-enhanced MRI images. Axial, (d) T1, (e) T2, (f) fat-saturated, and contrast-enhanced MRI images. There is florid oedema in the surrounding marrow with peripheral enhancement of the wall of the structure with the oedema and enhancement extending across the growth plate after contrast medium injection.

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