

# Bone Grafting in Brodie's Abscess

Athar Ahemad

Department of Orthopaedics, Indian Institute of Medical Sciences and Research, Warudi, Tq. Badnapur, Jalna, Maharashtra, INDIA.

Email: [dratharahmed@gmail.com](mailto:dratharahmed@gmail.com)

## Abstract

Brodie's abscess is a localized infection of the bone manifesting on radiographs as an osteolytic lesion limited by sclerotic bone. It was first described by Sir Benjamin Brodie in the year 1832 as a localized abscess in the tibia seen in an amputation stump. It is most commonly seen in proximal tibia followed by femur and then in humerus. Various treatments have been described in the literature ranging from antibiotics alone to debridement alone to curettage and filling of defect by bone graft or cement 2,3,4. Here, we report 2 cases of Brodie's abscess treated successfully by surgical debridement and bone grafting.


## Address for Correspondence

Dr. Athar Ahemad, Department of Orthopaedics, Indian Institute of Medical Sciences and Research, Warudi, Tq. Badnapur, Jalna, Maharashtra, INDIA.

Email: [dratharahmed@gmail.com](mailto:dratharahmed@gmail.com)

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## INTRODUCTION

### Case 1

A 24 year old male manual laborer presented to us with complaints of throbbing pain in the upper part of leg on and off since last 4 years especially at night. It was relieved to some extent by analgesics and aggravated by activities. No history of fever or trauma in the past. He had taken multiple courses of antibiotics earlier without avail. On examination, there was tenderness and thickening of the tibial cortex. No warmth or sinus was noted. Roentgenogram revealed a bilocular osteolytic cavity in the metaphysis of proximal tibia consistent with the diagnosis. Serological tests were within normal limits. Osteolytic cavity was exposed by making a rectangular window on the anterolateral aspect of tibia. The tibial cortex was thickened and hard in an attempt by bone to limit the infection. The cavity was filled by pale granulation tissue and not pus (as illustrated in the picture). A wash was given with povidone-iodine and

hydrogen peroxide. The cavity was debrided till there was bleeding bone all around. Since the bone defect was large (5x3x3cm), fresh cancellous autograft from ipsilateral iliac crest was used to fill the defect. Muscle flap stitched over the window as a local flap. A long knee brace was given to prevent pathological fracture.



**Photo 1:** Cavity of the abscess being debrided with a curette which contains granulation tissue

Histopathology report revealed a diagnosis of subacute osteomyelitis of tibia (inflammatory cell infiltrate with necrotic bone fragments). Culture of the granulation tissue turned out to be sterile. We gave empirical course of intravenous cefuroxime and amikacin for 2 weeks followed by oral cefuroxime for 4 weeks. There was full pain relief after surgery and graft incorporation was satisfactory.

### CASE 2

A 19 year old male worker came with pain in the ankle after a long standing traumatic wound. Radiograph and MRI showed a translucent area with surrounding sclerotic

bone suggestive of Brodie's abscess in both tibia and fibula. Reaming of medullary cavity was done for fibula. Tibial abscess was debrided, cavity was filled with autograft bone and antibiotics were given for 6 weeks. Culture of the pus was found to be sterile.



**Photo 2:** Radiograph showing Brodie's abscess in tibia and fibula with surrounding sclerosis

## DISCUSSION

Brodie's abscess is a special subtype of subacute osteomyelitis appearing on xray as a central radiolucent area surrounded by dense sclerotic bone formed as nature's attempt to limit the infection<sup>2</sup>. It occurs in individuals with good immunity where the pathogenic influence of the microorganism is strongly countered by the body's defences. The disease presents as localized bony pain for several weeks or even months with little or no constitutional symptoms with mostly normal

laboratory workup. *Staphylococcus aureus* is the predominant pathogenic organism found in approximately 50% cases. Roughly 25% of cultures are found to be sterile<sup>4</sup>. Differential diagnoses include tuberculous osteomyelitis, benign bone tumors like osteoid osteoma, bone cyst, fibrous dysplasia and bone metastasis. Treatment comprises of surgical drainage and curettage to eradicate the infection. If the lesion is large and in a weight-bearing long bone, then the cavity should be filled up with substitute either by bone graft or cement to reduce recurrence of infection. We prefer autologous bone graft as it is readily incorporated into the host bone and no stress riser is left for pathological fracture in the future.

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