



RESEARCH ARTICLE

BISPHOSPHONATE-RELATED FEMUR FRACTURES: OPERATIVE AND NONOPERATIVE
MANAGEMENT OUTCOMES

Dr. Narinder Sharma, *Dr. Preeti Jamwal and Dr. Anita Sharma

GMC Jammu, India

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ABSTRACT

Several case series have discussed the outcomes of the operative management of AFFs. Weil *et al* reviewed clinical data from 15 patients with 17 AFFs associated with long-term BP use who were treated surgically. Fracture healing after the initial procedure among patients treated with intramedullary nails was 54%, with 46% of patients requiring reoperation. The authors attributed this high failure rate to qualitative bone defects caused by long-term BP use.

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INTRODUCTION

Prasarn *et al* looked at the rate of intraoperative fractures and postoperative plate failures in 25 patients with BP-associated femoral shaft fractures as compared with 20 control patients with similar fracture types without a history of BP use. Fifteen patients in the BP arm were treated surgically with intramedullary nail placement, and the remaining 10 were treated with plates and screws. The authors found that the BP cohort as a group had a higher rate of major complications, including intraoperative fracture, implant failure, nonunion, malunion, and periprosthetic fracture (P, 0.005). There were no significant differences in the rates of minor complications, including the development of heterotopic ossification, pain, weakness, and paresthesia (P = 0.112). To assess the efficacy of the nonoperative treatment of BP-related AFFs versus the prophylactic fixation of femoral stress fractures, Banffy *et al* retrospectively reviewed 34 patients with 40 BP-associated AFFs. Twenty-eight out of 40 (70%) were complete displaced fractures, and the other 12 were nondisplaced incomplete fractures. Six of these 12 patients were treated nonoperatively, whereas the remaining 6 were treated with prophylactic cephalomedullary nail fixation. After an average of 10 months, 5 of the 6 stress fractures treated nonoperatively progressed to complete fractures that required operative management. These patients also had hospital stays that averaged 3 days longer than those of patients treated prophylactically.

The authors concluded that the nonoperative treatment of these BP-associated AFFs is not feasible or reliable because the majority progress to complete fractures. ASBMR has made recommendations for the assessment and treatment of AFFs. Egol *et al* recently published the results of a retrospective review of surgical treatment versus nonoperative treatment for patients with incomplete BP-related femur fractures. In this study, 37 patients with 43 incomplete femur fractures were treated and followed for at least 1 year. Patients had to have focal cortical thickening with an incomplete fracture line of the lateral cortex of one or both femurs, and they had to have been receiving BP therapy; the average length of therapy was 9.1 years. Nineteen patients (21 incomplete fractures) were treated surgically; 100% of these patients had radiographic healing of their fractures, and 81% were free of pain on an average of 7.1 months postoperatively. The remaining 18 patients (22 incomplete fractures) were treated nonoperatively, with the discontinuation of BP therapy and the initiation of vitamin D and calcium supplementation and protected weight bearing, with or without a bone stimulator. Only 64% of these patients were free of pain, and only 18% had radiographic evidence of healing at 11 months after the initiation of treatment. Functional outcomes in those patients who were treated operatively were better than those of the nonoperatively treated group on the basis of the results of the Short Form Musculoskeletal Functional Assessment. AFFs that progress to complete fracture warrant immediate operative fixation, with conventional techniques of medullary fixation required in most cases.

*Corresponding author: Preeti Jamwal,
GMC Jammu, India.

On the basis of limited data from small retrospective studies, it seems that surgical treatment is superior to nonoperative management for the improvement of functional and clinical outcomes in patients with symptomatic, incomplete, and BP-related AFFs. The operative treatment of AFFs is associated with higher rates of complications and delays in healing. Controversy remains regarding the prophylactic treatment of patients with incidentally found impending AFFs in the absence of a visible fracture line or symptoms. Better prospective studies are required to identify the optimal management of these fractures at all stages of their natural history.

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