

Atypical femoral fracture

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1 Atypical femoral fracture is an uncommon complication of long-term use of bisphosphonates

Long-term use of bisphosphonate is defined as greater than three years for the treatment of osteoporosis.¹ This type of fracture accounts for 1.1% of all femoral fractures, with an age-adjusted incidence rate of 1.8 to 113 cases per 100 000 person-years for bisphosphonate exposure of less than 2 years to 8–10 years, respectively.¹ Number needed to harm is about 1 per 2000 per year of bisphosphonate use.² Atypical femoral fractures can occur in the absence of osteoporosis treatment.

2 Atypical femoral fractures are stress or insufficiency fractures occurring in the femoral shaft

Bisphosphonates inhibit osteoclasts and decrease bone remodelling that may lead to accumulation of microdamage and stress fracture in the femoral shaft (below the lesser trochanter and proximal to the supracondylar flare; Figure 1A).^{1,3}

3 Prodromal thigh or groin pain may occur before fracture

In about 70% of patients, pain in the thigh or groin may be present for several weeks or months before the atypical femoral fracture occurs.¹ Patients receiving long-term antiresorptive treatment (e.g., bisphosphonates or denosumab) who have thigh or groin pain should undergo full-length plain radiography of both femurs. If a stress fracture is not found, the patient should be referred for further imaging (i.e., bone scan or magnetic resonance imaging).⁴

4 Atypical femoral fracture may first present as an incomplete fracture

Incomplete fracture is seen on radiography as an area of cortical thickening (Figure 1B) and is bilateral in up to 63% of cases.⁵ An incomplete atypical femoral fracture can progress and become complete across the femur shaft.¹ Minimal comminution is typical, with a short oblique or horizontal fracture line.⁴ A medial spike may also be apparent.⁴

5 Antiresorptive treatment should be stopped after a diagnosis of complete or incomplete atypical fracture

Weight bearing should be limited for patients with incomplete atypical femoral fractures and guided by the presence of thigh or groin discomfort. Management includes intramedullary nailing.⁴ Teriparatide, an anabolic agent, has been associated with healing of atypical femoral fracture in some cases.⁴

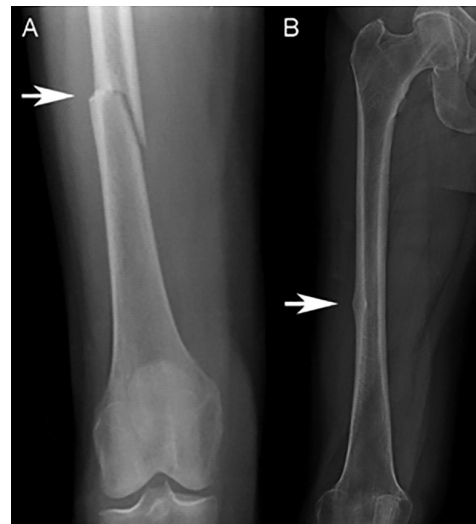


Figure 1: Radiographic views of (A) an atypical femoral fracture that occurred spontaneously in a woman after six years of treatment with a bisphosphonate and (B) an incomplete atypical femoral fracture with cortical thickening that presented as thigh pain.

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