

## Long-term Alendronate Therapy and Subtrochanteric Femoral Fractures

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### CASE REPORT

A 69-year-old woman experienced subtrochanteric fracture of her right femur. She was walking into her house when she tripped and fell forward. She was seen at the emergency department, where she was diagnosed as having subtrochanteric femoral fracture. She underwent intramedullary rod placement. Radiographs (Figure) further revealed a nondisplaced subtrochanteric stress fracture of the left femur. She had been experiencing thigh pain 3 to 4 months before the fracture; she previously had had a fracture in the left fifth metatarsal about 1½ years earlier, which was slow healing. She had been taking alendronate sodium for more than 7 years. The bone mineral density of her total hip (T score) had improved to  $-1.3$  from  $-2.3$  the previous year. Her 25-hydroxyvitamin D level was normal at 50 ng/mL (to convert 25-hydroxyvitamin D level to nanomoles per liter, multiply by 2.496). She had had no exposure to corticosteroids. Alendronate was stopped, and teriparatide was started.

### DISCUSSION

Alendronate reduces osteoclastic bone resorption and thereby increases bone mineral density and decreases bone turnover.<sup>1</sup> Microdamage that occurs regularly in bone but is normally repaired may accumulate because of prolonged suppression of bone turnover by alendronate.<sup>2,3</sup> This suppression can result in the formation of stress fractures in areas of great loading such as the subtrochanteric region of

the femur and the fifth metatarsal. Long-term alendronate therapy may cause completion and displacement of stress fractures, with low-energy insults and delayed healing likely because of oversuppression of bone turnover. In such cases, discontinuation of alendronate should strongly be considered. After diagnosing stress fracture, some clinicians suggest prophylactic rod placement to prevent a completed fracture or treatment with teriparatide. Teriparatide promotes the activity of osteoblasts, stimulates bone formation, increases bone mass, and improves bone microarchitecture.

### REFERENCES

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Figure. X-ray of pelvic anterior-posterior view showing open reduction internal fixation of right subtrochanteric femoral shaft fracture and left subtrochanteric femoral stress fracture (arrow).

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