



## **A typical Femoral Fracture of the Subtrochanteric Region in a Young Patient**

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## **Abstract**

**Background:** Atypical femoral fractures (AFFs) are most commonly associated with prolonged bisphosphonate use and typically occur in elderly patients. Their occurrence in younger, medically free individuals without antiresorptive exposure is rare.

**Case Presentation:** A 42-year-old woman presented with acute left thigh pain after a low-energy fall, preceded by months of intermittent thigh discomfort. Radiographs demonstrated a transverse subtrochanteric femoral fracture consistent with an atypical femoral fracture. Laboratory investigations and DEXA scan were normal. Endocrine evaluation revealed subclinical hypothyroidism. After metabolic optimization, she underwent fixation with a long cephalomedullary nail. Subsequent imaging identified a contralateral subtrochanteric stress reaction. The patient declined prophylactic fixation and was managed with close follow-up. At 1-year follow-up, the operated fracture had united and the contralateral lesion remained stable.

**Conclusion:** Atypical femoral fractures can occur in younger patients without classic risk factors. Recognition of prodromal pain and contralateral femoral evaluation are critical.

## **Introduction**

Atypical femoral fractures are stress-related fractures occurring in the subtrochanteric region or femoral shaft and are characterized by distinct radiographic and clinical features. They are frequently linked to prolonged bisphosphonate therapy and suppressed bone turnover. However, AFFs in younger patients without antiresorptive exposure are uncommon and present diagnostic and therapeutic challenges.

## **Case Report**

A 42-year-old female with no significant medical history presented with left thigh pain following a minor fall at home. She reported intermittent left thigh pain for several months before presentation.

## **Clinical Examination**

- Localized tenderness over the left proximal thigh
- Pain-limited range of motion
- Neurovascular status intact

- No open injury

#### Investigations

- Complete blood count: Normal
- Serum calcium, phosphate, alkaline phosphatase: Normal
- Vitamin D: Within normal limits
- Renal and liver function tests: Normal
- DEXA scan: Normal bone mineral density
- Endocrinology evaluation: Subclinical hypothyroidism
- No history of bisphosphonate or antiresorptive therapy use

#### Treatment

After optimization of thyroid function, the patient underwent surgical fixation with a long cephalomedullary nail. Postoperatively, she was mobilized under protected weight-bearing protocol. During follow-up, imaging of the contralateral femur revealed a subtrochanteric lateral cortical crack consistent with an incomplete atypical femoral fracture. Prophylactic fixation was recommended; however, the patient declined surgery.



Figure1: subtrochanteric femur fracture



Figure 2: stress fracture on other side.

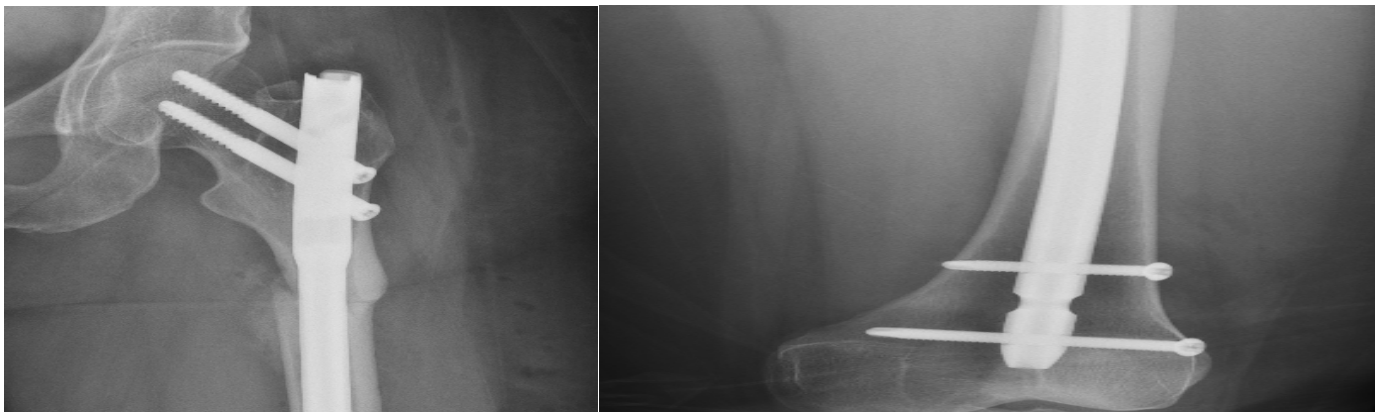


Figure 3: post op day 1 fixation with long cephalmedullary nail



Figure 4 : one year post operative      Figure 5 : stress fracture with no change on other side after one year

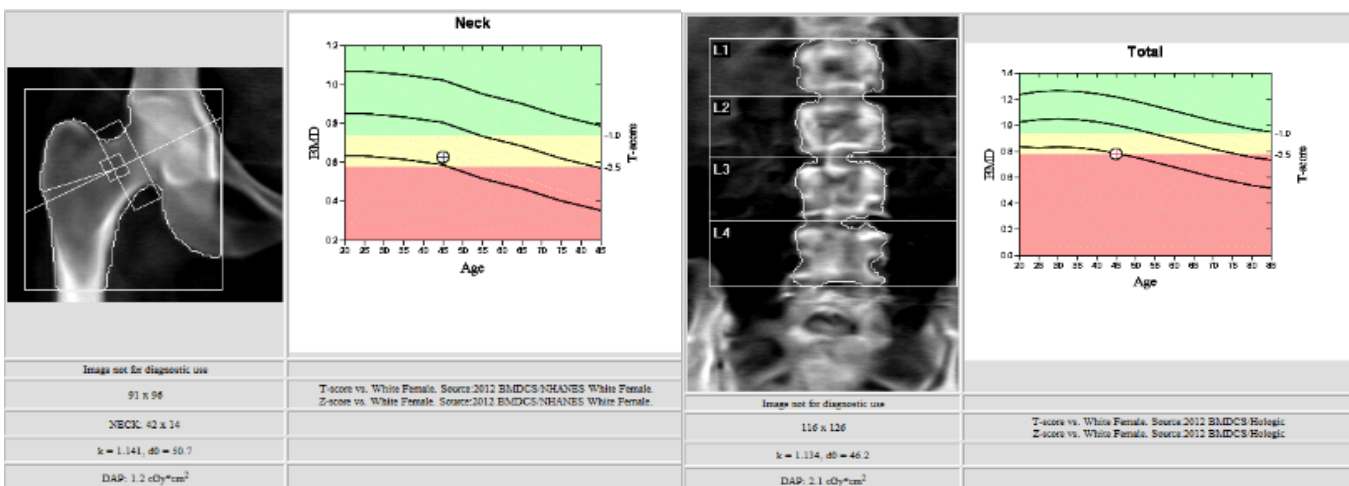


Figure 5: bone marrow density shows – 2.4 indicated of osteopenia according to WHO classifications

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## Follow-Up

The patient was followed for one year with serial clinical and radiographic assessments. The left fracture demonstrated radiographic union, and the contralateral lesion remained stable without progression.

## Discussion

AFFs are characterized by subtrochanteric or diaphyseal location, transverse fracture configuration, minimal comminution, lateral cortical thickening, prodromal thigh pain, and possible bilateral involvement. Although commonly associated with prolonged bisphosphonate therapy, AFFs may occur without antiresorptive exposure. Intramedullary fixation remains the gold standard for complete fractures. Close surveillance is required for incomplete contralateral lesions when prophylactic fixation is declined.

## Conclusion

This case highlights that atypical femoral fractures may occur in younger, medically free patients without bisphosphonate exposure. Recognition of prodromal symptoms and routine imaging of the contralateral femur are essential. Long-term follow-up is necessary to prevent bilateral complete fractures.

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