

# Atypical femoral shaft insufficiency fracture: a case report

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## PATIENT PRESENTATION

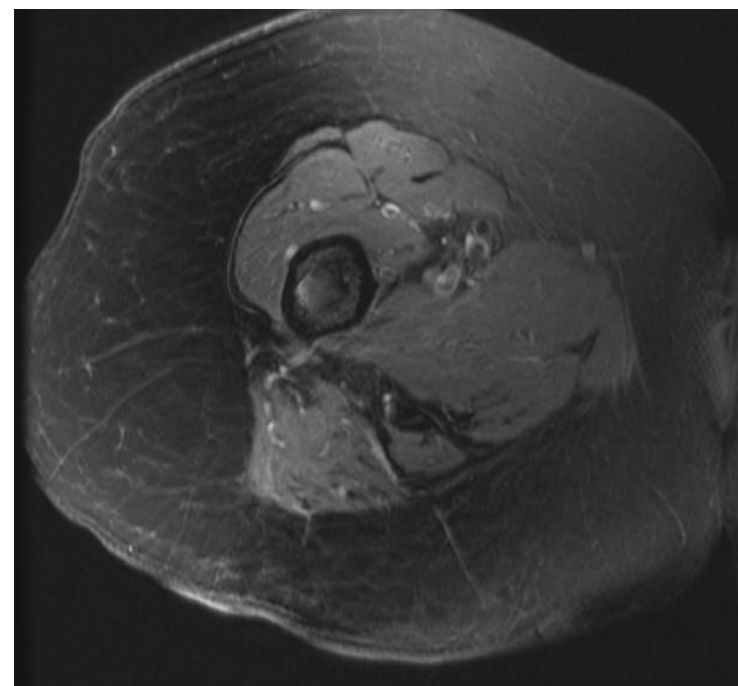
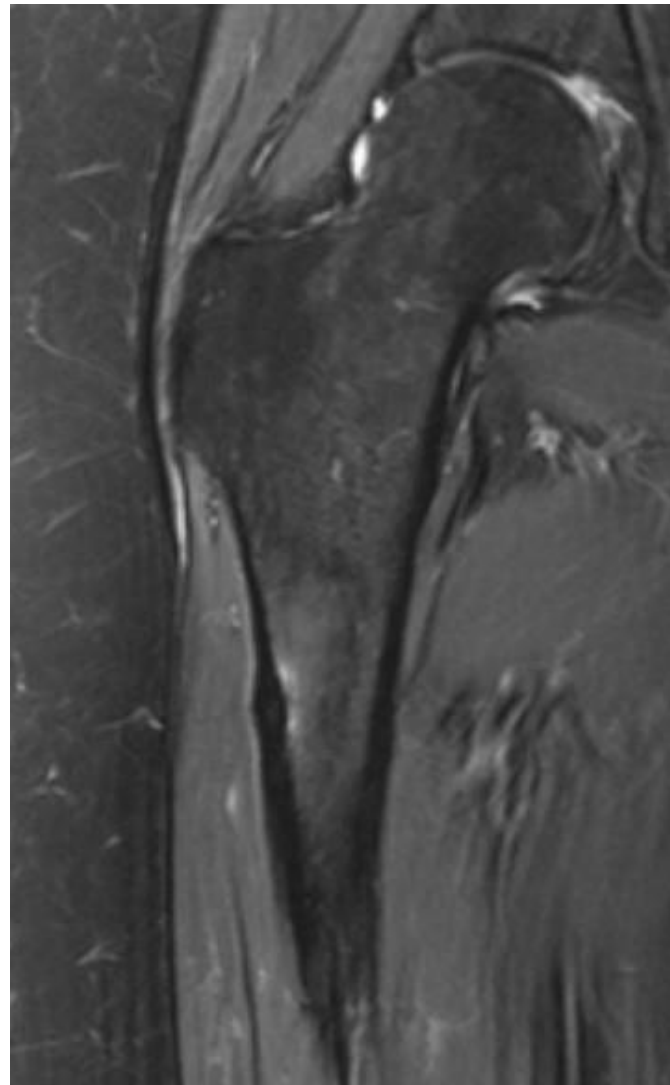
- A 77 year old female with medical history of osteoporosis not on bisphosphonate therapy presented with a one-month history of right lower extremity pain.
- There was no history of trauma, but she increased the frequency of her exercise routine 1 month prior to presentation.
- The pain started in her right lateral hip and moved to the right anterior knee with associated intermittent weakness.
- She initially had an intermittent limp but it had progressed to a consistent limp.
- Symptoms were worse with walking and better at rest.
- Denied any numbness or tingling in the right lower extremity. Denied any consistent locking, popping, catching, clicking, bruising, or swelling of the right knee.

## PHYSICAL EXAM

- On physical exam, there was preserved hip range of motion with normal provocative tests.
- The right lower extremity was noted to be longer than the left lower extremity.
- Inspection, palpation, ROM and strength of the right knee was normal.
- Lumbar spine exam was negative.

## IMAGING

- X-ray and MRI of the right femur showed cortical thickening of the proximal femoral shaft laterally with overlying and subcortical bone marrow edema. There was no discrete fracture line.
- Overall the radiographic appearance was consistent with an atypical insufficiency fracture of the lateral proximal femoral shaft.



## CLINICAL COURSE

- The patient was instructed to ambulate with protected weight-bearing and to continue cross-training exercises while her fracture healed. Proper Vitamin D and calcium supplementation was ensured.
- At 6-week follow up her pain had resolved by 75%.

## DISCUSSION

- Atypical femoral shaft fractures are a newly defined phenomenon and are rare.
- As compared to typical femoral stress fractures, according to the *American Society for Bone and Mineral Research* criteria, the atypical fracture:

- ❖ is found in the subtrochanteric or shaft region,
- ❖ is relatively transverse in configuration,
- ❖ is noncomminuted,
- ❖ is associated with cortical thickening, and
- ❖ is often atraumatic in nature.

## DISCUSSION (CONT.)

- Overall, only 7-10% of femoral fractures occur below the lesser trochanter, and of these 75% are due to major trauma reducing the true incidence to 2-3%.
- While the literature has suggested that some and possibly most of these fractures are due to bisphosphonate use, it is important to recognize they can occur in patients with no exposure to these drugs.

## CONCLUSIONS

- Recognition of atypical femoral shaft fractures is important in patients with osteoporosis.
- If sufficient clinical suspicion, MRI is the imaging modality of choice. These fractures have an association with bisphosphonate use but can also be seen in patients who are not taking any of these drugs.

## REFERENCES

- Tins, Bernhard J et al. "Stress fracture of the pelvis and lower limbs including atypical femoral fractures-a review." *Insights into imaging* vol. 6,1 (2015): 97-110. doi:10.1007/s13244-014-0371-z
- Larsen MS, Schmal H. The enigma of atypical femoral fractures: A summary of current knowledge. *EFORT Open Rev.* 2018;3(9):494-500. Published 2018 Sep 12. doi:10.1302/2058-5241.3.170070
- Woodward, Chase C. MD, MPH; Ahn, Jaimo MD, PhD The atypical femoral fracture, *Current Orthopaedic Practice:* January/February 2016 - Volume 27 - Issue 1 - p 24-29 doi: 10.1097/BCO.0000000000000326

