



Visual Case Discussion

Occult femur fracture

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A 57-year-old man with a history of HIV presented to the Emergency Department complaining of severe, stabbing, 10/10 pain in his right hip

following a fall off his bicycle earlier in the day, resulting in him hitting his right hip against the ground. Physical exam revealed a decreased range of motion of the right hip secondary to pain, but fall range of



Fig. 1. AP X-ray of right pelvis.

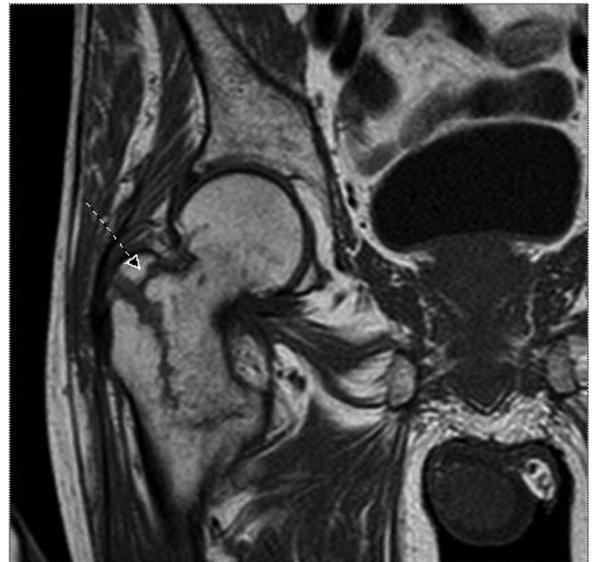


Fig. 2. MRI of right femur with arrow demonstrating comminuted non-displaced right intertrochanteric fracture.

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motion in the right knee, ankle, and the left lower extremity. The patient denied any decreased sensation, numbness, or loss of consciousness. Initial evaluation of this patient included an x-ray of the right hip, which did not indicate the presence of any fracture. However, due to the patient not being able to bare any weight on his right leg, clinical suspicion of an occult fracture remained high. Consequently, an MRI of the right hip was ordered in the emergency department which revealed a minimally displaced intertrochanteric hip fracture. The patient was admitted to the orthopedic surgery team and underwent cephalomedullary nail fixation (Figs. 1 and 2).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.visj.2018.10.010](https://doi.org/10.1016/j.visj.2018.10.010).

Questions

1. Which of the following imaging modalities is most sensitive in regards to picking up femur fractures?
 - a. X-ray
 - b. CT scan
 - c. MRI
 - d. Ultrasound
2. What is the one year mortality for patients with a femur fracture who undergo timely operative management?
 - a. 2-3%
 - b. 8-10%
 - c. 14-16%
 - d. 23-35%

Answers

1. MRI. Explanation: In patients with a recent fall who demonstrate no onset inability to bear weight or pain on rotation a femur fracture should be considered in the differential. While the standard of care in these patients is to undergo plain film, 2-10% of cases are occult and thus not detected by x-rays. In these cases MRI is the suggested imaging modality, as CT scans are not sufficient to rule out a fracture. Reference: Haubro M, Stougaard C, Torfing T, Overgaard S. Sensitivity and Specificity of CT and MRI Scanning in Evaluation of Occult Fracture of the Proximal Femur. *Injury* 2015;46:1557-61.
2. 14-16%. Explanation: Data regarding femur fractures has shown a one year mortality of 14-16% in patients who undergo operative treatment within two days. If operative treatment is delayed then the mortality rate can reach as high as 30%. The high mortality rate is largely due to complications of immobility, including embolism and infection. Reference: Haubro M, Stougaard C, Torfing T, Overgaard S. Sensitivity and Specificity of CT and MRI Scanning in Evaluation of Occult Fracture of the Proximal Femur. *Injury* 2015;46:1557-61.