

EMERGENCY IMAGING

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FIGURE 1



FIGURE 2



A 36-year-old man presents to the ED with knee pain after a skiing accident. Physical exam reveals joint effusion and pain along the lateral aspect of the right knee. Further examination is limited by pain and guarding. AP (Figure 1) and lateral (Figure 2) radiographs of the right knee are obtained.

What is your diagnosis, and what other injuries do you suspect?

Should additional imaging be performed?

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CONTINUED

ANSWER

FIGURE 3



FIGURE 5



FIGURE 4



The AP view of the right knee (Figure 3) reveals an elliptical bone fragment parallel to the lateral tibial rim (white arrow), indicating a Segond fracture. The fracture is not visualized on the lateral view of the knee (Figure 4). However, the lateral view does demonstrate a large joint effusion (white asterisk), which in the setting of trauma indicates the presence of an intra-articular injury.

Segond fractures are small vertical cortical avulsion fractures of the lateral tibia occurring just distal to the tibial plateau. They are typically a result of excessive internal rotation and varus stress while the knee is in flexion. This produces tension on the lateral joint capsule, causing an avulsion fracture of the lateral tibia.

Recognition of this often-subtle fracture is important because it is associated with anterior cruciate ligament (ACL) tears in 75% to 100% of cases^{1,2} and meniscal injuries in 53% to 75% of cases.³ Furthermore, this radiographic finding may be the only evidence of these injuries, as clinical evaluation of ligamentous stability and meniscal injury in the acute setting is often unrevealing due to pain, muscle spasm, and hemarthrosis.

Due to the high incidence of the associated ACL and meniscal injuries, patients with Segond fractures should undergo further diagnostic evaluation to de-

FIGURE 6



termine the extent of the overall injury. MRI is the preferred examination for injury to the menisci and ligamentous structures of the knee. A coronal proton density-weighted image from an MRI obtained in

this patient (Figure 5) demonstrates the avulsed cortical fragment (white arrow) that has been pulled off by the lateral joint capsule. A sagittal fat-suppressed proton density-weighted image (Figure 6) illustrates complete disruption of the ACL (white arrows), as well as the joint effusion (black asterisk) that was seen on the lateral radiograph. No meniscal injury was present in this patient.

Although they are a subtle finding, Segond fractures are often the only sign of significant soft tissue injuries of the knee. Prompt diagnosis and treatment of these injuries is important to prevent late complications of anterolateral joint instability and osteoarthritis. **EM**

REFERENCES

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