



Knee pain in a collegiate runner following figure-4 fall

Sarah Kottenstette, MD¹, Tyler Slayman, MD²

1. JPS Hospital Family Medicine Residency, Fort Worth, Texas

2. UI Sports Medicine – University of Iowa Hospitals and Clinics, Iowa City, Iowa

History

A 20-year-old collegiate track and cross-country athlete presented for evaluation of left lateral knee pain. 8 days prior to presentation, she fell during a race in a figure 4 position with initial point of contact being the lateral calf. She felt no popping with initial injury. She has had swelling and bruising on the lateral and posterior aspect of her knee. She is also having some pain in the anterior, medial portion of the knee.

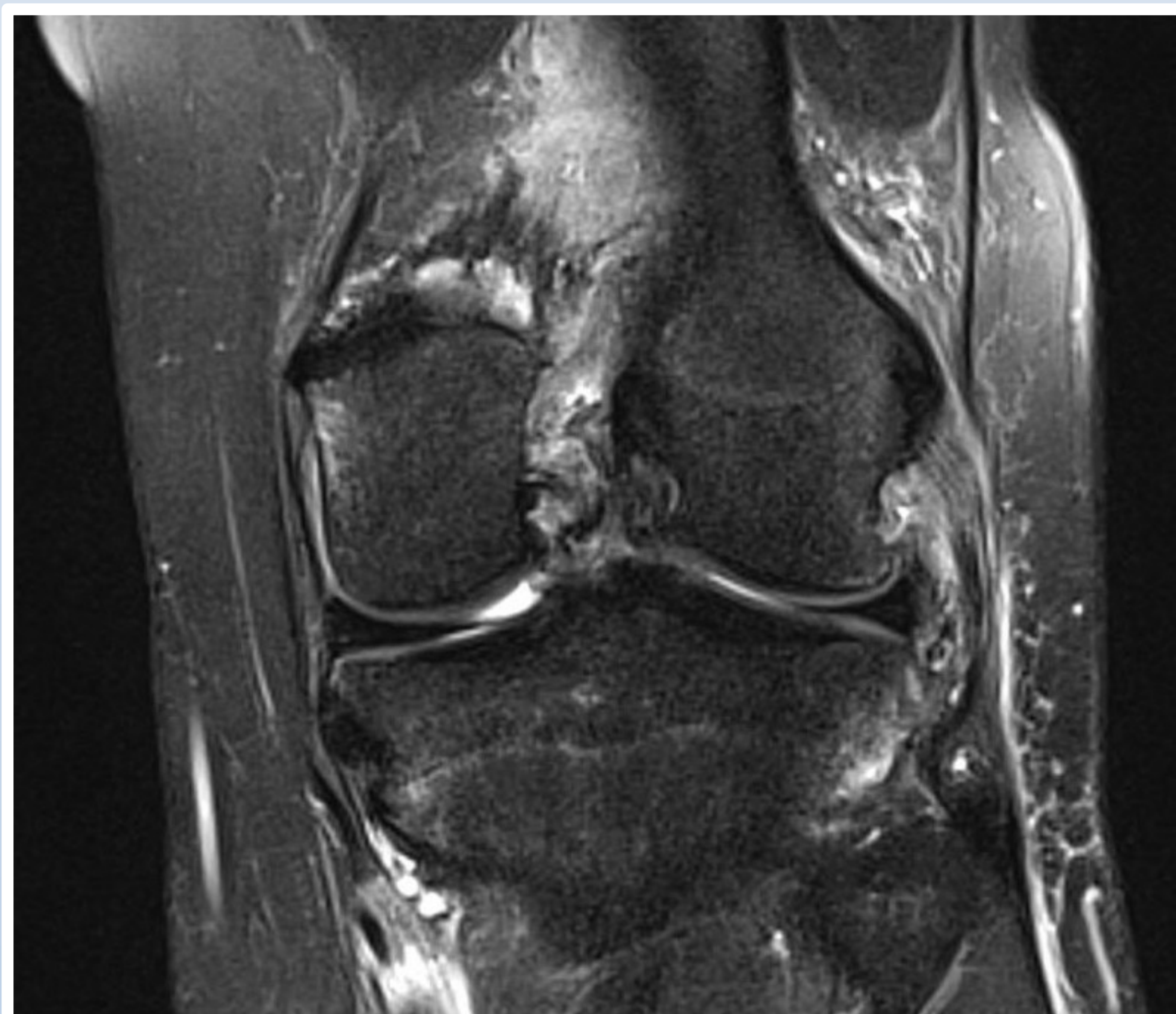
She used crutches for five days and is now WBAT with a tight feeling in the knee. She has a popping sensation with extension and is unable to fully extend. No history of prior knee injury. She has tried a knee sleeve and ibuprofen with minimal relief. She is currently in season for outdoor track.

Physical Examination

- Ecchymosis most prominent in the posterior fossa and along both hamstring tendons. Effusion present.
- TTP along medial joint line, posterior hamstring insertions, popliteal fossa, posterior lateral corner.
- The knee has 120 degrees of flexion and extends to 15 degrees. 3/5 in resisted knee flexion and extension. Limited by pain.
- Lachman painful negative for gapping, anterior and posterior drawer negative, varus and valgus stress test negative, McMurray's positive with medial and lateral stressing, patella grind negative, patella apprehension negative. Dial test painful.

Tests and Results

- Outside x-ray personally reviewed and negative for acute fracture
- Limited POC U/S showed large joint effusion with intact patellar and quadriceps tendon
- MRI left knee
 1. Grade II/III strain involving lateral head of the gastrocnemius, as well as plantaris, soleus, popliteus, and long head of biceps femoris
 2. Moderate to severe tendinosis of the popliteal ligament
 3. Mild osseus edema at the insertion of the ACL. Osseus edema of the medial femoral condyle and tibial plateau.



Left knee MRI showing Grade I PLC strain, osseus edema at attachment of ACL, but intact.



Differential Diagnosis

1. Posterolateral corner injury
2. ACL injury
3. Isolated PCL injury
4. Meniscus injury
5. Hamstring tendon injury

Outcome

Since this patient was in-season and had a Grade I PLC injury, she was managed non-operatively. She wore a hinged knee brace that was initially locked while ambulating for two weeks then was unlocked for two weeks. She avoided hamstring activating exercises for the first two weeks out of the brace. She was started on a return to run protocol.

Return to Play

She successfully completed her return to run protocol. She was able to return to sport and full participation.

Final Diagnosis

Grade I Posterolateral Corner Injury

Take Home Message

- The PLC consists of the LCL, popliteus tendon, popliteofibular ligament and is essential to maintain knee stability. This patient had pain with dial test and mechanism was concerning for PLC injury. MRI showed Grade I PLC injury and Grade II/III posterior chain sprain.
- For Grade I PLC injury, it can be managed non-op with knee immobilization then PT. Grade II/III often need to be managed with surgery. There is no literature regarding management of competitive runners who are in-season at the time of injury. Based on this patient, non-op management of Grade I PLC and Grade II/III strain of the posterior chain is successful at getting athletes back to competing at an earlier time interval.