

Acute Knee Injuries: Review Questions

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QUESTIONS

Choose the single best answer for each question.

- 1. A 21-year-old female basketball player has a tender, swollen knee that was injured when she landed awkwardly. She reports that her knee “gave out” and that she heard a “pop” and was unable to return to play. Which of the following is the most likely diagnosis?**
 - A) Anterior cruciate ligament (ACL) injury
 - B) Knee contusion
 - C) Lateral collateral ligament injury
 - D) Medial collateral ligament (MCL) injury
 - E) Posterior cruciate ligament (PCL) injury
- 2. A 12-year-old boy injures his knee in a football game. His knee is tender and swollen, and he is unable to walk from the field. Physical examination shows a tense effusion and negative Lachman and drawer tests, but the patient has demonstrable laxity with valgus stress testing. Plain radiographs are normal for the patient’s age. Which of the following studies is the most appropriate to obtain at this point?**
 - A) Computed tomography scan
 - B) Functional testing
 - C) KT-1000 arthrometer testing
 - D) Magnetic resonance imaging
 - E) Stress radiography
- 3. A 30-year-old construction worker trips and lands on his knee with his foot plantar flexed. He has a moderate effusion and reports that his knee feels “loose.” Which of the following is the most likely diagnosis?**
 - A) ACL injury
 - B) Knee contusion
 - C) Lateral collateral ligament injury
 - D) MCL injury
 - E) PCL injury
- 4. Which of the following is the recommended treatment for a patient with an isolated MCL injury?**
 - A) Acute repair/reconstruction
 - B) Delayed repair/reconstruction
 - C) Hinged knee brace for 6 to 8 weeks
 - D) Knee immobilizer for 6 to 8 weeks
 - E) Symptomatic treatment only
- 5. A 25-year-old man is injured in a car accident and reports that his knee hit the dashboard. Physical examination reveals a moderate effusion, apparent increased excursion with Lachman testing, significant (3+) posterior drawer, and increased external rotation of his foot with the knee in both 30 and 90 degrees of flexion. The remainder of the examination of his knee is unremarkable. Which of the following is the most likely diagnosis?**
 - A) Combined ACL and PCL injury
 - B) Combined ACL and posterolateral corner injury
 - C) Combined PCL and posterolateral corner injury
 - D) Isolated ACL injury
 - E) Isolated PCL injury
- 6. An 18-year-old female soccer player sustains a twisting injury and reports that her knee “popped out of place.” Physical examination shows a moderate effusion, but results of her ligamentous examination and anteroposterior and lateral radiographs are normal. Which of the following is the most likely diagnosis?**
 - A) ACL injury
 - B) Growth plate (physeal) injury
 - C) Patellar dislocation
 - D) Patellar tendon rupture
 - E) Tibial eminence fracture

(turn page for answers)

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EXPLANATION OF ANSWERS

1. **(A) Anterior cruciate ligament (ACL) injury.** A non-contact pivoting injury with a “pop” is characteristic of an ACL injury. This type of injury is very common in female basketball players, and research to determine risk factors in this population is underway. Up to 75% of patients with acute knee effusions will have an ACL injury. The key diagnostic examination is the Lachman test, performed with the knee in 30 degrees of flexion. Radiographs of the knee typically show normal results, but more than 50% of patients with have an associated “bone bruise” on magnetic resonance imaging (MRI) studies.
2. **(E) Stress radiography.** Stress radiographs should be obtained in skeletally immature patients with instability of the knee. A physeal fracture is more likely than a ligamentous injury in this population. MRI and computed tomography scans are not indicated at this point in the evaluation, although they may be useful later. KT-1000 arthrometer testing is used for objective measurement of anterior instability. Functional testing is not appropriate for acute injuries.
3. **(E) PCL injury.** The most common mechanism of injury for posterior cruciate ligament (PCL) disruption is a force to the proximal tibia. When the foot is plantar flexed, the force vector is transmitted to the proximal tibia and a PCL injury can occur. When the foot is dorsiflexed, the force vector is transmitted through the patella. PCL injuries can also occur with hyperflexion in sports. ACL injuries typically occur with non-contact pivoting injuries. Collateral ligament injuries are a result of varus-valgus contact injuries. Knee contusion is a nonspecific diagnosis of exclusion.
4. **(C) Hinged knee brace for 6 to 8 weeks.** Although medial collateral ligament (MCL) injuries were treated surgically in the past, recent studies have clearly shown that these injuries are best treated nonoperatively. Use of a knee immobilizer is discouraged for extended periods of time because loss of range of motion is likely. Thus, the use of a hinged knee brace is favored. Some physicians recommend that motion be restricted to approximately 30 to 60 degrees for the first portion of brace treatment, but there is no universal consensus on how long or how much restriction should be recommended.
5. **(C) Combined PCL and posterolateral corner injury.** The patient’s physical examination demonstrated a 3+ posterior drawer and external rotation asymmetry at both 30 and 90 degrees of flexion. This is characteristic of a combined PCL and posterolateral corner injury. The apparent increased excursion of the tibia is caused by a posterior starting point and is a false-positive result. The key physical examination for a PCL injury is the posterior drawer test. A 3+ grade implies that the proximal tibia can be displaced behind the medial femoral condyle. Grade 3 PCL injuries are frequently associated with combined posterolateral corner injuries. It is essential to correct both deficiencies at the time of surgery, which ideally should be performed within the first 2 to 3 weeks following the injury.
6. **(C) Patellar dislocation.** Patients who sustain a patellar dislocation will typically report that their knee dislocated. Careful history taking will quickly reveal that the patella, not the entire knee, dislocated. The key physical examination will assess for patellar laxity and apprehension. A Merchant, or “sunrise,” radiographic view is necessary to assess for patellar subluxation and tilt and to determine if there are any obvious loose bodies. Treatment for acute first-time patellar dislocations is a matter of some controversy. Some authors advocate acute repair of the medial patellofemoral ligament, which is the main restraint to lateral patellar displacement, but long-term studies are not yet available.

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