

# Chapter 44

## Ligament Injuries of the Knee

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### Overview

Complete workup for ligament injuries of the knee (Fig. 44.1) includes evaluation of open versus closed injury, neurovascular status, associated injuries, and spontaneous versus manual reduction.

### What to Ask

1. Are there any open wounds (possible traumatic arthrotomy)?
2. Are there associated injuries?
3. What is the vascular exam (HIGH index of suspicion for vascular injury in multi-ligament knee injuries)?
4. Was the knee ever dislocated? Is the knee currently dislocated?

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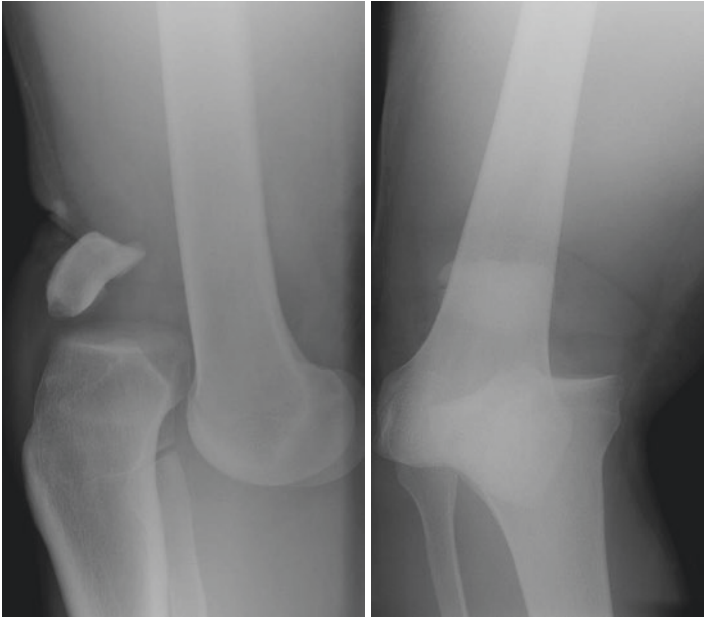


FIGURE 44.1 Representative radiographs of a patient with a multi-ligament injury of the knee (knee dislocations)

## What to Request

1. Ensure the leg is stabilized, elevated, and iced immediately.
2. X-rays of the knee in AP and lateral.
3. IV access in place, initiate antibiotics if concern for open fracture.
4. Doppler for ABI/vascular exam.

## When to Escalate

1. Open injuries: should be irrigated in ED and receive antibiotics (will require formal irrigation and debridement in OR)
2. Neurologic or vascular compromise
3. Dimpling of the skin after reduction or an irreducible dislocation should promptly be escalated to an attending.

## Imaging

1. AP, lateral of the knee. Obliques may lend additional information but not required acutely.
2. Evaluate imaging carefully for intra-articular air.
3. *Don't miss*: dome-shaped fragment proximal to the fibular head (bony avulsion of LCL and associated tendons, known as an arcuate fracture).

## Effective Communication

1. Open versus closed
2. Neurovascular status
3. Associated injuries
4. Spontaneous versus manual reduction

## What to Bring

1. Knee immobilizer
2. Arthrotomy injection kit if concerned for traumatic arthrotomy

## Key Exam Pearls

1. Sensation (saphenous/sural/superficial and deep peroneal, tibial).
2. Motor (extensor hallucis longus/flexor hallucis longus/gastrocnemius/tibialis anterior).
3. Evaluate all wounds: dermal violation raises suspicion for open injury.

## Reduction/Treatment

Ligamentous injuries about the knee can typically be divided into single-ligament injuries (such as an ACL tear) or knee dislocation equivalents. While an ACL tear may have an

MCL sprain associated, significant injury to two or more ligaments is typically considered a knee dislocation (even if the patient presents with the joint in correct alignment!).

Knee injuries with a single ligament disrupted are often given a knee immobilizer or hinged knee brace and made weight bearing as tolerated. Providing a well-fit hinged knee brace and promoting motion can benefit the patient by helping them decrease swelling and effusion and begin early retraining of proprioception, often referred to as “prehab.”

Injuries in which there is evidence of multiple ligament injuries, either by MRI, plain film, or physical exam, should be considered high-priority consults. If the knee is actively dislocated it should be reduced as soon as possible. Typically pain control and axial traction are adequate but some light sedation may be required. ABIs should be tested after reduction or in the knee presenting reduced as there is a high incidence of popliteal artery injury. Careful neurologic exam is key, as the peroneal (common or its branches) may be injured. These patients should typically be placed into a knee immobilizer and triaged according to their vascular status and stability. External fixation may be required to maintain stability. Patients should be evaluated for compartment syndrome serially after presentation.

## Follow-Up

1. Single-ligament injuries can typically be discharged to follow up within 1 week.
2. Multiply injured knees should be admitted for observation of compartment syndrome.