POSTEROLATERAL CORNER INJURIES

SIDDHARTH JADHAV M.D.
Assistant Professor of Radiology
E.B. Singleton Department of Pediatric Radiology
Texas Children's Hospital
COMMERCIAL DISCLOSURE

- NONE
Objectives

1. To describe anatomy and normal variations of the posterolateral corner of the knee

2. Review the imaging findings of posterolateral corner injury

3. To discuss common pitfalls of MR imaging
Introduction

- The **posterolateral corner** of the knee has a complex anatomy that shows **variation from person to person**.

- Posterolateral corner injuries - increasingly **recognized** in pediatric patients
Introduction

• Posterolateral corner injuries often accompany other internal derangements of the knee.

• Clinical evaluation limited due to significant joint effusion and swelling from associated injuries

• Repair needed for optimal long-term post-operative results and knee stability
The Posterolateral Corner

- The “posterolateral corner” also referred to as arcuate complex includes -

  Lateral (fibular) collateral ligament,
  Arcuate ligament,
  Popliteus muscle and tendon,
  Popliteofibular ligament,
  Fabellofibular ligament and
  Posterolateral capsule
The origin is below the origin of the lateral head of the gastrocnemius and the femoral attachment of the lateral collateral ligament.
Popliteus
The popliteus tendon passes through the popliteal hiatus. Superior and inferior popliteo-meniscal fascicles. Normal deficiencies.
Popliteus passing underneath the arcuate ligament (arrows) to become extracapsular. Popliteus muscle near its insertion on the posteromedial tibia.
- Extracapsular
- No meniscal attachment
- Acts as a simple passive restraint
- Intact posterior capsule at the lateral joint line - reliable sign of an intact arcuate ligament.
Popliteofibular Ligament
Posterolateral corner injury

Injury to a component of the lateral collateral ligament complex in association with tears of the popliteus tendon, arcuate ligament, popliteofibular ligament, and either the ACL or the PCL is termed **posterolateral corner injury**.
Posterolateral corner injury

- Failure to treat surgically in 10 to 14 days - high incidence of poor result
- Clinically unrecognized posterolateral injuries - cause of chronic instability and postsurgical failure of cruciate ligaments
Popliteus strain

Majority of popliteus strains - extraarticular

Injuries can also be a combination of intraarticular and extraarticular
Popliteus intrasubstance tear
Popliteus tendon tears can be intraarticular at the level of the popliteal hiatus and at or near the femoral attachment.

**Fig a.** is a sagittal T2WI showing a tear of the popliteus tendon (yellow arrow) at the popliteal hiatus. Note how only a thin posterosuperior portion of the tendon remains intact (black arrow).

**Fig b.** shows a normal popliteus tendon for comparison.

**Fig. c and d:** Coronal STIR images of 2 different patients with intrasubstance tear of the popliteus tendon at its origin.

**What the clinician needs to know:**

1. Intra-articular or extra-articular
2. Partial thickness (conservative therapy) or full thickness (may warrant repair)
3. Degree of retraction
4. Associated injuries – Repair warranted to prevent instability
The “arcuate” sign - avulsed bone fragment related to the insertion site of the arcuate complex.
The Arcuate Sign
Posterolateral corner injury
Posterolateral corner injury

Disruption of the capsule at the posterolateral joint line - reliable indicator of arcuate lig. injury
Posterolateral corner injury
Fluid in the popliteal bursa (yellow arrows) may be mistaken for popliteus myotendinous injury.
Fig. a and b: Interface between the popliteus tendon and lateral meniscus

Fig. c: Normal deficiencies in the popliteo-meniscal fascicles
Conclusion

• Injuries of the posterolateral corner are often associated with ACL, PCL and meniscal tears.

• Identification of posterolateral corner injury is paramount to avoid long-term instability.

• Care should be taken to avoid imaging pitfalls related to the posterolateral corner.

Reference:
Comprehensive review of the anatomy, function, and imaging of the popliteus and associated pathologic conditions. JadHAV SP, More SR, Riascos RF, Lemos DF, Swischuk LE. Radiographics. 2014 Mar-Apr;34(2):496-513