Summary & Conclusion

Injuries of the posterolateral corner of the knee are infrequent but can cause severe disability due to both instability and articular cartilage degeneration.

Proper diagnosis of injuries to the posterolateral structures with a clinical examination is still difficult. Posterolateral rotatory instability resulting from injury to the posterolateral structures may be unrecognized because of subtle findings that can be overlooked on a physical examination, because these injuries are relatively less common and, in some cases, because they are combined with other ligament injuries

Recent studies have been showed new light on the complex anatomy and functional mechanics of the posterolateral corner of the knee, and they provide a framework for improved diagnosis and treatment of these often disabling injuries

Recent anatomic studies have more clearly defined the complex arrangement among the various anatomic structures composing the PLC of the knee including :

1. the lateral (ie, fibular) collateral ligament .
2. the popliteus tendon complex.
3. popliteofibular ligament .
4. the posterolateral capsule .

Other structures provide additional static and dynamic stability to the PLC. The iliotibial band is composed of multiple layers and blends with a confluence of the short head of the biceps to foramen anterolateral sling about the knee.

The long and short heads of the biceps femoris muscle provide dynamic stability, with the fabellofibular ligament being a thickening of the distal capsular edge of the short head of the biceps.

The common peroneal nerve is located on the posterior border of the long head of the biceps

Finally, the lateral meniscus increases the conformity and thus the stability of the lateral compartment, which is inherently unstable due to the convex nature of the compartment

The structures of the PLC function primarily to resist varus rotation, external tibial rotation, and posterior tibial translation.

The LCL is the primary static restraint to varus opening of the knee.

The PLC, not the PCL, is the primary restraint to posterior tibial translation near full knee extension

The overall incidence of a posterolateral corner injury following a direct blow to the anteromedial aspect of the knee, contact or noncontact hyperextension injury to the knee, and/or a varus contact injury to a flexed knee, is believed to between 20-30%, with the majority of these occurring in combination with anterior cruciate and/or posterior cruciate ligament injuries.

Common mechanisms of injury include a posterolaterally directed blow to the anteromedial proximal tibia, with resultant hyperextension; a non contact hyperextension and external rotation twisting injury; direct blow to a flexed knee; or high energy trauma.

In cases of high-energy trauma, the history may be difficult to elicit and may aid little in making the diagnosis.

To be complete, a classification or grading system of the PLC must include assessment of both varus and rotational stability compared with those of the contralateral limb.

In addition, the time of the injury is critical. Acute injuries are usually defined as of <3 weeks, but they can be repaired for up to 4 to 6 weeks. After this period, they are considered chronic injuries. The most commonly used classification system, that defines injury severity based primarily on varus instability:

Grade I: injuries are sprains without tensile failure of any capsule-ligamentous structures, with little or no varus instability (0 to 5 mm).

Grade II: injuries are partial injuries with minimal abnormal laxity (6 to 10 mm).

Grade III: injuries are complete disruptions with significant laxity (>10 mm), probably representing associated injuries.

Patients with acute isolated injury of the posterolateral corner usually complain of pain in the posterolateral aspect of the knee, and some may have neurologic symptoms as well. Injury of the peroneal nerve was present in two of twelve patients with isolated injury of the posterolateral corner .

The knee should be carefully examined for edema, ecchymosis, induration, and tenderness.

patients with acute posterolateral corner injury had diffuse tenderness over the posterolateral joint region, with point tenderness localized over the fibular head or at the joint line in patients with arcuate or Segond fracture respectively.

Patients with a suspected posterolateral corner injury should be carefully observed for limb alignment and changes in their gait.

1- Patients may present with a standing varus alignment of the knee, and an abnormal gait pattern characterized by a varus thrust or a hyperextension varus thrust may develop during the stance phase .

2-To avoid the pain and instability of knee hyperextension, some patients may walk with a slightly flexed knee

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present protocol for non-surgical management includes use of crutches with a hinged knee brace for 4 to 6 weeks. Early extension immobilization is then followed by progressive motion, weight bearing, and strengthening, with return to full activity in 3 to 4 months

PLC injuries are best treated in the acute stage, before significant capsular scarring and soft-tissue stretching occur .

This can be done by :

1. direct repair.
2. with or without augmentation & advancement.
3. primary reconstruction.

Beyond 4 to 6 weeks from injury, significant pericapsular scarring makes it difficult to localize and repair discrete structures; thus, reconstruction is favored.

1. Proximal Tibial Osteotomy.

2. Split biceps Femoris Tendon Transfer Surgical Technique.

Fibular-Based Technique.

3. Allograft Options In Posterolateral Corner Reconstructions.

Isolated PLC injuries are rare events; combined injuries are more frequent and are increasingly recognized.

A growing body of basic science literature is focused on the anatomy and biomechanics of this region and its influence on the remainder of the knee.

Although no universal classification system has been adopted, attention to both varus and rotational stability is critical.

Treatment emphasizes early, accurate diagnosis so that immediate surgical intervention can be performed.

For chronic (ie, late) severe injuries, no benchmark reconstruction technique exists. There has been a recent trend, however, toward more nearly anatomic reconstruction, with attention paid to proper insertion site anatomy in order to restore native knee kinematics as well as possible.

Reports of long-term outcomes are limited, but short-termstudies demonstrate good results.

Treatment of posterolateral instability of the knee requires a thorough knowledge of the variable anatomy of the posterolateral corner.

Since posterolateral instability is rarely an isolated finding.

One must be proficient in the diagnosis of all knee-ligament injuries.

While many operative procedures have been devised to treat posterolateral instability, we prefer to repair all ligamentous injuries as anatomically as possible.

Repair and reconstruction for the treatment of acute posterolateral instability results in greaten success than do reconstructions for chronic

posterolateral instability and, accordingly, we recommend acute repair or reconstruction when possible.

When a major posterolateral injury is present, the popliteus muscle-tendon unit and the lateral collateral ligament can be repaired, augmented, or reconstructed primarily.

Reconstruction of all ligamentous lesions leads to the greatest chance of success in the treatment of this problem.