

# What About Rehab After Cartilage Transplantation for the Knee

Orthopedic surgeon Robert A. Arciero from the University of Connecticut Health Center says that repairing damaged ligaments in the knee is "doomed to fail" if injury to the posterolateral corner remains unrecognized and untreated. Dr. Arciero offers his own solution to the problem.

You might not realize it, but the knee actually has corners. It may look like your leg is round on the outside but inside are complex bony and soft tissue structures in a location referred to as a corner. Injury to any of these "corners" that goes untreated can create a painful, unstable knee even after surgery for the presenting knee problem.

There are two corners in the front (anterior) and two in the back (posterior). Then add one from each side: medial (side closest to the other knee) and lateral. Combining front and side and back and side gives us corners named anteromedial, anterolateral, posteromedial, and posterolateral.

The corners of the knee are made up of a very complex system of soft tissues woven together. The way in which they share the load makes an injury of one ligament likely to affect the function of others as well. Sometimes where one ligament ends and another begins is impossible to tell. Likewise, many of the ligaments are attached to the joint capsule surrounding the joint (or to the joint itself) in very unique ways. Connective tissue called fascia is also part of the soft tissue structures that helps hold everything together at each corner.

Treatment for any of the corner injuries requires careful and accurate diagnosis. The surgeon depends on the physical examination and imaging studies for this. In the case of a posterolateral corner (the subject of this article), the surgeon tests for ligamentous laxity of the posterior cruciate ligament (PCL), anterior cruciate ligament (ACL), and the medial collateral ligament.

There are specific hands-on clinical tests (e.g., dial test, drawer test, tests for varus and rotational laxity) that can be performed to assess the integrity of each of these ligaments. The surgeon relies on the uninjured leg to serve as the "normal" results (along with clinical experience having seen other knees as well).

None of these tests are 100 per cent reliable. For example, studies have shown that an isolated tear of the posterolateral corner may not show up easily. An MRI may be needed to fully evaluate a knee for a posterolateral corner (PLC) injury. The presence of bruising on the medial side of the bone is a red flag of potential damage to the PLC.

Identifying all of the damaged soft tissues in a knee injury is important. An isolated posterolateral (PLC) injury may not require surgery. Conservative (nonoperative) care for an isolated PLC injury has the same results as doing surgery. Surgery is only advised when PLC injuries are accompanied by damage to the cruciate ligaments as well. When surgery is needed, it should be done within three weeks of the injury.

Early surgery has been shown to have better results compared with delayed procedures. And reconstruction of the corner (rather than just attempting to repair the damage) is more likely to be successful. With reconstruction, there is more knee stability, better function, improved range-of-motion, and less risk of arthrofibrosis (stiff knee from fibrous adhesions).

The main focus of this surgeon's report on posterolateral corner injuries is the reconstruction technique he uses. This approach called the dual femoral tunnels, trans-fibular tunnel, free graft is described with intraoperative photos and drawings to help surgeons understand the method. Patient positioning on the operating table, place to make the incision, and type of incision are discussed.

The basic idea behind this procedure is to use tendon graft material (from the hamstrings muscle), thread it through two tunnels placed in the bones around the knee in order to secure it to the bone. One type of screw is used to hold the graft in place. Another screw called the interference screw helps determine the amount of tension places on the graft. The position, angle, and tension of the graft material are very important in restoring the right amount of rotation, motion, and angle of the joint itself.

After surgery, patients are in a cast that holds the knee straight and allows for minimal weight-bearing. This period of immobilization lasts about four weeks. During that time, the patients are allowed to do leg raises but active knee motion doesn't begin until the cast comes off in a month. Then the serious business of rehabilitating the knee begins.

A physiotherapist supervises a program of active motion, strengthening, and for athletes a return to sports. Most athletes are back to 80 per cent of quadriceps strength between six and nine months. But for some, full return to a pre-injury level of function can take up to a year or more.

The authors conclude by saying that the best reconstruction technique for posterolateral corner (PLC) knee injuries remains a point of considerable debate. The important thing is to recognize the need for PLC reconstruction. When this area of the knee joint is damaged but goes undiagnosed, reconstruction surgery for the cruciate ligaments is doomed to failure. The double femoral tunnel, fibular-based method of PLC reconstruction described here works well to restore knee stability.

Reference: Matthew J. Bollier, and Robert A. Aciero, MD. Surgical Management of Posterolateral Corner Injuries of the Knee. In Current Orthopaedic Practice. November/December 2011.