

Multi-ligament Knee Injuries

Anatomy

The knee ligaments allow the smooth cartilage surfaces of the knee to remain stable during range of motion, impact, and pivoting/twisting activities.

Ligaments are the tissues that join one bone to another. Tendons join muscles to the bone. The knee has multiple ligaments and tendons.

The major ones include the:

anterior cruciate ligament (ACL), posterior cruciate ligament (PCL), medial collateral ligament (MCL), fibula collateral ligament (FCL), postero-lateral corner (PLC), anterolateral Ligament (ALL) and posterior oblique ligament (POL). The postero-lateral corner includes the FCL, Popliteo-fibular ligament and Popliteus tendon.

The disease process

High-energy knee injuries can lead to devastating consequences for stability, from injuries to more than one of the critical knee stabilisers. Multi-ligament knee injuries are very serious. With severe injury the entire knee can even dislocate and lead to tearing and damage to the nerves and even blood vessels. This can cause critical damage to the blood supply of the leg requiring vascular operations or potentially amputations.

Injuries can involve many combinations of ligament rupture. The ligaments that can be injured are the Anterior Cruciate Ligament, Posterior Cruciate Ligament, Postero-lateral Corner, Medial Collateral Ligament, Posterior

Oblique Ligament, Antero-lateral Ligament. Tendon injury can also occur, including the biceps tendon and semi-membranous tendon.

Surgical treatment

Multiple Ligament injuries require knee stabilisation by reconstruction of ligamentous structures to allow early range of motion (within 3 weeks). The timing of this however must allow the knee, which has a ruptured capsule, to regain continence to allow containment of arthroscopic fluid.

Graft choices are difficult with multi-ligamentous knee injuries. Graft choices may include; hamstring grafts, other side hamstring grafts, quadriceps tendon grafts, patella tendon grafts, iliotibial band grafts, allografts (donated tendon transplants) both bone and soft tissues, and rarely artificial ligaments.

Surgery for multi-ligament knee injuries is sometimes performed in two stages, depending on the severity of the injury. A combination of open and arthroscopic procedures are required depending on the ligaments involved. Some damaged structures cannot be repaired and are reconstructed. Others are repaired and protected with concurrent ligament reconstruction.



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Rehabilitation / Recovery

Rehabilitation after multi-ligament knees often requires extensive rehabilitation, braces and protection of weight bearing status. This requires crutches and a prolonged course of physiotherapy.

[photo of swollen bruised knee]

[x-ray of multi-ligamentous knee reconstruction]



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