

INTRODUCTION

Injury to the PCL is not as common as any of the other knee injuries (see Figure 1). The PCL is larger and stronger than the ACL and is therefore another very important stabilizing ligament in the knee. The PCL is located deep within the knee joint and attaches the femur to the tibia, passing from the front of the end of the femur, backwards, and down to attach at the back of the top of the tibia. It acts to prevent excessive backwards movement of the tibia in relation to the femur. Posterior cruciate ligament injuries account for 3% to 20% of all ligament tears.



Figure 1 PCL Tear (view from the back of the knee)

INJURY

In sport injury is usually due to trauma to the front of the upper tibia where the tibia is forced backwards. This may result from a collision or due to a fall onto the ground with the knee bent. Injury will normally occur in conjunction with damage to other structures.

Signs and Symptoms

- ✦ poorly localised pain – likely at the back of the knee and maybe into the calf
- ✦ minimal swelling
- ✦ vague feelings of unsteadiness/instability

Due to the indistinct nature of PCL injury damage symptoms, and therefore the ability to function relatively normally, the injury can be hard to diagnose.

Diagnosis

A physiotherapist or doctor will look for various signs and go through clinical tests to establish if there is damage to the PCL. X-rays are commonly taken to rule out an avulsion fracture (where bone has been pulled away from the top of the tibia with the ligament rupture). A MRI scan may be required to confirm a PCL rupture.

MANAGEMENT

If instability is minimal a PCL rupture may be managed conservatively with a rehabilitation program. However, if there is significant instability or damage to multiple structures the player may need to be referred to an orthopaedic consultant to discuss surgical reconstruction. The conservative approach to treatment, which may take 12-20 weeks depending on degree of injury, usually consists of a program containing the following elements:



- ✦ PRICE if necessary for pain and swelling

- ✦ Intensive quads strengthening program

- ✦ gait re-education

- ✦ manual therapy and stretches to regain range of movement

- ✦ a strengthening program including lower limb, core stability and upper body conditioning

- ✦ lower limb flexibility (stretching)

- ✦ balance program

- ✦ low weight bearing cardiovascular program (static cycling) progressing to full weight bearing activities like walking – jogging – running etc.

- ✦ plyometric program

- ✦ Sports specific skills (in the later stage of rehabilitation e.g. sprinting, twisting, turning, cutting, ball skills, etc...)

PCL Reconstruction Surgery

The torn PCL is replaced by a graft, which comes from either the 'Patella Tendon' (where the middle third of the large tendon below the kneecap is taken to make the new PCL) or the 'Achilles' tendon (where the PCL is made out of tissues from the Achilles tendon). The knee may be braced and locked straight after the operation for approximately six weeks. The brace is locked into extension to prevent the hamstrings actively bending the knee and therefore pulling the tibia backwards on the femur and stressing the new PCL graft.

Rehabilitation

It will generally take approximately six months for a player to return to sport following a progressive rehabilitation program.

Initial Rehab. (wks 1-6)

- ✦ PRICE

- ✦ Gait re-education

- ✦ some patients may be allowed to perform PASSIVE (someone bends the knee rather than the patient actively moving the knee) range of movement exercises post-operatively (this will depend on the consultant)

- ✦ Basic lower limb strengthening – mainly quads (active hamstring exercises must be avoided)

Middle Stage Rehab. (wks 6-12)

- ✦ Continuation of the above

- ✦ Progressive lower limb resistance program with focus on functional exercises (squats, lunges, step exercises)

- ✦ Increase walking distance with correct gait pattern

- ✦ Balance exercises

- ✦ Low weight bearing cardiovascular gym machines and lower limb resistance machines

- ✦ Swimming

- ✦ Core stability

- ✦ Upper body conditioning

Late Stage Rehab. (wks 12-24+)

- ✦ Progressive strength



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- Flexibility
 - Balance
 - Core stability and jogging/running program
 - Plyometric training (hopping, jumping etc.)
 - Turning/twisting/cutting program
 - Sports specific skills
 - Gradual return to training

Return to Sport (24+ weeks)

- In order to return to match play the player must be able to sprint, accelerate, decelerate, change direction at pace, jump and land on operated leg, solo, kick (from hands and the ground) and tackle comfortably without adverse reaction at the knee.

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