Posterior cruciate ligament injury

What is a posterior cruciate ligament injury?

The knee contains the posterior cruciate ligament (PCL), which is one of four ligaments (tough bands of tissue) that connect the femur (thigh) bone to the tibia (shin) bone. In combination with the anterior cruciate ligament (ACL), the PCL makes a diagonal "X" through the center of the knee joint and allows the knee to twist/rotate and move side-to-side. The PCL becomes injured or torn when it is stretched beyond its normal range of movement. Research shows that up to 60 percent of PCL injuries may also involve other structures in the knee (meniscus, the pad/disc between the knee bones, cartilage or other ligaments) creating increased instability.



Mechanism of injury:

- PCL injuries are the result of a direct blow to lower leg from the front, pushing the tibia (lower leg/shin bone) backwards when the knee is bent.
- PCL injuries can occur with knee hyperextension (straightening out beyond the normal range).
- This injury is often caused by contact with another player, equipment or falling onto a bent knee.

Who is at risk?

 Children/adolescents who participate in activities that require landing on bent knees (volleyball, dancers, gymnasts, etc.) and/or where there is regular contact between players (football, soccer, wrestling, etc.) are at the greatest risk for PCL injuries.

What are the symptoms?

- May have pain in the knee, usually in the back of the knee, and perhaps into the calf.
- May have swelling in the posterior fossa (back of the knee).
- May report feeling the knee buckle or give out if they try to stand on it or report feeling the knee is unstable.



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What are the treatment options?

Conservative/non-surgical treatment:

- Rest from activities that cause pain or "relative rest."
- Ice the area for swelling/pain for 10 to 20 minutes, once an hour as needed.
- A knee brace may help with stability of the knee during activities.
- A referral to physical therapy could be beneficial to address pain, swelling, range of motion, flexibility, strength, gait, bracing and sport training will usually improve symptoms.
- Muscle stretching to improve flexibility and strengthening to assist knee alignment:
 - Concentrate on hamstring (back of thigh) and gastrocnemius/soleus (calf) stretching.
 - Strengthen the leg by emphasizing the inside quadriceps (thigh) muscle and the vastus medialis (VMO) muscle (inside thigh muscle). It is recommended to avoid deep squats, leg presses and long/short arc exercises.
- The child/adolescent may benefit from a progressive core/balance program to provide sports-specific retraining.

Surgical treatment:

- PCL injuries in athletes and young adults typically require surgical reconstruction.
- There are a number of techniques depending on the patient's age and activities.
- Reconstruction options may be limited in children with open growth plates (the cartilage area at the end of bones that allow for growth).

What is the time frame for returning to activity/sport?

• Typically six to nine months after surgical reconstruction.

What are the long-term side effects?

- May not be able to return to same level of activity, compared to before injury.
- Increased potential for arthritis in adulthood.
- May have instability of knee.



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