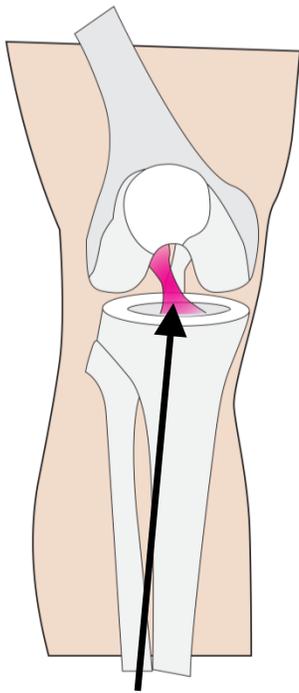


Graft Choices for ACL Surgery in Youth

A torn ACL in the knee can be reconstructed using tissue from other parts of the body or from a donor.



Anterior cruciate ligament (ACL) in knee



What are the options for knee (ACL) reconstruction?

Anterior cruciate ligament (ACL) knee injuries are one of the most common injuries in orthopedics. During surgery, the torn ligament is replaced with a new tissue that will turn into ligament over time. This tissue (called a graft) is removed or “harvested” from another body site and transferred surgically to a new area in the same surgery.

There are two main types of graft tissues that can be used in ACL reconstruction surgery: autograft (from your child) or allograft (from a donor/cadaver). Your surgeon will discuss in detail the pros and cons of each graft during the pre-surgical office visit. At this visit, your surgeon will evaluate your child’s specific injury, view diagnostic studies such as x-rays and MRI, and get a complete patient history. You can then talk together to decide which option best fits for your child. Factors include child’s age, whether the growth plates are open or closed, any health risks your child may have, and what specific activities they will be returning to, i.e. sport position and participation level. Overall, each of the grafts is just as strong as another if your child follows the specific rehabilitation protocol associated with each graft type.

The different options for graft are discussed below.

Autografts (tissue from your child)

Bone-Patellar Tendon-Bone (BPTB) autograft

The BPTB graft has been historically been considered the gold standard autograft for ACL reconstruction for high-level athletes. In this case, a piece of the patella (knee cap) the patellar tendon, and a piece of the tibia (shin bone) are taken from the injured knee.

- The presence of bone on both sides of the graft aids in quicker incorporation (healing) of the graft.
- Use is limited to an older child whose bones are done growing or close to being done growing.

Complications include patella fracture and rupture of the patellar tendon. This can complicate and prolong recovery. It is also associated with increased pain in the front of the knee, particularly with kneeling.

Hamstring tendon autograft

The hamstrings consist of a series of three muscles in the back of the thigh and their tendons. They function to both bend the knee and straighten the hip. The harvest procedure to remove the tendon involves a small incision just below and towards the inside of the injured knee.

To Learn More

- Orthopedics Clinic
206-987-2109
- Ask your child's healthcare provider
- www.seattlechildrens.org

Free Interpreter Services

- In the hospital, ask your child's nurse.
- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.

- Ideally suited for pediatric and young adolescent patients who are still growing. (The most common graft choice in children and young adolescents).
- There is a smaller harvest incision, less surgical complications and less knee pain after surgery compared to BPTB graft.

Drawbacks include a decrease in strength to flex or bend the knee. Also the size of the graft the surgeon is able to get can be unpredictable. If the graft is too small, there is an increased risk of failure.

Quadriceps tendon autograft

The quadriceps is a large muscle group on the front of the thigh. Its main function is to straighten the leg. The quadriceps tendon (QT) inserts on the top of the patella (knee cap). The QT is a versatile graft that can be used in a variety of ACL reconstruction techniques.

- Similar to the hamstring graft, it is ideal for pediatric and young adolescent patients, and has a small harvest incision.
- Similar in structure to BPTB grafts but is thicker and has more collagen density.
- Other advantages include the ability for the surgeon to get a predictable graft size.

Iliotibial band autograft

The iliotibial (IT) band is a long tendon that runs along the outside of the thigh, from the pelvis down to the tibia (shin bone). Typically, this graft is used in young children who have not yet reached puberty.

- Provides knee stability and improves function in young athletes who still have a lot of growing to do (growth plates in bone are still present).
- Techniques using the IT band minimize risk of growth disturbance. Disadvantages include a larger harvest incision.

Allograft (tissue from a donor)

The major advantage of getting a graft from a donor is the lack of a harvest procedure which means decreased pain with surgery. However, many studies have found an increased failure rate of allografts in younger and more active kids. This is due to a somewhat slower incorporation rate (when body accepts it). This failure rate can be improved through prolonged rehabilitation with exercise and physical therapy, but this delays return to sports. Allografts also are associated with a slightly higher risk of infection.