

Osteotomy and Unicompartamental Knee Arthroplasty

Total joint replacement (arthroplasty) is a common and very successful surgery for people with degenerative arthritis (osteoarthritis) of the knee. Two other surgeries can also restore knee function and significantly diminish osteoarthritis pain in carefully selected patients. If osteoarthritis damage to your knee meets certain qualifications, a doctor may recommend either osteotomy or unicompartamental knee arthroplasty (UKA).

Osteoarthritis damage to the knee

A normal knee glides smoothly because articular cartilage covers the ends of the bones that form joints. Osteoarthritis damages the cartilage, progressively wearing it away. The ends of the bones become rough like pieces of sandpaper. Damaged cartilage can cause the joint to "stick" or lock when you use it. Your knee may get painful, stiff and lose range of motion. See your doctor to diagnose osteoarthritis.

Provide your complete medical history including detailed descriptions of osteoarthritis symptoms and when they began. Have you tried nonsurgical treatments such as rest, weight loss and nonsteroidal anti-inflammatory medication for pain? Does it hurt too much to get dressed, bathe or walk up stairs? The doctor will check your knee's range of motion, ligament stability and angular deformity. He or she will observe your knees while you stand and walk, and examine your hips, feet and ankles. Both knees will probably be X-rayed.

Your doctor's recommendation of a surgical procedure for osteoarthritis knee repair depends in part upon how it is damaged. The knee has three joints (compartments), any or all of which can be impacted by osteoarthritis:

- The inside (medial) compartment (medial tibial plateau and medial femoral condyle) is most commonly involved, producing a bowleg (genu varum) deformity.
- The outside (lateral) compartment (lateral tibial plateau and lateral femoral condyle) is sometimes involved in women or obese people, producing a knock-knee (genu valgum) deformity.
- The kneecap (patellofemoral) compartment (patella and femoral trochlear notch) may also develop osteoarthritis.

If you have early stage arthritis confined to one part of the knee, your doctor may recommend osteotomy or UKA.

Osteotomy

Osteotomy may be appropriate if you are younger than age 60, active or overweight. There must also be uneven damage to the joint, correctable deformity and no inflammation. The surgeon reshapes the shinbone (tibia) or thighbone (femur) to improve your knee's alignment. The healthy bone and cartilage is realigned to compensate for the damaged tissue. Knee osteotomy surgically repositions the joint, realigning the mechanical axis of the limb away from the diseased area. This lets your knee glide freely and carry weight evenly on a more normal compartment.

- Proximal tibial valgus osteotomy treats arthritis of the medial compartment, correcting a knee that angles inward (varus deformity).
- Distal femoral varus osteotomy treats arthritis of the lateral compartment, correcting a knee that angles outward (valgus deformity).

The doctor may use one of several techniques to hold the joint in place (i.e., immobilization with a cast, staples or internal plate devices).

Outcome: Osteotomy relieves pain and may delay the progression of osteoarthritis. Cosmetically, the knee may not look symmetrical after osteotomy. There's a chance you will eventually need TKA, which can be a more technically challenging procedure after you've had an osteotomy. Infections and other complications are possible. Depending upon how quickly you heal, you will need to walk with crutches for 1-3 months. After that you begin rehabilitative leg strengthening and walking exercises. You may be able to resume your full activities after 3-6 months.

Unicompartmental knee arthroplasty

Unicompartmental knee arthroplasty (UKA) may be appropriate if you are age 60 or older, not obese and relatively sedentary. Among other specific qualifications, your knee must have:

- An intact anterior cruciate ligament (ACL).
- No significant inflammation.
- No damage to the other compartments, calcification of cartilage or dislocation.

Your doctor will verify that your knee meets the requirements when he or she begins the surgery. (Note: If your knee does not meet the qualifications, you may need TKA.) The surgeon removes diseased bone and puts an implant (prosthesis) in its place. The two small replacement parts are secured to the rest of your knee. You can get UKA surgery on both knees at the same time if you need it.

Outcome: UKA alleviates pain and may delay the need for TKA. You get better joint motion and function because the procedure preserves both cruciate ligaments and other healthy parts of the knee. You also keep the bone stock in the kneecap joint and the other compartment, which can be helpful if you ever need conversion to TKA in the future. Complications are rare, but the new joint could develop an infection or slip out of place after surgery. For these reasons, your doctor may want to see you for follow-up visits after surgery. You will have to do range of motion and other physical therapy exercises to rehabilitate your knee. Recovery from UKA is faster than from TKA or osteotomy.

Although UKA was a controversial procedure when it was first introduced about 30 years ago, success rates have improved thanks to precise patient selection, refined surgical techniques and improved implant design. UKA has a higher initial success rate and fewer complications compared with osteotomy. Other advantages include less blood loss during surgery and cheaper cost.

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