

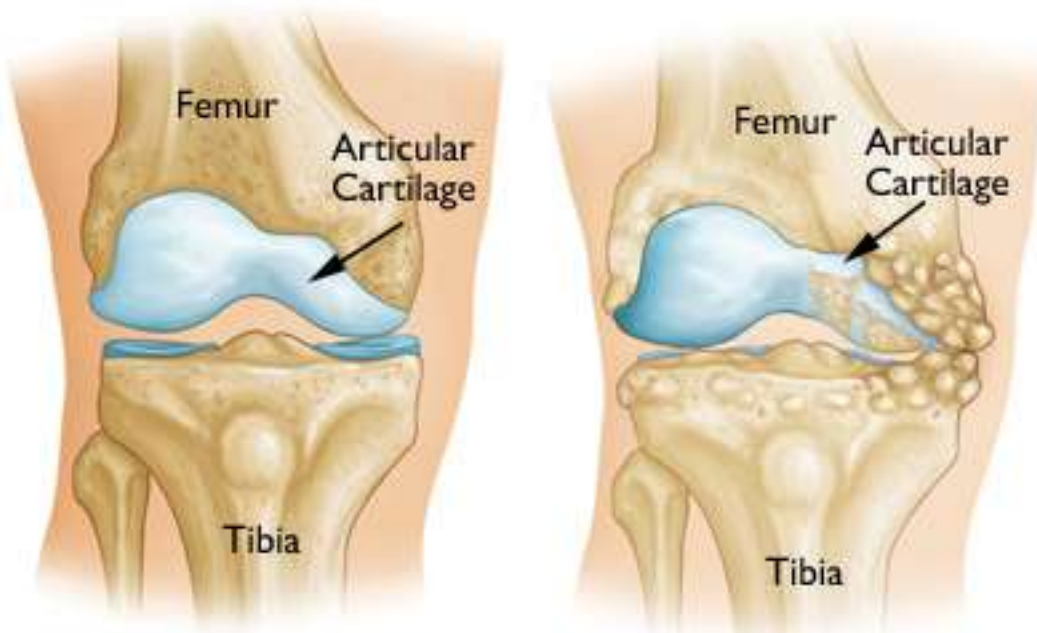
Osteotomy

Osteotomy literally means "cutting of the bone." In a knee osteotomy, either the tibia (shinbone) or femur (thighbone) is cut and then reshaped to relieve pressure on the knee joint.

Knee osteotomy is used when you have early-stage osteoarthritis that has damaged just one side of the knee joint. By shifting your weight off of the damaged side of the joint, an osteotomy can relieve pain and significantly improve function in your arthritic knee.

Description

Osteoarthritis can develop when the bones of your knee and leg do not line up properly. This can put extra stress on either the inner (medial) or outer (lateral) side of your knee. Over time, this extra pressure can wear away the smooth cartilage that protects the bones, causing pain and stiffness in your knee.



(Left) A normal knee joint with healthy cartilage. **(Right)** Osteoarthritis that has damaged just one side of the knee joint.

Advantages and Disadvantages

Knee osteotomy has three goals:

- To transfer weight from the arthritic part of the knee to a healthier area
- To correct poor knee alignment
- To prolong the life span of the knee joint

By preserving your own knee anatomy, a successful osteotomy may delay the need for a joint replacement for several years. Another advantage is that there are no restrictions on physical activities after an osteotomy - you will be able to comfortably participate in your favorite activities, even high impact exercise.

Osteotomy does have disadvantages. For example, pain relief is not as predictable after osteotomy compared with a partial or total knee replacement. Because you cannot put your weight on your leg after osteotomy, it takes longer to recover from an osteotomy procedure than a partial knee replacement.

In some cases, having had an osteotomy can make later knee replacement surgery more challenging.

The recovery is typically more difficult than a partial knee replacement because of pain and not being able to put weight on the leg.

Because results from total knee replacement and partial knee replacement have been so successful, knee osteotomy has become less common. Nevertheless, it remains an option for many patients.

Procedure

Most osteotomies for knee arthritis are done on the tibia (shinbone) to correct a bowlegged alignment that is putting too much stress on the inside of the knee.



(Left) This x-ray of a healthy knee shows the normal joint space between the tibia and femur. **(Right)** In this x-ray, osteoarthritis has damaged the inside portion of the knee. The tibia and femur are rubbing against each other, causing pain (blue arrow).

During this procedure, a wedge of bone is removed from the outside of the tibia, under the healthy side of the knee. When the surgeon closes the wedge, it straightens the leg. This brings the bones on the healthy side of the knee closer together and creates more

space between the bones on the damaged, arthritic side. As a result, the knee can carry weight more evenly, easing pressure on the painful side.

In a tibial osteotomy, a wedge of bone is removed to straighten out the leg.

Osteotomies of the thighbone (femur) are done using the same technique. They are usually done to correct a knock-kneed alignment.

Candidates for Knee Osteotomy

Knee osteotomy is most effective for thin, active patients who are 40 to 60 years old. Good candidates have pain on only one side of the knee, and no pain under the kneecap. Knee pain should be brought on mostly by activity, as well as standing for a long period of time.

Candidates should be able to fully straighten the knee and bend it at least 90 degrees.

Patients with rheumatoid arthritis are not good candidates for osteotomy. Your orthopaedic surgeon will help you determine whether a knee osteotomy is suited for you.

Your Surgery

Before Surgery

You will likely be admitted to the hospital on the day before surgery.

Before your procedure, a doctor from the anesthesia department will evaluate you. He or she will review your medical history and discuss anesthesia choices with you. Anesthesia can be either general (you are put to sleep) or spinal (you are awake but your body is numb from the waist down).

Your surgeon will also see you before surgery and sign your knee to verify the surgical site.

Surgical Procedure

A knee osteotomy operation typically lasts between 1 and 2 hours.

Your surgeon will make an incision at the front of your knee, starting below your kneecap. He or she will plan out the correct size of the wedge using guide wires. With an oscillating saw, your surgeon will cut along the guide wires, and then remove the wedge of bone. He or she will "close" or bring together the bones in order to fill the space created by removing the wedge. Your surgeon will insert a plate and screws to hold the bones in place until the osteotomy heals.

This is the most commonly used osteotomy procedure, and is called a closing wedge osteotomy.

After the wedge of bone is removed, the tibia may be held in place with a plate and screws.

In some cases, rather than "closing" the bones, the wedge of bone is "opened" and a bone graft is added to fill the space and help the osteotomy heal. This procedure is called an opening wedge osteotomy.

After the surgery, you will be taken to the recovery room where you will be closely monitored as you recover from the anesthesia. You will then be taken to your hospital room.

After Surgery

In most cases, patients stay at the hospital for 2 to 4 days after an osteotomy. During this time, you will be monitored and given pain medication.

After the operation, your surgeon may put your knee in a brace or cast for protection while the bone heals.

You will most likely need to use crutches for several weeks.

About 6 weeks after the operation, you will see your surgeon for a follow-up visit. X-rays will be taken so that your surgeon can check how well the osteotomy has healed. After the follow-up, your surgeon will tell you when it is safe to put weight on your leg, and when you can start rehabilitation.

During rehabilitation, a physical therapist will give you exercises to help maintain your range of motion and restore your strength.

You may be able to resume your full activities after 3 to 6 months.

Complications

As with any surgical procedure, there are risks involved with osteotomy. Your surgeon will discuss each of the risks with you and will take specific measures to help avoid potential complications.

Although the risks are low, the most common complications include:

- Infection
- Blood clots
- Stiffness of the knee joint

- Injuries to vessels and nerves
- Failure of the osteotomy to heal

In some cases, a second surgery may be required, particularly if the osteotomy does not heal.

Conclusion

Osteotomy can relieve pain and delay the progression of arthritis in the knee. It can allow a younger patient to lead a more active lifestyle for many years. Even though many patients will ultimately require a total knee replacement, an osteotomy can be an effective way to buy time until a replacement is required.