

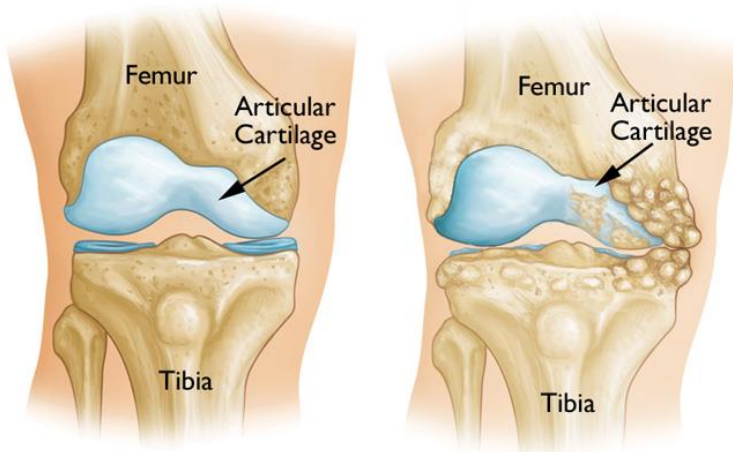
TREATMENT

Osteotomy of the Knee

Please be aware that, due to the COVID-19 pandemic, many hospitals and health systems are asking patients to delay their elective orthopaedic procedures. For more information: [What to Do If Your Orthopaedic Surgery Is Postponed](/en/treatment/what-to-do-if-your-orthopaedic-surgery-is-postponed/) (/en/treatment/what-to-do-if-your-orthopaedic-surgery-is-postponed/).

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 a patient has early-stage osteoarthritis that has damaged just one side of the knee joint. By shifting weight off of the damaged side of the joint, an osteotomy can relieve pain and significantly improve function in an arthritic knee.

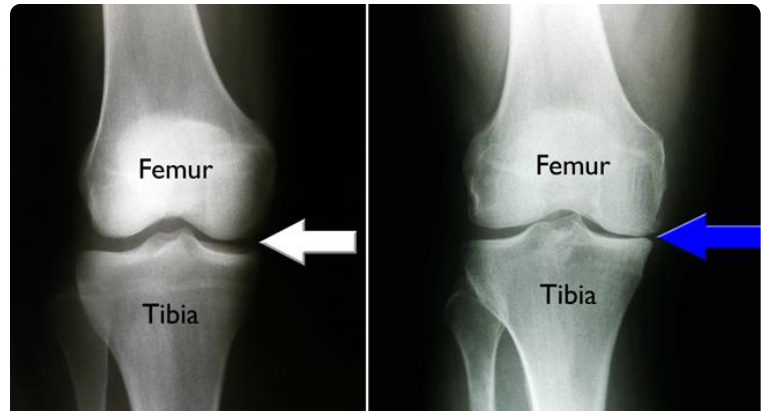


(Left) A normal knee joint with healthy cartilage. (Right) Osteoarthritis that has damaged just one side of the knee joint.

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 articular cartilage that protects the bones, causing pain and stiffness in your 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).



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

One advantage of the procedure is that, 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 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. And recovery from osteotomy is typically longer and more difficult because you may not be able to bear weight on your operated knee right away.

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

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

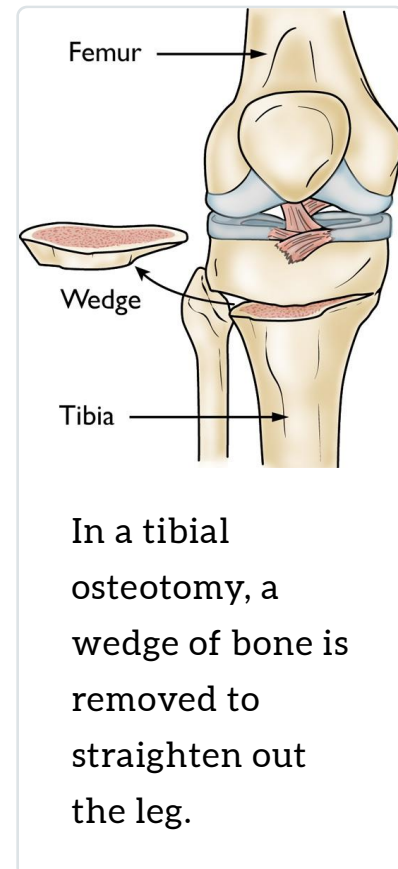
Most osteotomies for knee arthritis are done on the tibia (shinbone) to correct a bowlegged alignment that is putting too much stress on the inside of the knee.

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.

Tibial osteotomy was first performed in Europe in the late 1950s and brought to the United States in the 1960s. This procedure is sometimes called a "high tibial osteotomy."

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 less than 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 by 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 of 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.

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.

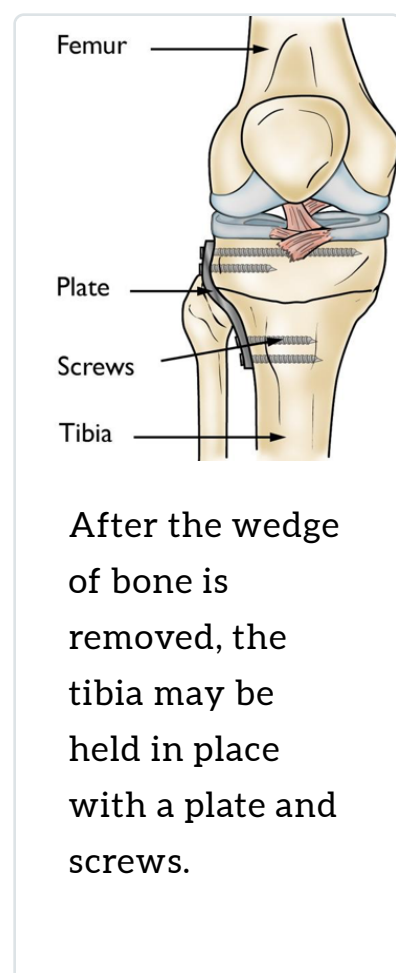
After the surgery, you will be taken to the recovery room where you will be closely monitored as you recover from the anesthesia. You will then be taken to your hospital room.

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.

Recovery

Hospital discharge. In most cases, patients go home 1 to 2 days after an osteotomy.

Pain management. After surgery, you will feel some pain, but your surgeon and nurses will make every effort to help you feel as comfortable as possible.

Many types of pain medication are available to help control pain, including opioids, nonsteroidal anti-inflammatory drugs (NSAIDs) and local anesthetics. Treating pain with medications can help you feel more comfortable, which will help your body heal faster and recover from surgery faster.

Opioids can provide excellent pain relief, however, they are a narcotic and can be addictive. It is important to use opioids only as directed by your doctor. You should stop taking these medications as soon as your pain starts to improve.

Weight bearing. After the operation, you will most likely need to use crutches for several weeks. Your surgeon may also put your knee in a brace or cast for protection while the bone heals. Your surgeon will give you instructions about when weight bearing can begin.

Doctor visit. You will see your surgeon for a follow-up visit after surgery. X-rays will be taken so that he or she 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.

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

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

Outcome

For most patients, osteotomy is successful in relieving pain and delaying 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.

Last Reviewed

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