

Total vs. Partial Knee Replacement

Total knee replacement (TKA) (picture on right) is a common and very successful surgery for people with degenerative arthritis (osteoarthritis) of the knee. In a total knee replacement, all cartilage is removed and inserts are placed on all three bones that make up the knee joint. However, there is another surgery that 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 a unicompartmental or partial knee arthroplasty (picture on left). A partial knee replacement removes only the most damaged area of cartilage.



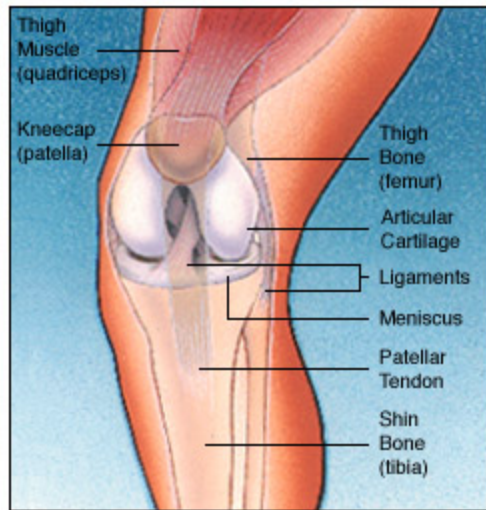
How the Normal Knee Works

The knee is the largest joint in the body. Nearly normal knee function is needed to perform routine everyday activities. The knee is made up of the lower end of the thigh bone (*femur*), which rotates on the upper end of the shin bone (*tibia*), and the knee cap (*patella*), which slides in a groove on the end of the femur. Large ligaments attach to the femur and tibia to provide stability. The long thigh muscles give the knee strength.

The joint surfaces where these three bones touch are covered with articular cartilage, a smooth substance that cushions the bones and enables them to move easily.

All remaining surfaces of the knee are covered by a thin, smooth tissue liner called the synovial membrane. This membrane releases a special fluid that lubricates the knee which reduces friction to nearly zero in a healthy knee.

Normally, all of these components work in harmony, but disease or injury can disrupt this harmony, resulting in pain, muscle weakness, and less function.



Normal Knee Anatomy

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.

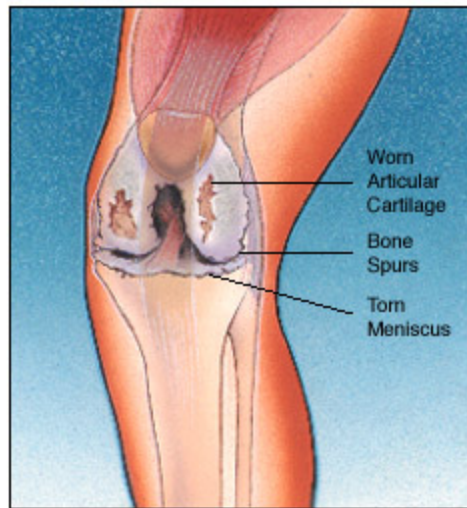
Your doctor's recommendation of a surgical procedure for osteoarthritis knee repair depends in part upon how it is damaged. The knee has three joints (compartments), any or all of which can be impacted by osteoarthritis:

- 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 a unicompartmental knee arthroplasty.

Common Causes of Knee Pain and Loss of Knee Function

The most common cause of chronic knee pain and disability is arthritis. Osteoarthritis, rheumatoid arthritis, and traumatic arthritis are the most common forms.



Knee with Arthritis

Osteoarthritis usually occurs after the age of 50 in an individual with a family history of arthritis. The cartilage that cushions the bones of the knee softens and wears away. The bones then rub against one another causing knee pain and stiffness.

Rheumatoid Arthritis is a disease in which the synovial membrane becomes thickened and inflamed, producing too much synovial fluid which over-fills the joint space. This chronic inflammation can damage the cartilage and eventually cause cartilage loss, pain and stiffness.

Post Traumatic Arthritis can follow a serious knee injury. A knee fracture or severe tears of the knee ligaments may damage the articular cartilage over time, causing knee pain and limiting knee function.

Is Partial Knee Replacement for You?

Partial knee arthroplasty may be for you if you are age appropriate, not obese and not involved in significant impact activities (i.e. long distance running and contact sports). Among other specific qualifications, your knee must have:

- An intact anterior cruciate ligament (ACL).
- No significant inflammation or rheumatoid arthritis
- No significant 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 a total knee arthroscopy)

Benefits of a Partial Knee Replacement

Partial knee replacement 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 a conversion to TKA in the future. A partial knee replacement also involves a smaller incision and shorter hospital stay.

The Orthopedic Evaluation

The orthopedic evaluation consists of several components:

- **A medical history**, in which your orthopaedic surgeon gathers information about your general health and asks you about the extent of your knee pain and your ability to function.
- **A physical examination** to assess your knee motion, stability, and strength and overall leg alignment.
- **X-rays** to determine the extent of damage and deformity in your knee.
- Occasionally **blood tests, an MRI (Magnetic Resonance Imaging) or a bone scan** may be needed to determine the condition of the bone and soft tissues of your knee.

Your orthopedic surgeon will review the results of your evaluation with you and discuss whether partial knee arthroplasty would be the best method to relieve your pain and improve your function. Other treatment options including medications, injections, physical therapy, or other types of surgery also will be discussed and considered.

Your orthopedic surgeon also will explain the potential risks and complications of a partial knee replacement, including those related to the surgery itself and those that can occur over time after your surgery.



Realistic Expectations About Knee Replacement Surgery

An important factor in deciding whether to have partial knee replacement surgery is understanding what the procedure can and can't do.

More than 90 percent of individuals who undergo partial knee replacement experience a dramatic reduction in knee pain and a significant improvement in the ability to perform common activities of daily living, but partial knee replacement won't make you a super-athlete or allow you to do more than you could before you developed arthritis.

Following surgery, you will be advised to avoid some types of activity for the rest of your life, including jogging and high impact sports.

Dangerous Activity After Surgery jogging or running • contact sports jumping sports • high impact aerobics
Activity Exceeding Usual Recommendations After Surgery vigorous walking or hiking • skiing tennis • repetitive lifting exceeding 50 lbs. repetitive aerobic stair climbing
Expected Activity After Surgery recreational walking • swimming golf • driving • light hiking recreational biking • ballroom dancing normal stair climbing

With normal use and activity, every knee replacement develops some wear in its plastic cushion. Excessive activity or weight may accelerate this normal wear and cause the knee replacement to loosen and become painful. With appropriate activity modification, knee replacements can last for many years.

Preparing for Surgery

Medical Evaluation

If you decide to have partial knee arthroplasty surgery, you may be asked to have a complete physical by your family physician several weeks before surgery to assess your health and to rule out any conditions that could interfere with your surgery.

Tests

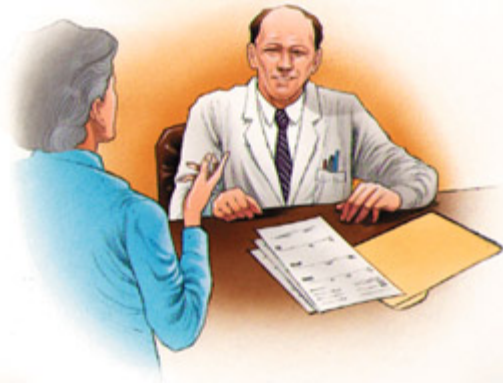
Several tests, such as blood samples, a cardiogram, and a urine sample may be needed to help your orthopaedic surgeon plan your surgery.

Preparing Your Skin and Leg

Your knee and leg should not have any skin infections or irritation. Your lower leg should not have any chronic swelling. Contact your orthopedic surgeon prior to surgery if either is present for a program to best prepare your skin for surgery.

Medications

Tell your orthopedic surgeon about the medications you are taking. He or she will tell you which medications you should stop taking and which you should continue to take before surgery.



Dental Evaluation

Although the incidence of infection after knee replacement is very low, an infection can occur if bacteria enters your bloodstream. Treatment of significant dental diseases (including tooth extractions and periodontal work) should be considered before your partial knee replacement surgery.

Urinary Evaluations

A preoperative urological evaluation should be considered for individuals with a history of recent or frequent urinary infections. For older men with prostate disease, required treatment should be considered prior to knee replacement surgery.

Social Planning

Though you will be able to walk on crutches or a walker soon after surgery, you will need help for several weeks with such tasks as cooking, shopping, bathing, and doing laundry. If you live alone, your surgeon's office and a social worker or a discharge planner at the hospital can help you make advance arrangements to have someone assist you at home. They also can help you arrange for a short stay in an extended care facility during your recovery, if this option works best for you.

Home Planning

Several suggestions can make your home easier to navigate during your recovery. Consider:

- Safety bars or a secure handrail in your shower or bath
- Secure handrails along your stairways
- A stable chair for your early recovery with a firm seat cushion (height of 18-20 inches), a firm back, two arms, and a footstool for intermittent leg elevation
- A toilet seat riser with arms, if you have a low toilet
- A stable shower bench or chair for bathing
- Removing all loose carpets and cords



Your Surgery

You will most likely be admitted to the hospital on the day of your surgery. After admission, you will be evaluated by a member of the anesthesia team. The most common types of anesthesia are general anesthesia, in which you are asleep throughout the procedure, and spinal or epidural anesthesia, in which you are awake but your legs are anesthetized. With your input the anesthesia team will determine which type of anesthesia will be best for you.

The procedure itself takes about one and a half hours. Your orthopedic surgeon will remove the damaged cartilage and bone and then position the new metal and plastic joint surfaces to restore the alignment and function of your knee.

Many different types of designs and materials are currently used in partial knee replacement surgery. The picture below is of the Boimet Oxford® Unicompartmental Knee System.



After surgery, you will be moved to the recovery room, where you will remain for one to two hours while your recovery from anesthesia is monitored. After you awaken, you will be taken to your hospital room.

Your Stay in the Hospital

You will most likely stay in the hospital for one day. After surgery, you will feel some pain, but medication will be given to you to make you feel as comfortable as possible. Walking and knee movement are important to your recovery and will begin immediately after your surgery.

To avoid lung congestion after surgery, you should breathe deeply and cough frequently to clear your lungs.

Your orthopedic surgeon may prescribe one or more measures to prevent blood clots and decrease leg swelling, such as special support hose, inflatable leg coverings (compression boots), and blood thinners.

To restore movement in your knee and leg, your surgeon may use a knee support that slowly moves your knee while you are in bed. The device, called a continuous passive motion (CPM) machine, decreases leg swelling by elevating your leg and improves your venous circulation by moving the muscles of your leg.

Foot and ankle movement is encouraged immediately following surgery to also increase blood flow in your leg muscles to help prevent leg swelling and blood clots. Most patients begin exercising their knee the day after surgery. A physical therapist will teach you specific exercises to strengthen your leg and restore knee movement to allow walking and other normal daily activities soon after your surgery.



Possible Complications After Surgery

The complication rate following partial knee arthroplasty is low. Serious complications, such as a knee joint infection, occur in less than two percent of patients. Major medical complications, such as heart attack or stroke occur even less frequently. Chronic illnesses may increase the potential for complications. Although uncommon, when these complications occur they can prolong or limit your full recovery.

Blood clots in the leg veins are the most common complication of knee replacement surgery. Your orthopedic surgeon will outline a prevention program, which may include periodic elevation of your legs, lower leg exercises to increase circulation, support stockings, and medication to thin your blood.

Discuss your concerns thoroughly with your orthopedic surgeon prior to surgery.

Your Recovery at Home

The success of your surgery also will depend on how well you follow your orthopedic surgeon's instructions at home during the first few weeks after surgery.

Wound Care

You will have stitches or staples running along your wound or a suture beneath your skin on the front of your knee. The stitches or staples will be removed several weeks after surgery. A suture beneath your skin will not require removal.

Avoid soaking the wound in water until the wound has thoroughly sealed and dried. A bandage may be placed over the wound to prevent irritation from clothing or support stockings.

Diet

Some loss of appetite is common for several weeks after surgery. A balanced diet, often with an iron supplement, is important to promote proper tissue healing and restore muscle strength.

Activity

Exercise is a critical component of home care, particularly during the first few weeks after surgery. You should be able to resume most normal activities of daily living within three to six weeks following surgery. Some pain with activity and at night is common for several weeks after surgery. Your activity program should include:

- A graduated walking program to slowly increase your mobility, initially in your home and later outside.
- Resuming other normal household activities, such as sitting and standing and walking up and down stairs.
- Specific exercises several times a day to restore movement and strengthen your knee. You probably will be able to perform the exercises without help, but you may have a physical therapist help you at home or in a therapy center the first few weeks after surgery.

Driving usually begins when your knee bends sufficiently so you can enter and sit comfortably in your car and when your muscle control provides adequate reaction time for braking and acceleration. Most individuals resume driving about four to six weeks after surgery.

Avoiding Problems After Surgery

Blood Clot Prevention

Follow your orthopedic surgeon's instructions carefully to minimize the potential of blood clots which can occur during the first several weeks of your recovery.

Warning signs of possible blood clots in your leg include:

- Increasing pain in your calf
- Tenderness or redness above or below your knee
- Increasing swelling in your calf, ankle, and foot

Warning signs that a blood clot has travelled to your lung include:

- Sudden increased shortness of breath
- Sudden onset of chest pain
- Localized chest pain with coughing

Notify your doctor immediately if you develop any of these signs.

Preventing Infection

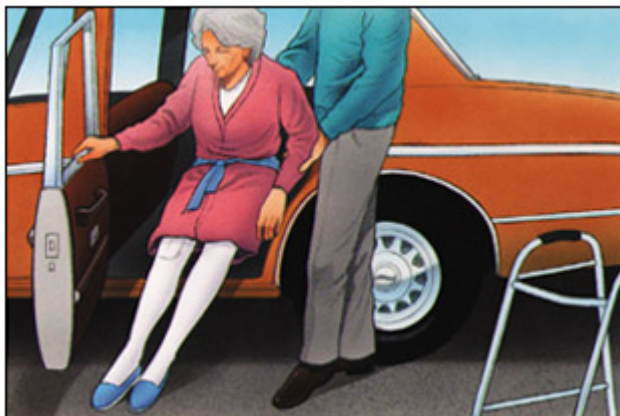
The most common causes of infection following partial knee arthroplasty surgery are from bacteria that enter the bloodstream during dental procedures, urinary tract infections, or skin infections. These bacteria can lodge around your knee replacement and cause an infection.

Following your surgery, you should take antibiotics prior to dental work or any surgical procedure that could allow bacteria to enter your bloodstream.

Warning signs of a possible knee replacement infection are:

- Persistent fever (higher than 100 degrees orally)
- Shaking chills
- Increasing redness, tenderness, or swelling of the knee wound
- Drainage from the knee wound
- Increasing knee pain with both activity and rest

Notify your doctor immediately if you develop any of these signs.



Avoiding Falls

A fall during the first few weeks after surgery can damage your new knee and may result in a need for further surgery. Stairs are a particular hazard until your knee is strong and mobile. You should use a cane, crutches, a walker, hand rails, or someone to help you until you have improved your balance, flexibility, and strength.

Your surgeon and physical therapist will help you decide what assistive aides will be required following surgery and when those aides can safely be discontinued.

How Your New Knee is Different

You may feel some numbness in the skin around your incision. You also may feel some stiffness, particularly with excessive bending activities. Improvement of knee motion is a goal of total knee replacement, but restoration of full motion is uncommon. The motion of your knee replacement after surgery is predicted by the motion of your knee prior to surgery. Most patients can expect to nearly fully straighten the replaced knee and to bend the knee sufficiently to go up and down stairs and get in and out of a car. Kneeling is usually uncomfortable, but it is not harmful. Occasionally, you may feel some soft clicking of the metal and plastic with knee bending or walking. These differences often diminish

with time and most patients find these are minor, compared to the pain and limited function they experienced prior to surgery.

Your new knee may activate metal detectors required for security in airports and some buildings. Tell the security agent about your knee replacement if the alarm is activated.



After surgery, make sure you also do the following:

- Participate in regular light exercise programs to maintain proper strength and mobility of your new knee.
- Take special precautions to avoid falls and injuries. Individuals who have undergone total knee replacement surgery and suffer a fracture may require more surgery.
- Notify your dentist that you had a knee replacement. You should be given antibiotics before all dental surgery for the rest of your life.
- See your orthopaedic surgeon periodically for a routine follow-up examination and X-rays, usually once a year.

This brochure has been prepared by the American Academy of Orthopedic Surgeons and is intended to contain current information on the subject from recognized authorities. However, it does not represent official policy of the Academy and its text should not be construed as excluding other acceptable viewpoints. Persons with questions about a medical condition should consult a physician who is informed about the condition and the various modes of treatment available. 35M0998 Product No. 03057