

TOTAL KNEE REPLACEMENT

Ted W. Parcel, DO
Larry Martin, MD
Scott Sherrill, MD



Carolinus HealthCare System





CMC-Lincoln has earned the Joint Commission's Gold Seal of Approval for Disease-Specific Certification by demonstrating compliance with the Joint Commission's national standards for healthcare quality and safety in hip and knee replacement. The certification recognizes CMC-Lincoln's outstanding performance and commitment to a higher level of care.

Introduction

You have been diagnosed with significant arthritis in the knee which necessitates a total knee replacement. This procedure should reduce or eliminate your pain and restore function. Total knee replacement is usually a successful as well as reliable procedure; pain is often reduced by between 90 and 95 percent for people undergoing the procedure. Assuming they have minimal or no arthritis in other joints, the majority of patients can move more easily and walk without assistance following the procedure. Following rehabilitation, you should be able to resume most physical activities after your knee replacement. Your doctor will discuss limitations specific to your condition, but in general, most competitive sports are not recommended while activities such as golf, swimming, and walking are often permitted. Repetitively pushing, pulling, and lifting objects weighing more than 25 pounds should be avoided.

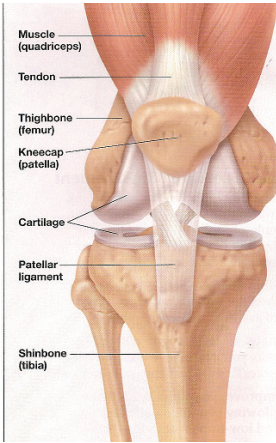
A combined effort is required by both the orthopedic surgeon and the patient in order to obtain an optimal result from your knee replacement procedure. As is the case with all surgical procedures there are certain risks involved. It is important that before deciding to undergo this procedure, the patient have a full understanding of what the operation entails, have reasonable expectations, and a strong commitment to work toward recovery. This booklet will help you understand the operation and recovery.

The objectives of total knee replacement are:

1. To reduce pain
2. To improve range of motion and joint function
3. To provide more stability
4. To improve alignment
5. To improve quality of life

Anatomy

The knee joint is a hinge joint that allows some rotation. The femur (thigh



bone), the tibia (shin bone), and patella (kneecap) are normally covered with a smooth gliding surface known as “articular cartilage.” When the knee becomes damaged as the result of trauma or disease such as “wear-and-tear arthritis” (osteoarthritis), inflammatory arthritis (rheumatoid arthritis), or loss of blood supply (avascular necrosis), the joint cartilage degrades. This leaves bare bony surfaces which can be very painful due to bone spurs around the joint and limited range of motion. Common activities such as walking,

getting out of a chair, or putting on socks and shoes can become painful and difficult.

During surgery, the damaged joint and bone spurs are removed through an incision made on the front of the knee. The lower end of this femur is resurfaced with a metal cap. The upper end of the tibia is resurfaced with a plastic and metal or all-plastic implant. The patella is also resurfaced with an all-plastic implant. The concept of total knee replacement is similar to retreading a car tire. The surrounding muscles and most of the ligaments are preserved to hold the knee together. The new joint will again be smooth and glide easily and most of your pain should be relieved and functional motion restored over a short period of time. The average obtained knee flexion (bend) is 120 degrees or more. It may be less however, if poor knee motion is present preoperatively, excess scarring occurs, or inadequate rehabilitation takes place. During a total knee replacement, all arthritis will be removed from the knee.

Total Knee Replacement Implants

The implants are held in place with bone cement, which allows the implant to perfectly fit the irregularities of the bone. The cement allows the implant to perfectly fit the irregularities of the bone. This method of fixation is the “gold standard” in knee replacements today. Additionally, the implants used have a long and excellent track record for durability and success. Also, the femoral component is made of such a material (oxidized zirconium) that has been developed to improve its resistance to wear when compared to the standard femoral components made of a cobalt-chromium alloy. The tibial component is made of titanium and the plastic (high-density polyethylene) locks into this “tray.” Examples of these implants are available in your physician’s office.



Surgical Techniques

Choosing a surgical technique is an individualized process which will be discussed at length with you by your doctor. Many factors, including age, weight, medical history, knee deformity, and history of prior knee surgeries are considered when deciding upon the appropriate surgical technique. Based on these factors, your doctor may elect use a “standard” technique or potentially a less invasive approach.

The standard surgical approach is by far the most widely performed surgical technique in knee replacement. An incision approximately six to eight inches long is made in the front of the knee and the quadriceps muscle group is incised (later repaired) allowing maximum exposure to the entire knee. This approach is often necessary to perform the total knee replacement.

The less invasive or subvastus approach is used whenever possible to perform the surgery without cutting into the quadriceps muscle, but is technically more difficult to perform. A slightly smaller incision is used than the standard approach in the front of the knee, and the quadriceps muscle is moved to the side rather than incised. Since the quadriceps muscle group is kept intact, a quicker recovery in therapy is possible.

Minimally Invasive Surgery

Many patients ask about minimally invasive surgery or “MIS.” While this approach to knee replacement was more prevalent in the early 2000s, it was difficult to perform due to limited visibility and access to the knee. Research has shown a higher rate of complications and less-than-optimal results with this technique. As a result, “true” MIS techniques have been widely abandoned for joint replacement procedures. While some surgeons currently promote an MIS approach, they’re actually often referring to a small skin incision into the muscles and other structures underneath the skin, which is of no real benefit to the patient. Rehabilitation is much more dependent upon the recovery muscles underneath the skin as opposed to the length of skin incision.

Potential Complications

All surgeries have potential risks. Complications from total knee replacement sometimes occur despite every necessary precaution taken by your surgical team.

Infection

Infection is one of the most serious complications that can arise with knee replacement surgery, although the risk of developing an infection is less than one percent. You will be administered antibiotics prior to and immediately following your procedure to help reduce the likelihood of infection. It is important to let your doctor know about any antibiotic or drug allergies that you may have.

Intra-operative Complications

Rare intra-operative complications include bone fracture with possible non-healing of bone, and injury to nerves, or ligaments around the knee. Other surgical risks include, but are not limited to hematoma, loss of range of motion, and instability.

Other Potential Complications

Possible medical complications include blood clots (deep vein thrombosis), blood clots that migrate to the lungs (pulmonary embolism), fat globules migrating to the lungs or brain (fat embolism), allergic conditions, inability to pass urine (urinary retention), bowel distension (ileus), constipation, acute pain, heart attack or other cardiac problems, lung problems, and very rarely death. The average total risk for an acute complication is quite low (less than five percent), meaning that the typical patient has a 95 percent chance of a complication-free procedure. A complete medical checkup should be scheduled prior to surgery to assess your medical risks.

Potential Long-term Problems

Long-term problems can also develop after a total knee replacement. These include infection traveling to the knee from other sources in the body, reflex sympathetic dystrophy, chronic pain, chronic leg swelling or edema, wear of the plastic component, bone reaction to the wear debris, or loosening of the implant. Most total knee implants will wear and eventually loosen after time or excessive stress. Therefore, it is important for the patient to comply with the postoperative activity modifications.

Of course, one alternative to total knee replacement is not to have surgery at all. A course of oral anti-inflammatory drugs, injections, rest, weight reduction, special exercises, and activity restriction to protect the joint may decrease pain and stiffness in some individuals with knee arthritis. However, if none of measures seem to help and your lifestyle is significantly compromised by pain and stiffness, surgery is most likely the best option.

Preoperative Preparations and Procedures

You may be able to minimize the length and difficulty of your recovery by doing the following prior to surgery.

- If you are overweight, you should make every effort to lose weight prior to surgery. If you are significantly overweight, it may be advisable to postpone the procedure until you are able to reduce your weight by a significant amount. Being overweight markedly increases the possibility of a wound complication or infection. Infections in joint replacements cannot be successfully treated without several additional surgeries. Losing weight can also minimize the amount of stress placed on your replacement joint. For every pound you lose, your knee will absorb between two and two and a half fewer pounds of pressure as you walk. Avoid 'crash diets' prior to surgery since you may become malnourished, increasing the risks associated with surgery. Talk with your doctor about your diet options.
- Smoking increases the potential for respiratory problems after the surgery and slows the body's healing process. Smoking less, or better yet quitting altogether, can greatly improve the recovery process.

Prior to surgery, you will need to stop taking blood thinning medications such as aspirin, Plavix, Aggrenox, Ticlid, or other anti-inflammatory medications. The timing of this will be discussed with your surgeon and primary doctor/cardiologist. If you currently take Coumadin, your primary doctor or cardiologist may elect for you to take an injectable blood thinner prior to surgery. Many herbal supplements, including vitamin E, ginkgo biloba and garlic also increase the risk of bleeding. These too should be stopped two weeks before surgery. A multivitamin is safe to continue up to surgery.

If you note any signs of a respiratory infection such as a cough, runny nose, urinary tract infection, skin infection, or elevated temperature before surgery, please notify your doctor. It may be necessary to postpone your surgery to minimize the risk of potential infection.

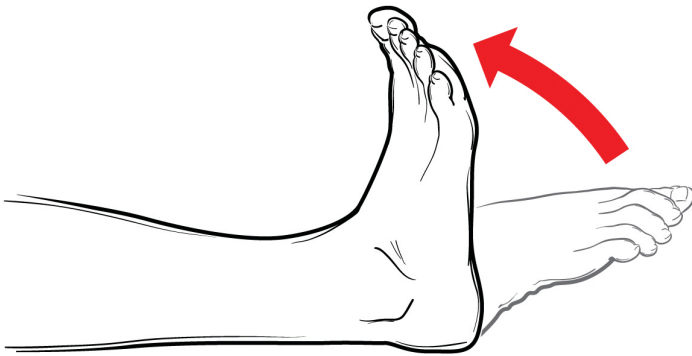
Medical Clearance

To assure that you are healthy enough to undergo your total knee replacement surgery, it is necessary to schedule a medical evaluation and medical clearance by your primary care physician or cardiologist. Medical clearance appointments should ideally be scheduled about a month before surgery. This provides time for additional testing if it is required. Your doctor may choose to do some of the blood tests, X-rays, and/or electrocardiogram in order to clear you for surgery. Otherwise, these may need to be done in the hospital.

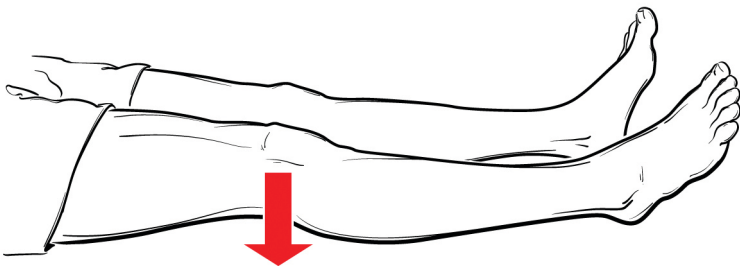
Preoperative Exercises

Prior to your knee surgery, it is very important that you maintain the range of motion in your knee and strengthen the muscles as much as possible. The following exercises should also be performed after surgery. The stronger your muscles are before surgery and the more familiar you are with your exercise program, the easier and shorter your rehabilitation will be. These exercises should be done within the limits of your motion and pain tolerance. Also, these should be done twice a day, beginning with 10 repetitions of each exercise and progressing to 20 repetitions.

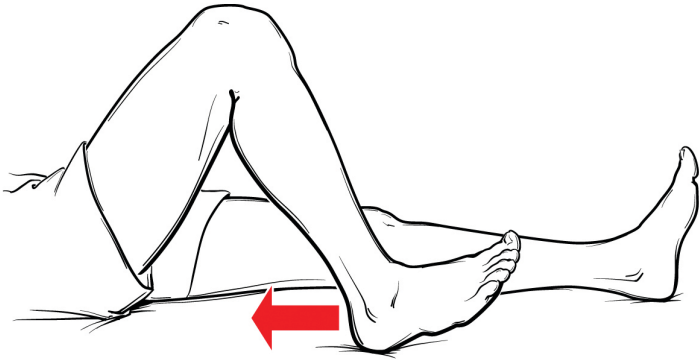
Ankle Pumps: Move both ankles up and down like you are pushing the gas pedal of a car.



Quadriceps Sets: Tighten the muscle in the front of the thigh (quadriceps) by pushing the back of the knee down into the bed while keeping the knee as straight as possible. Hold for a count of 10.



Hamstring Sets: While lying in bed, bend your knee about 20 degrees towards the ceiling while digging your heel in the bed. Hold for 10 seconds.



Straight Leg Raise: While lying on your back with your foot pointed straight up and your knee straight, lift your foot about 12 inches off the bed. Hold for a count of 10. Add weight as tolerated.



Preparing Your Home

Prior to your surgery, you may want to make some preparations in your home to ease the recovery process. Start by reducing household hazards. Remove any throw rugs and objects from the floor and attempt to hide any electrical cords to prevent falls. You may also want to stock up on food items at home to limit the need to go to the store. Arrange for friends and family members to assist you in preparing meals, doing laundry and completing other household chores.

In addition, place objects that you will routinely use within easy reach. Do not place objects on the floor or in high cabinets. Also, arrange so that you can minimize your need to climb the stairs until you are further along in your rehabilitation. You may also want to plan on setting up a bedroom for yourself on the main floor.

Patients are not permitted to drive until cleared by their physician, so please also plan to have a friend or family member drive you to your doctor's appointments and other locations.

Packing for your Hospital Stay

When packing for your hospital stay, you should include a pair of shoes with non-skid soles such as sneakers or tennis shoes, toiletries that you would prefer to use, and a leisure hobby such as a book or crossword puzzles. Some people also like to bring pajamas or a robe.

Do not bring your medications from home with you. Medications will be given to you from the hospital pharmacy. Also, do not bring any valuables, including jewelry. Lastly, be sure to bring your glasses or contact lenses.

The Surgical Procedure and Hospital Stay

You will be admitted to the hospital the morning of the surgery. The hospital will advise you on when to arrive. Time of surgery will vary depending on the procedure and the amount of damage in the knee. Due to anesthesia, total procedure time will be roughly three hours, depending on complications.

Following the operation, you will be in the recovery room for an hour to several hours, depending on your recovery. You will have an intravenous (IV) line in your arm for fluids. An intravenous line will be inserted into your arm for fluids while a small tube will be inserted into the knee for drainage. Patients often feel tired or groggy for several hours after awakening from general anesthesia. If a spinal anesthetic was used, the sensation in your legs will recover over several hours. In some patients, other types of nerve blocks may be left in the leg to help control pain.

You will be administered a combination of pain management medications designed to minimize your discomfort. There will be scheduled IV injections and oral medications, while additional medication will be available on an "as-needed" basis from your nurse. Prior to discharge, you will be administered only oral medications, and a prescription will be given to you prior to going home for these same medications.

The IV line will be kept in to provide antibiotics, fluids, and medications. A urinary catheter will be inserted while you are in the operating room and removed the first morning after surgery. The dressing on your knee as well as tube for drainage is usually removed in the morning of the second day following surgery.

You will have a blood sample drawn daily to monitor your blood count and other values, while a blood thinner pill or injection will be used to help prevent blood clots. Support stockings will be used on both legs. Also, mechanical calf pumps may be used to stimulate blood flow. All of these measures in addition to aggressive physical therapy are designed to reduce the rate of blood clots.

An internal medicine physician or family physician will accompany you during your stay to assist with your non-surgical medical care.

Physical Therapy

Your physical therapy program begins almost immediately after surgery. You will typically start therapy by performing the same exercises assigned to you prior to your surgery. On the day of surgery or the first day after surgery, you will start to work with a physical therapist. This will also be your first attempt at bearing weight on your new knee. While your physician or therapist will most likely allow you to bear weight on your new knee immediately following surgery, there are exceptions. Your therapist will instruct you on the proper way to walk, how to get in and out of bed, getting in and out of a chair, how to climb steps with minimal pain, and other aspects of daily living. The therapist will also evaluate your range of motion and assist you in certain exercises.

Your goals with physical therapy prior to hospital discharge:

1. Independent walking on a flat surface with a walker
2. Independent and safe bed, chair and automobile transfers
3. Stair climbing (if necessary)
4. Near 90 degrees of knee flexion
5. Near full knee extension
6. Proper performance of exercises

Hospital Discharge and Follow-up

Most patients will be deemed ready for discharge after a stay of two to three days. If you live alone or feel that you will be unable to care for yourself at home, arrangements will be made for you to be transferred to a rehabilitation or nursing facility. These arrangements will be made by members of social services at the hospital including discharge planners, case managers, and social workers. If you are discharged home, arrangements will be made for either a physical therapist to come to your home or for outpatient physical therapy to continue your rehabilitation (see guide provided in this booklet.)

You will be discharged from the hospital when you:

1. Have mastered the above therapy goals
2. Have no fever
3. Report minimal pain
4. Are medically stable
5. Have a benign-appearing incision

As part of your discharge, you will be given instructions and prescriptions for your pain medication and administered a blood thinner to prevent blood clots.

Typically, your incision will be closed with a suture underneath the skin, similar to a plastic surgery closure. However, on occasion it may be necessary to use skin staples or other measures to close the wound. Until your sutures are removed, you should avoid getting your incision wet. While inconvenient, keeping the wound dry allows it to heal as quickly as possible.

Approximately two to three weeks after surgery, you will have a follow-up appointment with your doctor. At this time, you will have your sutures removed, X-rays taken, and your therapy progress evaluated. Once your sutures are removed, you will be able to take a shower. Patients should not submerge the wound in a bath or pool until at least a month following the surgery. The elastic compression stockings will need to be worn for a month from the day of surgery on both legs.

One of the most important things to understand is the importance of straightening your knee. A straight knee is vital for proper walking and standing in place. This needs to be kept in mind as far as your rehabilitation goes, especially in the first couple of weeks.

Your range of motion will be evaluated again at a follow-up visit six weeks after surgery. If the doctor deems your range of motion to be less than satisfactory, he may advise a manipulation under anesthesia, where your physician will help you regain range of motion by forcibly bending your knee while you are sedated. This involves your doctor forcibly bending your knee while you are sedated in an attempt to regain your motion. While total knee replacement is usually an effective procedure, there is no guarantee that you will regain full range of motion. Physical therapy is still a necessity regardless of the outcome. Overall, poor range of motion will prolong your rehabilitation course.

Additional information regarding your post-operative course:

- It is recommended that you avoid driving until you are cleared by your doctor
- Please report any changes in the appearance of your incision including drainage, redness, or increased swelling.
- If you experience an increase in pain, an inability to bear weight on the knee, the inability to move the knee or a fever of more than 101 degrees, please contact your doctor.
- Wear the elastic compression stockings for a month from surgery. Stockings may be removed at night.
- Please refrain from getting your incision wet in the shower until directed to do so by your doctor, which is typically after your sutures are removed.
- Refills on pain medication prescriptions will not be handled after office hours, at night, or on the weekends. Please plan ahead and be sure to have your prescription refilled prior to running out of medication.

Living With Your New Knee

The metal in your replacement may trigger metal detectors at security checkpoints. You will receive an identification card to carry with you to help communicate with the security personnel that you have had a joint replacement. It should be noted that showing this card to authorities will not necessarily preclude you from further precautionary security measures, so it is recommended that you allow for extra time when you travel.

Total knee implants can become infected by bacteria in the bloodstream at any time, even many years after your knee surgery. This can occur if you develop an infection elsewhere in the body. Any dental work, including routine cleanings, can put you at risk. We recommend that patients take a dose of antibiotics prior to any dental procedures to minimize this risk. Some dentists will gladly give you a prescription, but if not, we will be more than willing to give you one. While some dental professionals feel it is unnecessary to administer these antibiotics, it is the position of the American Association of Orthopaedic Surgeons that these antibiotics are taken prior to any invasive procedures to minimize the risk of infection. This is not limited to dental work, and also applies to urinary procedures (including catheterizations) and surgical procedures. If there is any question, please contact your doctor.

The antibiotics typically used are:

- Amoxicillin 500mg, four tablets one hour prior to the procedure
- Clindamycin 300mg, two tablets one hour prior to the procedure (for those with penicillin allergies)

For urologic procedures:

- Ciprofloxacin 500mg one tablet one hour prior to procedure

Routine follow-up visits for joint replacement patients will be:

- Two weeks after surgery
- Six weeks after surgery
- Three months after surgery
- One year after surgery
- Then every one to three years for routine follow-up visits

The purpose of these yearly visits is to identify potential problems that may be asymptomatic, including early wear or loosening of the implant. These problems are easier to treat when identified early. Your doctor will discuss this with you should any problems be identified.

If you have any questions, please feel free to contact our office or you may address them with your doctor at your next appointment.

CMC Orthopaedic Surgery-Lincoln

441 McAlister Road, Suite 1100A

Lincolnton, NC 28092

Phone: 980-212-6250 | Fax: 980-212-6251

Hours: Monday – Friday, 8 a.m. to 5 p.m.

CMC Orthopaedic Surgery-Denver

1585 Forney Creek Parkway, Suite 2350

Denver, NC 28037

Phone: 704-801-5030 | Fax: 704-801-5031

Hours: Wednesday from 8 a.m. to noon; Thursday from 1 to 5 p.m.

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