



# TOTAL KNEE REPLACEMENT

## A PATIENT'S GUIDE



## THE ORTHOPAEDIC SPECIALITY CLINIC

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## Arthritis of the knee

Arthritis of the knee is a condition in which the smooth gliding surfaces of your knee joint (articular cartilage) have become damaged. Arthritis usually results in pain, stiffness, and reduced flexibility. The most common type of arthritis, **Osteoarthritis**, typically develops in older patients due to a lifetime of wear and tear. It can also occur in someone whose knee did not develop normally.

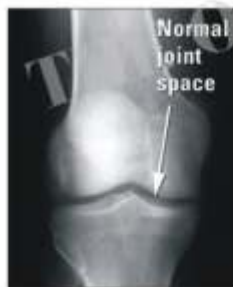
**Other forms of arthritis are**

**1) Traumatic** arthritis which develops as a result of an injury, such as a fracture in the knee joint that does not heal properly.

**2) Rheumatoid** or inflammatory arthritis, which results from an inflammatory condition or an autoimmune disease.

In Knee Replacement surgery, the surfaces of the knee joint that are damaged are replaced with biocompatible materials that provide a smooth and painless range of motion. I will make every effort to restore your knee to a condition that resembles its healthy preoperative status and to correct any deformity that may have existed. You should discuss with me what is the realistic outcome that you should expect.

### Normal knee



In an X-ray of a normal knee, the particular cartilage (the area labeled "normal joint space") is clearly visible.

### Arthritic knee



On this X-ray, the joint space has been greatly reduced. Wherever there is complete loss of cartilage, the condition is known as "bone-on-bone."

**Knee Replacement does not mean that the whole joint is replaced with a new joint. The surfaces are resurfaced maintaining the original or native muscles and ligaments.**

### There are two types of knee replacements :

Partial and Total Knee Replacement. In a Partial Knee Replacement, the worn out inner (medial) or outer (lateral) compartment is re-surfaced. In a Total Knee Replacement, both the inner (medial) and outer (lateral) compartments are re-surfaced.

### Partial Knee Replacement



The Implants are used to resurface only the medial or inner side of the joint (tibia and femur) this technique is used in certain specific cases of arthritis that are limited to only the inner half of the knee.

### Total Knee Replacement



Implants are anchored to the femur (thigh bone) and to the tibia to form a new joint that is held in place by muscles and soft tissues. Implants may be secured to your bone by cement or they may have textured surfaces to encourage bone ingrowth.



Depending on the nature of your disease pattern, I will be able to make a decision whether a Partial or a Total Knee Replacement is suited for you. In either case, this operation should last for about 15-20 years (in ideal situations). **The materials used for Knee Replacements** are 1) Cobalt Chromium alloy 2) Oxinium or Coated Titanium alloy 3) Gold coated alloy (for patients who have nickel allergy).



Cobalt Chromium alloy



Oxinium or Coated Titanium alloy



Gold coated alloy

## Section - I 1] Before your surgery

### ■ Preparing for your surgery

Preparation for your total knee replacement surgery begins several weeks before the date of the surgery itself. To begin with, you will be asked to keep the following appointments :-

- A) Pre-admission testing:** This is a physical examination and a series of tests (X-rays, blood work, etc.) that will be performed in preparation for your surgery.
- B) Medical clearance for surgery:** Approval for you to undergo surgery is required from your primary doctor – or we can arrange for you to be examined by one of our doctors. This examination, in combination with pre-admission testing, is necessary to review your overall health and identify any medical conditions that could interfere with your surgery or recovery.
- C) Watch your weight:** If you are overweight, losing weight will help reduce stress on your new joint. (If your weight is normal, keep it that way.)
- D) Have a dental examination:** Although infections in joint replacements are not common, one can occur if bacteria enter the bloodstream somewhere else in your body. Therefore, you should arrange to have dental procedures such as extractions and periodontal work completed before your surgery.
- E) Medical Insurance:** Check with us if you have a medical insurance. All hospitals do not carry all insurances. Also discuss with your insurance agent for inclusions and exclusions prior to admission.

#### Stop taking certain medications:

We can tell you which medications to stop taking before your surgery. Be certain to tell your physician all the medications specially blood thinner medication such as aspirin, clopidogrel, etc. that you are taking, these also including over-the-counter medications, because some of these may increase your bleeding during surgery.

#### Consider pre-donating blood for transfusion:

If we determine that your operation may require a blood transfusion.



**Stop smoking :** This is a good idea at any time, but particularly before major surgery in order to help reduce the risk of postoperative lung problems and improve healing.



## 2] Readyng your home

There are several things that you (or a friend or family member) can do before entering the hospital to make your home safer and more comfortable upon your return :

- In the kitchen and elsewhere, place items that you use regularly at arm level so you do not have to reach up or bend down.
- To avoid using stairs or consider temporarily changing rooms – for example, by making the living room your bedroom.
- Rearrange furniture to give yourself enough room to maneuver with a walker.
- Remove loose carpets and rearrange electrical cords in the areas where you will be walking.
- A footstool will be useful for keeping your operated leg straight out in front of you when you sit.
- Plan to wear a big-pocket shirt or soft shoulder bag for carrying things around.
- Set up a “recovery center” in your home, with the phone, television remote control, radio, facial tissues, waste basket, pitcher and glass, reading materials, and medications within reach.



### 1. The chair which you use for routine sitting must have:

- Adequate height - about 18 to 21 inches.
- Adequate width for ease of getting in and out.
- Adequate depth to support the thighs.
- Firm cushion to avoid sinking.
- Back support to avoid adjustments which are counter productive.
- Flat feet for better stability to prevent slipping.
- Arm rest that strong and sturdy and help push off.



### 2. General home environment

- Hall and passages must be free of tripping hazards like doormats, rugs, cords, etc.
- Avoid slippery surfaces like wet floors and glazed tiles.
- Avoid dark areas which may have objects like toys on the floor, and can cause trips and falls.
- Frequently used household items must be kept at raised levels in the rooms, kitchen and bathroom.

### 3. Adjustments in the bathroom

- Grab bars and stand assists to be attached near commode and shower.
- Bathing, preferably by shower, for the first 6-8 weeks.
- Shower knobs should not be too low.
- Toilet seat must be raised to at least 21 inches.



**Evaluate your needs for at-home care after discharge from the hospital : Most knee replacement patients will need help at home for the first few weeks, including assistance with preparing meals and transportation.**



## 1] What TO bring and what NOT to bring

### BRING to the hospital ☒

- Your cane or crutches, if needed.
- Eyeglasses – not contact lenses.
- Dentures / hearing aid which you should keep on your bedside table or in a drawer - not on the bed or a food tray.
- A list of your medications, including the ones you have recently stopped taking at your surgeon's request.
- Important telephone numbers.
- Small amount of cash – for newspapers, etc.
- A book, magazine, or hobby item for relaxation.

### DO NOT BRING to the hospital ☒

- ⊗ Valuables – jewellery, large amounts of cash.
- ⊗ All hospital staff members respect your property rights, but we cannot guarantee security for your personal property.

## Surgery preparation checklist

### Once you arrive at the hospital:

- You will be provided with a gown. Your own clothing and personal belongings will be safely stored.
- You will be asked to fill out an operative consent form, to review it, and to sign it along with a third party witness. We will also place his/her initials over the operative site as an extra precaution.
- Our anesthesiologist will go over with you the type of anesthesia to be used for your surgery. After that explanation, you will be asked to complete, review and sign a consent form specifically for the anesthesia. When the operating room is ready, you will be escorted there by a nurse.
- During your surgery, your family and friends may wait in any of several comfortable hospital locations. With your permission, we will visit them or call and speak with them after your surgery is completed.

### The night before your surgery :

- Shower (may be done on the day of surgery if time permits).
- Do not eat or drink anything after midnight or follow the instructions given by us.
- Get a good night's rest - Tell us if you require a mild sedative at night.

### On the day of your surgery :

- Take routine medications with only a sip of water as instructed by anesthesiologist.
- You may brush your teeth and rinse your mouth-without swallowing any water.
- Shower and shampoo either the night before or the morning of your surgery.
- Wear comfortable, loose-fitting clothing and flat, non-slip, walking shoes.
- Leave valuable possessions at home or give them to a family member for safe keeping.

**Just after your surgery:**

When your surgery is complete you will be taken to a recovery room, where you will spend two to three hours before being moved to your regular hospital room. Family and friends will be reunited with you once you are settled in.

Depending on your anesthesia, your medical history and other factors, you may first be taken to a monitored bed environment (either the Intensive Care Unit or the Post-Op Unit). Me or the anesthesiologist will discuss this with you before your surgery.

Our team will monitor your progress throughout your hospital stay to ensure your safe and efficient recovery. Among other things, we will periodically check your vital signs – temperature, blood pressure, etc. – and change the dressings that cover your incision. We may also decide that you can benefit from a blood transfusion, a blood-thinning medication to prevent clot formation, an incentive spirometer that helps keep your lungs clear, and/or a continuous passive motion machine that automatically exercises your knee : All these things will be attended to by us.

**Diet and Hydration after Surgery**

- Follow a simple and easy to digest diet post surgery.
- Avoid starchy and high fat content foodstuffs for this very reason. Foodstuffs that have a high roughage value are particularly helpful to prevent constipation.
- Diabetics should avoid diets that contain sugar and

patients with hypertension should avoid salt in their diet.

- Maintaining proper hydration is equally important post surgery. Unless contraindicated, water (or fluid) intake of about 3 liters per day is recommended. It may be advisable to add one sachet of Electral® to 1 liter of drinking water for consumption over 24 hours.

**Bathing after Knee Surgery :**

The surgical incision following your surgery will typically be closed using absorbable stitches. This does not require subsequent removal. Sometimes, skin staples or stitches maybe used which need removal later. In all cases however, an absorbent water repellent dressing is applied. You may take bath at home after discharge but the dressing must not be made wet. Bath must be taken sitting on a high plastic chair or stool and preferably under shower. Care must be taken to prevent a slip and fall in the bathroom. Here are some ways in which you can protect the dressing from getting wet.



A typical knee dressing following replacement surgery or ligament reconstruction



Commercially available plastic covers are ideal for occluding the dressing. These are easy to wear and remove with minimal assistance and can be used multiple times.





A cling wrap which is used for food packaging is easily available in departmental stores. This is also easy to apply and affords adequate water proofing. The wrapping must extend at least 3 inches above and below the dressing limit.

A large garbage collecting bag can also be used. It is equally easy to put on. However, care must be taken to seal the top end completely to prevent water from trickling inside.

## 2] Exercise and physical therapy

The day after your operation, we will start you on a course of treatment that will prepare you for life with your new knee.

On the morning following your surgery, a physical therapist will assist you to a standing position, and using a walker, you will begin to walk on your new knee. In most cases you will be allowed to put all your weight on your new knee; this is called weight bearing as tolerated. Sometimes, because of the nature of your surgery, we may decide that at first you should place only part of your weight on your operated leg; this is called partial weight bearing. As time passes, you will be able to increase the amount of weight that you place on the operated side to weight bearing as tolerated. We will leave specific instructions with your physical therapist.

We will ask you to use a **cryo-cuff** on your knee about 4 times a day for 15 minutes duration. This device provides ice compression under pressure. It helps decrease inflammation and thus decrease pain and swelling.

**Cryo-cuff**



By about the third day after your surgery, you will be walking with greater confidence, and be ready for discharge. Your physiotherapist will teach you special techniques for dressing, bathing and climbing stairs. Most patients are surprised at how independent they become, and how quickly.

For the first four to six weeks following surgery, most of our patients require and receive some form of therapy: either home therapy or outpatient therapy.

Your active participation in physical therapy is critical to a successful surgical outcome following total knee replacement. The knee joint requires movement after surgery to prevent the formation of scar tissue that would make the knee stiff. Your physical therapist will instruct you on exercises that will help your knee regain its flexibility and strength. It may be recommended that you exercise 20 to 30 minutes three times a day : morning, afternoon and night.

If the knee becomes stiff during the first month or so after surgery, we may recommend a knee manipulation. (A small percentage (2%) of knee replacement patients need this.) You would be brought back to the operating room where under anesthesia your knee is bent and straightened in order to break up the scar tissue. Your active participation is needed to avoid this, so if you are bothered by discomfort during exercising, ask us or a pain specialist for additional pain-management strategies.

### 3] Early post-operative exercises

These exercises are important for increasing circulation to your legs and feet to prevent blood clots. They also are important to strengthen muscles, improve your knee movement and prevent the formation of scar tissue that would make the knee stiff. Do not give up if some exercises feel uncomfortable at first. They will speed your recovery

and reduce your postoperative pain. All exercises should be done SLOWLY.

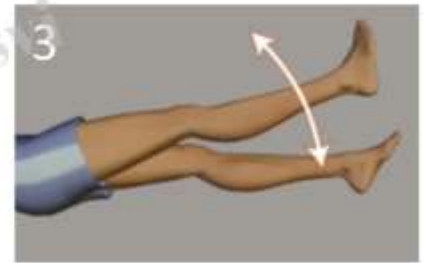
Not every exercise is appropriate for every patient. Your therapist will check off the exercises that are right for you. Unless otherwise indicated, do these exercises every day in three sessions : morning, afternoon and night.



**Ankle pumps :** Slowly move your foot up and down. Do this exercise several times as often as every five or 10 minutes. This exercise can be done while you are either lying down or sitting in a chair. You can begin this exercise immediately after surgery in the recovery room. Keep doing it periodically until you are fully recovered.



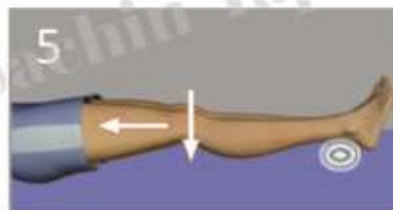
**Ankle rotations :** Move your ankle inward toward your other foot and then outward away from your other foot. Repeat five times in each direction. This exercise can be done while you are either lying down or sitting in a chair.



**Straight leg raises:** Tighten your thigh muscle with your knee fully straightened on the bed. As your thigh muscle tightens, lift your leg several inches off the bed. Hold for five to 10 seconds, then slowly lower your leg. Repeat this exercise 10 times for each leg (not just your operated leg).



**Quad set:** Tighten your thigh (quadriceps) muscle. Try to straighten your knee while pushing the back of your knee to the bed. Hold for five to 10 seconds. Repeat this exercise 10 times for each leg (not just your operated leg).

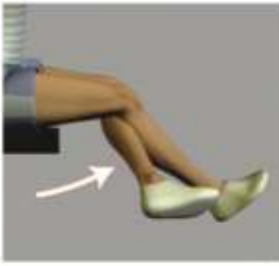


Tighten your thigh. Try to fully straighten your knee and to touch the back of your knee to the bed. Hold fully straightened for five to 10 seconds. Repeat until your thigh feels fatigued.

**Repeat the exercise with a 6" towel roll under your ankle.**

**Knee-straightening exercises :** Place a small, rolled-up towel under your leg just above your heel so that your heel is not touching the bed.





**Sitting supported knee bends:** Sit on a bed or chair with your thighs supported. Alternately straighten and bend your knee, using the foot of your unoperated leg to push your operated leg up and back as far you can. Hold your knee in the full bent/straightened position for five to 10 seconds. Repeat several times until your leg feels fatigued or until you can completely bend and straighten your knee.



**Sitting unsupported knee bends:** Sit on a bed or chair with your thighs supported. Bend your knee as far as you can until your foot rests on the floor. With your foot lightly resting on the floor, slide your upper body forward in the chair to increase your knee bend. Hold for five to 10 seconds. Straighten your knee fully. Repeat several times until your leg feels fatigued or until you can completely bend your knee.

**Bed-supported knee bends:** Bend your knee as much as possible while sliding your foot on the bed. Hold your knee in a maximally bent position for five to 10 seconds and then straighten. Repeat several times until your leg feels fatigued or until you can completely bend your knee. A full recovery will take time. The pain from your problem knee before your surgery and the pain and swelling after surgery have weakened your knee muscles. The following exercises and activities will help your knee muscles recover fully.



**Assisted knee bends :** Lying on your back, place a folded towel over your operated knee and drop the towel to your foot. Bend your knee and apply gentle pressure through the towel to increase the bend. Hold for five to 10 seconds. Repeat several times until fatigued.



**Standing knee bends:** Standing erect with the aid of a walker or crutches, lift your thigh and bend your knee as much as you can. Hold for five to 10 seconds. Then straighten your knee, touching the floor with your heel first. Repeat several times until fatigued.

## Getting around after your surgery

**Walking with a walker or crutches:** Stand comfortably and erect, with your weight evenly balanced on your walker or crutches. Move your walker or crutches forward a short distance. Then move forward, lifting your operated leg so that the heel of your foot touches the floor first. As you move forward, your knee and ankle will bend and your entire foot will rest evenly on the floor. As you complete the step, allow your toe to lift off the floor. Move your walker or crutches again, and reach forward with your hip and knee for your next step. Remember, touch your heel first, then flatten your foot, then lift your toes off the floor. Walk as rhythmically and smoothly as you can, but don't hurry. Adjust the length of your step and speed as necessary to walk with an even pattern. As your muscle strength and endurance improve, you may spend more time walking. Gradually, you will put more and more weight on your leg.

**Walking with a cane or single crutch:** A walker is often used for the first several weeks to help your balance and to avoid falls. A cane or single crutch is then used for several more weeks until your full strength and balance have returned. Use the cane or crutch in the hand opposite the operated knee. You are ready to use a cane or single crutch when you can walk and stand for more than 10 minutes.

**Climbing and descending stairs:** Going up and down stairs requires both flexibility and strength and so should be avoided if possible until healing is complete. If you must use stairs, you may want to have someone help you until you have regained most of your strength and mobility. Always use a handrail for support on the side of your unaffected leg and move up or down the stairs one step at a time:

## Stairs Climbing



### Going up stairs:

1. Step up on your unaffected leg.
2. Next step up on your operated leg.
3. Finally bring up your crutch(es) or cane(s).



### Going down stairs, reverse the process:

1. Put your crutch(es) or cane(s) on the lower step.
2. Next step down on the operated leg.
3. Finally, step down on the unaffected leg.

## Section - IV

## Going Home after Surgery



### Traveling in a car:

- Sitting in the front seat with the chairpulled back completely is preferable initially.
- **To enter**, buttocks must be slid in first and the legs lifted later using the hands.



- **To exit**, the reverse motion is followed.
- Use a cushion to raise the height of the car seat.

### Medications:

- Please discuss with us about restarting your previous medicines
- Make sure you have had explanation of your post-op medicines.
- Diabetics should have their sugar checked every 7 days (or as advised) after going home. These values should be informed to your physician for further action.
- Hypertension patients should get their BP checked at home every week from your physician if the BP exceeds 140/90.

### Physical Therapy:

- A physiotherapist may be needed to visit you after surgery. Please ensure that your physio is well versed handling joint replacement patients.
- We can help you arrange a physio to come and visit your home.
- Take your Implant certificate. Before discharge also ask for the 'Leave Certificate' and 'Physiotherapy required' certificate if needed for your job/college or mediclaim.



**Resuming your normal activities :** Once you are home, you will want to keep track of the state of your new knee as well as your general health for several weeks. In particular:

- Take your temperature twice daily and notify your physician and us if it exceeds 100.5°F.
- Take all medications as directed.
- Notify us immediately if you notice tenderness, redness, or pain in your calf, chest pain, and/or shortness of breath. These are all signs of a possible blood clot.

**Frequent Infections:** Because you have an artificial joint, it is especially important to prevent bacteria from entering your bloodstream that could settle in your joint implant. You should take antibiotics whenever there is the possibility of a bacterial infection, such as when you have dental work. Be sure to notify your dentist that you have a joint implant; they are trained to prescribe antibiotics for you to take by mouth prior to an extraction, periodontal work, dental implant, or root canal work.

**Diet :** By the time you come home from the hospital, you should be eating a normal diet. We recommend that you take iron and vitamin supplements. Continue to drink plenty of fluids and avoid excessive intake of vitamin K if you are taking the blood-thinning medication Coumadin (warfarin). Foods rich in vitamin K include broccoli, cauliflower, brussels sprouts, liver, green beans, lentils, soybeans, soybean oil, spinach, lettuce, turnip greens, cabbage and onions. Try to limit your coffee intake and avoid alcohol altogether. You should continue to watch your weight to avoid putting more stress on the joint.

**Basic activities :** Generally, the following guidelines will apply :

1. **Weight bearing:** Be sure to discuss weight bearing restrictions with your physician and physical therapist. Their recommendations will depend on the type of implant and other issues specific to your situation.
2. **Driving:** You can begin driving an automatic shift car in four to eight weeks, provided you are no longer taking narcotic pain medication. If you have a Manual car, this may take longer. The physical therapist will show you how to slide in and out of the car safely. Placing a plastic bag on the seat can help.
3. **Knee exercises with resistance: A)** You can perform any of the early or advanced exercises with light bands around your ankle. (These resistance exercises usually can begin four to six weeks after your surgery. Use one-to two-pound weights at first; gradually increase the weight as your strength returns.  
**B) Stationary bicycle exercise:** Exercising on a stationary bicycle is an excellent activity to help you regain muscle strength and knee mobility. Adjust the seat height so that the bottom of your foot just touches the pedal with your knee almost straight. Pedal backwards at first. Pedal forward only after a comfortable backwards cycling motion is possible. As you become stronger (at about four to six weeks) slowly increase the tension on the pedals. Pedal forward 10 to 15 minutes twice a day, gradually building up to 20 to 30 minutes three to four times a week.
4. **Sexual relations** can be safely resumed four to six weeks after surgery.
5. **Sitting, sleeping positions:** There are no restrictions on sitting or sleeping position; just find a comfortable position.
6. **Return to work:** We will determine when you are medically fit to return to work. In your first follow-up visit (usually four to six weeks after your surgery), if everything is normal your surgeon may give you the go-ahead to return to work full-time. If your work is not too physically demanding and you feel up to it, you can return to work even earlier, at least part-time (perhaps a few hours once or twice a week). Don't push yourself too hard. If your work is more physically demanding, it may take more time (approximately three months) to return to work.
7. **Other activities:** Walk as much as you like once we give you the go-ahead, but remember that walking is no substitute for your prescribed exercises. Swimming is also recommended. You can begin swimming as soon as your surgeon has determined that your surgical wound is well healed. By three months, most patients can return to an active lifestyle. Most surgeons discourage high-impact aerobic activities like jogging and basketball. Do not do any heavy lifting (more than 40 pounds) or perform weightlifting exercises.



## Risk factors and complications

There are risks in any type of surgery, not just knee replacement surgery. The general risks of knee replacement surgery – such as a bad reaction to anesthesia or heart attack – are no greater than in most other types of surgery.

The following are among the possible complications following knee replacement surgery. While this list is not complete, it includes complications you should be aware of.

■ **Blood clots** : One of the risks of knee replacement surgery is the development of blood clots in the legs. In addition to early ambulation and leg compression hose/devices, we will place you on an anticoagulant (blood thinner) medication. We will place you on stockings which should be worn throughout the day time for the first one month following surgery.

■ **Implant loosening and wear** : The typical knee replacement has a 90-95 % probability of functioning well for more than 15 years. This is still not forever. Over time, the implant may show signs of wear, or it may loosen, and so may require a second replacement

(“revision”). Continuing research promises to increase implant lifetimes and make replacement even easier in the future. Feel free to discuss the current state of technology with us regarding implant designs.

■ **Infection** : Although infection in a knee replacement is relatively rare, it is a serious complication that requires urgent, aggressive treatment. Many infections can be avoided. For example, standard dental procedures, including routine cleaning, carry the risk of bacteria entering your bloodstream and infecting your knee implant. Taking an antibiotic approximately an hour before your procedure can greatly reduce or eliminate this risk. The same rule applies to medical procedures such as surgery or even a colonoscopy. Ask us for guidance when you are scheduled for one of these procedures.

**Nerve or blood vessel injury** : There is a risk of damage to nerves or blood vessels in knee replacement surgery – as in any other kind of surgery – but it is extremely low. If you experience sudden numbness or weakness in your leg or foot in the days following surgery, notify your doctor immediately.

**Our Services: Sports Injuries - Knee / Shoulder, Arthroscopic Surgery,  
Primary / Revision Joint Replacement**

## THE ORTHOPAEDIC SPECIALITY CLINIC

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