Total Knee Replacement

Patient Information Booklet

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PLEASE BRING THIS BOOKLET TO THE HOSPITAL WHEN YOU COME FOR THIS OPERATION.

Surgeon

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Treatment Options for Arthritis

Introduction

The various treatment options for knee arthritis include non-surgical methods, arthroscopy, osteotomies about the knee, and knee replacement with a prosthesis. The type of treatment chosen depends on many factors, including age, physical condition, needs of daily living, and the severity of the disease.

Non-Surgical Treatments

Knee arthritis can usually be treated non-operatively during its early stages. The non-surgical treatments include: weight reduction, muscle strengthening exercises (straight leg raises), activity modification, the use of a cane, and medication. Pool Therapy, “arthritis aquatics,” may be very helpful in relieving pain. The first choice of medication for arthritis of the knee is acetaminophen (Tylenol). Usually two tablets (650–1,000 mg), two to four times a day, is helpful for the relief of pain. Other medications, known as non-steroidal anti-inflammatories, such as advil, motrin, aleve (available without prescription) or clinoril, feldene, celebrex, etc. may decrease inflammation in the joint and decrease pain. Nutritional treatment with Cosamin–DS may relieve pain in many patients with early arthritis.

Muscle strengthening exercises can maintain motion and strength in the knee, which helps protect it from further damage. Often, pain in the knee is brought on by
certain activities which can either be modified or stopped, depending on the patient’s situation. A cane, usually carried in the opposite hand, can reduce joint loading by as much as 15%. Each pound of weight lost diminishes joint loading by over three pounds. This is very important for pain reduction and slowing the progression of arthritis. **We recommend against surgery if you weigh more than 235 lbs. or body mass index (BMI) more than 36, as the rate of complications and residual pain in the knee is high.**

**Arthroscopy**

Arthroscopy involves the use of an instrument that enables the surgeon to examine the inside of the joint and to treat some of the conditions encountered, especially those resulting from injury, without making a large incision. Although this is widely used in athletes, **arthroscopy is not usually helpful** for arthritis of the knee except in special circumstances.

**Partial Knee Replacement**

Pending further research, it is our experience that partial knee replacement and metal spacers in the knee are much less successful procedures and we recommend against them.

**Total Knee Replacement**

Total knee replacement, in almost its present design, has been widely used for over thirty years and is the most successful joint replacement procedure. The purpose of
this operation is not to give you a normal knee but to relieve pain and improve function in the knee.

The lower end of the femur is replaced with a metal component, the upper end of the tibia is replaced with a plastic component with metal backing, and the underside of the kneecap is usually replaced with a plastic disc. The prostheses are usually fixed with an acrylic bone cement. Your own muscles and ligaments move and support the prosthetic knee. A special kind of total knee replacement (Constrained condylar, CCK) is used if your ligaments are too weak and your knee is very deformed.

Pre-Admission Information

Patients contemplating this surgery are encouraged to see their private physician (internist or family practitioner) to be checked medically before surgery. If you have not seen a dentist in the past year, this examination is also recommended prior to surgery.

To prevent excessive bleeding during surgery, stop taking arthritis and anti-inflammatory medications such as advil, aleve, aspirin, ibuprofen, and motrin; and prescription arthritis medications such as naprosyn, celebrex, indocin, at least one week before surgery.

Blood Transfusion

Patients may require a blood transfusion after total knee replacement. Bloodborne diseases and allergic reactions are the major risks of a transfusion. The
Prosthesis used in total knee arthroplasty (knee cap prosthesis not shown)

X-ray of total knee arthroplasty (frontal view)

X-ray of total knee arthroplasty (side view)
screening procedures at the blood bank are as thorough as possible and the risk associated with blood transfusion is exceedingly small. However, we no longer recommend that patients donate blood routinely before knee replacements.

Pre-Operative Evaluation
You will come to the office one to two weeks prior to surgery for examination to see that your general health is satisfactory. You will have blood drawn and a urine specimen will be obtained at the hospital. X-rays of your chest and an electrocardiogram (EKG) to check your heart will also be performed. X-rays of your knee will be made if we do not have films taken within the past six months. The consent form for surgery will be signed.

Spinal anesthesia is strongly recommended because there are fewer complications. Less bleeding and fewer blood clots occur with spinal anesthesia. A nerve block in the groin will also be performed. The hospital nurse will give you an antiseptic soap before you leave. It is very important that you take a thorough shower and wash your knee with this antiseptic soap the morning of surgery.
Admission Information

You should not eat or drink after midnight the night before surgery. It is most practical to bring pajamas, short gowns, T-shirts, shorts, or sweat pants to the hospital. Long gowns and robes interfere with walking. Bring a pair of shoes (or sneakers) that you are accustomed to wearing; bedroom slippers usually do not give the foot enough support. Any lifts on the heel or sole will need to be removed. This is not a good time to “break in” new shoes.

Day of Surgery

Check in at the hospital at the specified time and you will be given white compression stockings. Blood may be drawn. You will have any hair on your knee clipped with an electric razor. The pneumatic sleeves will be placed on both legs. An intravenous line will be placed in your arm. In the operating room a urinary catheter will be inserted and left in place for one or two days.

We recommend that family and friends wait in the O.R. waiting room and be available to talk with your doctor after your operation.

Anesthesia and surgery usually takes three to four hours. From the operating room, you will go to the recovery room for one to three hours. You will be wearing white compression stockings and pneumatic sleeves on both legs. The intravenous (IV) fluid will still be running. The nurses will check your blood pressure and pulse frequently. An X-ray will usually be taken in the recovery room.
After going to your room, the nurse will continue to check your blood pressure, pulse, and have you cough and breathe deeply. The IV will continue to run for approximately 48 hours. There will be a bulky dressing over the knee and a small drainage tube coming from the knee. The drainage tube decreases the amount of blood in the knee, and will be removed in 24 hours.

You may take sips of fluid as soon as your are awake if you are not nauseated. Your food intake will be advanced as tolerated. You will need to take deep breaths at frequent intervals and cough out the mucus that accumulates in your lungs during and after surgery. It is very important that you do this to keep your lungs fully expanded and free from infection.

Following Surgery

You will be given exercises and encouraged to move about in bed. These exercises will help prevent blood clots and improve motion in the knee. You cannot turn over or get out of bed by yourself.

A continuous passive motion (CPM) machine is used to facilitate movement in the operated knee. It is used in addition to the exercise program described below. Your nurse will go over the details of its use with you.

You will not have to lie flat all the time. You may raise the head of your bed periodically. You will have a catheter in your bladder for one or two days. After it is removed you will have to use the bedpan or the
bathroom. A laxative will be ordered for you if you need it.

Pain should be expected after any surgery. The pain is managed with a combination of intravenous non-narcotic medication and Oxycodone (narcotic) tablets. Some patients may administer their own IV pain medication through the use of a PCA machine. The postoperative pain that you will experience is expected and is perfectly normal. The nurse will ask you to note the severity of your pain before and after giving you pain medication. The discomfort after surgery is usually different from the pain you had before surgery, and is to be expected for several months.

While you are in bed, you may eat normally and should drink large amounts of fluid to keep your kidneys functioning properly. You should continue to cough and breathe deeply to keep your lungs working properly. You should begin to do your knee exercises shortly after returning to your room. At first, it will not seem like you are doing much, but it is persistence that counts.

1. Tighten the muscle above your knee (quadriceps) by pushing your knee down toward the bed.
2. Bend your feet up and down at the ankles so that you can feel your calf muscle tighten. This motion helps your circulation by pumping blood from your legs back to your heart.

It is important that these exercises be done five to ten times every hour and that you exercise both legs. The exercises must be done slowly; tighten the muscle
for the count of five, then relax it for the count of five. You will make your muscles sore if you exercise them too fast. These exercises improve circulation and strengthen the muscles around the knee. As soon as you are able to raise your leg from the bed or CPM machine, you should begin to do so several times every few hours. Use the overhead trapeze to strengthen your arms and reposition yourself while in bed.

The nurses will be close by to care for you and answer any questions you have. You are expected to do your part (coughing, deep breathing, exercising your legs and arms, drinking plenty of fluids, etc.).

On the first day after surgery you will get up to walk with the therapist, at first with a walker and later with crutches. The distance you walk and the weight you bear will be determined by your surgeon, therapist, and you. Discomfort at this point is usually muscular and is normal. You usually do not walk far the first time you are up, but the distance improves each time.

**Physical and Occupational Therapy**

On the first day after your operation, you will begin physical therapy. You will begin exercises and review precautions to protect your new knee. Therapy will continue twice a day until you go home. You will work on walking farther distances and practice going up and down steps. After your surgery, you will also see an Occupational Therapist who will help you practice tasks
that will make it easier for you to take care of yourself at home, such as going into the bathroom and getting yourself dressed. On the third day after your surgery you should be ready to go home. You will have your own walker or crutches and instructions for continuing exercises. If you need further therapy after you leave the hospital, the social worker will make arrangements for additional physical therapy. Patients who cannot go home due to other medical problems will generally go to a rehabilitation unit or nursing home for further recovery.

Requirements for Discharge

1. Able to get in and out of bed, and on and off the toilet by yourself;
2. Able to walk with a walker or crutches; and
3. Able to flex the knee to approximately 70 degrees.

If you are unable to bend the knee well by 28 days after surgery, manipulation (bending) under anesthesia may be performed. This is necessary for approximately five percent or less of patients.

Summary of Hospital Stay

Day of Surgery

Come to the hospital for admission. White compression stockings will be applied on both legs. Surgery is performed. Transfer to Recovery Room, then to your hospital room.
Postoperative Day 1
You will have an intravenous line in your arm, a catheter in your bladder, a drain in your knee, and a pneumatic compression sleeve on your calf. Physical Therapy will begin. Exercise (CPM) machine three times a day, for one hour each session, will begin. The drain in your knee will be removed.

Postoperative Day 2
The intravenous line and the bladder catheter will be removed. Physical therapy will continue twice a day. It is important to push yourself in therapy. Dressing will be changed with gauze and waterproof Tegaderm.

Postoperative Day 3
Physical therapy and Occupational therapy will be provided. If you are progressing well, you may be able to go home. Discharge to home in the afternoon, or, if additional therapy is needed, the following morning. Transfer to nursing home or rehabilitation unit if necessary.

Going Home
You will usually be able to go home about three days after surgery. You will not be able to be alone all of the time after you go home. There are a few things you will not be able to do for yourself for three or four weeks. You may need help in the morning and evening with dressing and bathing. The skin staples or sutures will be removed about two to three weeks after surgery.
The following instructions should assist you in making a comfortable and rapid recovery.

**Activity:** You should be as active as your comfort, confidence, and strength allow when you go home. Remember to use the walker or crutches at all times until told otherwise by your physician. Take short frequent walks rather than one long walk. As your strength increases, walk a little farther each time.

Sit in a chair with a firm seat and arms for only 60–90 minutes at a time. This kind of chair will allow you to get up and down more easily. When you are sitting, practice bending your knee back.

**Exercises:** Continue the same exercises that you were doing in the hospital. Start with each exercise eight to ten times, four times a day and increase slowly to 15 times, five times a day. Any discomfort from the exercise should subside before it is done again.

1. Moving your foot up and down (ankle pumps);
2. Tightening the muscles above the knee (quadacepts setting);
3. Straight-leg raises;
4. Flex (bend) and straighten your knee while in a sitting position.

**Bathing:** You may take a walk-in shower but your incision should be covered with plastic.

**Elastic Stockings:** Continue to wear your elastic stockings or Ace wrap until seen for your six week appointment. Wear regular shoes, not bedroom slippers, to prevent falls.
Never rest your leg with a pillow behind the knee.

Return Appointment
You will be given an appointment to return about two to three weeks after surgery. Contact the office for a return appointment if one was not made prior to your hospital discharge. If you have any questions concerning your knee or if any of the following occur, call your physician:

A. Severe or increasing pain in the knee;
B. Increased swelling in the knee or leg;
C. Loss of ability to use your knee;
D. Increased redness around the incision;
E. “Pulling apart” of the incision;
F. Drainage from the incision.

Postoperative Considerations
Knee replacements hurt and pain medicine is usually necessary for six weeks after surgery. Pain medicine is necessary before and after physical therapy sessions. You will leave the hospital walking with a walker or crutches. These are to be used for approximately six weeks. Some patients will be able to return to light work for limited periods of time about six to eight weeks following the operation and to a full day’s work at a desk job within three months. Light labor may be resumed at three to four months, but heavy labor is usually not recommended. Based on our experience to date, you have a 97% chance of having a good result.
**After Your Hospital Stay**

If things look good at the time of your first follow-up visit, you may be able to begin walking with a cane. You will use a cane until you can walk well without it—usually for a few weeks to several months. By continuing your exercise program, strength and endurance will increase slowly. You should not drive a car until six to eight weeks after the surgery. Swimming or water exercises may be resumed at three months. Most people are able to return to light work for limited periods of time six to eight weeks following the operation and to a full day’s work at three to six months. You should avoid kneeling on the replaced knee because the feeling in the skin on the front of your knee is decreased by the incision and damage may be done to the skin before it is realized. The knee will feel hot (have a fever) for one year after surgery. Some pain or soreness is to be expected for one year.

Based on our experience to date, you have an excellent chance of being pleased with the knee replacement, which means that you will be able to walk with minimal or no limp and minimal or no pain. You should have enough motion to sit and stand normally, and you very likely will be able to get in and out of a chair and go up and down stairs more easily than you were able to do preoperatively. Medical, spine, and other joint problems may adversely affect the result of surgery. The purpose of the operation is not to give you a normal knee, but one that functions better than your knee functioned prior to the operation. Thus, with reasonable common sense, you should be able
to live a normal life with your knee. Heavy manual labor and sports are strongly discouraged, as this will prematurely loosen the knee or wear out the plastic.

**Infection Prevention**

Pending the results of further research, we recommend that all joint arthroplasty patients receive antimicrobial prophylaxis before dental manipulation (having teeth cleaned, filled, or pulled) for two years. The prescription for the medication should be given by the dentist. We recommend Keflex 500 mg one hour before dental treatment and 500 mg six hours after the first dose. In patients with allergies to penicillin and/or Keflex, we recommend erythromycin or clindamycin, one gram one hour before the procedure and 500 mg six hours after the first dose.

If you have a bladder or bowel infection, internal examination, or surgery, antibiotic prophylaxis is also suggested. If sores or ulcerations develop on your lower legs or feet, contact your medical doctor immediately. Infection can spread by the bloodstream to your replaced knee.

**Risks and Complications**

There are certain risks involved in any operation, and this operation is no exception. With adequate precautions, however, the risks are small.
1. **Death.** As with any major operation, you can die from a heart attack, a stroke, or a blood clot to the lung. However, in our experience the risk is extremely small (0.3% at 90 days).

2. **Infection.** Based on our results, the chance of developing infection is about 1% with a primary (first-time surgery) total knee replacement. The risk of infection is higher in patients with psoriasis, obesity, diabetes, or prior knee surgery (3–10%). If you develop a deep infection following this operation around the artificial knee, then the prosthesis will usually have to be removed to control the infection. This will leave you with an abnormal leg. Once the infection is cured, it may be possible to reinsert a new knee replacement in six to eight weeks. However, it may rarely be necessary to fuse the knee joint or perform an amputation.

3. **Blood clots in the leg.** With the use of pneumatic sleeves and aspirin, our results show an 8% chance of a blood clot in your calf. Patients with high risk for clots require stronger blood thinners.

4. **Neurovascular damage.** Although extremely rare, it is possible to have nerve or artery damage that could result in permanent paralysis or numbness in the foot or leg.

5. **Loosening of the prosthesis.** Rarely, the cement or bone can fail and result in painful loosening of the prosthesis. Re-operation may be required
to replace the loose pieces. The chance of re-operation is 3% at ten to fifteen years.

6. **Abnormal wear.** Rarely, the plastic will have excessive wear over time and require replacement.

7. **Stiffness.** Sometimes scar tissue can form in the knee after surgery and make the knee very stiff and painful. We do not know the cause of this and are not able to predict to whom it is going to occur. If the knee does not bend close to 90 degrees by four weeks after surgery, a manipulation of the knee may be necessary under anesthesia.

Medical complications include those affecting organs other than the knee joint. Total knee arthroplasty is major surgery, and the stress from this surgery can affect almost any organ in the body including lungs, heart, vascular system, neurological system, gastrointestinal and genitourinary systems to name a few. Any of these complications can result in severe illness or death, but these outcomes are rare. One of the more common complications is venous thrombosis, that is, clots forming in the veins of the lower limbs. This complication becomes more dangerous if these clots dislodge and go the lung, causing a pulmonary embolism. Other pulmonary problems include pneumonia and atelectasis (areas of lung collapse). After surgery you will be instructed in exercises which will decrease the risk of these complications.

You must understand that the risks of the operation mentioned over the last few pages, although relatively
small percentage-wise, are very real and cannot be avoided. Therefore, you must compare how you feel and get around at the present time to decide if there is enough to gain by the operation to make it worth taking these risks. You are the only one who can really decide whether or not you should have the operation.

You should carefully consider the advantages and disadvantages of the operation before making a decision. If you decide to have the operation, it is exceedingly important that you develop a positive attitude toward the operation and the postoperative period. Your attitude and cooperation have a lot to do with how well you do. The more positive your attitude, the better your knee will move, the stronger your knee will be, and the more comfortable it will be.

Re-Operation (Revision Surgery)

As mentioned before, it is sometimes necessary to replace the artificial parts. The procedure is generally similar to the original operation, but there are a few differences.

The operation involves taking the knee apart and removing the artificial parts. It is usually necessary to remove all of the cement and a layer of soft tissue that may have formed between the cement and the bone. It is usually possible to insert new artificial parts. The procedure is more complicated and takes longer than a first time knee operation.
Another development useful is special circumstances is the use of bone substitutes or metal augments. We will discuss this procedure with you in greater detail if we think it might apply in your case. This is a more extensive operation than the original procedure. You will be in the hospital about three to four days after the operation and the remainder of the postoperative course is very similar to the original operation.

All of the complications mentioned for the original operation apply to a re-operation. The results of a re-operation may be similar to the original operation. However, because the re-operation is longer and more difficult, the risks, such as infection (5–9%), are greater than with the first operation.
Notes