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## **TOTAL KNEE REPLACEMENT**

Since you have progressed to the point of serious consideration of total knee replacement, there is a great deal of information that is important for you to understand. Prior to making your final decision and ultimately having your total knee replacement, it is important that you understand everything about the procedure and have realistic expectations about the results. You should understand why you are having problems with your knee and when you should make the decision to have knee replacement surgery. It is important to know exactly what is done at the surgery and what to expect from the surgical procedure. These expectations along with the possible complications of the procedure will allow you to decide when to proceed with the operation. I also want you to understand clearly what is expected of you prior to surgery, and in the rehabilitation period after your discharge. I will try to summarize all this information for you. Certainly, if you have any questions, please feel free to contact me.

## **RATIONALE AND INDICATION**

Total knee replacement for disorders of the knee joint has been performed for over thirty years. There has been a rapid evolution of changes in prosthesis design and the surgical technique itself. The great majority of the operations are done for arthritic conditions of the knee. There are many different causes of arthritis, all of which cause a deterioration of the knee joint. The knee joint is a hinged joint which moves on a smooth surface called the articular cartilage. The articular cartilage is worn away by the arthritic process to the point that the knee joint becomes painful. The process is usually gradual and may require months or even years for it to progress from a mild to a severe state.

As it becomes more severe, there will be more pain and more limitation of function. There are many types of arthritis that can cause this deterioration of the knee joint. These forms of arthritis include osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, traumatic arthritis (related to injury), and rare causes such as avascular necrosis or loss of blood supply to the knee joint.

A second category of causes requiring total knee replacement are those of failed previous knee surgeries. The most common is a previous knee replacement that has now failed either through loosening of the component from bone or wear of the polyethylene or plastic liner. This is called a revision total knee replacement, while the initial knee replacement is called a primary total knee replacement.

In the early stages of knee disease, the pain and loss of function may be improved by conservative means of treatment to include medication such as nonsteroidal anti-inflammatory agents, the use of a cane or crutches, and restriction of activity. Weight loss, if possible, can also significantly reduce the level of pain. For many medical reasons, it is best to reach your optimal weight. This weight loss is difficult and sometimes impossible, as you cannot exercise or walk very far.

At some point, however, if the arthritic process increases in severity, patients will have increasing pain and decreasing function which are no longer managed by these conservative measures. This is the time to seriously consider total knee replacement. The decision to perform the total knee replacement is usually based entirely on the patient's symptoms and complaints. It is rare when the surgery is done on an urgent basis. The only potential cause for this necessity is when the arthritic process is so severe it actually wears away or erodes the bone. Once this erosion occurs, the operation must be done in a reasonable period of time as progressive loss of bone will compromise the potential for a successful surgery and result.

## **SURGERY**

The knee is a hinged joint that connects the distal (or bottom) end of the femur or thigh bone and the upper end of the tibia or shin bone. The surfaces of each end of the bone are covered by

articular cartilage. The hinged joint has an additional component in that the kneecap or patella rubs on the distal anterior end of the femur. This serves as a fulcrum or a mechanical advantage for the quadriceps muscle which straightens the knee. The end of the femur is removed and replaced by a metal shell that is made of either titanium or combination of chromium and cobalt. The upper end of the tibia is replaced by a surface made of a high density polyethylene or plastic that is attached to the bone by a metal plate. The hinged joint of the knee, therefore, is replaced by a metal on plastic total knee replacement. The portion of the patella that slides on the femur is replaced also by a polyethylene surface. All mechanical parts, with some exception, are attached to the bone with bone cement. In the cases where no bone cement is used, the parts used have a surface on which bone is intended to grow.

## **EXPECTATIONS**

The operation is very successful in terms of its main goal that is pain relief. Approximately 90 percent of people have complete pain relief. The additional 10 percent of patients may have mild and intermittent discomfort especially if they over-use the knee or become too active. The same high percentage of people no longer have a limp after the surgical procedure, but the limp may persist even though pain relief occurs. This occurs in situations where the muscles around the knee are very weak or where the postoperative exercises are not performed. Most patients do not require any assistive devices to walk although in some cases patients choose to use a single cane for safety or balance reasons.

You are usually able to increase your activity level dramatically after surgery. Patients are encouraged to walk, hike, ride a bicycle on even ground or a stationary bicycle, swim and even play golf. Sports that cause significant impact or twisting such as running, singles tennis or downhill skiing are not ideal, and we do not recommend them. Activities that cause significant impact on the knee replacement are not recommended. Getting up from a low chair without arms and going up and down stairs places significant stress on your knee replacement. These activities can be accomplished but you should not do them excessively. Finally, kneeling with direct pressure on the knee replacement is uncomfortable for many patients.

A frequent complaint in addition to pain is the development of an angular deformity such as becoming more knock-kneed or more bowlegged. This occurs because the arthritic process is wearing more on one side of the knee joint than the other. Either process may occur in any given patient. Normally a patient should be slightly knock-kneed. An advantage of the operation is that the knee is realigned so it has a normal appearance with the patient being slightly knock-kneed.

Some patients complain that one leg is shorter than the other. After the knee replacement surgery, the leg may be straighter, but the leg can rarely be made longer. The ligaments of the knee limit any intentional lengthening of the leg. In patients who are undergoing hip replacement one is usually able to correct limb length discrepancies. That is a distinct difference between hip replacement and knee replacement.

The final critical issue is how long the knee replacement will last. At this point we have very good information that suggests a cemented knee replacement will last approximately ten to fifteen years. After many years of use and walking, the knee prosthesis can loosen from the bone or the plastic can wear out. If this occurs and pain is present, it may be necessary to revise the knee replacement. This technically can be accomplished successfully, but obviously it is best to have the initial knee replacement last as long as possible.

## **COMPLICATIONS**

The results of total knee replacement are excellent. Therefore, there must be some reason that prevents us from performing knee replacements except in patients with significant complaints. This is because there are many potential complications. These complications include infection, blood clot formation or thrombophlebitis, stiffness, slippage or dislocation of the kneecap from its groove at the end of the femur, nerve injury, fracture and other general complications. The issues especially important to address include infection, blood clot formation and stiffness.

The chance of infection in total knee replacement is 1 out of 200, or .5%. This is a very low number but nevertheless can occur. If this occurs, it can be a very difficult problem, as it is usually

necessary to have other surgeries to remove the infection and, in some cases, actually remove the implant for a temporary period of time. Obviously, the best way to treat the infection is to prevent it. These operations are done sometimes in special operating rooms with air filter systems called laminar flow rooms. These laminar flow rooms exchange or filter the air over 300 times an hour while a normal operating room filters the air approximately 20 times per hour. The surgical team also uses air exhaust systems, which are operating room apparel often called spacesuits. This prevents the operating room staff from breathing on the area of your knee operation. In addition, all patients receive preventive or prophylactic antibiotics immediately prior to the incision. This combination of techniques should lower the chance of infection even below this acceptable rate of .5%.

Blood clot formation or thrombophlebitis or deep venous thrombosis is the formation of a blood clot in one of the deep veins of the lower leg. This is a common complication that occurs despite all methods of prevention in a small percentage of cases. There are multiple ways to try to prevent this. I prefer and put most patients on chewable aspirin. Xarelto (rivaroxaban) is another blood thinner that can be used starting the morning after surgical procedure and continue this for a total of 14 days. Other patients may receive Coumadin (or warfarin) – this medication will need to be started the night before surgery. The advantage of Xarelto is that you do not need to get your blood levels checked twice a week, as you do need to with Coumadin. More commonly, patients are placed on *chewable aspirin for 6 weeks*.

All patients also wear TED hose, and if in the hospital - sequential compression devices (SCDs) or plexipulses on both feet as well. TED hose are stockings that can be used for 10-14 days and are intended to decrease leg swelling and blood pooling. TED hose may be removed whenever you choose (they are helping merely with swelling); these do not need to be used but most like the compression they provide. SCDs are devices placed on both legs that massage the leg from the ankle to the thigh. Plexipulses massage the feet. TED hose, SCDs, and plexipulses are used to increase blood flow to minimize the chance of clot formation.

After total knee replacement, it is very important for you to faithfully follow your exercise and physical therapy program. *Exercises should be done three times a day on your own and twice weekly with a physical therapist.* Nevertheless, it is still possible for the knee to gain less than the expected flexibility. For you to have a well-functioning knee implant the goal is to gain 90° or more of bend or flexion. This must be gained in the first three months, **ideally within 2 weeks after surgery.** If excessive scarring occurs or you do not perform your exercises, stiffness may prevent you from gaining the goal of 90° of flexion. If this occurs, a manipulation under anesthesia must be performed to break the adhesions. The chance of requiring manipulation should be less than 5%. Everyone has different goals of flexion, given that preoperative flexion is the best determinant of future flexion after TKA.

Other complications that might occur are rare. They are potentially associated with any major surgery and anesthesia. These potential complications include death, heart attack, heart failure, stroke, pneumonia, lung congestion, gastrointestinal problems such as nausea, vomiting, diarrhea or constipation, urinary tract infections, decubitus or bedsores, etc.

The long-term complication is that the total knee replacement may fail by either loss of fixation or mechanical loosening of one or all parts of the implant or wear of the plastic polyethylene surface. Since a patient with a painless knee replacement may walk one to two million steps per year, it is reasonable to expect that eventually it may fail. Some total knee replacements have lasted more than twenty years.

It is advisable to stay in good physical health, avoid excessive weight gain, avoid excessive impact activities as previously noted, and exercise frequently. Although revision surgery is usually very successful, hopefully it will never be required for most patients.

## **PREPARATION FOR SURGERY**

Once you have made your decision to have the total knee replacement, you should contact my assistant **Lidia Talavera at 724-3260** and she will schedule the surgery. The time you must wait is

variable depending on the schedule. We will make every attempt to schedule the surgery at your convenience. **Lidia** can answer any questions about preparation for surgery, the preoperative sequence of events or insurance matters. If desired, she will also assist you in filling out an application for a handicapped license tag, which you may want for at least three to six months.

It is important to have a complete physical examination by your internist or family physician prior to the total knee replacement. Since this is a serious operation, you should be in your best medical health with all medical problems under good control. Your doctor may also perform all routine tests that are required prior to surgery. If you have had a recent complete physical examination, it may not be necessary to have a new examination. You should discuss this with your internist or family doctor. Your internist or family doctor can then mail or fax the results of your examination and tests to our office prior to your admission to the hospital.

Total knee replacement can rarely require blood transfusions. I do not recommend donating your own blood before surgery. We have numerous interventions that help conserve your blood during and after surgery. The requirement for blood transfusion may vary from zero to two units of blood in primary cases or zero to three units of blood in revision or re-do cases. Donor blood is tested thoroughly by the blood bank; despite this, there is a small risk of transmission of viral infections, such as hepatitis, HIV, among others. The estimated incidence of hepatitis transmission is roughly 1 in 4000 blood transfusions and HIV being 1 in 750,000 transfusions. If for medical reasons you are unable to do this, I will be very cautious in using any other blood transfusions and will always discuss this with you first. But if it is necessary, the blood is very carefully screened and tested for these two problems. I use an intravenous medication immediately before the surgery and while in the recovery room, tranexamic acid, to help prevent bleeding. This, along with the use of a drain that is placed in your knee at the time of the surgery, has dramatically reduced the need for transfusions after surgery. The use of a drain is not necessary, and I do not use it in every situation.

Once you have scheduled your surgical procedure, you will be contacted by the New Mexico Center For Joint Replacement Surgery to make an appointment for your preoperative patient education class. This

is a very important part of the process and will discuss in great detail what to expect during your hospitalization or day surgery (if outpatient same day discharge), during the therapy and after the time you are discharged from the hospital. This is a very helpful time to bring members of your family so that everyone can understand what is required to get the best possible result from your surgery. At this time, you will also discuss the nursing plan and philosophy for your care at the New Mexico Center For Joint Replacement Surgery.

## **HOSPITALIZATION**

Most insurance plans do not approve admission one day prior to surgery; therefore, you will usually be admitted the same day of surgery. At preadmission, if not already performed, there will be a number of routine blood and x-ray tests to be performed. These are all routine prior to a surgery of this type.

## **OUTPATIENT SAME-DAY DISCHARGE**

Over recent years, joint replacements have been determined to be safe in select individuals to have same-day discharge. In this situation, you can expect to be walking with a walker in the recovery room. In cases of expected same-day discharge, you will also check in the morning of surgery to the respective facility and spinal anesthetic is preferred, if you are a candidate, to general anesthesia.

In the preoperative holding area, a sedative will be given to you as ordered by your anesthesiologist. This will allow for consultation with the anesthesiologist and starting of the intravenous line. In almost all cases a spinal anesthetic is used from which you will be made numb from the waist down. Although you may be wide awake, we can sedate you as heavily as you would like so that you are completely relaxed and will not remember anything about the operation. This is safer than a general anesthetic and your recovery is more rapid. A general anesthetic is used in some cases. A nerve block, of the adductor canal, is completed prior to going to the operating room; in addition, I administer local anesthetic throughout the knee during the surgery. All of these modalities aid in you controlling your pain in the immediate post-operative stage.



Primary total knee replacement requires between one and two hours of surgery time, while a revision total knee replacement requires between two and four hours of surgery time. While you are in the operating room, your family may wait either in your room, in the surgical waiting area on the fourth floor or at home. As soon as the surgery is completed, I will contact them and describe to them the results of the surgery.

You will be in the recovery room for one to three hours until the effect of the spinal anesthesia has worn off. Once that occurs and your vital signs are stable, you will be returned to your room on the Orthopaedic floor. There are some circumstances, especially in patients with severe cardiac problems, that you may spend one night in the Intensive Care Unit. With same-day discharges, you will walk with the nurse in the recovery room and try to void your bladder. Also, discharges will occur, in this situation, directly from the recovery room.

After surgery you will not need to remain rigidly immobilized in one position in the bed. With the bed controls you may elevate the head of the bed or remain perfectly flat. At the time of your surgical procedure while the anesthetic is still in effect, a catheter is inserted into your bladder. This will be removed the morning following your surgery, and you will be able to urinate on your own.

You will begin your bed exercises and begin standing and walking on the first postoperative day. You will gradually increase your walking distance and frequency as tolerated. You are usually in the hospital for 1 night until you reach a level of independence following the surgery. When you are independent, you should be able to get in and out of bed by yourself and walk between 150 and 300 feet (total for the day). If you meet these guidelines, you will be able to return home. You should strive to go home; ***recent studies have demonstrated improved outcomes in patients who return home immediately from the hospital, as opposed to a nursing facility.*** This will also encourage independence. The discharge planner, prior to discharge from the hospital, will arrange home health care and physical therapy. For same-day discharges, this should be arranged prior to your surgery.

We have discontinued the use of a continuous passive motion (CPM) machine. Studies have not demonstrated benefit with inpatient total knee replacements and outcomes. I do not send patients home with a CPM; working hard with physical therapy for strengthening and motion has no substitute.

You will be provided with a walker prior to leaving the hospital or given one prior to surgery at the office. Prior to your discharge from the hospital, the physical therapist will be certain you understand very clearly your discharge exercise program and will be able to succeed in the immediate postoperative period when you arrive home. I recommend a walker in most cases, however, since this is more stable and easier to use for most people.

You should plan on a hospital stay of 1 night. Your dressing will not be changed. There should be minimal to no drainage. The dressing you will have, in most cases, is a waterproof dressing. ***This dressing should be removed exactly 1 week after the day of your surgery.*** No dressing changes need to be done. You will, in most cases, have an appointment set up 10 to 14 days after surgery for staple removal, in my office. In cases where we only use steri-strips (skin tape) and skin glue, we will check your incision and range of motion. When you go home you may still have some clear, yellow drainage (serous drainage). This is not an indication of any type of infection but just of the healing process in the fat below the skin level. This may continue from one to five days. You should not, however, take a bath or soak your knee, such as in a hot tub. Let water run down your knee while in the shower and pat the dressing and knee dry. After removal of the dressing 1 week after surgery, you may shower directly over the incision. There should be no drainage at this point; if there is, please notify me immediately. If the staples are catching on clothing, a light dressing from a local pharmacy can be placed on top of the staples for comfort.

### **Pain Control Post-Surgery**

When you are discharged you will have a prescription for a mild narcotic pain medication but you should be requiring less of the medication each day. It is common to have swelling in the leg, especially, if you are becoming more active in your activities at home. The one type of swelling that can be worrisome is swelling in the entire leg starting at the ankle or foot level. This is common if you sit for

prolonged periods of time. If this occurs you need to spend less time sitting and more time lying down on the bed or couch with the leg elevated. If the swelling does not resolve significantly with this elevation, you should contact me so that we might further evaluate this.

Pain medications come in many different forms, and I encourage the use of various ones, to limit the amount of narcotics needed. Medications such as, tramadol, Celebrex or meloxicam , and Tylenol are highly encouraged to help with pain control as well as rapid recovery.

The blood thinner Xarelto does cause more swelling and sometimes even drainage from the incision site. Please contact me if drainage is occurring or you are concerned about the swelling.

**My goal is for you to get to your blood thinner and Tylenol as quickly as possible, even within a few days. Not everyone will follow this pattern, but that is the immediate goal. All medications (except dexamethasone, which is scheduled for 4 days, every 12 hours) for pain are not scheduled – they are, as written on the bottle, *as needed*.**

Everyone progresses off of their walker at their own pace. Everyone is different. Some make take 3 to 4 weeks or less, while others may take 6 weeks or more. Try not to compare to others who may have had similar surgery. Focus on your own goals that you and your therapist have created.

## **FOLLOW-UP**

Since you have had a total knee replacement, it is important to monitor closely the healing process in the first three to six months following the surgical procedure. It is also important to monitor the long-term fixation of the implant over a period of many years to be certain there is no adverse effect on the bone or any sign of loosening of the prosthesis. Therefore, the usual follow-up schedule involves your return to the office for examination and x-rays at the following times after the surgical procedure: two weeks, six weeks, three months, one year. After the first year, you are seen every other year. In some situations, because of difficulty of travel, I can make arrangements for you to be seen by your local family physician who can obtain x-rays and send those to me for evaluation. Unfortunately, this is not the ideal situation. I will try to be as flexible as possible because I know travel is often quite difficult and expensive.

## PROPHYLACTIC ANTIBIOTICS

The practice of whether to recommend antibiotics prior to dental or medical procedures has changed. As of 2016, unless you are at increased risk of infection (uncontrolled diabetes, on medications that increase your risk of infection), I do not recommend routine antibiotics prior to dental cleanings and dental procedures after 3 months from date of surgery. I can further discuss this if you have questions. This is a recommendation from the American Dental Association and the American Association of Orthopaedic Surgeons.

## PROBLEMS OR QUESTIONS

If you have any concerns or questions about the scheduling or preoperative sequence of events, you should contact **Lidia Talavera in my office at 724-3260**. She can answer questions about the surgical scheduling, logistics surrounding surgery, scheduling time, any insurance concerns or preparation for surgery. **Lidia** can also help you after your discharge from the hospital with questions about your recovery. If I am not in the office at the time of your call, she will make certain that I receive the message as soon as I return to the office. **Micah Benson** is a certified physician's assistant and will be helping with your care along the way as well. You may receive prescriptions from him, have appointments set up with him or may ask him any questions.

*My goal is for you to stay as informed as possible throughout the entire process, understanding that we are here to help you through this educational and recovery process.*

If you have any additional questions, please ask me when I see you prior to your admission to the hospital at the time of your preoperative history and physical examination.

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