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INFORMATION ON TOTAL KNEE REPLACEMENT SURGERY

Who should consider an artificial knee?

A person with advanced arthritis of the knee joint resulting in severe pain is a candidate for a total knee replacement. When the pain in the knee interferes with one's ability to stay active and maintain a sense of independence, it is time to consider the alternative after nonoperative intervention has been exhausted. Many individuals have chosen a total knee replacement so they can maintain muscle tone and stay active. However, the primary reason to consider a total knee replacement is for pain relief.

How does arthritis destroy the knee?

The ends of the femur (thigh bone) and tibia (shin bone) and back of the patella (knee cap) form the knee joint. They are covered with a thin, smooth, glistening material called hyaline cartilage. It is the knee hyaline and meniscal cartilage that cushion the joint and absorb shock. Normally, this cartilage is lubricated by a few drops of specialized fluid. The arthritic knee may produce increased amounts of fluid (ie., "water on the knee"). Cartilage has poor healing capabilities and once it is damaged it no longer provides cushioning. As it wears away, bone becomes exposed. Bone surfaces rubbing against each other can cause significant pain. There are no predictable or satisfactory methods of reversing the damage of arthritis. When nonsurgical alternatives cannot bring a suitable level of relief, total joint replacement is a realistic alternative.

What does it look like?

A total joint replacement consists of three pieces. These are made of rugged polyethylene (high density plastic) and alloy metals. These pieces

resurface the three bones that comprise the knee joint (the femur, tibia, and patella). The femoral component (the end of the thigh bone) is made of metal. The tibial component (the top of the shin bone) has a metal tray with a snap-in plastic insert that mates with the femoral components. The patella component (kneecap) is all plastic, and mates with a groove in the femoral components. This allows the knee cap to glide freely, like it normally does.

What holds the artificial knee in place?

There are two present methods of securing the prostheses to the bones. One relies on an ingrowth of the patient's bone to anchor the device, and the other uses cement. The cement is actually a polymer that serves as a grout and is not an adhesive. The fixation method is usually based on the patient's age and the quality and condition of the patient's bone. The design of the prostheses also influences the method of attachment to the bone. No one method has been shown clearly to be superior in long term studies (>10 years); however, in our practice we use cement.

How does it feel once it is in place?

Replacement joints come in many different sizes, and are precision engineered to feel and move as much like a real joint as possible. Most people with an artificial knee joint are not constantly aware of a difference between the feel of the implant and their original knee. Usually, there is some loss in the total amount of bending (flexing) in the knee; the key determinant of post-operative range of motion is your pre-operative range of motion.

How long will they last?

Design changes have occurred in recent years and current prostheses have been improved in an effort to yield better function and longevity. A Well implanted prosthesis, in a compliant patient, usually lasts for many years. Strenuous use and obesity have the potential to shorten the life span of the implant. Since the prostheses now being used are of newer designs we do not know exactly how long they will last. Occasionally, trauma, wear or loosening makes it necessary to replace a prosthesis. Revision arthroplasties statistically have a shorter life expectancy than primary implants. Every effort must be made to prolong the life of the total knee which is implanted first. A minimum of 7-10 years is a reasonable expectation. We have had some replacements in for 18 years and still functioning. The physical activity varies greatly between individuals as does the life of a replacement.

What will my function be after a total knee?

The main objective of a total knee is pain relief. Other goals include the correction of deformity and restoration of stability. Prosthetic designs constraints usually limit the range of motion to approximately of 0-110 degrees, many achieve more motion. It is critical to achieve full extension in the first 6-8 weeks after surgery. It should also be emphasized that total knee replacements are not done to allow patients to return to unlimited activities. Fitness may be maintained by low impact sports such as swimming or bicycling. Golfing and bowling are usually possible, and even moderate skiing in some individuals. Jogging is not recommended. Doubles tennis is preferred to singles.

Who is a candidate for total knee replacement?

The ideal patient is over sixty years of age. Most of the people we do are between 55 and 90 years of age. Many have some medical problems but are healthy enough for anesthesia. A younger age is usually a contraindication to total knee replacement, however, exceptions are made and must be individualized. Extreme osteoporosis (softening of the bone) is also a relative contraindication to total knee replacement. In patients with a significant history of past infection in their knee, total knee replacement may be contraindicated because of the risk of reactivating the infection. The patient with extremely poor dental hygiene should have all cavities filled or extractions performed before surgery. A patient with recurrent urinary tract infection secondary to chronic kidney stones, urethral strictures, or other genitourinary problems should have a urologic evaluation prior to total knee replacement.

Are there any special precautions necessary before and after total knee replacement?

Special precautions against infection are taken before, during and after surgery. Antibiotics and a special room with filters for clean air are used during surgery. Surgeons even wear a “space suit” in the operating room.

Although the risk is very low, the occurrence of late infection could require removal of the prosthesis. To minimize this risk prophylactic antibiotics should be given any time dental manipulation, urinary tract surgery or instrumentation is done, or significant bowel procedures are performed. Any skin infection should also be evaluated and treated with antibiotics since late prosthetic implant infections may be related to skin infections.

What about blood transfusions?

Blood transfusions are often required but are highly individualized based on patient age and health status, with a particular emphasis on your cardiac history. If you become symptomatic after surgery (ie., dizziness, light headedness, fast heart beat) we usually will give you intravenous fluid to increase your volume. If you do not respond to one or two fluid challenges and/or you have a history of heart disease, we may encourage you to accept a blood transfusion. The decision to pre donate blood is controversial and personal and you should discuss this with your surgeon.

How long will I be in the hospital?

You will be admitted on the day of surgery and remain hospitalized for approximately 3 to 5 days. During your hospital stay the emphasis will be placed on walking, regaining knee motion (particularly extension) and strengthening exercises. The quicker you can get back home, the better off you will be. It is especially important to emphasize the ability to straighten (extend) your knee.

Usually a therapist comes to your home three times a week for 4 to 6 weeks following surgery. They assist in the restoration of the strength of the muscles and progression to walking without a walker or crutches.

What are the potential complications?

A potentially significant complication associated with total knee replacement is infection. Infections occur in approximately one to three percent of total knee replacements and, depending upon the microorganism, may require removal of the implant. A new prosthesis can be implanted after the infection is cleared. In some unusual situations a fusion of the knee may be necessary.

Dislocation or subluxation (a partial dislocation) of the kneecap is another potential problem that occurs in a small percent of total knee replacements. Correction of this problem usually requires more surgery.

Premature loosening and wear may occur that shorten the longevity of the replacement.

Failure to satisfactorily relieve the pain occurs in about 10 to 15 percent of cases.

Fracture may occur around the knee as a direct result of implantation of the prosthesis, or later in the form of stress fractures. These are rare occurrences.

Important nerves and arteries lie immediately behind the knee joint and are rarely injured during total joint replacement.

The risk of anesthesia (general or spinal) is small but includes death. We use board certified anesthesiologists who work with us on a regular basis.

A tourniquet is applied to the thigh during the surgery to provide a bloodless field. Damage due to the pressure of the tourniquet is infrequent.

Blood clots forming in the legs or pelvis after surgery is a potential problem. If it occurs, thinning of the blood with medications is the treatment. This, often, requires hospitalization for a few days. A blood clot, if it moves to the lungs, has the potential to cause death. A medication to help prevent clot formation is given after surgery.

Fortunately, the total incidence of all serious complications is less than 5 percent. The majority of patients obtain excellent pain relief and function.

What are the usual recuperative landmarks following an uncomplicated knee replacement surgery?

Discharge from the hospital can be expected after 3 to 5 days in the hospital. The staples are typically removed from the skin in 10 to 14 days. You may shower or immerse the knee in water two weeks after surgery. You may swim, use a Jacuzzi, or whirlpool in 3 weeks. Driving is not recommended until approximately 4 weeks, when you have control of your quadriceps (thigh) muscle. Crutches or a walker are utilized for 4 to 6 weeks. Maximum recovery is attained in 3 to 6 months.