# Knee Replacement

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The knee is a complex joint. It acts as a "hinge joint," where it can flex and extend; however, it can also rotate and glide. The knee joint is formed by three bones: the tibia, femur, and patella. These bones form two different joints, the femorotibial joint and the patellofemoral joint. The joints are connected with collateral ligaments for stability and cushioned with menisci. The knee is finally covered with articular cartilage.

The knee is constantly in use, making it susceptible to damage. The destruction of the knee joint could be for five main reasons. The first and most common reason is osteoarthritis or "wear and tear" on the joint. This causes the smooth cartilage lining to wear away, because of a prior injury or infection. Another motive is Rheumatoid arthritis; this occurs when there is inflamed or swollen tissue surrounding the knee joint. Post-traumatic arthritis is a "wobbly" knee due to the injury of cartilage or ligaments. Avascular necrosis can happen when there is not a suffient supply of blood to the bone ends; this causes the articular cartilage to wear away. Lastly, Malalignment or "knock knees" of the knee joint can occur when there is irregularly high amounts of stress on either the inner or outer portion of the joint.

If a patient should have one of the mentioned conditions he or she could be a candidate for a knee replacement. Patients should only consider a knee replacement if he/she is in constant daily pain and/or if the pain is affecting their work or recreational life. The patient must also have noteworthy proof of damage to the knee.

During a knee replacement the worn or diseased cartilage and bone ends are removed and replaced with artificial surfaces. If a knee replacement becomes the only good option, the surgeon will then have to decide whether the patient will have an arthroplasty replacement (total knee replacement-TKR) or uni-compartmental (partial knee replacement). For TKR, all of the cartilage must be detached and implants are put in place; whereas for the partial replacements only the damaged areas are restored.

There are also categories of knee replacements. These included constraint, non-constraint, semi-constrained, and uni-condylar implants. Constrained implants are used on severely damaged knees; it links a hinged device together to support the knee. Non-constrained (most common) uses the artificial parts; however, the parts are not linked to one another. Semi-constrained are only used to replace the inner knee ligament. Finally, uni-condylar is only used to repair half (damaged area) of the joint.

The prosthesis for the knee replacement has four components: femoral component, tibial trays, tibial inserts, and patellar component. The femoral component is usually cemented (polymethyl-methacrylate used to adhere prosthetic to bone) to the reshaped portion of the femur. Next, the tibial component is inserted into the tibia, it can be either cemented or noncemented (the implant has rough surface to allow the bone to grow over the prosthetic with no cement needed). Next, the tibial trays are put in place between the femoral and tibial components; this allows the femur and tibia to move soundly. Finally, the patellar component is glued to the back of the patella.

The knee replacement has very few risks, although it does possess some danger. Infection, like with any operation, is less than one percent. Stiffness can occur if the patient does not remain active following the operation. Loosening of the implant or cement can happen. Deep Venous Thrombosis (formation of blood clots) can take place because of the slowing of blood to the knee during surgery. Lastly, osteolysis or "the breakdown of bone" can cause the implant to loosen or damage bone.

Knee replacements have a 90-95% success rate with patients and a 95% success rate for its lifespan (10 to 15 yrs.). Knee replacements are an unbeatable prosthetic.

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