

Minimally Invasive Total Knee Replacement

One of the most significant advancements in total knee replacement is that the procedure can be done with less invasive techniques which allow the patient to recover faster. This has even progressed to the point that some patients are able to have their surgery accomplished as an outpatient procedure. New implants have been designed to reproduce the normal motion and function of the replaced joint. These new designs incorporate new plastics and new biologically active coatings for the implants. These materials include highly crosslinked polyethylene for the knee. This new plastic has been approved by the F.D.A. for regular use in the United States. Laboratory tests have shown these new plastic implants to last longer than previous types.

The new implant designs can be inserted using minimally invasive techniques resulting in less trauma to the patient and the tissues surrounding the knee. The benefits for the patient are that the scar is significantly smaller and less to heal and the second major advantage is faster recovery from surgery of "smaller" magnitude. When knee replacement surgery is accomplished with smaller incisions, the patients will require fewer blood transfusions, will have shorter hospital stays and will return to work or recreation sooner. Patients report that a joint replaced with these new techniques is significantly less painful than with the previous, more generous, surgical exposures. Minimally invasive knee replacement can be performed thru one 3 to 4 inch incision. We try to use this limited exposure on all patients but those patients who are significantly overweight will have a slightly larger scar and a larger, more extensive exposure.. Our first priority in performing the operation is to be able to see anatomy adequately. The latest new development has been the pre-operative creation of cutting blocks based upon the patient's CAT scan anatomy of the hip, knee and ankle. Using this device called "My Knee" (Medacta) there is no need for intramedullary guides which cause increased blood loss and there is a higher percentage of perfectly positioned prosthetic components which most likely will increase the total knee longevity.

Minimally invasive knee replacement surgery can be performed as an outpatient on some selective patients with partial replacements. The unicompartmental knee replacement, which can be used on about 10% of patients who have degenerative arthritis in only part of their knee. All of the ligaments are preserved with this technique (anterior cruciate, posterior cruciate, medial collateral and lateral collateral). The knee replaced with a "uni" rehabilitates faster and seems to function much more like a normal knee than a traditional total knee replacement. In this situation, the patient receives appropriate education before surgery and then comes to the hospital the morning of surgery. After the operation, the patient is able to leave the hospital on crutches and be driven home to recover. The most current anesthetic techniques are used and appropriate medications given to minimize any risk of nausea and decrease pain.

The following pre-requisites are necessary:

1. The patient is in a stable medical condition.
- Minor medical conditions should be well controlled: hypertension, asthma, thyroid conditions, stomach or gastrointestinal problems.
 - Contraindications include: diabetes, altered mental function (dementia, Parkinson's disease),

obesity, unstable cardiac status, renal failure, sleep apnea, and significant prostate obstruction interfering with adequate urination.

- Age itself is not very important as long as other considerations are fulfilled.
2. The patient is willing to attend physical therapy before coming to the hospital. The patient must learn the use of crutches and the appropriate dislocation precautions before surgery.
 3. There is an appropriate caregiver to help take care of the patient at home for the first few days after surgery. This is the same as for any outpatient surgical procedure.
 4. The patient strongly desires to have the operation as an outpatient.