



Total and Partial Knee Replacement

Advances in Knee Replacement Surgery

- Technology and Innovation Merged with Timeless Tradition: We combine the latest technological advancements and surgical techniques along with the timeless principles of anatomy and minimization of soft tissue trauma in order to achieve the best results possible.
- Simplicity: We do not routinely use tourniquets, drains, Foley (bladder) catheters, or skin staples.
- We have found that not using tourniquets in the operating room has dramatically decreased pain following surgery and does not lead to increased blood loss with our modern surgical techniques. Increased pain associated with tourniquet use may be due to the development of significant hypoxia (no delivery of fresh blood and oxygen) to the tissues of your leg which happens with extended use of the tourniquet.
- Decreased Infection Risk: Drains and foley catheters can hinder mobility and increase the risk of infection.
- Innovations in Wound Management: Skin staples may be associated with an increased risk of wound complications/infection, increased scarring and/or a less attractive wound appearance, and can delay showering and hinder basic hygiene. We now routinely employ specialized glue for skin closure, which allows for immediate showering after surgery and dramatically simplifies incision management.

Customized Patient-Specific Knee Implants

Patient-Specific Implants and Instrumentation: Customized Total and Partial Knee Replacement implants along with 3D printed patient-specific intraoperative instrumentation is now available.

Preoperative Planning and Preparation: A preoperative CT scan is performed, which allows for creation of patient-specific Operating Room (OR) instrumentation and implants. Patient-specific instrumentation and implants help to minimize soft tissue trauma during surgery and optimize implant fit and positioning unique to each individual person.

Less Soft Tissue Trauma and Decreased Infection Risk: Patient-specific instrumentation and implants are designed to fit each patient's unique anatomy, which allows for a faster and smoother OR procedure and decreased bone and soft tissue trauma. Furthermore, there is significantly less equipment that needs to be brought into the OR and opened onto the sterile field. As such, OR setup is faster, OR traffic is decreased (related to less OR equipment that needs to be moved into the room) , and the wound is open to the atmosphere for a shorter period of time. All of these factors may work synergistically to lower the risk of infection.

Improved Outcomes: In our experience this improves not only implant fit but also outcomes following total and partial knee replacement surgery. A more natural, customized implant fit combined with a procedure involving less soft tissue trauma (and subsequently less scarring) leads to improved function and higher patient satisfaction. This is intuitive and makes logical sense as form follows function.

Anterior Knee Incision

The incision is located along the front of the knee. Incision size depends upon many factors. In general the incision is proportional to the size of the patient and the subcutaneous tissues around the knee. We take great care to minimize soft tissue trauma and we don't make the incision any

larger than what is necessary. However, we also don't hesitate to make an incision large enough to facilitate adequate exposure in order to safely perform the procedure and to achieve optimum implant positioning. The incision is closed with glue, and a waterproof dressing is applied in the Operating Room (OR). It is OK to shower with the waterproof dressing in place immediately following surgery.

Anesthesia

Options include spinal or general anesthesia. Spinal anesthesia may provide better pain relief immediately following surgery and may be associated with a lower risk of intraoperative blood loss and postoperative Deep Venous Thrombosis (DVT).

Activity Progression after Surgery

You can bear full weight as tolerated immediately following surgery (unless specifically directed otherwise). Use of assistive devices such as a walker or a cane following surgery can increase mobility and maximize safety. Resuming activities of daily living, work, and driving are highly individual and are largely dependent upon individual factors. In general, individuals who have planned ahead and have taken the time to optimize their health and minimize their risk factors over which they have control recover noticeably faster.

Postoperative Course and Recovery

Depending upon many factors, the surgery may be performed at a surgery center on an outpatient basis or at a hospital with an overnight stay. The ideal situation is to go home after surgery if you have adequate support from family and close friends. The other option is to go to a skilled nursing facility for a couple of days after surgery if you live alone and adequate assistance at home is not available. While some adjustments can be made after surgery if you are admitted to a hospital, it is quite helpful to plan ahead and arrange for support and help at home if possible.

Recovery varies significantly from person to person and is dependent upon many variable factors including preoperative hip and lower extremity range of motion/strength, nutrition status, smoking status, the presence of other medical conditions/overall health, cardiovascular fitness, and the severity of hip arthritis present at the time of surgery. We have found excellent outcomes correlate more with physiological age (one's overall health fitness) than with simple chronological age (the number of years you have been alive). It is a worthwhile endeavor to get in the best physical, spiritual, and mental condition as possible before surgery as this will lead to a faster recovery and minimize the risk of perioperative complications.

Physical Therapy (PT)/Home Exercise Program (HEP)

PT along with a focused HEP is essential in order to achieve optimal Range Of Motion (ROM) following knee replacement surgery. Formal PT and a HEP begin immediately following surgery. While there may be some pain associated with ROM exercises following knee replacement surgery, prolific scar tissue begins to mature at approximately 4-6 weeks postoperatively. As such, immediate and aggressive postoperative knee range of motion exercises are important in order to achieve an optimal outcome. We aggressively employ a multimodal pain control regimen to assist with ROM exercises during the first 4-6 weeks following surgery. The goal is to achieve full extension (knee completely straight) and at least 90° flexion (knee bent at a right angle) as soon as possible (but definitely within 1-2 weeks postoperatively). The ultimate goal is to obtain and maintain full extension and 125° (or greater) of flexion by 6 weeks postoperatively.

While Range Of Motion (ROM) must come quickly following surgery, strengthening, gait training, and cardiovascular conditioning are not as time-sensitive and can be optimized later in the postoperative period. If adequate ROM is not achieved by 6 weeks postoperatively, a knee manipulation under

anesthesia (bending the knee in the operating room) may be required. One of the best indications of postoperative ROM is preoperative ROM. This is one of the many reasons why it is also important to optimize ROM prior to surgery and to proceed with surgery prior to the development of significant ROM restrictions or knee deformity.

Deep Venous Thrombosis (DVT) and Pulmonary Embolism (PE) prophylaxis (Blood Clot Prevention)

- We employ a variety of different methods to minimize your risk of DVT and PE including medications (oral medications or injections depending upon your individual risk factors for bleeding and/or blood clots), early mobilization, calf compression devices, and adequate hydration following surgery.
- The best way to prevent blood clots after surgery is adequate hydration (drink plenty of water) and frequent movement of all 4 extremities.
- If you have No Risk Factors for blood clotting or excessive bleeding, take an Enteric-Coated Baby Aspirin (81 mg) 2X/day for the first 2 weeks and then 1X/day during weeks 3-4 following surgery. This may help to lower the risk of a blood clot developing after surgery.
- Call the office if you notice excessive swelling or significant pain below your knee (Calf, ankle, or foot).
- Move all 4 of your extremities several times per hour while resting in bed and when seated. This frequent movement helps to keep blood moving in the veins of your leg.
- Begin drinking fluids as soon as possible after surgery. This will help to thin your blood as well as encourage mobility as you will need to get up and use the restroom more frequently.

Postoperative pain control

We employ a multimodal treatment approach to manage postoperative pain including medications taken preoperatively, injections given intraoperatively, and a variety of different strategies postoperatively. This approach helps to minimize narcotic use and side effects while more effectively controlling postoperative pain.

Infection prophylaxis

IV antibiotics will be given both prior to surgery and postoperatively. After surgery you may need to take oral antibiotics prior to dental cleanings/procedures for the rest of your life depending upon your particular situation.

Diet

- Beginning the after day of surgery, drink plenty of clear liquids and eat nutritious foods. Adequate hydration and optimal nutrition is an essential part of your healing and recovery.

Common Complaints after Surgery

- Nausea/Vomiting is usually related to the anesthetic drugs used during surgery and resolves during the first 24 hours. Begin with clear liquids and light foods following surgery.
- Drowsiness is associated with anesthetic drugs and IV pain medications used during your surgery. This usually resolves within 24 hours after surgery.
- Constipation is a common side effect of narcotics and strong pain medications. Adequate hydration, a diet high in fiber, and over-the-counter stool softeners can help to minimize constipation.
- Low grade fever (< 100.5° F) can occur during the first 24-48 hours following surgery. Taking deep breaths and periodically sitting upright will help this to resolve.

When to Call

Call us at 858.703.6964 if any of the following develop:

- Temperature > 101.5° F
- An increase in redness or cloudy drainage from the incisions
- Increased foot or calf swelling
- Severe pain not adequately controlled with medications
- Excessive nausea or vomiting
- Chest pain or shortness of breath