



*Zimmer MIS
Mini-Incision TKA
and Understanding
Total Knee Replacement*

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A global leader in the provision of high-quality, hands-on education and training for orthopaedic surgeons.

Individual results may vary. Your results will depend upon your personal circumstances. This information is intended to provide an overview of knee replacement surgery. Review this information with your doctor. Joint replacement surgery is usually a last option after all other treatments have been exhausted.

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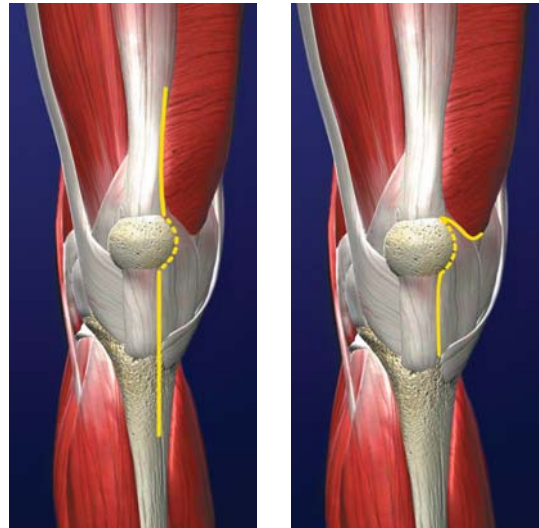


MIS Mini-Incision TKA and Understanding Total Knee Replacement

Your knee is the largest joint in your body and one of the most easily injured. Known as wear-and-tear arthritis, osteoarthritis can set in over time and cause pain and stiffness. Discomfort may be felt when bending or putting pressure on the knee, such as when walking or going up and down stairs. Eventually, the pain may become nearly constant. Medications and walking aids may help temporarily, but much of the time the only long-term solution is knee replacement.

Today, Zimmer *Minimally Invasive Solutions*[™] (MIS[™]) Mini-Incision Total Knee Arthroplasty (TKA) is allowing knee replacement surgery to be performed less invasively, using the same clinically proven implants as traditional surgery.

All knee replacement surgeries require that the knee joint be exposed so its surfaces can be replaced. Traditional knee surgery involves a 20 cm to 30 cm incision. The MIS Mini-Incision procedure can be performed through an incision as small as 10 cm.



Standard Incision

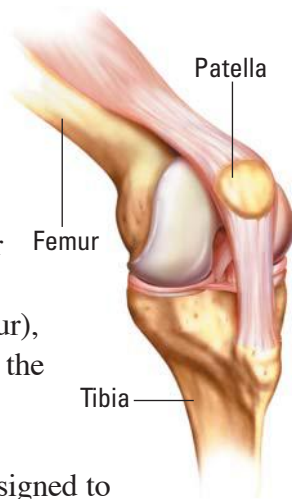
MIS Mini-Incision

Zimmer MIS Mini-Incision TKA offers potential benefits:

- Less disruption of tissue during surgery
- A smaller incision and scar – as small as 10cm to 12cm in length – rather than the standard 20cm to 30cm incision
- The ability to perform more exercises – such as straight leg raises – on day one following surgery
- Some patients may experience less pain
- No difference in complications compared to traditional total knee replacement surgery

How Does Osteoarthritis Affect the Knee?

Knee osteoarthritis usually affects the weight bearing sections of the knee, which include the junction of the lower leg bone (tibia), the upper leg bone (femur), and the area beneath the kneecap (patella).



A healthy knee is designed to move and endure the forces of everyday activities. A cushioning layer of tissue, called cartilage, prevents direct contact among the three bones and allows them to move without creating wear on the bone surfaces.

When the cartilage is damaged or worn away over time or after injury, knee bones rub together causing friction, pain, and eventually, deterioration of the bone surfaces. There is currently no medication or treatment that will cause damaged cartilage to grow back.



What is Total Knee Replacement?

Total knee replacement surgery, also called Total Knee Arthroplasty (TKA), involves resurfacing the damaged portions of all three bones of the knee and restoring function by placing metal and plastic implants. Total knee replacement is necessary when both compartments, or condyles, of the knee are damaged. If only one condyle is damaged, you may be a candidate for partial knee replacement through another minimally invasive procedure, the Zimmer MIS Procedure for the M/G® or Zimmer® Unicompartmental Knees.



During total knee replacement, the surface of the upper bone is replaced with a rounded metal component that comes very close to matching the curve of your natural bone. The surface of the lower bone is replaced with a flat metal component and a round disc of polyethylene plastic that will serve as the cartilage. The undersurface of the kneecap also may be replaced with a polyethylene disc.

Birthday Brings Gift of New Knee

On her 55th birthday, flower shop owner Eileen Alonso woke up with exactly what she'd been wanting for the past year: a brand new knee.



The long journey that led Eileen to undergo total knee replacement had begun 14 months prior. When she was making the four-and-a-half hour drive home to Miami after visiting her 7-month-old granddaughter in Orlando, her left knee suddenly began to throb.

“When I got out of the car, I was limping and my knee was swollen,” Eileen said. “My left knee was one-and-a-half times the size of my other knee.”

During the next year, Eileen tried many treatments, but none relieved her pain. She tried prescription pain relievers,

acupuncture and orthotics. She received injections designed to stop her knee bones from rubbing directly against each other, and also tried cortisone shots into the joint.

“I had absolutely no quality of life,” she said. “I couldn’t play with my granddaughter. My life was pretty lousy.”

Eileen’s doctor referred her to an orthopaedic surgeon who specialized in minimally invasive total knee replacement and the Zimmer *MIS* Mini-Incision TKA procedure.

Her surgery took place on the Monday before her birthday. She returned to work at her flower shop two weeks after she left the hospital.

She knew two people who had previously undergone traditional knee replacement surgery, and said they couldn’t believe her small incision – 10 cm vs. the standard 20cm to 30cm incision – and the speed of her rehabilitation compared to their experiences.

“My life has changed totally,” Eileen said, adding that she’s such a fan of the minimally invasive procedure that she’s already recommended it to others. “My best friend just had both knees replaced the same way,” she said.

After Two Total Knee Replacements, Fun-Loving 70-Year-Old Returns to Biking

Arthur Sheldon isn't about to give up the things he loves to do. At age 70 and with two artificial knees, he works as a construction executive, pumps iron, and still enjoys one of his favorite pastimes – biking with his best friends. Eight years ago, when severe knee pain was interfering with his ability to participate in recreational activities and interrupting his sleep, Arthur took action.



“I was limping, hurting, and not functioning the way I wanted,” he said. “At night, while lying in bed, I would get what I call ‘jolts’ – my knee would jump off the bed in exceptional pain. I just wasn’t going to live like that.”

He underwent two knee replacements, first his left knee in 1995, followed by his right in 2003. The left knee replacement was done with a traditional surgical approach, and the right one was replaced with the less-invasive Zimmer *MIS* Mini-Incision TKA procedure.

Although the procedures were performed 8 years apart, Arthur’s rehabilitation goal remained the same: he wanted to return to the regular Saturday morning biking get-togethers with his friends.

“My focus and goal in rehab were to rejoin my biking buddies,” he said. “It’s not just a bike ride, it’s about bonding with friends who go back 50 years. It’s fun and it’s healthy for body and spirit. We bike 35 to 38 miles. I needed to return to that routine.”

Arthur said the newer, minimally invasive surgical approach led to a faster recovery when compared to his experience with traditional knee replacement.

While the scar on his right knee is less than half the length of the scar on his left knee, that’s not what matters to Arthur. “The minimally invasive approach heals quicker, better, and easier, with less pain,” he said. I think it’s a better procedure. In 1995, I was able to return to biking with my buddies in five weeks; in 2003, I was able to return in four weeks.”

He has a message for others who suffer from knee pain. “When your knees are worn out, bone on bone, you need everything fixed up, go ahead and get it done. Arthur said, “You will not regret it.”

Is the Zimmer MIS Mini-Incision TKA Procedure Right for Me?

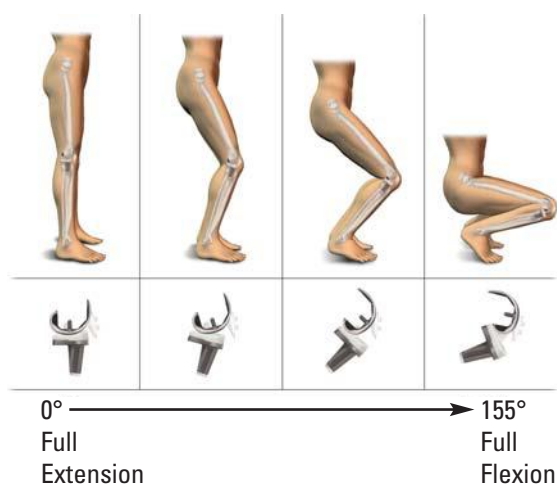
The decision to have knee replacement surgery is up to you and your orthopaedic surgeon. Your doctor will consider a number of factors, including:

- Medical history
- Weight
- Health status
- Anatomical structure, including bone structure and extent and pattern of arthritis

How is the Zimmer MIS Mini-Incision TKA Procedure Performed, and How Does it Differ from Traditional Surgery?

The Zimmer *MIS* Mini-Incision technique involves removing or resurfacing the damaged portions of the knee through an incision that begins at about the same point below the kneecap as the incision used in traditional knee replacement surgery; however, the mini incision does not extend as far up into the quadriceps muscle as the traditional incision. Quadriceps muscles and tendons control the bending of the knee. Less cutting of this muscle group during surgery leads to potential patient benefits.

The same knee implants are used in both traditional and minimally invasive approaches. The Zimmer *NexGen*[®] Complete Knee Solution high flex knee is the most commonly used implant in the *MIS* Mini-Incision procedure. The high flex knee is specifically designed to safely accommodate deep knee bending of up to 155 degrees. Other knee implants typically accommodate flexion of up to 125 degrees, which may not be enough for everyday activities such as climbing stairs (requires 75-140 degrees of bending) and sitting in a chair (90-130 degrees of bending). Gardening, golfing, kneeling for prayer, and sitting cross-legged can demand up to 130-150 degrees of bending.



How Will I Know If I Need Total Knee Replacement Surgery?

Your orthopaedic surgeon will perform a very thorough examination of your knee. This will include a test of your range of motion – how far you can bend and extend your knee. Your surgeon also will look for deformities in your legs, which may show up as conditions commonly called bow-legged or knock-kneed. You will be asked to walk, sit, and perhaps to go up and down a few steps.

Your surgeon will ask you many questions to determine your medical history. You will be asked about injuries, infections, and other disorders you have experienced in your life. Your surgeon will want to know what medications you are taking. And, of course, you will be asked to describe the pain in your knee.

Finally, your surgeon will take x-rays which will be used to further assess the condition of your knee joint. If you decide on knee replacement surgery, these x-rays also will be used to help your surgeon select the best type and size of artificial knee.

Based on this examination, your surgeon will determine whether you are a candidate for total knee replacement. Although widely practiced, total knee replacement is a major surgical procedure and should only be considered when all other treatment

methods have failed. There may be more conservative alternatives for you and your surgeon to consider. These include medications or injections for pain and inflammation, physical therapy, or other types of surgery.

The final decision about whether or not to have total knee replacement surgery will be yours, so you will want to understand the risks involved. There are potential complications both during and after surgery. Generally, these include infection, blood clots, pneumonia, prosthesis loosening, nerve damage, and reaction to the anesthesia. Your surgeon can answer your specific questions about these risks.

What is it Like to Have Minimally Invasive Total Knee Replacement Surgery?

Before Surgery

If you and your surgeon decide that total knee replacement is right for you, a date will be scheduled for your surgery. Several things may be necessary to prepare for surgery. For example, your surgeon might ask you to have a physical examination by an internist or your regular doctor.

Because blood transfusions may be needed during your surgery, you may want to donate one unit of your own blood, or possibly two units if your surgeon feels it is needed. You can donate one unit per week before your surgery.

Your surgeon also may ask you to meet with an occupational therapist who will show you how to perform daily tasks at home with your new knee so that you can begin practicing. For example, he or she will instruct you on how to go to the bathroom, how to dress yourself, how to sit or stand, and how to pick up objects when you have an artificial knee.

During Surgery

On the day of surgery, a small tube (intravenous line) will be inserted into your arm. This tube will be used to administer antibiotics and other medication during your surgery. You will then be taken to the operating room and given anesthesia. After the anesthesia takes effect, your knee will be scrubbed and sterilized with a special solution.

The surgery will begin with an incision along the knee that will expose the joint. Special precision guides and instruments are used to remove the damaged surfaces and shape the ends of the bones to accept the implants.

The implants are then secured to the bones. It also might be necessary to adjust the ligaments that surround the knee in order to achieve the best possible knee function. When the surgeon is satisfied with the fit and function of the implants, the incision will be closed.

A special drain may be inserted into the wound to drain the fluids that naturally develop at the surgical site. A sterile bandage will then be applied, and you will be taken to the recovery room, where you will be closely monitored. Your surgery will likely take between one and three hours, depending on your individual circumstances.

After Surgery

As your anesthesia wears off, you will slowly regain consciousness. A nurse will be with you, and may encourage you to cough or breath deeply to help clear your lungs. You also will be given pain medication. When you are fully awake, you will be taken to your hospital bed or room. Your knee will remain swollen and tender for a few days.

What Can I Expect After Minimally Invasive Surgery?

When you are back in your hospital bed, you will begin a rehabilitation program that will help you regain strength, balance and range of movement in your knee. This program will be designed specifically for you. It may include a machine, called a continuous passive motion machine, that automatically moves your leg to reduce stiffness.

Your physical therapist will help you perform appropriate exercises. You will be asked to flex your knee almost immediately following surgery. Then, about four to six hours after surgery, you will be asked to stand. And within 24 hours, you will probably begin to walk a few steps with the help of a walker or cane. If you did not meet with an occupational therapist before your surgery to learn how to perform daily tasks at home, you will do so before you are dismissed from the hospital.

When your surgeon determines that you have recovered sufficiently, you will be discharged. This will usually be the same day or the next day, but may be longer. You may or may not be transferred to a nursing facility for a few more days, as determined by your surgeon. Your bandages and sutures may be removed

before you leave the hospital. Within one to two weeks, you will revisit your surgeon to check the progress of your recovery.

At home you will need to continue your exercises. If your physician orders physical therapy, your physical therapist will instruct you about proper home care, and may continue to work with you. Most patients are able to walk with a cane, or with no support at all, within weeks after surgery. Some patients are able to resume normal activities, including driving a car, within seven to ten days after surgery. But recovery times vary, depending on the specific patient.

In most cases, successful total knee replacement will relieve your pain and stiffness, and allow you to resume many of your normal daily activities. But even after you have fully recovered from your surgery, you will still have some restrictions. Normal daily activities do not include contact sports or activities that put excessive strain on your knees. Although your artificial knee can be replaced, a second implant is seldom as effective as the first.