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*MIS Procedure for
the M/G Uni Knee
and Understanding
Partial Knee
Replacement Surgery*



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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Why Does My Knee Hurt?

Your knee joint is made up of three bones. Your thigh bone (femur) sits on top of your shin bone (tibia). When you bend or straighten your knee, the two rounded projections at the end of your thigh bone roll and glide across the relatively flat upper surface of your shin bone. The third

bone is often called the kneecap (patella), which is attached to the muscles that allow you to straighten your knee.

Your kneecap provides leverage that reduces strain on these muscles.

In a normal, healthy knee, the bone surfaces that come together at the joint are smooth and hard. A

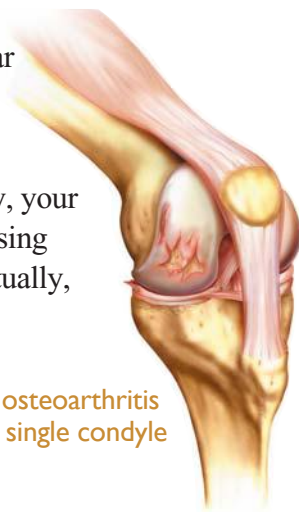
cushioning layer of tissue, called cartilage, prevents direct contact among these bones. This tough layer of tissue allows the three bones to move without creating friction or wear on the bone surfaces.

When this cartilage is damaged or worn away, your bones rub together causing friction, pain and eventually,

Knee with osteoarthritis of a single condyle



Healthy Knee



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 six 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 partial 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.

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What Can I Expect After Minimally Invasive Surgery?

When you are back in your hospital bed or room, 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 help 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.

deterioration of the bone surfaces. In some people, all of the bone surfaces may be damaged. In others, the damage may be limited to only one side of the joint – only one of the rounded projections. The most common causes of damage to your cartilage are the various types of arthritis. There is no medication or treatment that will make damaged cartilage grow back.

What is Partial Knee Replacement, and How is it Different from Total Knee Replacement?

In total knee replacement surgery, the damaged surfaces of all three bones are resurfaced with metal and plastic implants. Using special, precision instruments, your surgeon will typically remove the damaged surfaces. The replacement surfaces will then be fixed into place. 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 slab of ultra-high-molecular weight polyethylene plastic to serve as the



Total Knee Replacement

cartilage, or the entire component may be plastic. The undersurface of the kneecap also may be replaced with a round disc made of the same polyethylene plastic.



Partial Knee Replacement

Partial knee replacement is an option for patients who do not require total knee replacement because some of the joint surfaces are still healthy. In partial knee replacement surgery, the surgeon removes only the diseased portion of the knee before placing the implant, leaving the healthy portion untouched. This means that the surfaces are replaced on only one side of the joint, that is, only one of the rounded projections is replaced beneath it. A successful partial knee replacement may delay and, in some cases, prevent a more extensive knee replacement surgery.

Partial knee replacement is an option for patients who do not require total knee replacement.

The surgery will begin with an incision over 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 is it Like to Have Minimally Invasive Partial Knee Replacement Surgery?

Before Surgery

If you and your surgeon decide that partial 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.

How Has Partial Knee Replacement Changed?

Any knee replacement surgery requires that the knee joint be exposed so its surfaces can be replaced. The traditional way to expose the knee joint is to make a skin incision that is 20cm to 30cm long. This procedure has been performed successfully for many years and on thousands of patients, and is still performed today.

The *Minimally Invasive Solutions*[™] (*MIS*[™]) Procedure for the *M/G*[®] Unicompartmental Knee (Uni Knee) is an alternative to the traditional technique for some patients who suffer from osteoarthritis of the knee. Using new, specialized instrumentation, surgeons are able to perform this minimally invasive procedure through an incision that can be as small as 8cm long.

Is MIS Partial Knee Replacement Better ?

The *MIS* partial knee replacement procedure may not help your new knee joint function better or last longer than traditional surgery, but it might help make your surgery, recovery, and rehabilitation faster and easier for you.

The MIS Procedure Offers:

- Smaller incision and scar – as small as 8 cm in length, rather than the standard 20cm to 30 cm incision
- Shorter hospital stay – may be performed on an outpatient basis; hospital time is minimized, often 24 hours or fewer
- Faster rehabilitation/recovery time – an estimated five weeks for many patients, but may vary
- Greater range of motion after recovery – when compared to standard total knee procedures (non-high flex), it allows for nearly full range of motion

These benefits will vary based on your individual circumstances and factors such as your weight, general health, and the extent and pattern of your arthritis.



alternatives that you and your surgeon might want 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 partial 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.

Is the MIS Procedure Right for Me?

An ideal candidate is someone who has osteoarthritis of the knee that is isolated to only one condyle (or compartment) of the knee. Candidates also may include people who are not responding to other forms of treatment such as medication, arthroscopy, or cartilage transfers. (The Uni Knee replacement is not performed on individuals with rheumatoid arthritis.)

Your surgeon may begin a minimally invasive partial knee procedure, then discover that the condition of your knee is such that the incision needs to be enlarged and/or a total knee replacement is necessary. This will be determined during your surgery. Enlarging the incision will not affect the function of your new knee.

How Will I Know if I Should Have Partial Knee Replacement?

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 bowlegged or knock-kneed. You will be asked to walk, sit, and perhaps 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 partial knee replacement, and whether a minimally invasive partial knee procedure is right for you. Although widely practiced, partial knee replacement is a major surgical procedure and should only be considered when all other treatment methods have failed. There may be more conservative

Symptoms

Your doctor can help you determine if you are a candidate for partial knee replacement, which is considered when:

- Aching in the knee(s) is followed by periods of relative relief
- Pain occurs after extensive use
- Mobility has been lost
- Joint stiffness tends to follow periods of inactivity such as sleeping or sitting
- Knee pain seem to increase in humid weather

How Do I Decide?

The decision to have the *MIS* procedure for an *M/G* Uni Knee replacement 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



Beating Osteoarthritis of the Knee One Patient's Road to Recovery

For Dominick Semenza, a 58-year-old lieutenant with the Edison Police Department in New Jersey, everyday, every step was a painful reminder of the physical challenges of his job.

“For three years, my left knee was constantly aching – from the moment I woke up until the moment I fell asleep,” Dominick said. “It even got to the point where I had to put a pillow between my knees at night to prevent them from touching.”

Dominick had always excelled in his career and enjoyed an active life, from snow skiing to carpentry work. But as Dominick's symptoms worsened, he was forced to give up these activities and faced an early retirement from the police force after 34 years of duty. In addition, Dominick was having difficulty keeping up with his family, which includes his wife, Pamela, five children and six granddaughters.



“My quality of life has greatly improved.”



Dominick met with two doctors who both suggested a total knee replacement. “A total knee replacement would have eased my pain, but it would have prevented me from returning to work and other activities. I wasn't ready to settle – I knew there had to be another treatment that was better suited to my condition.” A third physician then concluded Dominick was an ideal candidate for the (*MIS*) Procedure for the *M/G* Uni Knee.

Dominick spent one night in the hospital after undergoing the *MIS* procedure and was then able to return to the comfort of his own home. Over the next several weeks, he diligently attended physical therapy and performed daily exercises to get his knee back to its full range of motion. After only four weeks of recovery, Dominick was back to work and continuing with his active life. “Since undergoing the *MIS* procedure and receiving the Uni Knee, my quality of life has greatly improved,” Dominick said.