

MAKOplasty® Robotic Arm Partial Knee Resurfacing  
**Your Pre-operative Guide**



MAKOplasty® partial knee resurfacing is an innovative surgical treatment option for adults living with early to mid-stage osteoarthritis (OA). It is best suited for patients whose arthritis has not progressed to include all three compartments of the knee. It is powered by the RIO® Robotic Arm Interactive Orthopedic System, which allows surgeons to achieve consistent reproducible precision with the newest techniques in bone and tissue sparing knee implant surgery.



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*The information provided herein is not meant to substitute for the in-depth consultation you should have with your physician. Only a licensed physician can adequately diagnose and explain your underlying orthopedic condition, the natural history of the condition without intervention, the MAKOplasty® procedure, medically acceptable alternative procedures, and the potential complications and risks of any procedure and/or operation. In every case your physician must guide you on all aspects of your surgery, including pre and post-operative care. Individual results will vary.*

# MAKOplasty® Partial Knee Resurfacing

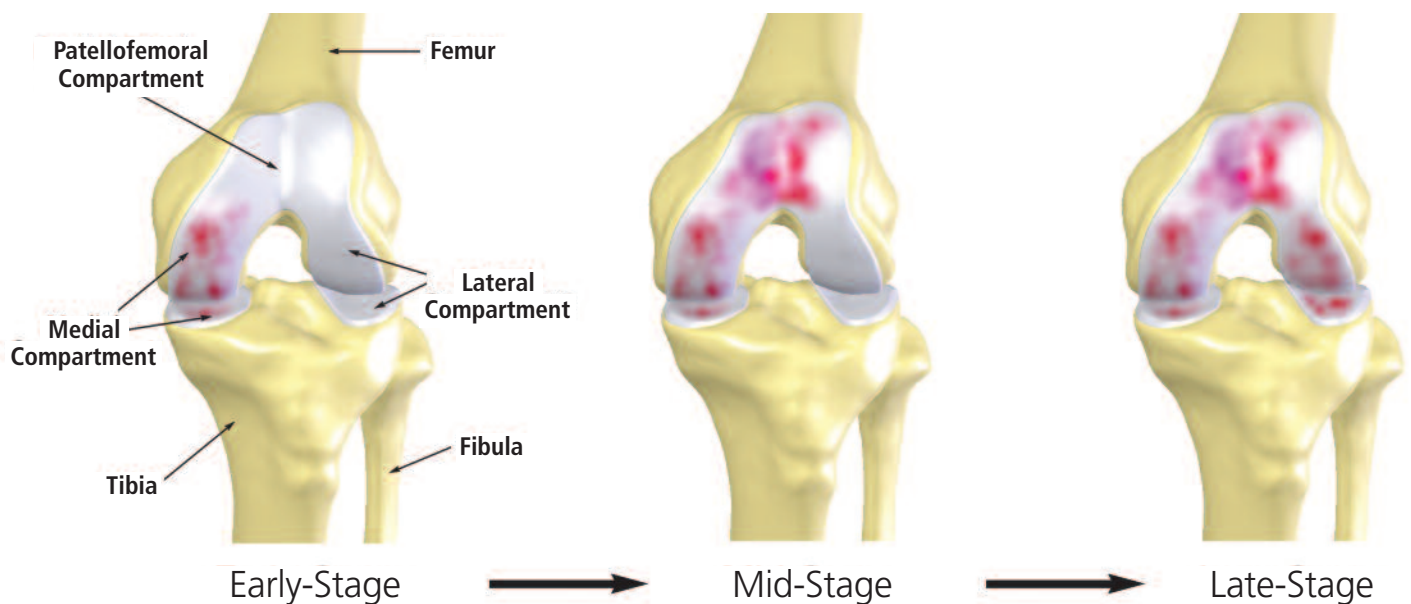
Your surgeon has determined that you are a candidate for MAKOplasty® Partial Knee Resurfacing. This brochure was designed to provide you information about the MAKOplasty® procedure as well as what to expect before and after the procedure. This information is not meant to substitute for consultations with your physician and his or her staff.

MAKOplasty® is designed to relieve the pain caused by joint degeneration due to osteoarthritis (OA). By selectively targeting the part of your knee damaged by OA, your surgeon can resurface your knee while sparing the healthy bone and ligaments surrounding it. Other benefits may include a smaller incision, minimal hospitalization, reduced blood loss, less scarring, rapid recovery and the ability to return to an active lifestyle quickly.

The MAKOplasty® procedure is indicated for patients suffering from unicompartmental or bicompartamental knee disease. Therefore, a total knee replacement (for tricompartmental knee disease) is sometimes necessary if your surgeon discovers during surgery that your knee has more damage than originally seen in the pre-operative X-rays and CT scan.

## Stages of OA

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# MAKOplasty® – A Less Invasive Procedure



## MAKOplasty® Partial Knee Resurfacing Can:

- Enable surgeons to precisely resurface only the arthritic portion of the knee
- Preserve healthy tissue and bone
- Facilitate optimal implant positioning to result in a more natural feeling knee following surgery
- Result in a more rapid recovery and shorter hospital stay than traditional knee replacement surgery
- Be performed on an out-patient basis (in some cases) depending on what your surgeon determines is the right course of treatment for you

The MAKOplasty® procedure is a unicompartmental or bicompartamental knee replacement enabled by robotic arm technology that allows the surgeon to perform surgery precisely through a smaller incision as compared to standard manual procedures. Surgeons use the RIO® Robotic Arm Interactive Orthopedic System, a surgeon-controlled robotic arm system that combines computer imaging with an intelligent instrumentation. This allows the surgeon to precisely place an implant that has been selected for your knee.

MAKOplasty® can be performed through a four to six inch incision over your knee with small incisions in both your femur (thighbone) and tibia (shin). By preserving healthy bone, tissue and ligaments along with more ideal patient specific implant positioning, the results may be a more natural feeling knee.

Since healthy bone is preserved, patients who undergo MAKOplasty® partial knee procedures may still be candidates for a total knee replacement procedure later in life if necessary. Your physician should discuss the specific risks associated with MAKOplasty® and other treatment options with you. In addition, you should be informed of any pre-operative and post-operative instructions by your surgeon or his or her staff.



**RIO® Robotic Arm Interactive  
Orthopedic System**

# Your Guide to MAKOplasty® Surgery

## Before Surgery

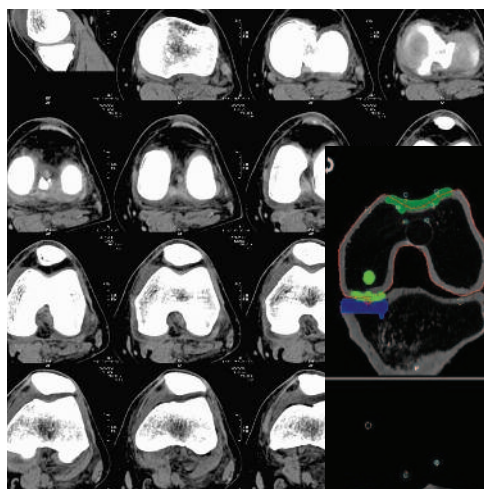
It is important that you take care of your health as best as possible prior to your MAKOplasty® procedure. This may involve losing weight or starting an exercise program prior to your surgery. If you smoke, your physician may ask you to stop smoking so that your body can heal properly following surgery, as tobacco products can rob your body of oxygen supply that may be needed to facilitate healing.

Remember to inform your orthopedic surgeon and anesthesiologist of any medications you may be currently taking. You may be advised to stop taking estrogen, aspirin, Vitamin E, anti-inflammatories, NSAIDs or herbal supplements prior to surgery.

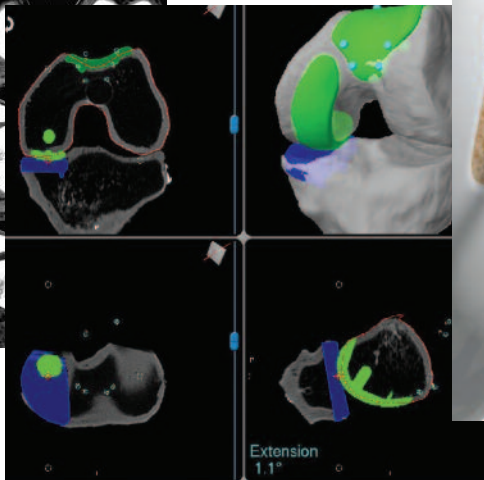
Your surgeon will schedule a CT scan at least one or two weeks prior to your surgery date. Data from this scan will help him or her plan the implant placement specifically to fit your knee.

Remember not to eat or drink anything after midnight the night before your surgery unless otherwise instructed. You may be advised to take any normal medication with a sip of water the morning of surgery, but always confirm this with your surgeon. Do not use alcohol or sedatives 24 hours before surgery.

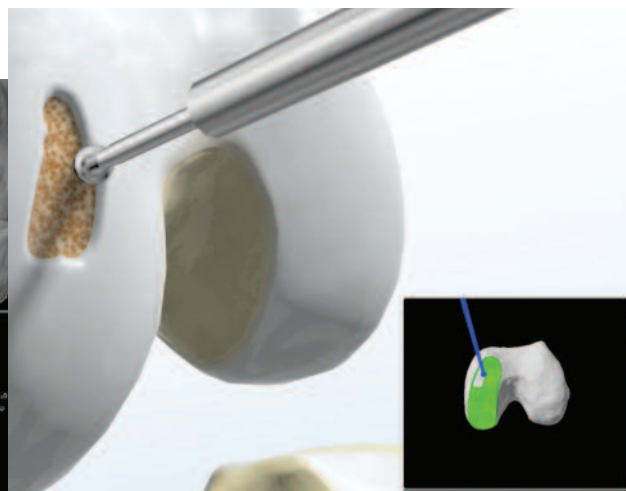
## MAKOplasty® Procedure



CT Scan



Patient-specific Planning



Precision Sculpting



# Your Guide to MAKOplasty® Surgery (cont'd)



## What Can I Expect?

MAKOplasty® can be performed as either an inpatient procedure or on an outpatient basis depending on what your orthopedic surgeon determines is right for you. Hospital stays average anywhere from one to three days; ambulatory patients return home the same day.

In many cases, patients are permitted to walk soon after surgery, drive a car in the first few weeks and return to normal daily activities shortly thereafter. Your recovery therapy and restrictions will be discussed with you by your surgeon and his/her team.

## Day of Surgery

You will be admitted to the hospital the day of your surgery. You will be asked to sign consent forms and have your leg shaved for surgery. An intravenous (IV) line will be started in your arm followed by pre-operative antibiotic and medicine that will make you drowsy. You will then be taken into the operating room for surgery.

Pre-operatively, you will be visited by an anesthesiologist before the surgery begins to discuss his or her role. Although MAKOplasty® is a less invasive procedure, general anesthesia is still required. The specific type will be discussed with you. This usually entails general or spinal anesthesia. During surgery, you will be monitored carefully by your anesthesiologist. He or she will monitor your blood pressure, pulse, temperature and level of oxygen intake. Additional monitoring may be required to monitor the heart or lungs more closely. Your anesthesiologist will discuss all of this with you prior to surgery and will determine the best course of monitoring based on your personal health history.

If your MAKOplasty® procedure is performed as an inpatient procedure, your hospital stay will normally range anywhere from one to three nights. Personal articles and clothing may be limited to what will fit into a single suitcase. Here are some helpful packing tips to help make your stay as pleasant as possible:

- Pack only the things you will need while in the hospital
- Pack loose fitting clothing and shoes with non-skid soles for your trip home
- If you prefer a special type of soap or hair product, remember to pack it
- Pack your own electric razor or battery-operated appliance as the hospital does not provide these items
- Bring any prescribed medications you will need during your hospital stay in the original container so it can be identified by the hospital pharmacist and authorized by your physician
- Do not bring money, jewelry, credit cards, or any other valuables to the hospital

# Your Guide to MAKOplasty® Surgery (cont'd)



## Tips for Post-op Care:

- Call your surgeon to report or discuss any post-op concerns
- Keep the wound area dry until the staples are removed
- Use ice or medication and elevate your knees to reduce any swelling in the operative leg
- Report any unusual symptoms to your doctor including, but not limited to: redness, calf pain, drainage from the incision, or chest pain
- Use your doctor-prescribed medication for pain control as needed
- Be aware of any signs of infection including, but not limited to: fever, chills, sweats or constant pain. Report this to your doctor immediately.

## After the Surgery

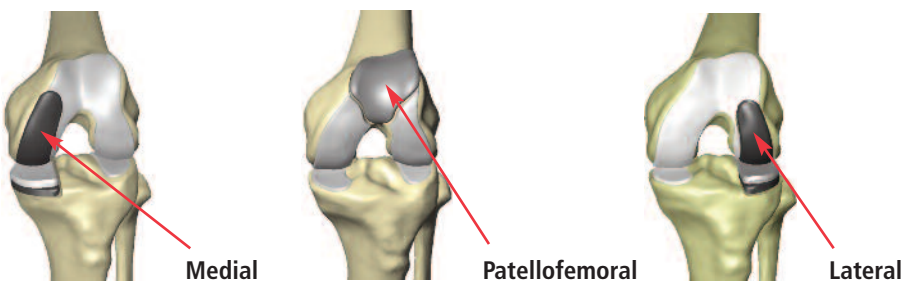
Your initial recovery after surgery will begin in a post-anesthesia care unit (PACU) where you will be closely monitored while you wake-up and begin to recover from the anesthesia. You will awaken in the recovery room with a dressing and ace bandages on your leg from your toes to upper thigh. You may also have a thin tube inserted into the surgical site that will be attached to a drain. This tube will collect any fluid that accumulates under the skin and muscle, and at the discretion of your physician will most likely be removed 48 hours following surgery. An ice wrap may be used to reduce swelling and you will be medicated adequately for post-operative pain.

An anesthesiologist and registered nurses will also be in the PACU to monitor your recovery. Visitation in the PACU is limited in order to decrease the risk of infection, promote privacy for all patients, and enhance the healing process. Your leg may feel numb as local anaesthetic blocks were used.

## Your Implant - The RESTORIS® Family of Knee System Implants

The RESTORIS® family of implants are specially designed for MAKOplasty® procedures. It enables the treatment of one or two compartments of the osteoarthritic knee. With single compartment disease, a second compartment may be treated in the future if OA spreads.

### Unicompartmental



### Bicompartmental





# Your Guide to MAKOplasty® Surgery (cont'd)



## Ask Your Doctor About Self Care:

- Before your surgery, arrange for assistance you may require from others after surgery
- Eat a balanced diet, take any vitamin or iron supplement your doctor recommends and be sure to drink plenty of fluids. Good nutrition may help your tissue heal and your muscles regain strength.
- Engage in low stress activities that do not put any pressure on your knee as guided by your physician. Low stress activities may include golfing, hiking, walking, biking, and swimming.
- Work with your physician to monitor the healing of your joint replacement. It's important to keep your physician and prescribed therapy appointments.

## Physical Therapy

If your physician prescribes physical therapy, a physical therapist may ask you to move your ankle joint, stand and/or walk with the assistance of a walker or cane soon after surgery in order to prevent circulation problems and strengthen your muscles. Your surgeon may use a CPM (continuous passive motion machine).

Your post-surgical physical therapy program should continue shortly after your return home, and be conducted under your physician's guidance and supervision. A typical physical therapy program following knee surgery includes isometric exercises that tighten the muscles around the knee without moving the joint in order to regain your mobility as soon as possible. Your therapist can show you appropriate ways to accommodate your daily lifestyle while you are recovering.

Your surgeon will be in charge of determining when you will be able to return to work, drive a car, or do low-impact aerobic exercises such as walking, golfing, bowling or swimming. Jogging and high-contact sports are not recommended. You should follow your surgeon's instructions and advice post-surgery. It is common to experience swelling in the knee, heaviness, and tightness for several weeks. A tourniquet is commonly used during surgery to minimize blood loss and this may lead to some upper thigh discomfort. You will notice two small extra skin incisions where the trackers for the robotic arm system are placed.

## Recovery at Home

You may want to prepare your home before you go in for surgery so it will be comfortable and safe when you return from the hospital. Think safety first by removing any hazards including floor rugs, loose phone lines or cables and clutter that can cause you to slip or fall. Organize the items you'll need on a daily basis within arm's reach to reduce unnecessary movement during the first few days following your return home.

According to the Arthritis Foundation (2009), the success of your surgery also relies on how well you follow your surgeon's post-operative instructions. Rest when you need to but moving about frequently with your cane, crutches or walker will gradually increase your activity level to help you heal and feel better.

- Practice walking every day, first around your home and later outside
- You should be able to resume most light activities within three to six weeks
- It is important to follow the exercise program developed by your physical therapist diligently. This will help your muscles regain mobility and strength, allowing you to walk normally again.

# Frequently Asked Questions



**Q: What is the lifespan of a MAKOplasty® implant?**

**A:** All implants have a life expectancy that depends on several factors including the patient's weight, activity level, quality of bone stock and compliance with their physician's orders.

Proper implant alignment and precise positioning during surgery are also very important factors that can improve the life expectancy of an implant.

**Q: Is MAKOplasty® covered by health insurance providers?**

**A:** As a knee arthroplasty procedure, MAKOplasty® is typically covered by most Medicare-approved and private health insurers.

**Q: How long has the MAKOplasty® procedure been available?**

**A:** MAKO's robotic arm technology was cleared by the U.S. Food and Drug Administration (FDA) in 2005. The first MAKOplasty® procedure was performed in June of 2006 and over 1,500 MAKOplasty® procedures were performed as of September 2009.

**Q: Does the robotic arm system actually perform the surgery?**

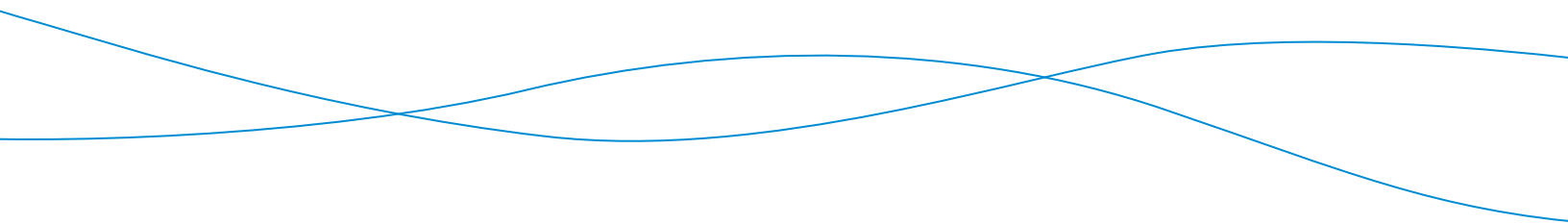
**A:** No, MAKOplasty® is performed by an orthopedic surgeon, who uses the surgeon-interactive RIO® System, a robotic arm system designed to pre-plan and assist the surgeon in making accurate, patient specific cuts with consistently reproducible precision. The robotic arm does not perform the surgery nor can it make decisions on its own or move in any way without the surgeon guiding it. During surgery, the RIO® provides the surgeon with real-time visual, tactile and auditory feedback to facilitate optimal joint resurfacing and implant positioning. It is this optimal placement that can result in more natural knee motion following surgery.

**Q: What is the difference between MAKOplasty® and traditional knee surgery?**

**A:** Unlike total knee replacement, MAKOplasty® provides the precision of RIO® and the contouring design of RESTORIS® implants that targets the patient-specific diseased area. MAKOplasty® preserves healthy bone, soft tissues and ligaments which allows for an overall less invasive procedure, more rapid recovery, shorter hospital stay and more natural knee function.

For more patient information, please call **877.411.MAKO** or visit **[www.RestoreYourKnees.com](http://www.RestoreYourKnees.com)**.





*Restoring Quality of Life Through Innovation®*

**MAKO Surgical Corp.**

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IMPLANT CARD FOR PATIENT

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Robotic Arm  
Partial Knee Resurfacing

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