



stryker

Mako™ Robotic-Arm Assisted Partial Knee Replacement

Your Pre-Operative Guide

A person's legs are shown in silhouette, walking on a beach. The background is a sunset over the ocean, with the sky transitioning from orange to blue. The person is wearing a dark, short-sleeved top. The overall mood is serene and contemplative.

So, you've spoken to your orthopedic surgeon about your knee pain, and decided to accept your surgeon's recommendation to undergo Mako Robotic-Arm Assisted partial knee replacement (PKR). Mako partial knee replacement is an option for adults suffering from osteoarthritis (OA) in one or two of the three compartments of the knee.

This educational guide is designed to help you understand more about how to prepare and what to expect before, during and after your partial knee replacement surgery.

Table of Contents

MAKO PARTIAL KNEE REPLACEMENT	4
HOW MAKO ROBOTIC-ARM ASSISTED SURGERY WORKS	5
BEFORE SURGERY	6
▶ WHAT TO EXPECT IN THE WEEKS PRIOR TO SURGERY	6
▶ TIPS FOR YOU & YOUR CAREGIVER.....	6
DAY OF SURGERY	7
AFTER SURGERY	8
▶ RECOVERING FROM SURGERY	8
▶ TIPS FOR POST-OP CARE.....	8
FREQUENTLY ASKED QUESTIONS	9

Mako Partial Knee Replacement

Mako Robotic-Arm Assisted Technology can be used for partial knee replacement, which is a surgical procedure that helps relieve the pain caused by osteoarthritis (OA) in one or two of the three compartments of the knee.

A Diseased Knee

Femur (thigh bone)

Diseased Cartilage

Tibia (shin bone)



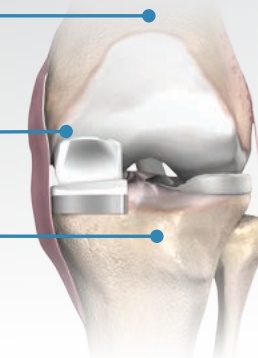
With PKR, only the damaged area of the knee joint is replaced, helping to minimise trauma to healthy bone and tissue.¹

A Replaced Knee

Femur (thigh bone)

Artificial Knee Implant

Tibia (shin bone)



OA is sometimes called degenerative arthritis because it is a “wearing out” condition involving the breakdown of cartilage in the joints. When cartilage wears away, the bones rub against each other, causing pain and stiffness. By selectively targeting the part of your knee damaged by OA, your surgeon can replace a portion of your knee while helping to spare the healthy bone and ligaments surrounding it.

There are three types of PKR



1. Unicondylar Knee Replacement

is a procedure that replaces only the single affected compartment of the knee, either the medial or lateral compartment.



2. Patellofemoral Knee Replacement

is a procedure that replaces the worn patella (the kneecap) and the trochlea (the groove at the end of the thigh bone).



3. Bicompartamental Knee Replacement

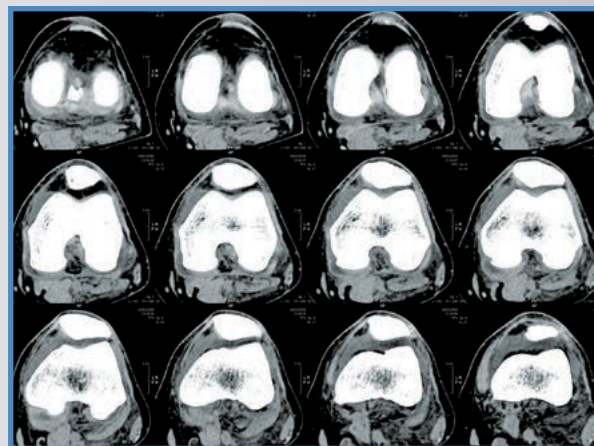
is a procedure that replaces two compartments of the knee, the medial and patellofemoral compartments.

How Mako Robotic-Arm Assisted Surgery Works



1 Have a Plan Personalised for You

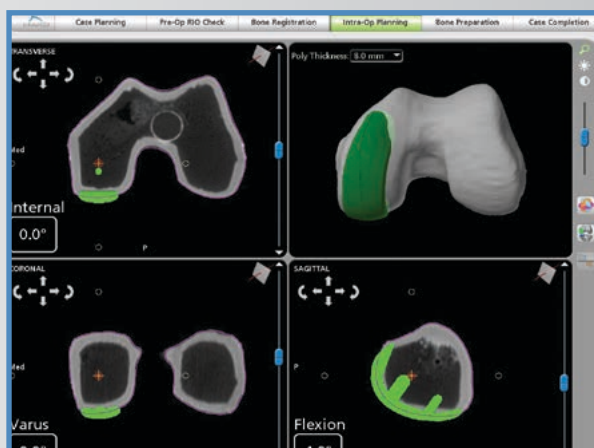
It all begins with a CT scan of your joint that is used to generate a 3D virtual model of your unique anatomy. This virtual model is loaded into the Mako System software and is used to create your personalised pre-operative plan.



CT Scan

2 In the Operating Room

In the operating room, your surgeon will use Mako to assist in performing your surgery based on your personalised pre-operative plan. The Mako System also allows your surgeon to make adjustments to your plan during surgery as needed. When the surgeon prepares the bone for the implant, the Mako System guides the surgeon within the pre-defined area and helps prevent the surgeon from moving outside the planned boundaries. This helps provide more accurate placement and alignment of your implant.²



Personalised Planning

3 After Surgery

After surgery, your surgeon, nurses and physical therapists will set goals with you to get you back on the move. They will closely monitor your condition and progress. Your surgeon may review an x-ray of your new partial knee with you.



Post-Operative X-ray

What to Expect in the Weeks Prior to Surgery

Preparing for Your Surgery

Preparing for partial knee replacement begins weeks before the actual surgery. The checklist below outlines some tasks that your surgeon may ask you to complete in the weeks prior to your surgery date.

- Exercise under your doctor's supervision
- Have a general physical examination
- Have a dental examination
- Review medications
- Stop smoking
- Lose weight
- Arrange a pre-operative visit
- Get laboratory tests
- Complete forms
- Prepare meals
- Choose a physical therapist
- Plan for post-surgery rehabilitative care
- Fast the night before
- Bathe surgical area with antiseptic solution

Tips for You & Your Caregiver

You may need assistance after surgery, so consider making arrangements with a caregiver before your surgery date. Your caregiver may be a family member or friend, and it is important to communicate with this person prior to surgery about how they can best help you when you return from the hospital. Below are some preparation tips for you and your caregiver to discuss with your doctor.

- 1.** Encourage your caregiver to attend your pre-op & post-op appointments so they can talk to your doctor about how to best help you after surgery.
- 2.** Ask what you can do to reduce unnecessary movement in the first few days following your return home. This may mean organizing the items you utilize on a daily basis within arm's reach.
- 3.** Think safety first, and ask yourself whether you will need to remove floor rugs, loose phone lines, or cables and clutter that may cause you to slip and fall.



A healthy diet can help patients heal and may reduce complications associated with knee replacement surgery.³

What to Expect

The Day of Surgery

Routine Checklist

Every hospital has its own procedures, however, partial knee replacement patients may expect their day-of-surgery experience to follow this basic routine:

- ❑ Arrive at the hospital at the appointed time
- ❑ Complete the admission process
- ❑ Final pre-surgery assessment of vital signs and general health
- ❑ Final meeting with anesthesiologist and operating room nurse
- ❑ Start IV (intravenous) catheter for administration of fluids and antibiotics
- ❑ Transportation to the operating room
- ❑ Joint replacement surgery
- ❑ Transportation to a recovery room
- ❑ Ongoing monitoring of vital signs until condition is stabilised
- ❑ Transportation to individual hospital room
- ❑ Ongoing monitoring of vital signs and surgical dressing
- ❑ Knee replacement recipients may use a continuous passive motion (CPM) machine to continuously bend and straighten the knee quadriceps (thigh muscles)
- ❑ Pain Management-You will be able to have medicine for pain so you can move around without much discomfort
- ❑ Orientation to hospital routine
- ❑ Evaluation by physical therapist
- ❑ Diet of clear liquids or soft foods, as tolerated
- ❑ Begin post-op activities taught during pre-operative visit

Risks & Complications

As with any surgery, partial knee replacement carries certain risks. Patients will need to modify their activities and not all patients will return to the same activity level. All surgery has serious risks including infection, heart attack, stroke, and death. Implant related risks that may lead to a revision include wear of the implant, dislocation, loosening, fracture, and nerve damage. The lifetime of any device is limited and depends on several factors like weight and activity level. Speak to your doctor and read the Important Information on the back page of this booklet to understand all of the potential risks.

Recovering from Partial Knee Replacement Surgery

Although the recovery process varies for each patient, here's what you might expect in the days following surgery.

- ❑ Your orthopaedic surgeon, nurses and physical therapists will closely monitor your condition and progress.
- ❑ When you are medically stable, the physical therapist will recommend certain exercises for the affected joint.
- ❑ To ease the discomfort the activity will initially cause, pain medication is recommended prior to therapy. Gradually, your pain medication will be reduced, the IV will be removed, your diet will progress to solids and you will become increasingly mobile.
- ❑ The physical therapist will discuss plans for rehabilitation following hospital discharge. Your physical therapist will also go over exercises to help improve your mobility.
- ❑ Depending on your limitations, an occupational therapist may provide instruction on how to use certain devices that assist in performing daily activities, such as putting on socks, reaching for household items, and bathing.
- ❑ A case manager will discuss plans for your return home and will ensure that you have all the necessary help to support a successful recovery.

Tips for Post-Op Care

1. Call your surgeon to report or discuss any post-op concerns.
2. Ask your doctor about how to care for the wound.
3. Ask your doctor about any unusual symptoms that you should look out for after your surgery.



A STUDY INDICATED THAT PATIENTS WHO UNDERGO KNEE REPLACEMENT MAY RETURN TO DRIVING IN FOUR TO SIX WEEKS.⁴

Frequently Asked Questions

Q: How long has the Mako procedure been available?

A: The first Mako procedure was performed in June of 2006.

Q: Does the Mako Robotic-Arm actually perform the surgery?

A: No, surgery is performed by an orthopedic surgeon, who uses the surgeon-controlled robotic-arm system to pre-plan the surgery and to position the implant. 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. The Mako System also allows your surgeon to make adjustments to your plan during surgery as needed.

Q: How long do knee implants last?

A: Individual results vary and not all patients will have the same postoperative activity level. The lifetime of a knee replacement is not infinite and varies with each individual. Your doctor will help counsel you about how to best maintain your activities in order to potentially prolong the lifetime of the device. Such strategies include not engaging in high impact activities, such as running, as well as maintaining a healthy weight.

IMPORTANT INFORMATION

Partial Knee Replacement

General Indications: Partial knee replacement is intended for use in individuals with joint disease resulting from degenerative and post-traumatic arthritis, and for moderate deformity of the knee.

Contraindications: Partial knee replacement surgery is not appropriate for patients with certain types of infections, any mental or neuromuscular disorder which would create an unacceptable risk of prosthesis instability, prosthesis fixation failure or complications in postoperative care, compromised bone stock, skeletal immaturity, severe instability of the knee, or excessive body weight.

Common Side Effects of Knee Replacement Surgery: As with any surgery, knee replacement surgery has serious risks which include, but are not limited to, peripheral neuropathies (nerve damage), circulatory compromise (including deep vein thrombosis (blood clots in the legs)), genitourinary disorders (including kidney failure), gastrointestinal disorders (including paralytic ileus (loss of intestinal movement)), vascular disorders (including thrombus (blood clots), blood loss, or changes in blood pressure or heart rhythm), bronchopulmonary disorders (including emboli, stroke or pneumonia), heart attack, and death.

Implant related risks which may lead to a revision of the implant include dislocation, loosening, fracture, nerve damage, wear of the implant, metal sensitivity, osteolysis (localised progressive bone loss), and reaction to particle debris. Partial knee implants may not provide the same feel or performance characteristics experienced with a normal healthy joint.

The information presented is for educational purposes only. Individual results vary and not all patients will receive the same postoperative activity level. The lifetime of a joint replacement is not infinite and varies with each individual. Your doctor will help counsel you about how to best maintain your activities in order to potentially prolong the lifetime of the device. Such strategies include not engaging in high-impact activities, such as running, as well as maintaining a healthy weight.

REFERENCES

1. Arno, S; Maffei, D; Walker, PS; Schwartzkopf, R; Desai, P; Steiner, GC. Retrospective Analysis of Total Knee Arthroplasty Cases for Visual, Histological and Clinical Eligibility of Unicompartmental Knee Arthroplasties. *J. Arthroplasty*. 2011. 26(8): 1396-1403. Blyth MJ, Smith J, MacLean III AB, Anthony, P Rowe. Does robotic surgical assistance improve the accuracy of implant placement in unicompartmental knee Arthroplasty? AAOS 2013 Annual Meeting, Chicago, IL.
2. Blyth NJ, Smith J, MacLean III AB, Anthony, P Rowe. Does robotic surgical assistance improve the accuracy of implant placement in unicompartmental knee Arthroplasty? AAOS
3. Golladay, Gregory, J. MD, Satpathy, Jibanananda, MD, Jiranek, William, MD. (2016). Patient optimization - strategies that work: malnutrition. *The Journal of Arthroplasty*. AAHKS Symposium: modifying risk factors: strategies that work. 31. 1631-1634.
4. Marecek GS, Schafer MF. Driving after orthopaedic surgery. *J Am Acad Orthop Surg*. 2013 Nov; 21(11): 696-706

A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient. Stryker does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery.

The information presented is intended to demonstrate the breadth of Stryker product offerings. A surgeon must always refer to the package insert, product label and/or instructions for use before using any Stryker product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

Stryker Corporation or its divisions or other corporate affiliated entities own, use or have applied for the following trademarks or service marks: Mako, Stryker. All other trademarks are trademarks of their respective owners or holders.