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Mako® Robotic-Arm Assisted Total Hip Replacement

Your Pre-Operative Guide

So, you've spoken to your orthopaedic surgeon about your hip pain, and decided to accept your surgeon's recommendation to undergo Mako Robotic-Arm Assisted total hip replacement (THR). Mako total hip replacement is an option for adults suffering from inflammatory or non-inflammatory degenerative joint disease.

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

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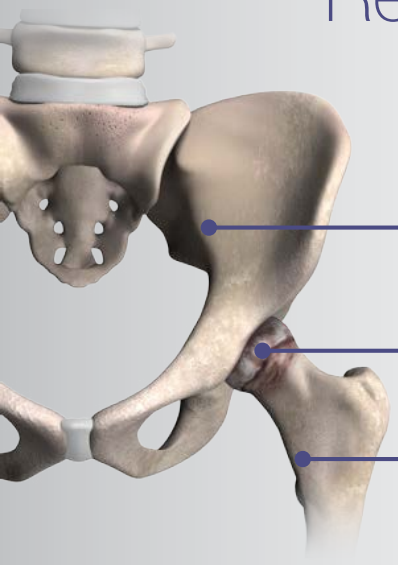
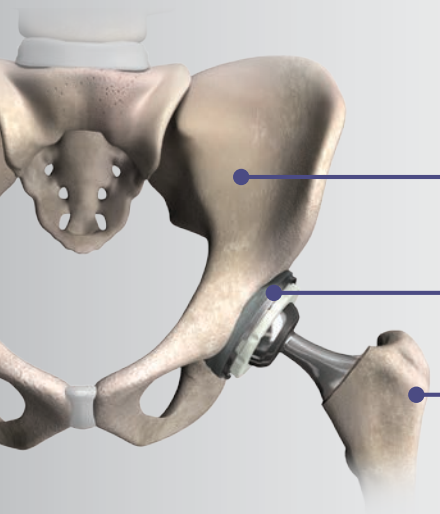
Mako Total Hip Replacement





Mako Robotic-Arm Assisted Technology can be used for total hip replacement, which is a surgical procedure designed for patients who suffer from non-inflammatory or inflammatory degenerative joint disease (DJD).

One form of DJD, and the most common, is osteoarthritis (OA). OA is sometimes called degenerative arthritis because it is a “wearing out” condition involving the breakdown of cartilage and bones. With osteoarthritis, the cushioning cartilage at the end of the femur may have worn down, making walking painful as bone rubs against bone.

Other forms of DJD of the Hip are:

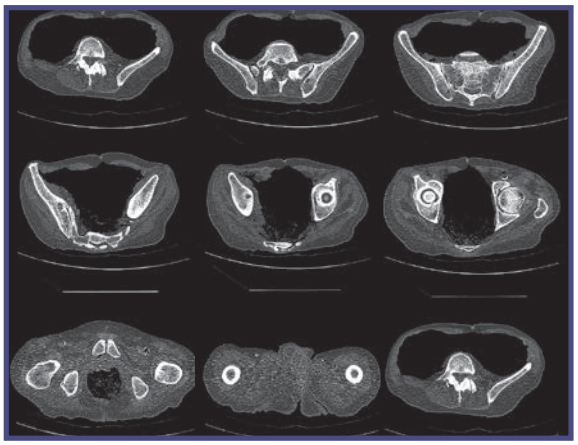
- Post-traumatic Arthritis
- Rheumatoid Arthritis (RA)
- Avascular Necrosis (AVN)
- Hip Dysplasia

To help relieve the pain caused by osteoarthritis, the arthritic bone and damaged cartilage is removed and replaced with hip implants. During surgery, the end of the thigh bone (femoral head) is replaced with a metal stem and an artificial ball that is secured to the top of the stem. The hip socket (acetabulum) is fitted with a metal cup that is lined with a durable plastic (polyethylene). The femoral and acetabular components work together to form the artificial hip implant that is designed to replicate the hip joint.

How Mako Robotic-Arm Assisted Surgery Works

1 Have a Plan Personlised 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

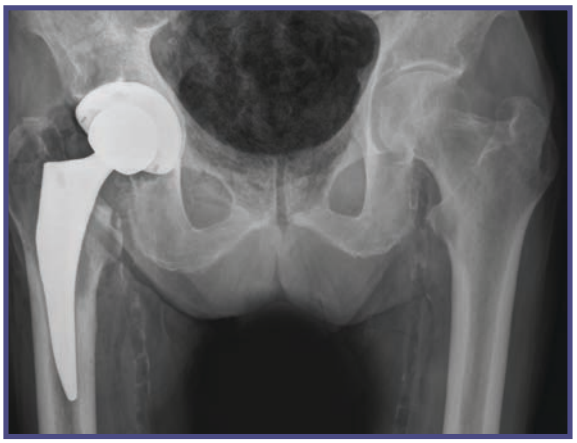
2 In the Operating Room

During surgery, the surgeon guides the robotic-arm while preparing the hip socket and positioning the implant 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.[1,2]

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 hip replacement with you.



Post-Operative X-Ray

What to Expect the Weeks Prior to Surgery

Preparing for Your Surgery

Preparing for hip 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 organising the items you utilise 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 hip replacement surgery.[3]

What to Expect
The Day of Surgery

Routine Checklist

Every hospital has its own procedures, however, hip 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
- ❑ 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, hip 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 Hip 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.**
- **Hip patients begin physical therapy soon after waking up from surgery, with your physical therapist helping you move from your hospital bed to a chair. You'll spend a great deal of time exercising your new joint and continuing deep breathing exercises to prevent lung congestion.**
- **Gradually, your pain medication will be reduced, the IV will be removed, your diet will progress to solids and you will become increasingly mobile.**
- **Your physical therapist will also go over exercises to help improve your mobility. Hip replacement patients will do exercises to tone and strengthen the thigh and hip muscles, as well as ankle and knee movements to pump swelling out of the leg.**

Tips for Post-Op Care

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

A STUDY INDICATED THAT PATIENTS WHO UNDERGO HIP 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 Total Hip replacement procedure was performed in 2010.

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

A: No, surgery is performed by an orthopaedic surgeon, who uses the surgeon-controlled robotic-arm system to pre-plan the surgery and to position the implant in the hip socket. 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 implants last?

A: Individual results vary and not all patients will have the same postoperative activity level. The lifetime of a hip 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

Mako Hip Replacements

Hip joint replacement is intended for use in individuals with joint disease resulting from degenerative and rheumatoid arthritis, avascular necrosis, fracture of the neck of the femur or functional deformity of the hip.

Joint 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 joint, or excessive body weight.

Like any surgery, joint replacement surgery has serious risks which include, but are not limited to, pain, bone fracture, change in the treated leg length (hip), joint stiffness, hip joint fusion, amputation, 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 digestive 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, heterotopic bone formation (abnormal bone growth in tissue), wear of the implant, metal sensitivity, soft tissue imbalance, osteolysis (localised progressive bone loss), audible sounds during motion, and reaction to particle debris.

The information presented is for educational purposes only. Individual results vary and not all patients will return to the same activity level. The lifetime of any joint replacement is limited and depends on several factors like patient weight and activity level. Your doctor will counsel you about strategies to potentially prolong the lifetime of the device, including avoiding high-impact activities, such as running, as well as maintaining a healthy weight. It is important to closely follow your physician's instructions regarding post-surgery activity, treatment and follow-up care.

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