

Mako SmartRobotics™ for Total Hip Replacement

We understand that knowing what to expect from your joint replacement experience is important to you. As you are reading through this material, please reach out to us to discuss if you have additional questions.

Each patient is unique and can experience joint pain for different reasons. It's important to talk to us about the reason for your hip pain so you can understand the treatment options available to you. Pain from arthritis and joint degeneration can be constant or come and go, occur with movement or after a period of rest, or be located in one spot or many parts of the body. It is common for patients to try medication and other conservative treatments to treat their hip pain. If you haven't experienced adequate relief with those treatment options, you may be a candidate for Mako Total Hip replacement, which may provide you with relief from your hip pain.

How Mako SmartRobotics™ Works

Mako SmartRobotics™ is an innovative solution for many suffering from painful arthritis of the hip. Mako uses 3D CT-based planning software so your surgeon can know more about your anatomy to create a personalized joint replacement surgical plan. This 3D model is used to pre-plan and assist your surgeon in performing your total hip replacement.

In the operating room, your surgeon follows your personalized surgical plan while preparing the bone for the implant. The surgeon guides Mako's robotic arm within the predefined area, and Mako's AccuStop™ technology helps the surgeon stay within the planned boundaries that were defined when the personalized pre-operative plan was created. By guiding your doctor during surgery, Mako's AccuStop™ technology allows your surgeon to cut less by cutting precisely what's planned¹ to help protect your healthy bone.²

Mako SmartRobotics™ for Total Hip replacement is a surgical procedure intended for patients who suffer from the noninflammatory or inflammatory degenerative joint disease (DJD). Some forms of DJD include osteoarthritis (OA), post-traumatic arthritis, rheumatoid arthritis (RA), avascular necrosis (AVN), and hip dysplasia.

It's important to understand that the surgery is performed by an orthopedic surgeon, who guides Mako's robotic arm during the surgery to position the implant in the hip joint. Mako SmartRobotics™ does not perform surgery, make decisions on its own or move without the surgeon guiding it. Mako SmartRobotics™ also allows your surgeon to make adjustments to your plan during surgery as needed.

An arthritic hip a replaced hip

IMPORTANT INFORMATION

Hip Replacements

Hip 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.

Hip 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, infection, 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 and/or foreign body sensitivity, soft tissue imbalance, osteolysis (localized progressive bone loss), audible sounds during motion, reaction to particle debris, and reaction to metal ions (ALTR). Hip and 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. Speak to your doctor to decide if joint replacement surgery is appropriate for you. 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 doctor's instructions regarding post-surgery activity, treatment, and follow-up care. Ask your doctor if a joint replacement is right for you.

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

References

1. Illgen RL, Bukowski BR, Abiola R, et al. Robotic-assisted total hip arthroplasty: outcomes at minimum two years follow up. *Surg Technol Int*. 2017;30:365-372.
2. Suarez-Ahedo C, Gui C, Martin TJ, Chandrasekaran S, Lodhia P, Domb BG. Robotic-arm assisted total hip arthroplasty results in smaller acetabular cup size in relation to the femoral head size: a matched-pair controlled study. *Hip Int*. 2017;27(2):147-152. doi:10.5301/hipint.5000418
3. Nawabi DH, Conditt MA, Ranawat AS, et al. Haptically guided robotic technology in total hip arthroplasty: a cadaveric investigation. *Proc Inst Mech Eng H*. 227(3):302-309. doi:10.1177/0954411912468540