MAKO / LEO 2

A new level of precision with the most advanced Leo II MAKO Robotic Total Hip Replacement and **Mako Robotic Knee surgery** platform now at your doorsteps……at No Extra Costs ……

At Anup Institute, Leo II Robotic Joint Replacement care unit we strive to give the best to our patients and fingerprints lasts forever in the lives we touch! We also endeavour to provide world class care within the reach of every individual/patient!

With this in our minds we are offering Robotic Total Joint Replacements at No Extra cost. In fact, the prices are far less than offered at most of the hospitals not only in India but around the world.

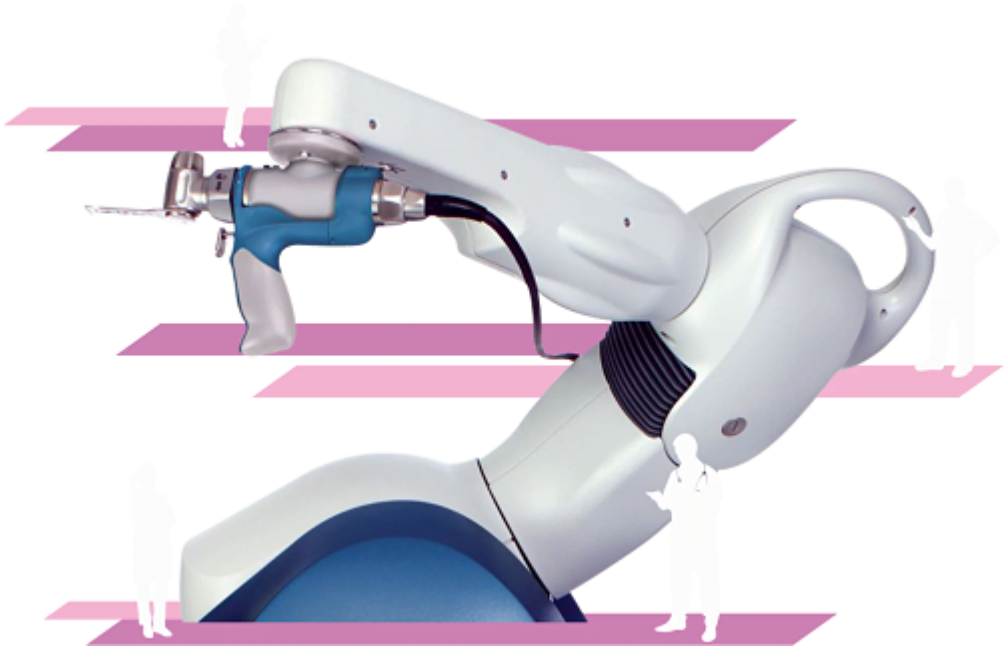
Thus, providing World's Best Platform, best available implant with Robotic Precision at no extra cost …

ROBOTIC GUIDED TOTAL HIP REPLACEMENT…. Is best a scifi or Real..

We as surgeons always aim at performing a perfect total hip replacement (THR) for each patient. Human performance has its own limitations. This fact is reiterated while performing an operation in a biological set up.

Innovations done over the period of fifty years by surgeons has undoubtedly improved the total hip replacement surgery.

There have been significant improvements, but the process is not devoid of complications and mechanical failures.



The results of Total Hip Replacement or THR have been affected by

- Excessive wear because of poor component position,
- dislocation,
- squeaking,
- fracture of articulations,
- periprosthetic fractures.

As surgeons, during our operations, we cannot visualize the relationship of the socket(acetabulum) to the pelvis through its spinopelvic dynamics, nor can we visualize the inner contour of the thigh bone(femur) that affects the positioning of the components of Total Hip Replacement.

There is a possibility of judgement errors due to inaccurate information of anatomy and these might lead to short term complications like dislocation and impingement pain. This can disappoint the surgeon and cause feelings of failure. More over it can cause complications of wear and loosening that can be a loss for the patient.

The Question is how do we minimize all this so that a Total Hip replacement lasts forever….

Today, every human endeavour that involves a device has used

modern technology of computers and robotic platform to minimize the human errors.

What can a computer do in this case? How can it help to overcome these shortcomings?

Benefits of Mako Robotic surgery or Stryker MAKOplasty:

It can help the surgeons with quantitative knowledge that can alter qualitative judgements to make them precise and accurate.

This Leo II Mako – the smart Robotic platform removes all these challenges and it is one of the best solution we surgeons can apply to resolve our intraoperative dilemmas.

Let us Understand and get there….

Steps of how the Leo II Mako System Improves Total Hip Replacement (THR) for someone with Arthritis pain: with 100% precision.

STEP 1 :INVESTIGATIONS AND SEGMENTATION:

The patient who is getting operated his pelvis’s X rays and CT scan are segmented and fed into the robot. By doing this one

gets a three-dimensional model of the hip joint- the femur (thigh bone), the socket (acetabulum) and surfaces damaged due to arthritis.

Figure 1 – Pre-Planning and Segmentation of the CT SCAN image

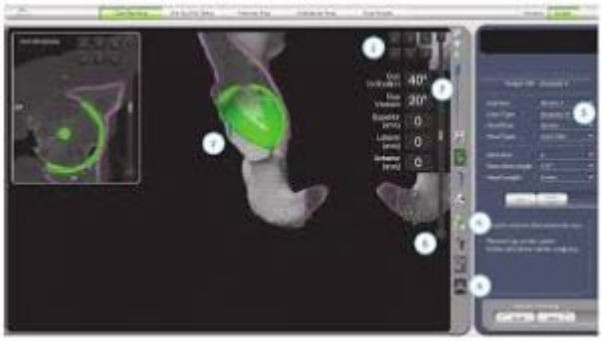
The surgeon depending on his or her choice can preoperatively plan out the best place for the tibia component and femoral component over the bone model.

This generally depends on the following factors:

- Angle of the legs.
- The manner of movement of the head of femur in the socket (acetabulum).
- Patient size.
- Location of articulating surface.

STEP 2: PATIENT SPECIFIC PERSONALIZED PRE-OPERATIVE PLANNIG PRIOR TO SURGERY

Figure 2 – Patient Specific Personalized Pre-Operative Planning prior to Surgery



The doctor’s team loads the plan onto the robot. Now, the

surgeon needs to compare the plan to patient's motion like bending the hip, straightening and flexing it. This is done by observing at the motion replicated on the robot's screen.

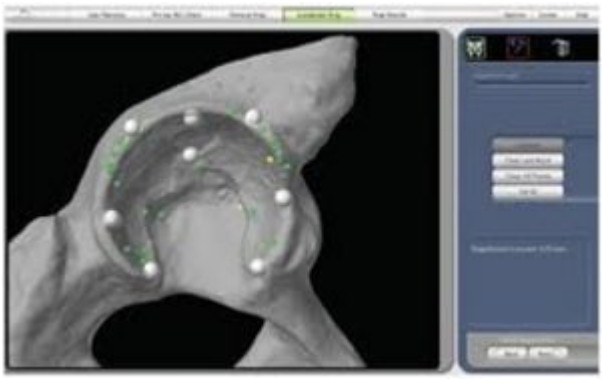
The surgeon observes if the ligaments are laxed or tensed so that he/she can tweak the component positioning by fractions of millimeters before finalizing the plan.

The arm of the robot will lock the plane of the reamer into a position relative to the final three-dimensional plan. It assists the surgeon in the process of making cuts.

The surgeon pushes the reamer, but the robot limits where the reamer can go in the space.

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

STEP 3: EXECUTION OF PLAN WITHIN PRE-DEFINED LIMITS OF HAPTIC BOUNDARY ENABLING MORE THAN 99% ACCURACY
Figure 3 – Execution of Plan within Predefined Limits of Haptic Boundary so soft tissue and Neurovascular damage cannot be done, and accurate Position is visualized on screen whilst operating.



"The surgeon still performs the surgery, but now with the

accuracy and precision specific to a plan, specific to a patient, which was not possible before with conventional, manual instruments,”

The robot’s haptic boundary prevents soft-tissue trauma. There are several peer-reviewed publications on the benefits, including a reduction in post-operative pain, increased patient satisfaction, increased flexion, less opioid drug use; reduction in length of stay. There are fewer readmissions due to complications from this procedure.

Benefits of Robotic-Assisted Total Knee Replacement; positive outcomes

Robotic surgery is being adopted to have the best surgical plan, the best execution, and to have a positive clinical outcome for the patient. Robotic surgery has been increasingly chosen as an option to address human errors that could potentially result in misalignment and decreased longevity of the prosthesis.

The precision of robotic-assisted surgery allows for

- More accurate implant positioning, which can result in a more natural feeling after surgery.
- Improved safety.
- Reduced risk of injury to adjacent tissues as there is a lesser retraction.
- Value & safety provided by the Pre-Op CT.
- Small incisions, which can mean a quicker recovery.
- Shorter hospitalization, less pain and a potential for better long-term function.

In a nutshell, The Robotic Technology helps in

- More accurate implant positioning, which can result in a more natural feeling after surgery
- Improved safety and reduced risk of injury to adjacent tissues as there is a lesser retraction.
- Value & safety provided by the Pre-Op CT.
- Small incisions, which can mean a quicker recovery, a shorter hospitalization, and less pain.
- Minimal blood loss.
- Precision in mapping of the joints.
- Leo II Mako AccuStop™ technology allows your surgeon to cut less by cutting precisely what is planned to help protect your healthy bone.
- Early mobilization and early discharge from the hospitals (less hospital stay)
- A happy patient

Visit the website of Anup Institute of Orthopaedic and Rehabilitation https://www.aior.co.in/ and connect with its team https://www.drashishsingh.com/bookappointment/appointment.php to get assistance and guidance about **Mako Robotic surgery India** as we have the **best robotic surgeon in Patna, North India**.