



HIP REPLACEMENT

with ARVIS® AUGMENTED REALITY

Understanding anatomy, pain,
treatment, and replacement surgery



Most people don't think about the movement of their joints until their joints become diseased and painful.

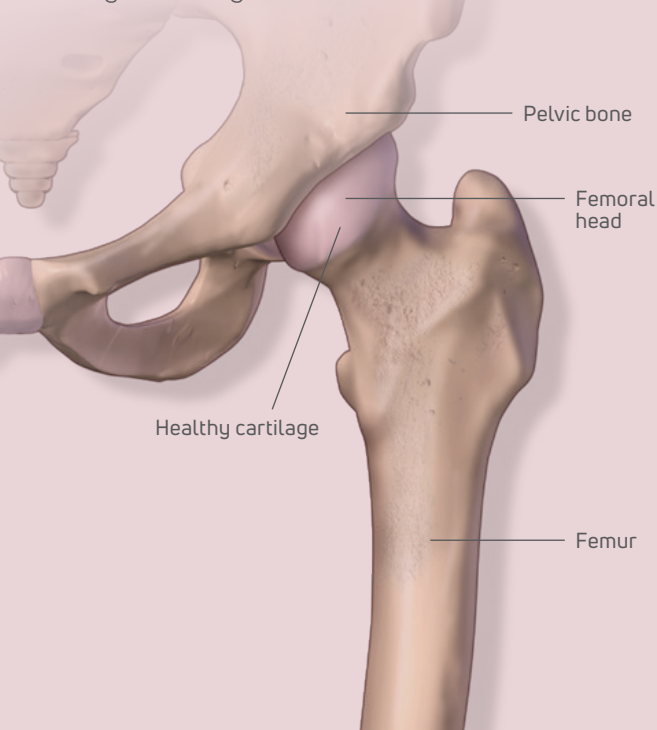
Normally, your hip joint moves easily. However, when you have arthritis or another hip injury, the pain can severely limit your ability to move and enjoy life.

This brochure is designed to help you understand the anatomy of your hip, treatment options for hip pain and total hip replacement surgery. Your orthopaedic surgeon will be able to explain your options so you can decide together what the best course of treatment will be.



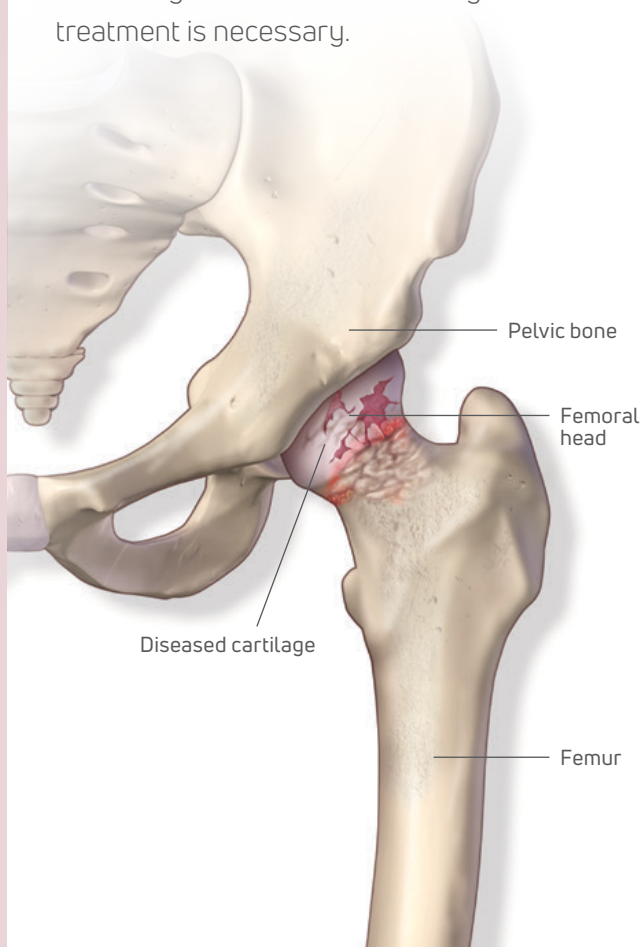
HOW THE HIP WORKS

The hip is a ball-and-socket joint and is the body's second largest weight-bearing joint (after the knee). The ball of the joint, which is at the top of the bone in your upper leg (the femur), is called the femoral head; and the socket created by the hollow of your pelvis is called the acetabulum. Cartilage is a layer of tissue that covers the femoral head and lines the socket of the pelvic bone. Healthy cartilage absorbs stress and allows the ball to glide easily in the socket.



COMMON CAUSES OF HIP PAIN

Common causes of hip pain include osteoarthritis, rheumatoid arthritis, post-traumatic arthritis and avascular necrosis (AVN). As the cartilage lining wears away, the protective lining between the bones is lost. When this happens, painful bone-on-bone arthritis develops. Severe hip arthritis can be quite painful and can restrict motion in your hip. While this may be tolerated with some medications and lifestyle adjustments, there may come a time when surgical treatment is necessary.



ORTHOPAEDIC EVALUATION

To properly diagnose your condition, your orthopaedic surgeon will conduct a thorough evaluation, which may consist of:

- Review of your medical history
- Physical examination
- X-rays
- Additional tests as needed

(for example: laboratory testing of blood, urine, or joint fluid)

TREATMENT OPTIONS

Depending on your diagnosis and the severity of your hip arthritis, your treatment options may include:

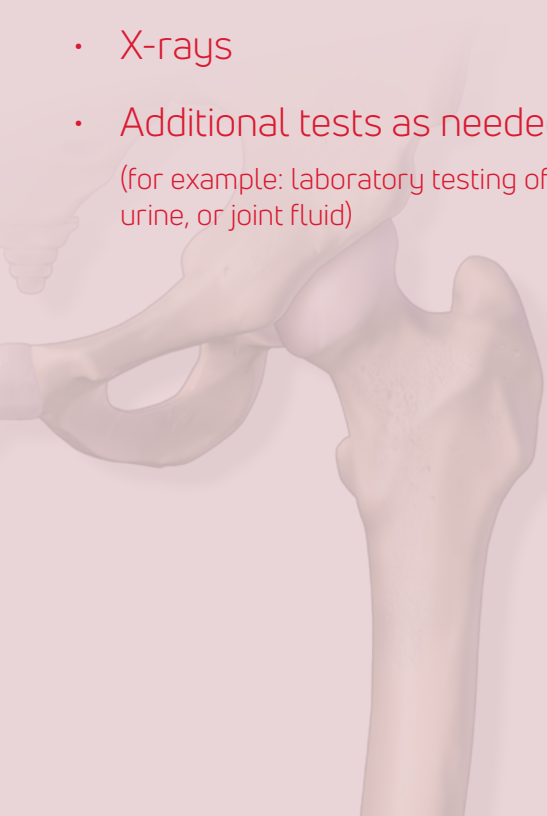
- Medications
- Physical therapy
- Joint replacement

HIP REPLACEMENT SURGERY

Hip replacement surgery may be considered when arthritis limits your everyday activities such as walking and bending, and when you get little pain relief from anti-inflammatory drugs or other treatments, such as physical therapy.

The goals of hip replacement surgery are to promote pain relief and help restore the range of motion in the hip. A total hip replacement is typically used for the severely arthritic joint. It involves the removal of arthritic bone ends and damaged cartilage and replacing them with prosthetic implants that are designed to replicate the hip joint.

One of the critical factors that helps determine how long your implant will last is accurate implant placement and alignment of the hip implant components. Not all hip prostheses are the same, and ultimately your surgeon will be able to determine the optimal design to maximize performance and longevity.



AUGMENTED REALITY (AR) IN ORTHOPAEDICS

Computer assisted surgery for hip and knee replacement has been a significant advancement in orthopedics by providing detailed information to the surgeon during surgery. The technology has been around for several years now, but augmented reality (AR) takes the technology to the next level and is designed to improve patient outcomes.

ARVIS® (Augmented Reality Visualization and Information System) is a revolutionary new platform for orthopedic surgery guidance. ARVIS uses augmented reality technology to provide the surgeon real-time information to meet their goals of precise and accurate implant placement.

BENEFITS OF ARVIS®

There are several important potential benefits to ARVIS:

- Designed to enhance surgeon's ability to precisely position the implants, potentially extending the life of the implant.
- A pre-operative CT scan or MRI may not be necessary, based on your surgeon's plan. If no scan or MRI is required, eliminates unnecessary exposure to radiation.
- Allows your surgeon to tailor your surgery based on your unique anatomy.
- Utilized with specialized instruments to facilitate optimal use of the system.

It is important to understand that your surgeon is always in control of the system and your procedure. A common misconception with computer-assisted or robotic technology is that a robot is doing the surgery, but that is not the case. Your surgeon is utilizing information from ARVIS and is ultimately the one making the decisions and performing the surgery.



TOTAL HIP REPLACEMENT PROCEDURE WITH ARVIS®

The surgical procedure itself is the same as a total hip replacement without ARVIS; with the difference being the computer-generated information superimposed in the surgeon's field of view on your hip.

Before your surgery begins, ARVIS will be attached to your surgeon's surgical helmet or headband.



Once your surgeon gains exposure to the joint, he/she will attach trackers to your hip. ARVIS uses infrared cameras to locate the trackers thereby letting the computer know where your hip is in space. Your surgeon will see an overlay of real-time surgical guidance information on the operating room table allowing him or her to set the instrument guides in the optimal position for your unique hip.

The surgeon will remove the worn head of the thigh bone (femur) and replace it with a metal or ceramic ball mounted on a long metal component. The metal stem is placed firmly down into the center of your thigh bone. The hip socket (acetabulum) will then be sized and a metal cup will be attached to the bone. A polyethylene insert is then snapped into the acetabular component. The ball and insert are designed to glide together to replicate the hip joint.

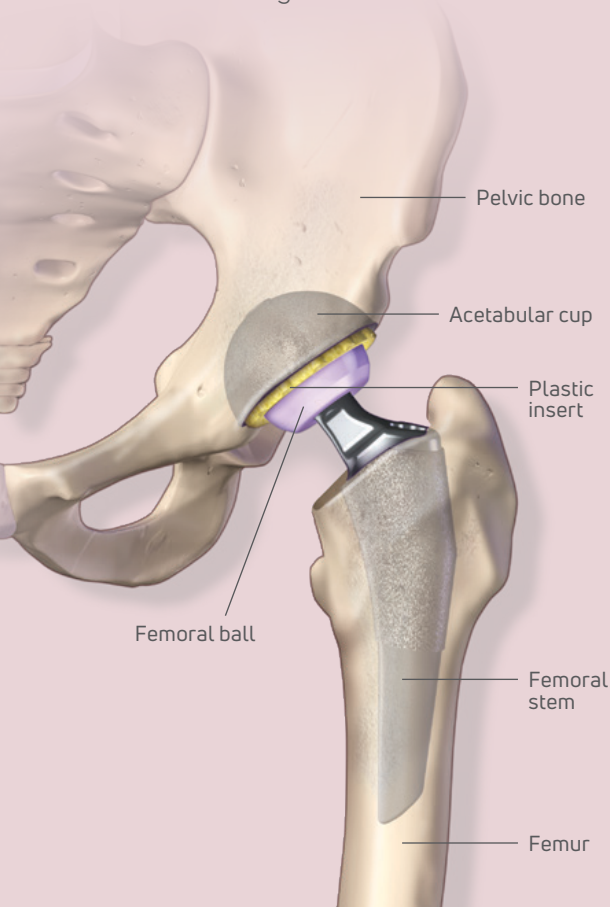


The trackers are only needed during the procedure; they are removed at the end of the surgery.

TAPERFILL® HIP PROSTHESIS

The TaperFill® Hip System is a femoral stem component designed for patients with hip arthritis.

It is the first anatomically congruent stem designed from CT-scan data for improved stability¹. TaperFill is a bone-conserving stem designed to restore individual patient anatomy and is exclusively from Enovis^{TM1}.



IMPLANT LONGEVITY

Vitamin E is a naturally-occurring antioxidant that has been added to Enovis' plastic implants. Blended Vitamin E plastic is designed to reduce long-term wear by up to 92%, which may extend the life of your implant². It is also designed to provide smooth movement throughout range of motion and enhance the strength of the plastic implant².

RECOVERY

Exercise is an important part of the recovery process. Your doctor or physical therapist will provide you with specific exercises to help restore movement and strengthen your hip joint. In general, your doctor will encourage you to use your "new" joint shortly after your operation, sometimes even the same day.

SUMMARY

When arthritis is impacting your daily activities, consider speaking with an orthopaedic surgeon about your options. You and your doctor will be able to determine the appropriate treatment and prosthesis for your particular condition. Component position is critical to a long-lasting hip replacement and augmented reality technology, like ARVIS, assists surgeons with proper implant alignment.

If conservative treatments have not been effective for your hip arthritis, talk to your doctor about total hip replacement using ARVIS.



NOTES



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1. TaperFill® White Paper (2014).
DJO® Literature 0021228-131 rev A 5/14
2. Data on file at DJO Surgical®

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