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Hip Resurfacing

AN ALTERNATIVE TO TOTAL HIP REPLACEMENT

Hip resurfacing is a replacement procedure that allows surgeons to restore hip function and relieve pain using a more conservative approach than total hip replacement. The basic cause of hip pain is osteoarthritis, which is a degenerative disease that wears away the cartilage at the end of the bones. As this cartilage wears away, the bone-on-bone movement causes pain and swelling, which affects your ability to perform daily activities such as walking, completing an exercise regime, or playing a sport.

The hip is a ball and socket joint (**Fig. 1**). The head of the femur (the ball) and the acetabulum (the socket) form the hip joint. The acetabulum is shaped by the combination of 3 bones within the pelvis: the ilium, the ischium, and the pubis. A thick layer of cartilage covers both the femoral head and the acetabulum so that the joint can handle the force that transfers across it during movement. Cartilage is the smooth tissue that covers the bones in a joint and allows the bones to move against each other with minimal friction. A ring of cartilage called the labrum also surrounds the joint and contributes to its stability.

With a standard hip replacement, surgeons remove the entire femoral head. A long stem is inserted into the femur to anchor a new femoral head and a new socket component is put in place. In a hip resurfacing procedure, a layer of bone is taken off the head of the femur and off the socket and those surfaces are replaced with 2 metal surfaces (**Fig. 2** and **Box 1**).

Surgeons initially developed hip resurfacing for younger patients who were athletes or heavy laborers because these patients typically place greater and prolonged stresses on the hip prostheses (**Fig. 3**); therefore, a standard total hip replacement would not last as long for them. Now with

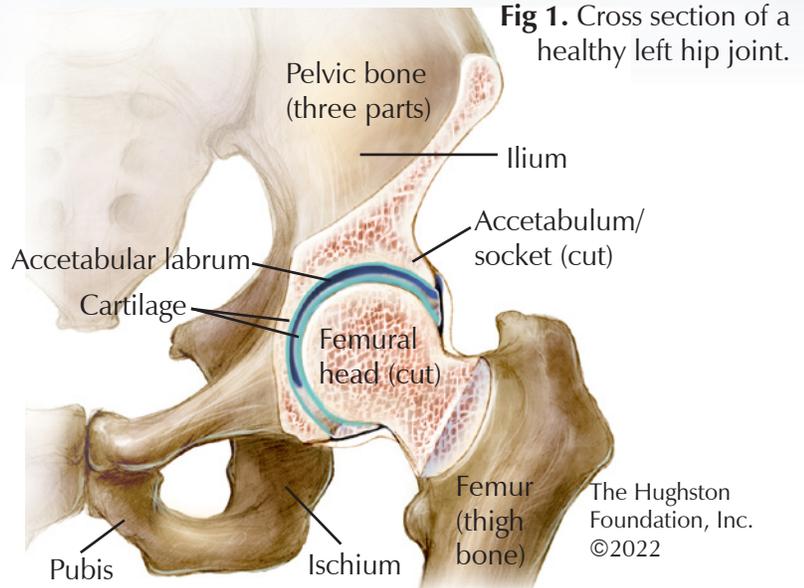


Fig 1. Cross section of a healthy left hip joint.

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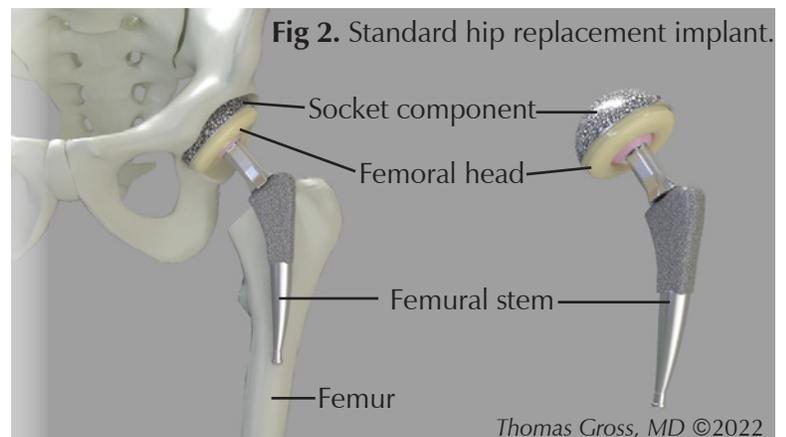


Fig 2. Standard hip replacement implant.

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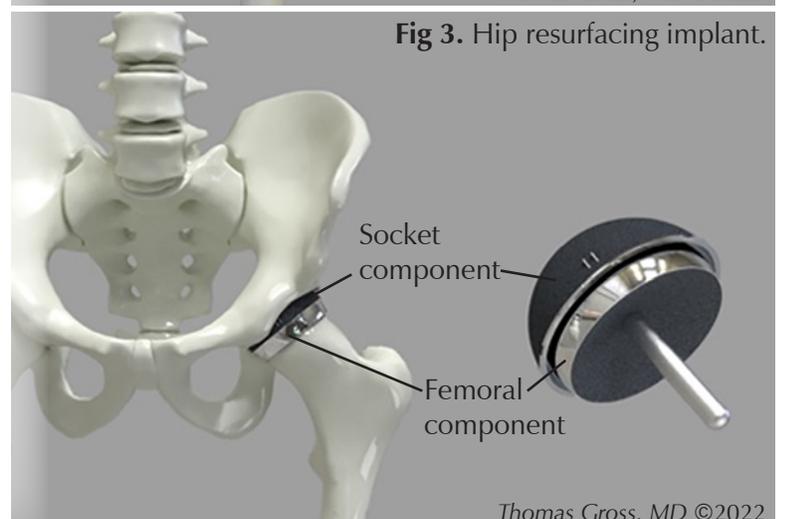


Fig 3. Hip resurfacing implant.

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Box 1. Standard Total Hip Replacement

- Extensive femoral bone removal.
- Smaller bearing size.
- Loading of femur through a large stem.
- Bone ingrowth porous surfaces.
- Suitable for the elderly for activities of daily living and light sports like golf and pickleball.

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Box 2. Hip Resurfacing

- Thin metal bearings requiring minimal bone removal and preserving the entire femoral head.
- Normal stability and natural loading of the femur.
- Bone ingrowth porous surfaces.
- Technically difficult to implant.
- Suitable for athletes and heavy laborers.

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improved surgical techniques, more patients are good candidates for a resurfacing procedure if they choose. Hip resurfacing has advantages that make it a good choice for some patients; however, it has disadvantages that you must also consider as well.

Advantages

The primary advantages of hip resurfacing are stability, functionality, durability, and bone preservation (**Box 2**). A hip resurfacing procedure leaves you with more of your natural bone, which is mechanically more like a normal hip and therefore less likely to dislocate. The dislocation rate is 0.3% compared to 3% for total hip replacement. A resurfacing is a super functional hip because patients are not limited by femoral stem pain. About 30% of total hip replacement patients have some discomfort from the stem with normal daily activities. This discomfort can become an impediment for heavy lifting or impact activities for patients. Hip resurfacing patients, on the other hand, can participate in vigorous athletics including karate, singles tennis, and running marathons without any fear of stem limitations.

Hip resurfacing is durable. Typical implant survivorship (how long the implant will last) in all patient groups is 99% at 15 years and this is with a much higher activity level. Standard total hip replacements have lower durability—95% with a 10-year implant survivorship for 70-year-olds and it is lower for younger patients. Since much less bone is removed with hip resurfacing compared to a total hip replacement, in the event of failure, more bone remains for a revision surgery.

Disadvantages

Two primary disadvantages of hip resurfacing have been femoral neck fractures and adverse metal wear failures. Orthopaedic surgeons have worked hard to minimize these risks and have practically eliminated them, but the risks still exist. To prevent fractures, surgeons look at the bone density of the femoral neck with a Dual-Energy X-ray Absorptiometry (DEXA) scan that measures bone density to determine the rate of recovery based on those results. If the bone is strong, rapid recovery often occurs. Patients with weaker bones will use crutches and a cane for a total of 10 weeks and take bone-strengthening medications. Surgeons instruct all patients to avoid extreme bending, heavy lifting,

running, and jumping for 6 months after the procedure to allow complete healing. If you follow the protocol, the fracture risk within 6 months is only 0.2%, which is well below the fracture risk of total hip replacement.

To avoid metal wear failures, surgeons use well-designed implants and specific guidelines for proper angle placement of the socket component. If the socket placement is too steep, the bearing (metal components) may wear abnormally and release large quantities of wear debris resulting in pain and swelling. If the socket is set correctly within the safe zone that the surgeon has established, wear is much lower. Significant corrosion does not occur with resurfacing and there is no type of total hip replacement that can match the low overall 15 year failure rate of hip resurfacing (1% at 15 years) in patients less than age 50.

Technological advances

Over the past 15 years, technology has changed dramatically allowing surgeons to perform hip resurfacing with minimal blood loss and good pain control. Surgeons can often perform the procedure in an outpatient surgery center, which means patients do not have to stay overnight in a hospital. Surgeons can use a number of non-narcotic means for pain management to minimize the amount of narcotics needed by patients. Typically, with good bone density, a patient can put full weight on their operative leg with crutches or a walker the day of surgery. After a week, the patient can progress to a cane and begin a daily walking program. Often, at 6 weeks, the patient can walk a mile without an assistive device and start performing light aerobic activities. At 6 months, patients can participate in full impact activities.

An alternative worth considering

Unfortunately, hip resurfacing is not commonly done. It is a more difficult, more complicated operation than a standard total hip replacement. In the hands of a surgeon experienced in this technique, however, hip resurfacing is worth considering as an alternative to total hip replacement. Talk to your doctor about which procedure fits your lifestyle and which will resolve the hip pain you are experiencing.

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