the preparation, the hospital stay and the recovery
HIP IMPLANTS for a Total Hip replacement. The *Implants* are sometimes called *prosthesis* or *components*.

*XRAY:* Replaced hip and a normal hip
what to expect: the patient’s guide to the direct anterior approach (DAA)

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# General/Overview

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The Hip Joint and Arthritis

What is the hip joint?
The hip joint forms where the top of the femur (thigh bone) meets the socket of the pelvic bone. The top of the femur is ball-shaped and fits snugly in the socket formed by the acetabulum (The hollow, cuplike portion of the pelvis into which the head of the thigh bone (femur) fits). A layer of smooth, shiny cartilage that cushions and protects the bones while allowing easy motion covers the bones of the hip joint. Surrounding the hip joint is the synovial lining, which produces a moisturizing lubricant. Tough fibers, called ligaments, connect the bones of the joint and hold them in place, while adding strength and elasticity for movement. Muscles and tendons also play an important role in keeping the joint stable.

What is cartilage?
Normal hip function requires a smooth gliding surface on the ends of the bones. This surface is made of a thin layer of slippery, tough tissue called hyaline cartilage. This cartilage also acts to distribute force during repetitive pounding-like movements such as jumping or running. The hyaline cartilage is also referred to as articular cartilage.

What is arthritis?
Arthritis is a term that includes a group of disorders that affect the joints. The word arthritis literally means, “joint inflammation” that is, a joint that is painful, warm to the touch, possibly red, swollen, and associated with a loss of function.

Arthritis symptoms include joint pain, inflammation and limited movement of joints. Surrounding each joint is a protective capsule holding a lubricating fluid to aid in motion.
With joint arthritis, the cartilage may be damaged, narrowed and lost by a degenerative process (see diagram on page 3) or by inflammation, making movement painful.

Because of arthritis symptoms, many people will experience some difficulty with activities at home or work. The following may all be impaired to some degree by arthritis pain and joint stiffness:
• getting out of bed in the morning
• fastening buttons
• writing
• sewing
• meal preparation
• dressing
• sleeping
• walking
• climbing stairs
• arising from a chair or a toilet seat
• personal hygiene

Many people find that loss of mobility is more distressing to them than arthritis pain.

For most people, arthritis pain and inflammation cannot be avoided as the body ages. In fact, most people over the age of 50 show some signs of arthritis. Joints naturally degenerate over time. Fortunately, arthritis can be managed through a combination of medication, exercise, rest, weight-management, nutrition, and, in some cases, surgery. Treatments often change over time and medication may be adjusted.

What types of arthritis are there?
Arthritis is not a single ailment. In fact, more than 100 different conditions can affect the joints and their adjacent bones, muscles, and tissues. The conditions are classified into various types of arthritis based on:
• Inflammation (ex. Rheumatoid arthritis)
• Non inflammatory (ex. Osteoarthritis)
• Post-Traumatic Arthritis: occurring after a major injury to the joint surface
• Infection of the joint(s)
• Recurrent bleeding into a joint due to a blood disorder

All of these types of arthritis are completely different, with different presentations, symptoms and treatment.

Does arthritis progress or does it heal itself?
Unfortunately, damaged cartilage cannot heal to become normal again, though tremendous research is taking place on developing methods to restore damaged cartilage.

Generally arthritis gets worse with age. The hip becomes more painful and the “good days” start to become fewer and fewer.

Are there any surgical alternatives to hip replacement for the treatment of hip arthritis?
Although there is no cure and little prevention for osteoarthritis, there are ways to help relieve the pain and to keep active and productive. In younger patients, the hip may be painful but the arthritis may be minimal. Sometimes the hip has developed abnormally (DYSPLASIA) and surgery other than a replacement may be needed. This procedure is called an osteotomy (Periacetabular Osteotomy or Ganz
Osteotomy). This procedure is done to alleviate the pain and retain the natural hip in younger patients (generally less than 50) that have dysplasia.

Alternative surgical options for young patients are discussed in other handouts. Please see material on surface hip replacement hip, hip arthroscopy and surgical dislocation of the hip for femoroacetabular impingement syndrome (FIA).

**Why are x-rays required before hip surgery?**

An x-ray of the hip joint usually shows a “space” between the ball and the socket. In the normal hip this “joint space” is approximately 1/8 inch wide and fairly even in outline. X-rays are used to determine the extent of degeneration to the cartilage or bone and may suggest a cause for the degeneration of the hip joint.

X-rays can also help determine if there are any areas of the hip that may have developed abnormally.

![](NORMAL_HIP_XRAY.png)  
![](ABNORMAL_HIP_XRAY.png)

**NORMAL HIP XRAY**  
**ABNORMAL HIP XRAY**: loss of joint space and pistol grip deformity. Cysts noted on the head.

**When should I have my hip replaced?**

The decision to have a hip replacement is usually up to you and your family. A hip replacement can commonly be avoided as long as you are willing to put up with a moderate degree of pain and minimal disability. Most people have a hip replacement when they experience significant and persistent pain, need a cane at least part of the time, are having sleep problems and are taking nonsteroidal anti-inflammatory medication (NSAIDs) often. **In general a total hip replacement (THR) is indicated when the hip discomfort has progressed to intolerable pain and significantly interferes with daily living.**
If the hip problem is only minor and only occasionally bothersome (causing discomfort) then non-operative treatments are more reasonable than surgery. There is almost never urgency or an emergency situation for hip replacement. You may choose to have a hip replacement because of the desire to have a more active lifestyle such as taking part in recreational activities, traveling, and taking part in regular day-to-day exercise routines. If cardiovascular fitness is being compromised due to hip pain, then surgery should be considered. Also, prolonged use of narcotic medication (codeine, hydrocodone, oxycontin, Darvocet) is not recommended for the treatment of arthritis.

If the hip disease is so bad that walking requires crutches and/or a wheelchair or there is a significant limp, most orthopedists would recommend a hip replacement, assuming that you are physically able to tolerate the surgery.

In summary, hip arthritis and the pain it causes will usually progress. It progresses from tolerable discomfort that is managed with anti-inflammatory medication and activity modification to persistent pain causing limitations in the amount you can walk and sleep disturbance. Most people decide to have a hip replacement when the pain becomes this severe.

**FACTS ABOUT TOTAL HIP REPLACEMENT:**

- Approximately 300,000 hip replacements are performed in the U.S. each year.
- 64 percent of hip replacement patients are women.
- 34 percent of hip replacement patients are between 40 and 64 years of age.
- 90 to 95 percent of hip replacements are successful for up to 10 years.
- Younger, more active patients are now receiving hip replacements and are demanding high-technology implants that will last longer and support their active lifestyles.

**Can I put off surgery?**

There are some advantages to putting off surgery. The technology is always improving; however, improved technology needs to be tested with medical studies to prove that it is better than a previous technique.

Orthopedists encourage young people to hold off with joint replacement surgery as long as possible. The problem with joint replacements is how long they will last. If you are undergoing hip replacement surgery for the first time in your early 40s, you may require two additional
surgical procedures over your lifetime. You may benefit delaying surgery if your lifestyle is not compromised due to the pain and you have manageable hip discomfort.

The disadvantages of waiting are the pain, discomfort, loss of motion, disability, the possible loss of muscle and strength around the hip due to inactivity. It is because of the loss of muscle strength that some orthopedists recommend undergoing a hip replacement if you have a persistent and noticeable limp.

**How long does a hip replacement last?**

This depends on several factors:

- your age
- the disease of your hip
- the type of total hip prosthesis implanted

The longevity of the hip replacement depends on how well you take care of your total hip replacement and also how well it was put in. A vast majority of total hip replacements can be expected to last fifteen to twenty years. A high level of activity and increased weight may decrease the longevity of a total hip replacement.

There are many factors involved; it’s not unlike asking how long your car will last or how long the tires will wear. Your mileage will vary, but these are the controlling factors:

- With the polyethylene liners, wear of the liner is a function of use. Less use gives you more time before it wears through. For the hard bearing surfaces (metal-on-metal and ceramic-on-ceramic), the wear rate is so small it is not expected that “wear-through” will be the limited factor – however, the wear debris (tiny particles that gradually wear off of the artificial joint surfaces and are absorbed by the surrounding tissues) can cause problems.

- Age is a factor. Younger people are harder on their joints and walk more steps per day.

- Males are usually harder on their joints and statistically put on more miles.

- Response of your body to the prosthesis used in your hip.

This table shows 25-year results of a conventional, cemented, polyethylene on metal prosthesis. Consequently, the prosthesis model and the operation technique are 25 years old. This data is from a study out of the Mayo clinic.

The table shows the percentage of total hips still in function after 25 years for patients of different age categories.

<table>
<thead>
<tr>
<th>AGE AT OPERATION</th>
<th>Percent of TH still in function 25 years later</th>
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<tr>
<td>&lt; 50 years</td>
<td>63 %</td>
</tr>
<tr>
<td>50 - 59 years</td>
<td>76 %</td>
</tr>
<tr>
<td>60 - 69 years</td>
<td>87 %</td>
</tr>
<tr>
<td>70 - 79 years</td>
<td>93 %</td>
</tr>
<tr>
<td>&gt; 79 years</td>
<td>96 %</td>
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What is Minimally Invasive Surgery (MIS) for Hip Replacement?

Minimally invasive hip replacement surgery allows the surgeon to perform the hip replacement through a smaller skin incision. Traditional hip replacement surgery involves making a 10- to 12-inch incision on the side of the hip. With MIS the hip replacement is performed through a 3-4 inch incision or some techniques require two small incisions. After the skin incision the muscles are split or detached from the hip, allowing the hip to be dislocated. Most surgeons today are performing MIS hip replacement using a smaller skin incision. This may provide for a more pleasing scar; however the muscles below the skin are still split and detached from the bone. Therefore the recovery and the pain after certain techniques of MIS hip replacement may be the same as a traditional hip replacement. The concept of muscle preserving hip replacement has continued to evolve. The only true way to preserve all the muscles and tendons around the hip during a hip replacement is to use a technique to access the hip from the front or also know as anterior, sometimes called the Direct Anterior Approach (DAA). Unlike performing hip surgery from the side (lateral) or the buttock (posterior) of the hip, the DAA takes advantage of going between the long thin muscles that go across the hip joint. These muscles are not detached and therefore the recovery may be faster. Also beneficial to the patient is the lack of ‘hip precautions’ that are frequently required after a hip replacement. With a side or buttock incision, important muscles are detached and frequently your doctor will impose certain restrictions that need to be placed on the hip while the muscles heal.

Minimally invasive surgery is performed by most doctors, however not all MIS techniques are the same. To learn more about the Direct Anterior Approach by Dr. Matthys, please review the patient education material provided in another handout: Direct Anterior Approach for Total Hip Replacement.

General Technique for MIS hip surgery:
The artificial implants used for the minimally invasive hip replacement procedures are the same as those used for traditional hip replacement. Specially designed instruments are needed to prepare the socket and femur and to place the implants properly.

The surgical procedure is similar, but there is less soft-tissue dissection. A single minimally invasive hip incision may measure only 3 to 4 inches. It depends on the size of the patient and the difficulty of the procedure.

The incision is placed over the front of the hip. The muscles and tendons are NOT split or detached during the DAA. With MIS approaches through the side or buttock, the muscle detachment may be to a lesser extent than in the traditional hip replacement operation. The muscles are routinely repaired after the surgeon places the implants.

Benefits of DAA:
Reported benefits of less invasive hip replacement include:

- Less pain
- More cosmetic incisions
- No muscle detachment
- No muscles are split
- Rehabilitation is faster
- No hip restrictions
- Fewer implant dislocations
- Hospital stays are shorter

For traditional hip replacement, hospital stays average 4 to 5 days. Many patients need extensive rehabilitation afterward. With less-invasive procedures, the hospital stay may be as short as 2 or 3 days. It is very unlikely to expect to go home on the day of or the day after surgery.
What is revision surgery?

Hip replacements may fail after 25 years, or sooner. The parts may come loose, wear out or break. Loose, worn or broken parts may need to be replaced. The surgery to replace or repair the components is called revision surgery.

Why are second and third time operations (revisions) not as good as the first time?

- **Bone availability.**
  The more times a joint is replaced, the less bone there is for the surgeon to work with. Special implants are required. The surgery is more extensive.

- **Muscle weakness.**
  The hip recovers from surgery less predictably with more operations. A weak hip or pelvis puts the patient at risk for dislocation and walking with a persistent limp.

- **Higher complication rate.**
  These complex revision operations are much riskier than the first time a hip is replaced. All the risks associated with first-time hip replacements are present, but the chances of complications occurring are increased.

If I put off surgery, will my hip deteriorate?

The surgical procedure in general is not any more difficult if surgery is delayed. Deterioration of the bone is rare, but can occur. The surrounding joints, such as the back, knees, and the other hip are not compromised and will not be damaged; however, the added stress may irritate these areas due to limp or weak hip muscles. If there is a significant delay and muscle weakness and loss of strength has occurred, recovery may take a longer period of time.

Is there any medication that can be injected or taken by mouth that can re-grow cartilage?

There are no scientific studies reporting regeneration of cartilage tissue with any medications prescribed by doctors or supplements provided by health food stores such as shark cartilage. Glucosamine and chondroitin sulfate, generally taken together, have demonstrated decreased pain, but there have been no studies to support regeneration of cartilage or slowing of cartilage loss due to the arthritis. Most researchers feel that the pain relief from glucosamine and chondroitin sulfate is more of an anti-inflammatory effect.

Is there any medications that can help with my arthritis?

Arthritis medications, sometimes called non-steroidal anti-inflammatory drugs (NSAIDS), help in decreasing the pain and inflammation. The effect of these medications vary from one patient to the other. NSAIDs are available both over-the-counter and as a prescription. It is very important to understand that while there are differences between prescription and non-prescription NSAIDs, these differences are not the strength or potential relief of symptoms. Many patients find their best response from over-the-counter NSAIDs.
Aspirin (Anacin, Ascriptin, Bayer, Bufferin, Ecotrin, Excedrin)
Choline and magnesium salicylates (CMT, Tricosal, Trilisate)
Choline salicylate (Arthropan)
Celecoxib (Celebrex)
Diclofenac potassium (Cataflam)
Diclofenac sodium (Voltaren, Voltaren XR)
Diclofenac sodium with misoprostol (Arthrotec)
Diflunisal (Dolobid)
Etodolac (Lodine, Lodine XL)
Fenoprofen calcium (Nalfon)
Flurbiprofen (Ansaid)
Ibuprofen (Advil, Motrin, Motrin IB, Nuprin)
Indomethacin (Indocin, Indocin SR)
Ketoprofen (Actron, Orudis, Orudis KT, Oruvail)
Magnesium salicylate (Arthritab, Bayer Select, Doan's Pills, Magan, Mobidin, Mobogesic)
Meclofenamate sodium (Meclomen)
Mefenamic acid (Ponstel)
Meloxicam (Mobic)
Nabumetone (Relafen)
Naproxen (Naprosyn, Naprelan*)
Naproxen sodium (Aleve, Anaprox)
Oxaprozin (Daypro)
Piroxicam (Feldene)
Rofecoxib (Vioxx)
Salsalate (Amigesic, Anaflax 750, Disalcid, Marthritis, Mono-Gesic, Salflex, Salsitab)
Sodium salicylate (various generics)
Sulindac (Clinoril)
Tolmetin sodium (Tolectin)
Valdecoxib (Bextra)

Some products, such as Excedrin, are combination drugs (Excedrin is acetaminophen, aspirin, and caffeine).

Note that acetaminophen (Paracetamol; Tylenol) is not on this list. Acetaminophen belongs to a class of drugs called analgesics (pain relievers) and antipyretics (fever reducers). The exact mechanism of action of acetaminophen is not known. Acetaminophen relieves pain by elevating the pain threshold, that is, by requiring a greater amount of pain to develop before it is felt by a person. It reduces fever through its action on the heat-regulating center of the brain. Specifically, it tells the center to lower the body's temperature when the temperature is elevated. Acetaminophen relieves pain in mild arthritis but has no effect on the underlying inflammation, redness and swelling of the joint.

Table of NSAIDs

How many Cortisone injections can I have a year?

In general most doctors do not recommend more than four per year. The injections can lose effectiveness the more times they are performed. This is generally because arthritis progresses and becomes more painful. Injections are indicated for patients with mild or moderate arthritis. The more severe the disease, the less likely an injection will be helpful.

Are there different types of hip injections?

Yes, injections can be placed on the side of the hip and are generally placed in the soft tissue bursa sac. This is generally used to alleviate pain that is outside the joint and is originating from the trochanteric bursa. Bursa are located throughout the body and are generally located over a
bony prominence. The function of the bursa is to decrease friction between the bone and a tendon or muscle. The bursa can swell and become inflamed and painful.

The other injection usually involves placing the medication into the joint under the guidance of X-ray. This generally requires an appointment with a radiologist. Here the needle is directed into the small joint space while using an X-ray to determine the location of the needle. This injection is intended to alleviate pain that is originating from the hip joint.

![Trochanteric Bursa (Bursitis)](image)

**Should I try to lose weight before surgery?**

If you are overweight, your extra weight will increase the hip pain. Weight loss will make you more comfortable, but is unlikely to completely relieve the pain. It may also be beneficial in allowing you to delay surgery, especially an advantage for younger people. It is important to understand that one pound of weight loss decreases the hip stress by three pounds. Obesity can also make surgical treatment more challenging. However, a hip replacement on heavier patients is commonly performed and does not usually prevent the surgeon from operating. It is documented in the medical literature that obese patients have a higher complication rate. This increased risk is rarely of a degree to make replacement impossible. Certain techniques of minimally invasive total hip replacement are not used in obese people. The Direct Anterior approach can be used since the surgery is performed in the front part of the hip between the trunk and the upper leg, where fatty tissue is less.

In summary, it is desirable to lose weight if you feel that you are overweight, however, we rarely insist upon it prior to surgery. We do recognize the difficulty with weight loss, especially when arthritis pain can cause a person to be less active.
Risks and Complications

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Risks and Complications

Are there risks to the surgery?
Yes, total joint replacement surgery is a major operation and there are some risks. The risks are rare due to experience and expertise in the field. According to the American Academy of Orthopaedic Surgeons, approximately 300,000 hip replacement operations are performed each year in the United States and less than 10 percent require further surgery. New technology and advances in surgical techniques have greatly reduced the risks involved with hip replacements. Numerous measures are undertaken to reduce the chance of a complication.

What are some of the risks of the operation to replace my hip?
To achieve the benefits that total hip replacement can offer you, you must accept certain limitations and be aware of possible risks. In most circumstances these risks can be avoided, prevented or corrected.

Complications occur in approximately 3% of all cases. Possible risks and complications include:

1. **Infection**
   Occurs in 3% of cases despite using sterile techniques. If infection occurs early (less than 6 weeks after surgery), then a revision surgery that is less extensive may be all that is needed. However, if the infection occurs after this time period the implants will have to be removed and the infection treated before the implants are put back in.

2. **Blood clots**
3. **Leg length differences**
4. **Fracture of the bone**
5. **Dislocation**
6. **Excess bone formation around the hip socket**
   This is rare, but can occur. It is also called heterotopic ossification. In rare circumstances it would require surgery to remove the extra bone that has formed.
7. **Early loosening/early failure of the implant**
8. **Blood loss requiring a transfusion of blood products**
9. **Nerve damage**
10. **Continued pain/thigh pain**
    This is due to bone ingrowth in a cementless prosthesis. It usually improves with time.
11. **Stress related conditions**
    The stress of surgery can increase the risk of heart attack or stroke.
12. **Late complication: loosening due to osteolysis**
    The most common later complication of hip replacement surgery is an inflammatory reaction to tiny particles that gradually wear off of the artificial joint surfaces and are absorbed by the surrounding tissues. The inflammation may trigger the action of special cells that eat away some of the bone, causing the implant to loosen. To treat this complication, the doctor may use anti-inflammatory medications or recommend revision surgery (replacement of an artificial joint). Medical scientists are experimenting with new materials that last longer and cause less inflammation.
What are the four most common complications after joint replacement?

- **Dislocation**
  
  **What measures are taken to reduce the rate of dislocation?**
  Dislocation occurs when the ball comes out of the socket. Just like your real hip, an artificial hip can dislocate. There is a greater risk of dislocation right after surgery, before the muscles and tendons around the new joint have healed. Hip dislocation causes pain and the hip will need to be put back in place in an emergency room or the operating room. If dislocation happens, it usually happens only once. Approximately 20% of patients will dislocate a second time. If the hip continues to dislocate it may require revision surgery.

  _The artificial hip is held in the socket by the muscles and other soft tissues around the hip. There is a low rate of dislocation with the direct anterior approach (DAA) because there is no disruption of the muscles and tendons around the hip._

- **Blood clots/deep vein thrombosis (DVT)**
  
  **What measures are taken to reduce blood clots?**
  Blood clots result from several factors including; being less active after surgery, use of oral contraception, history of DVT, history of cancer, use of tobacco and damage to the blood vessels.

  Blood clots may be suspected if pain and swelling develop in your calf or thigh (unrelated to your incision), tenderness or redness in your calf, and swelling of your thigh, calf, ankle or foot. Warning signs that a blood clot has traveled to your lung include shortness of breath or chest pain, particularly with breathing. This is called a _pulmonary embolism_. This can be a fatal condition if not treated. Consult your doctor immediately if you experience any of the above symptoms.

  Several measures are used to reduce the possibility of blood clots, including:

  - Blood thinning medications (anticoagulants).
  - Elastic stockings.
  - Exercise to increase blood flow in the leg muscles.
  - Plastic boots that inflate with air to compress the muscles in your legs.

- **Infection**
  
  **What measures are taken to help prevent an infection after surgery?**
  Infection can be a serious complication. Despite using precautions, the infection rate after a total hip replacement is 3%, and may be higher in patients that have other medical problems such as diabetes, chronic use of prednisone, obesity or chronic tobacco use. Multiple precautions are taken which include use of special surgical gowns, use of antibiotics and a sterile surgical environment. If an infection occurs, treatment is based on how severe it is and also how long ago the surgery was performed.
This table demonstrates the **general** guidelines for treatment of post-operative infection in joint replacement. This does not apply to every patient.

<table>
<thead>
<tr>
<th>Infection</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection involving only the skin (cellulitis).</td>
<td>Oral or intravenous antibiotics.</td>
</tr>
<tr>
<td>Deep infection involving the joint, less than six weeks after surgery.</td>
<td>I.V. antibiotics, surgery requiring the hip to be opened up and irrigated, possible removal of all or some of the implant device.</td>
</tr>
<tr>
<td>Deep infection involving the joint, later than six weeks after surgery.</td>
<td>I.V. antibiotics, surgery requiring the hip to be opened up and irrigated with removal of all of the implant device and two to three months of antibiotics. A second surgery required to replace the hip with new parts.</td>
</tr>
</tbody>
</table>

**Leg Length Differences**

**Will there be a difference in the length of my legs after the hip replacement?**

The surgeon’s goal at the time of the surgery is to restore the normal anatomy and length of the leg, as well as provide a stable hip that does not dislocate. However, sometimes either due to your unique anatomy or weakness in the muscles and soft tissues in the hip area, it may be necessary to lengthen the leg at the time of the surgery. Most commonly, the limbs can be restored to within 1/4" to the length of the leg before surgery. Usually, patients already have a difference in length of their two legs before surgery. This is due to the loss of cartilage and thus shortening of the leg.

If the leg requiring hip replacement surgery is shorter than the other leg, it can be lengthened with a goal of making it the same length as your other leg. If you have arthritis and shortening of both legs, then the leg lengths will be made equal at the time the second hip replacement is performed. If the leg to be operated on is already longer than the other leg, there is little that can be done to shorten the leg at the time of hip replacement surgery. To do so will very commonly lead to a looseness or laxity in the soft tissues, which will result in dislocation of the total hip replacement. In other words, if the leg that is being operated on is longer (which is rare) than your other leg, then it may be that way after surgery.
What measures are used to make my leg lengths as equal as possible?

Leg length is checked during surgery using x-rays. Hip replacement using the DAA is performed with you lying on your back flat on the table. Most surgeons perform hip replacement with you lying on your side. One major advantage of having you on your back is that leg lengths can be checked by x-raying both hips and printing a transparent image. These two images can then be overlaid to decide if the leg is long or short and make changes as needed.

Although all surgeons try to get the leg length correct at the time of the operation, it is common to be off by 5mm (one quarter of an inch), usually on the longer side. Most people usually adjust to this difference. This difference is naturally common in patients without hip disease.

If you have questions regarding the length of your legs before surgery, please ask your doctor about this.

What if my leg feels longer after surgery, but the x-rays show that they are equal?

Usually, the cause is the muscles and tissues that keep the pelvis slanting to the operated hip side after surgery. As the muscle contracture gradually disappears, the apparent leg length difference will disappear too. It takes one or two months to train your muscles to adapt after surgery.

Are most patients satisfied with total hip replacement?

Yes. About 90% of all patients are satisfied with their new hip. This is a very high figure, actually, compared with other kinds of surgery. Yet, about 10% of all patients operated on with the total hip replacement have been dissatisfied with the result of the operation. These are results of a national survey.

Dissatisfied patients in this group:

- Remaining pain in the joint that interferes with sleep (about 5%)
- unequal leg length (about 1%)
- instability in the new hip joint (about 5% with traditional approaches and 0.02% for the Direct Anterior Approach)
Getting Ready for Surgery

Once it is decided that I will undergo total hip replacement surgery, how long will it take before it is done? ................................................................. 18

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Getting Ready For Surgery

Once it is decided that I will undergo total hip replacement surgery, how long will it take before it is done?

Usually it takes about four to six weeks to get everything ready for your surgery. You will be asked to have a medical exam by your own doctor (family practice or internal medicine) before your operation to make sure you are physically fit to undergo major surgery. This is called a pre-op history and physical.

If you have any infection (teeth, bladder, kidney, for example), it should be treated and cleared up before joint surgery is done. An ample amount of time must be set aside for any special testing that needs to be done.

Any dental and colonoscopy procedures that are needed should be done before undergoing a total hip procedure.

Are there any medications I should stop taking before my surgery?

- **Stop taking NSAIDs, aspirin and all anti-inflammatories prior to surgery.** (Motrin®, Advil®, Aleve®, Naprosyn®, Celebrex®, Ultram®, etc) should be stopped **7 days before** the date of your surgery. This includes aspirin and aspirin-containing medication such as Anacin® and Bufferin®.
- **Medications that thin the blood (coumadin, lovenox, heparin, plavix) must be stopped** 7 days before surgery. Please consult with your internist or family practice doctor before you stop these medications.
- **Discontinue all herbal supplements** 7 days before surgery.

Because of the potential increase in bleeding during surgery, these medications must be stopped or adjusted. If they have not been discontinued properly, your surgery will need to be postponed.

Are there other things I need to do before surgery?

- If you smoke, stop or at least cut down significantly. Smoking can delay the healing process.
- Have any gum or tooth problems treated before surgery to reduce the risk of infection. Always inform your doctor of any medical procedures being done before surgery regardless of how minor they may be.
- Lose weight if you’re overweight. It will help take some of the stress off your new joints.
- Continue to exercise; it will help with your post-op recovery.
- Report any infections (even a cold), as surgery cannot be performed if present.
- Eat a well-balanced diet, supplemented with iron and a multivitamin.
Will I need blood?

Most patients require a blood transfusion after surgery. The blood may be from the blood bank (community donated) or blood that you donated prior to surgery (autologous).

Should I donate my own blood before surgery?

You may choose to donate your own blood before surgery, or if you are unable to give blood, a family member or friend with the same blood type may donate instead (directed donation). Every effort will be made to help reduce the amount of blood lost during surgery. To cut down on bleeding your blood pressure is lowered and blood vessels that are cut are cauterized. A specialized drain is used after surgery that will collect the blood that commonly leaks out after surgery. This blood that is collected can then be placed back into your body through an I.V.

Donating your own blood before surgery depletes your red blood cell supply, which can make you weak and anemic before surgery. Please speak to Dr. Matthys regarding donating your own blood and blood loss if you have any questions.

You may donate at the blood bank of the hospital at which you will have your surgery. If you live far from that hospital, or out of state, you may elect to donate blood at a major hospital near your home. It will be transferred to the hospital before surgery.

Blood can also be donated at any American Red Cross blood collection facility. Please call (800) 974-2113 to locate the center nearest your home.

What are the risks of receiving blood?

If a blood transfusion is indicated during a surgical procedure or other medical treatment, the risks of NOT receiving blood far outweigh the risks of transfusion. Risks of transfusion are low, but include:

- Some people may experience minor changes in the body’s immune system after a transfusion, causing mild symptoms, such as fever, chills or hives, which typically require little or no treatment.

- A small number of people may also react to donated blood by developing antibodies (immune reactions).

- The transmission of disease and the destruction of red blood cells can occur rarely. This seldom threatens life.

All donated blood in the United States is tested. When you consider the risks of transfusion, it may be helpful to know that many common activities carry far greater risks – for example, smoking cigarettes, driving a car or being pregnant.

Anesthesia

What type of anesthesia will I receive?

This choice is between the anesthesia staff and you, unless they feel that a particular type of anesthesia is right for you. Modern anesthesia is very safe. While spinal anesthesia is preferred for total joint replacement, some patients may not be able to have it. Spinal anesthesia can be more difficult in patients that have had lower back fusions (surgery).
General anesthesia is an excellent alternative.

Just before surgery, the anesthesiologist will review your medical history and briefly examine you. The anesthesiologist will talk to you about which anesthesia he or she feels is best for you.

The technique most patients are familiar with is general anesthesia. With general anesthesia, the patient is unconscious during the procedure. The anesthesiologist may administer a variety of drugs and gases to keep you unconscious during the operation. This type of anesthesia requires a machine to breathe for you during the operation.

Another anesthetic technique is spinal anesthesia. With this technique, a small needle is used to inject an anesthetic solution into your lower back, near the spinal canal. This numbs the body from the waist down, but you are still awake. You will also be given other medications that make you sleepy throughout the surgery.

An additional option may be the epidural technique. This technique is similar to the spinal anesthesia and involves an injection into the lower spine. A small catheter is placed through the epidural needle to add more analgesic-anesthetic solution during the operation. After surgery, small amounts of medication may be infused through the catheter for one or two days for pain relief.

Your anesthesiologist may suggest a modification or combination of any of these techniques and will be glad to explain the pros and cons of each type of anesthetic technique to you.

If you or your family have had an abnormal reaction to anesthesia, it is important that you tell Dr. Matthys and the anesthesiologist.
WHO PROVIDES YOUR CARE

THE TOTAL JOINT TEAM:

WHO ARE THEY AND WHAT DO THEY DO?
Joint replacement is a joint effort! The total joint team works together to help you along the way, making sure you know what to expect and assist you towards the best recovery.

THE PATIENT AND FAMILY
You, your spouse, family or significant other are the most essential members of this team. Taking the time to learn about your health and your surgery helps with your recovery.

ORTHOPAEDIC SURGEON
Your orthopedic surgeon is the leader of the team. In addition to planning and performing your surgery, your surgeon will work with the other team members to assure your complete and rapid recovery. Feel free to discuss any aspect of your care with your surgeon. Your complete satisfaction is your surgeon’s and the team’s goal.

OTHER MEDICAL DOCTORS
To care for all your medical needs, other doctors may be involved in your care. These doctors are internal medicine physicians and manage medical conditions such as high blood pressure, diabetes, heart disease and many more ailments.

CLINICAL STAFF
Donna is the coordinator for Dr. Matthys’ clinic. Donna can answer any questions or help with any problems you or your loved ones have while preparing for your surgery. Jane is the clinic manager and can try to answer any questions regarding insurance or finance. Both can be reached at 701-241-9300 or 866-887-9300.

NURSING STAFF
During your hospital stay, registered nurses and other skilled workers will care for you. Nurses attending to you after your surgery are specialists in orthopedic care. Each morning you and your nurse will develop a plan for the day, and coordinate your care accordingly.

The nurse will monitor your condition throughout your stay. The nursing staff will assist you with personal care activities, such as bathing and changing positions in bed. The nurse will assist you with pain management, medication administration, care of your surgical site, bowel and bladder function, walking, and other aspects of your recovery.

PHYSICAL THERAPIST
The physical therapist focuses on developing your independence by increasing your ability to move with ease. He/she will evaluate your mobility and strength. Your therapist will tailor an exercise plan to increase your strength and endurance. You will be shown special ways to walk and move to ensure your safety and protect the new joint as it heals. He/she will also give you exercises to increase your strength and improve your hip’s range of motion.
OCCUPATIONAL THERAPIST
The occupational therapist provides training and recommends equipment for independence in your daily activities at home. The therapist assesses your physical capabilities and limitations to determine your needs for equipment such as a raised toilet seat, hand rails, a tub bench, etc. The therapist will also show you how to use this equipment effectively. Not every patient will be seen by the occupational therapist, only those with special needs.

DISCHARGE PLANNERS AND SOCIAL WORKERS
The discharge planners will assist you with your discharge from the hospital. They may help plan outpatient physical therapy, home health care, or a short stay in a nursing care facility, if necessary.

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After Surgery

What can I expect right after surgery?

Right after surgery you will go to the recovery room until you are awake and alert. You may have chills and nausea which are normal side effects of the anesthesia. You may also notice:
- Drainage tubes and catheters. A drainage tube and catheter may be in place and is usually removed the second day after surgery.
- White elastic stockings. You may be fitted with elastic surgical stockings that help prevent blood clots and improve circulation. You will wear these stockings for 18 hours a day, every day for six weeks following surgery.

Can you tell me something about the pain after the surgery?

You will experience some pain, but we are prepared to handle it with various methods. You will be given pain medication to control the pain after surgery. You may be treated with a PCA (patient-controlled analgesia) device that you use to administer your own pain medication through an IV. This device allows you to press a button on the PCA pump and get a predetermined amount of pain medicine injected into your IV. The pump is set to prevent against an overdose. After the IV is removed, your pain medication will be given in pill form.

How long does it take to recover from surgery?

Recovery varies with each person and goes in different stages. Recovery is faster with the direct anterior approach. However, the time it takes for you is dependent on your:
- Age
- Activity level before surgery
- Complexity of any other medical problems you have
- How well you can tolerate pain

When will I begin physical therapy?

Generally, you begin physical therapy the day after surgery. You may be walking on the day of surgery. Once home, you may use a walker for 2-4 weeks to protect the new joint while it heals. It is usually two to four weeks before you are able to drive. Most people gradually increase their activities during the next six to eight weeks; some play golf, doubles tennis or go bowling in 12 weeks. You and Dr. Matthys will determine your activity level.

Recovery is affected by the condition that your joint was in before surgery. It is natural that some weakness had developed around the joint that has been painful. Therefore the recovery phase is dependent on the condition your joint was in before the operation.

When will I be able to go home?

Although this depends largely on the avoidance of complications while in the hospital and how active you were before surgery, most stays are 2-5 days after routine, uncomplicated total hip
surgery for the “primary” or first time total hip patients. See table below for some examples.

<table>
<thead>
<tr>
<th>Patient Demographics</th>
<th>Average Hospital Stay</th>
<th>Rehab or Skilled Nursing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young patients or elderly patients that are active (walk greater than six blocks) and have few medical problems</td>
<td>Two to four days</td>
<td>Not required</td>
</tr>
<tr>
<td>Patients with stable medical problems (heart, lung), less active patients, patients using a walker or cane for less than three months</td>
<td>Four to six days</td>
<td>May not be required</td>
</tr>
<tr>
<td>Elderly patients living independently. Patients using a cane for greater than three months who use a wheelchair for longer distances. Elderly patients with multiple steps in their living quarters, patients having both hips replaced.</td>
<td>Four to seven days</td>
<td>Four to ten days</td>
</tr>
</tbody>
</table>

*This table is only a guide. Your length of stay will be decided by you and Dr. Matthys.

**Will I need to stay longer in a rehab unit or a nursing home?**

On occasion, patients may be admitted to a rehabilitation or skilled nursing facility after being discharged from the hospital. This depends on your activity level and general medical condition before undergoing hip replacement surgery. Most of our patients return home without an extended care facility stay or requiring a live-in companion.

**Will I need to use a special pillow (abduction pillow) between my legs to help prevent dislocation?**

This is not required with the direct anterior approach. With traditional surgery there is usually a wedge shaped pillow that patients sleep with for up to three months.

**Are there any special hip positions that I must avoid?**

With traditional hip replacement surgery there are usually restrictions that are required. These restrictions are called “hip precautions”. These usually involve restricting the amount of bending that can be done at the waist and hip. There are usually restrictions on sitting in low chairs and crossing one leg over the other. These restrictions are necessary so that the muscles/tendons that were detached have time to repair themselves. Because there are no muscles that are cut from the bone with the DAA, there are no special hip or trunk positions that must be avoided.
When can I resume normal sexual activity?

There are no restrictions for patients undergoing THR with the DAA. Sexual activity can be safe as soon as two weeks after surgery. The major limitations in most activity after the surgery are due to pain and discomfort. Therefore if the pain in the hip is tolerable, there are no restrictions.

Do I need to follow any special precautions or use a special chair after my surgery?

No. There are no specific precautions to prevent hip dislocation. Hip dislocation with the direct anterior approach is very low. There is no requirement for a special chair or special toilet seat.

Will I need to use a cane long term after surgery?

No. Many patients are able to walk with a completely normal gait after hip replacement surgery. Very few patients require a cane for long term use after hip replacement surgery. Normally, the reasons for needing a cane are due to problems with balance, arthritis, or other disabling conditions in other joints of the lower extremities.

When will I be able to go back to work?

One to two weeks for a desk-type job is typical; up to three months for moderately physical work.

Examples:
Student, secretary, and computer operator: one to two weeks.
Landscaper, airline baggage attendant: two months (with restricted work duties).
Construction worker, delivery personnel: up to three months.

Many patients will choose to go back to work earlier on “light duty.” Your employer and Dr. Matthys will help you decide when it is appropriate.

What do I have to look out for when I get home?

It is normal for you to have some discomfort. You will probably receive a prescription for pain medication before you go home. If a refill is needed, please call your doctor’s nurse a few days before you run out of pills.

Contact your doctor if you develop any of the following:

- Changes around your incision:
  - Drainage and/or foul odor coming from the incision.
  - Fever (temperature about 101 degrees F or 38 degrees C) for two days.
- Excessive swelling of your operated leg and foot. It usually develops during the first few weeks after surgery. The collected blood in the tissues around the hip will settle down to the knee and even to the ankle area and the swelling may take a bluish color. Usually, this wound healing disturbance will resolve without special treatment. Use of special stockings will reduce the edema.
Note: excessive swelling in the leg and foot associated with pain may be a sign of vein clots (deep vein thrombosis). Contact immediately your doctor if you experience this.

- Contact your doctor immediately if you have chest pain, a cough, or shortness of breath. If it is an emergency, then please call 911.
- Pain that cannot be controlled by your pain medication

Take time to adjust to your home environment. It is normal to feel frustrated, but these frustrations will soon pass. It is okay to take it easy.

**When can I shower or take a bath?**

It is recommended that you keep the surgical area clean and dry until your two week follow-up. You will be taking a shower before you leave the hospital. You will be instructed how to keep your wound dry while showering. Once the sutures are removed you can start getting the wound wet if told so by your health care provider.

**Will I receive physical therapy at home?**

Most patients that are discharged home from the hospital will not need therapy. If at your six week follow-up, the progress has been slow then therapy may be started at that time. This depends on the amount of progress you made in the hospital. A physical therapist may come to your home to work on hip motion and walking safely.

**I have difficulty putting on a sock and tying a shoe before surgery. Will I be able to do this after surgery?**

After the surgery, the range of motion is improved. Commonly, patients will not get a normal range of motion, but will have a big improvement in range of motion after the surgery. Many patients will be able to once again tie shoes, put on socks, and to clip toenails after surgery.

**When do I need to return for follow-up visits?**

You will need to return in two weeks for suture/staple removal. Routine office visits with Dr. Matthys or his assistant are at:

- six weeks
- six months
- one year after surgery
- two years after surgery
- then every other year for the life of your prosthesis.

Follow-up is necessary to find any problems that may occur before you are aware of them.

**When can I drive after surgery?**

You need to use your best judgment. You should no longer be taking narcotic medications (hydrocodone, Darvocet, etc). In general it is not likely that you should be driving before your two week check up. If your car has a manual transmission with a clutch, and your surgery was on your left leg, this may require up to four to six weeks before you should drive.
My new joint feels great! How soon can I start my daily walking?

We encourage you to be active in order to control your weight and muscle tone. It is generally four to six weeks before you can resume low-impact aerobic activities such as walking, bicycling and swimming. Jogging, high-impact aerobics and certain sports should be avoided. When you are first starting out, you may consider walking a few blocks to see how you and your new joint are feeling. You can then work yourself up to a mile.

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## Follow-Up

**What should I do if I am having problems with my artificial hip?**

Contact your surgeon’s office by phone if it is not an emergency. Most concerns can be answered over the phone. In most cases, the doctor or their nurse will advise you promptly the best course of action to take to alleviate the problem. If it is a medical emergency contact your local Emergency Medical Service by calling 911. After Dr. Matthys’ office hours, you can contact 701-241-9300 and ask for the orthopaedic surgeon on call.

**Do I need to take antibiotics after dental and other procedures for the remainder of my life?**

Yes, you will need to take antibiotics. Your immune system and white blood cells have a very difficult time clearing bacteria from joint replacements. Therefore, it is best to avoid and reduce the risk of any possible infection. To do this, it is commonly recommended that for dental procedures, particularly those involving a dental abscess, and for other procedures that are at risk for putting bacteria into the blood stream, a patient may be given antibiotics around the time of these procedures. The greatest risk for infection to occur after these procedures is within the first two years after hip replacement. After that time, there is a risk of infection with procedures but it is greatly reduced.

**Will my hip replacement set off the metal detectors at the airport and governmental buildings?**

Most likely, yes. Although these materials are not made of stainless steel or iron, current technology will often detect these. We offer cards to notify officials that you have an implanted metallic device. In general, this has never been a problem for people traveling through airports.

**How will I know if I am having a problem with my hip replacement after surgery?**

Pain is the most common symptom after hip replacement surgery that may indicate a problem. However, there are many things such as wear and osteolysis (destruction of bone especially when associated with resorption), which may occur without symptoms. To identify these, it is important to maintain follow up and to have x-rays taken of your hip replacement at least every other year.

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*If a patient delays follow up until a hip replacement is painful, occasionally this can result in significant loss of bone and increased complexity to any reoperation that may be necessary.*
What kinds of sports can I participate in?
Your new hip is artificial, and although made of extremely durable materials, it is subject to wear and tear. You may certainly return to playing low-impact sports. That means sports which don’t put high stresses on your new total hip. Examples are golf, doubles tennis, bowling, cross-country skiing, and walking.

High-impact sports put excessive stresses on the hip joint prosthesis and should be avoided. There is a risk that this overload may lead to early failure of the total hip replacement.

**PERMITTED ACTIVITIES**

- Swimming
- Water aerobics
- Walking for exercise
- Cross-country skiing or Nordic Track
- Cycling or stationary bike
- Golf
- Dancing
- Sedentary occupations (desk work)
- Kneeling

**RECOMMENDED ACTIVITIES**

- Hiking
- Doubles Tennis
- Light labor (jobs that involve driving, walking or standing but not heavy lifting)

**NOT RECOMMENDED**

- Jogging/running
- Impact exercises
- Sports that require twisting/pivoting (aggressive tennis, basketball, racquetball)
- Contact sports
- Heavy labor