Arthritis of the Hip Joint

Welcome to the Online Edition of Dr. Huddleston's informative manual *Arthritis of the Hip Joint*, which covers in full many subjects related to hip pathology in general and *Total Hip Replacement* in particular.

You can follow in order by selecting the first link, which will lead you to the second, and so on. Or, you can just jump right in to the specific area you are interested in.

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If you feel that this online manual has omitted anything you would like to know, please send your suggestion to Dr. Huddleston. We will try to include it in future updates.

Dr. H.D. Huddleston
The Hip and Knee Institute
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Tel: 818.708.9090
**HERBERT D. HUDDLESTON, M.D., F.R.C.S.**

Dr. Huddleston is Board Certified in Orthopedic Surgery. He restricts his surgical practice to Surgery of the hip and knee.

Dr. Huddleston grew up in South Africa and graduated from the Medical School of the University of Capetown. He completed his training in General Surgery in England, and was elected a Fellow of the Royal College of Surgeons.

His orthopedic residency training was taken at the Albert Einstein College of Medicine in New York City, after which he moved to Los Angeles to do a one year Fellowship in Hip and Knee Replacement Surgery with Professor Charles O. Bechtol.

After spending time in England with John Charnley, the father of modern hip replacement, Dr. Huddleston joined Charles Bechtol in private practice as his assistant. Bechtol, while Professor of Orthopedic Surgery at the University of California in Los Angeles, was one of the first three surgeons to introduce the Charnley technique of hip replacement into the United States.

Dr. Bechtol and Dr. Huddleston became partners in a private practice limited exclusively to Hip and Knee Replacement Surgery. Upon Bechtol’s retirement, Dr. Huddleston took over the practice.

Dr. Huddleston’s extensive experience includes more than six thousand hip replacements and five thousand knee replacements. He has revised more than seven hundred failed hip replacements referred to him from around the United States.

He has published research on the causes of failure of cemented joint replacements and on leg length techniques and issues in hip replacement. He teaches and lectures on the subject of joint replacement surgery. Dr. Huddleston has designed a hip replacement system (the Omega system) which is used throughout the world.

Dr. Huddleston is a Fellow of the American Academy of Orthopaedic Surgeons, a
Fellow of the Royal College of Surgeons, and a Fellow of the International College of Surgeons. He is a member of the American Association of Arthritic Hip and Knee Surgeons. Dr. Huddleston is on staff at the Valley Presbyterian Hospital and the Providence Tarzana Hospital.

Dr. Huddleston and his wife, Fran, and three sons, Michael, Christopher and Nicholas, enjoy sailing, skiing, tennis and travel.

**WHY DR. HUDDLESTON MAY BE THE RIGHT SURGEON FOR YOU.**

1. He has had special training in joint replacement surgery.
2. His practice is restricted to hip and knee surgery.
3. He has performed more than six thousand hip replacements.
4. He has performed more than five thousand knee replacements.
5. He does all his own surgery, from beginning to end.
6. He uses the same joint replacement team in the operating room daily.
7. He selects the best implant for you, regardless of cost.
8. He selects implants that are right for you and your lifestyle.
9. His two hospitals do not dictate what implants he can install.
10. He has a special technique for perfectly measuring the leg length in every hip replacement.
11. He routinely uses the revolutionary mini-incision hip replacement and mini-incision knee replacement techniques.
12. As a result his patients recover from surgery extremely rapidly with minimal post-op restrictions, and with a rapid return to normal walking.
13. His anesthesiologists are experienced with elderly and high risk patients.
14. The nursing staff at his hospital have had extensive experience with joint replacements.
15. He still accepts what insurance pays for his services (for now).

On to the Next Section of the Manual:  
**Sir John Charnley**

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Sir John Charnley

One of the greatest surgical advances of the twentieth century has been the development of the hip replacement operation. The pioneer and innovator in the field was Sir John Charnley, an English orthopedic surgeon.

He invented the low friction hip replacement in the early 1960s at the Center for Hip Surgery at Wrightington, England. Surgeons from all over the world made their way to Wrightington to learn his techniques.

Sir John Charnley was a master surgeon, innovator and bio-engineer. Knee and shoulder replacement surgery developed directly out of his work on the artificial hip. His work has been an outstanding contribution to the relief of human suffering.

On to the Next Section of the Manual:
Initial Consultation with Dr. Huddleston
INITIAL CONSULTATION WITH DR. HUDDLESTON

Your initial consultation with Dr. Huddleston may take 45 minutes to an hour, depending on the complexity of your problem.

At your first visit, we will take a comprehensive medical history, with special emphasis on your hip problem. You will have a complete orthopedic examination to rule out other conditions which may be causing your symptoms. We will need to take x-rays of the involved joint(s) if you have not had any taken recently (and brought them with you).

PLEASE BRING THE FOLLOWING WITH YOU ON THE FIRST VISIT:

1. Any **family members or friends you may want to have present** to help in the discussion and decision making process.
2. A written list of questions you may have.
3. **Any X-Rays, MRI studies, bone scans or other studies of your hip** taken by previous physicians (that you can readily obtain).
4. A list of your **current medications** (with dosages).
5. A list of **physicians you have seen in the past 2 years** (with addresses and phone numbers, if possible). We normally send a full report to the doctor who referred you to us. Please let us know if you want a report sent to any other physician.

On to the Next Section of the Manual:
**Anatomy of the Hip Joint**

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ANATOMY OF THE NORMAL HIP JOINT

The hip joint is located where the thigh bone (femur) meets the pelvic bone. It is a “ball and socket” joint. The upper end of the femur is formed into a round ball (the “head of the femur”). A cavity in the pelvic bone forms the socket (acetabulum). The ball is normally held in the socket by very powerful ligaments that form a complete sleeve around the joint (the joint capsule). The capsule has a delicate lining (the synovium). The head of the femur is covered with a layer of smooth cartilage which is a fairly soft, white substance about 1/8 inch thick. The socket is also lined with cartilage (also about 1/8 inch thick). The cartilage cushions the joint, and allows the bones to move on each other with very little friction. An x-ray of the hip joint usually shows a “space” between the ball and the socket because the cartilage does not show up on x-rays. In the normal hip this “joint space” is approximately 1/4 inch wide and fairly even in outline.
The term “arthritis” literally means **inflammation of a joint**, but is generally used to describe any condition in which there is **damage to the cartilage**. Inflammation, if present, is in the synovium. The proportion of cartilage damage and synovial inflammation varies with the type and stage of arthritis. Usually the pain early on is due to inflammation. In the later stages, when the cartilage is worn away, most of the pain comes from the mechanical friction of raw bones rubbing on each other.

**Osteoarthritis** mainly damages the joint cartilage, but there is often some inflammation as well. It usually affects only one or two major joints (usually in the legs). **It does not affect the internal organs.** The cause of hip osteoarthritis is not known. It is thought to be simply a process of “wear and tear” in most cases. Some conditions may predispose the hip to osteoarthritis, for example, a previous fracture that involved the joint. Growth abnormalities of the hip (such as a shallow socket) may lead to premature arthritis. Some childhood hip problems later cause hip arthritis (for example, a type of childhood hip fracture known as a Slipped Epiphysis; also Legg-Perthe’s Disease). In osteoarthritis of the hip the cartilage cushion is either thinner than normal (leaving bare spots on the
bone), or completely absent. Bare bone on the head of the femur grinding against the bone of the pelvic socket causes mechanical pain. Fragments of cartilage floating in the joint may cause inflammation in the joint lining, and this is a second source of pain. X-rays show the “joint space” to be narrowed and irregular in outline. There is no blood test for osteoarthritis.

**Rheumatoid Arthritis (R.A.)** starts in the synovium and is mainly “inflammatory”. The cause is not known. It eventually destroys the joint cartilage. Bone next to the cartilage is also damaged; it becomes very soft (frequently making the use of an uncemented implant impossible). R.A. affects multiple joints simultaneously. It also affects internal organs. Another form of hip arthritis that is mainly “inflammatory” is Lupus. There are other more rare forms of arthritis that are also mainly “inflammatory”. They are basically similar to R.A.. X-ray changes in R.A. are essentially similar to osteoarthritis plus a loss of bone density.

**Blood tests for rheumatoid arthritis** are not very accurate. “Rheumatoid Factor” is present in the blood in about 80% of patients who have had rheumatoid arthritis for more than 18 months. Early on in the disease the percentage is much lower. Unfortunately, about 7% of people over the age of 70 test positive for rheumatoid factor, even though they do not have rheumatoid arthritis. The test, by itself, is therefore not very reliable.

**Anti-inflammatory medications** (see Non-Steroidal Anti-Inflammatory Drugs) are effective in treating the “inflammatory” aspect of either rheumatoid or osteoarthritis.

**Osteonecrosis** (literally: “dead bone”) is another serious cause of hip pain. It is not “arthritis”. It is a painful condition in which part of the femoral head dies. This dead bone cannot stand up to the stresses of walking, the femoral head collapses, and becomes irregular in shape. With collapse the joint becomes even more painful. The most common known causes of osteonecrosis are excessive alcohol use and excessive use of cortisone-containing medications. In most cases the cause is “idiopathic”, i.e. unknown.

On to the Next Section of the Manual:

**Symptoms of Hip Disease**

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ARTHRITIS OF THE HIP JOINT

SYMPTOMS OF HIP DISEASE

The most prominent symptom of hip arthritis is pain. Most patients think that their hip is in the region of the buttocks and are surprised to learn that **true hip pain is most commonly experienced in the groin**. Groin pain of hip arthritis is sometimes misdiagnosed at first as a hernia or a “groin pull”. (There is no known medical diagnosis of, and no Wikipedia definition for “groin pull”, but strangely, patients frequently self-diagnose themselves with this “condition”). The pain can radiate down the front of the thigh for a few inches as well. Occasionally it goes all the way down the thigh to the knee (“referred pain”). This is because the hip and knee have an overlapping nerve supply. In fact, in some patients with hip disease, **knee pain may be the only symptom**!

Back pain is even more frequently confused with hip pain. Pain in the buttocks, across the low back and down the back of the thigh usually comes from the spine. It usually indicates a **pinched nerve in the lower spine**. Patients with a pinched nerve will also often have numbness or tingling in the leg. To complicate matters, some patients with an arthritic hip may also have a pinched nerve from a back disorder.

It is important in such cases to **determine which problem is causing most of the pain**: the hip or the back. If your problem is mainly in your back, you may still be left with most of your pain after going through a hip replacement, and you will not be very happy with the result! If most of your pain is from the hip, a hip replacement may have the added benefit of improving your back condition as well, since the stiffness of an arthritic hip can aggravate a back problem.

Most patients with significant hip disease have a **limp** and **one leg may feel shorter** than the other (see true and false leg lengths). Bone-on-bone contact occasionally causes the patient to feel or hear the hip **creaking** during walking. As the disease progresses, the hip becomes stiff and less movement is possible. This may make it **difficult for you to clip your toe nails or to tie your shoe laces**, and may also limit your ability to spread your legs. Quite often the first step or two after prolonged sitting may be especially painful. Eventually you may have to “take a break” to ease the pain after walking only short distances. The distance you can walk will gradually decrease until you can only take one
The three common causes of pain around the hip are arthritis, bursitis, or a pinched nerve in the lower back (the commonest cause). The groin pain of hip arthritis is sometimes misdiagnosed at first as a hernia.

On to the Next Section of the Manual:
Non-Operative Treatment of Hip Disease

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1. **Should you limit your activities?** If you have hip arthritis, the more you walk the more the hip will hurt. In time, running, tennis, golf and eventually even walking may become impossible. You can minimize the pain by simply cutting back on activities which seem to aggravate the hip. Whenever possible, use an elevator (or an escalator) instead of stairs, and avoid long walks that leave you in pain. **However, “saving the joint” by becoming totally sedentary will not slow down the arthritis.** Therefore it is recommended that you remain as active as your pain will comfortably allow. A reported study in the *Annals of Internal Medicine*, in 1992 suggests that people with hip arthritis who force themselves to remain active may do better in the long run than those who "baby" themselves. Also, being totally sedentary leads to a loss of muscle and bone strength. If you feel that you really need it, ask Dr. Huddleston’s staff to arrange for a handicapped parking sign for your car, but you are better off parking further away and forcing yourself to walk!

The best all-around exercise for you is swimming. The water relieves the stress on your hip as you “walk” about in the shallow end of the pool. Dr. Huddleston can prescribe a program of “pool therapy” for you. Bicycling (stationary or mobile) is also well tolerated. If you do not have access to an exercise bike or pool, then walk as much as you can tolerate without causing yourself excessive pain.

2. **A cane** has been known since pre-biblical times to be an effective pain-reliever for hip arthritis. Unfortunately most people today are too vain to use one! Two important facts about canes: 1). Hold the cane in the **opposite** hand (yes, the opposite hand) from the side with the hip problem and 2). The cane should be the correct height. Any medical supply company that sells you a cane will adjust it to the correct length.

3. **Weight loss** will probably decrease your pain if you are greatly overweight. One pound of weight loss equals 3 pounds in stress reduction on the hip during normal gait! But weight reduction alone is unlikely to completely relieve the pain. Obesity also makes the hip operation more difficult, and complications occur more frequently in overweight people. It can be very difficult to lose weight when you are not very active because of your hip pain. Do the best you can!

4. **Gold injections and methotrexate** may be useful in rheumatoid arthritis.
The treatment is complex and usually only given under the supervision of a rheumatologist.

5. **Cortisone injection** into the hip joint can be very effective if the cortisone is injected accurately into the joint. It quite frequently gives good relief for six months or so. It is a deep joint, and a long needle must be used with x-ray guidance for the needle. It is therefore not often done as an office procedure. Dr. Huddleston is quite expert at injecting the hip in the office without x-rays because of his intimate knowledge of the anatomy of the hip. In obese patients he recommends the use of x-rays to be sure the needle is in the joint. Cortisone occasionally gives remarkable results, with even up to a year of relief in quite severe arthritis. You never how well it will work until you actually try it. Bursitis of the hip (another common cause of “hip pain”) is easily (and effectively) treated with cortisone injections given in the office.

6. **Non-Steroidal Anti-Inflammatory Drugs** (continued on next page)
6. **Non-Steroidal Anti-Inflammatory Drugs** NSAIDs (Pronounced EN-seds), are a group of drugs which decrease the inflammation (pain and swelling) in arthritic joints. The pain relief from NSAIDs can be quite amazing. Although they are commonly referred to as “arthritis pills”, none of them will in any way influence the outcome of the arthritis. There are many NSAIDs available, and newer ones are constantly being brought onto the market. The “newest” one is not necessarily the most effective. Most people respond better to one NSAID than to another, and you may have to try several before the “right” one can be found for you. They all have potentially serious side effects and should only be taken under medical supervision. Most can only be obtained by prescription and are expensive. **Aspirin (which is also an NSAID!) is cheap, and is often just as effective as any of the other NSAIDs. It should therefore be tried first.** If even coated aspirin (Ecotrin) affects your stomach, then try extra-strength Tylenol. Most NSAIDs are “COX I Inhibitors.”

**Always take NSAIDs with food or antacids, or with a full glass of water. These medications have potentially serious side effects, and should only be taken under close medical supervision.**

**COX II Inhibitors** are a fairly new class of NSAIDS which include Celebrex and Mobic. (Vioxx and Bextra have been taken off the market).

In general, these drugs have been found to be slightly more effective than most (but not all) of the older, COX I NSAIDs, but this is not true for all patients. They have much fewer gastric side effects than COX I inhibitors, but side-effects are not eliminated. Celebrex cannot be taken by people allergic to sulfa and can elevate blood pressure if you already have hypertension by counteracting the effectiveness of some blood pressure medications known as “ACE Inhibitors”.

**Side Effects of NSAIDs**

Please read this section carefully if Dr. Huddleston has prescribed NSAIDs for you.

About 30% of patients on NSAIDs can expect some side effects. Most side effects are mild and may go away without treatment. Others are more serious and should be
Most NSAIDs can affect the liver, bone marrow or kidneys (see Table below). Although Dr. Huddleston may give you the initial prescription for NSAIDs, and help you find the most effective one for you, we prefer your family doctor or internist to continue prescribing the medication, since blood tests are needed at least every three months to determine if you are having harmful side effects. The damage is reversible if the medication is stopped in time.

**Stomach Problems: Stop the medication immediately if you get stomach pain, cramping or burning.** Check with your doctor if you get nausea, constipation or diarrhea which lasts for more than three days.

**Fluid Retention:** This may happen if the NSAIDs affect your kidney function. You may notice swelling of the ankles, feet, or lower legs, or an unusual weight gain. If this continues for more than two weeks, check with your doctor.

**Bruising Tendency:** NSAIDs interfere with the clotting of blood and may cause you to bruise easily. If you have any bleeding problems or take blood thinners, check with your doctor before taking NSAIDs.

**Dizziness, Lightheadedness, or Drowsiness:** These are rare. If they do occur they usually go away when your body adjusts to the medicine.

**Stomach Ulcers:** Some people taking NSAIDs develop stomach ulcers, and occasionally these may bleed. The bleeding can come with very little warning, and can even be severe enough to cause death. This is why stomach symptoms should be taken very seriously in patients on NSAIDs.

If you have severe heartburn, or if your stools turn pitch black (altered blood), or if you vomit blood or material that looks like coffee grounds, stop the medicine and call your doctor immediately.

Note that iron pills (taken for anemia or during the period you are giving blood for auto transfusion) will also turn your stools pitch black.

Most people can take NSAIDs without having stomach problems. However, you may have a higher risk if you have had previous ulcers, or are over the age of 60, use cortisone (such as Prednisone), smoke or drink alcohol. If you are in any of these high risk categories, it is recommended that you take Cytotec (which helps to protect the stomach) in addition to the NSAID. Cytotec is not routinely prescribed as it is expensive and has side effects of its own. There are other medications which can help protect the stomach.

**Drugs that may interact with NSAIDs**

Some drugs may interact adversely with NSAIDs. In some cases the combination should be avoided completely; in others, the dosage of either drug may need compensatory adjustment.
Never take Aspirin-containing medication at the same time as taking NSAIDs.

If you are taking any of the following drugs, consult your internist before commencing treatment with NSAIDs. There may be others not included in this list: aspirin, lithium, phenytoin, methotrexate, digoxin, probenecid, barbiturates, anticoagulants, high blood pressure medications, antacids, oral diabetes medications or diuretics.

Allergy to the NSAIDs: This may be manifested as rapid breathing, gasping, wheezing, fainting, hives, itching, skin rash, rapid heart beat, or sudden puffiness of the eyelids. Allergy is exceedingly rare. It occurs sometimes in people who are truly allergic to aspirin. If you have these symptoms and you do not have someone to drive you to the hospital, call an ambulance and get to the hospital as soon as you can, since the allergic reaction could be severe and need urgent medical treatment.

Remember to discontinue the use of any aspirin or aspirin-containing drugs 7 days prior to your surgery. All nonsteroidal anti-inflammatory medications should be discontinued 7 days prior to your surgery.

The reason for discontinuing these medications is that they can increase bleeding at the time of surgery. Tylenol, Darvocet, and Tylenol with Codeine can be taken by mouth up to the night before the operation. If you have an uncemented implant, you should not use Indomethacin after surgery unless approved by Dr. Huddleston, since it may interfere with bone-ingrowth into the implant surface.

### EXAMPLES OF PRESCRIPTION AND OVER-THE-COUNTER NSAIDs

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Some Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COX I INHIBITORS</strong></td>
<td></td>
</tr>
<tr>
<td>aspirin compounds</td>
<td>Anacin, Bayer, BC Powder, Bufferin</td>
</tr>
<tr>
<td>(acetylsalicylates)</td>
<td>Excedrin, Ecotrin, Zorpin</td>
</tr>
<tr>
<td>non-aspirin salicylates</td>
<td>Arthropan, Disalcid, Magan, Trilisate</td>
</tr>
<tr>
<td>diclofenac</td>
<td>Voltaren *</td>
</tr>
<tr>
<td>fenoprofen</td>
<td>Nalfon *</td>
</tr>
<tr>
<td>flurbiprofen</td>
<td>Ansaid *</td>
</tr>
<tr>
<td>ibuprofen</td>
<td>Advil, Medipren, Motrin</td>
</tr>
<tr>
<td></td>
<td>Nuprin, Rufen *</td>
</tr>
<tr>
<td>indomethacin</td>
<td>Indocin *</td>
</tr>
<tr>
<td>Name</td>
<td>Brand Name</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>ketoprofen</td>
<td>Orudis *</td>
</tr>
<tr>
<td>meclofenamate</td>
<td>Meclomen *</td>
</tr>
<tr>
<td>mefenamic acid</td>
<td>Ponstel</td>
</tr>
<tr>
<td>naproxen</td>
<td>Naprosyn *</td>
</tr>
<tr>
<td>naproxen sodium</td>
<td>Anaprox *</td>
</tr>
<tr>
<td>phenylbutazone</td>
<td>Butazolidin *</td>
</tr>
<tr>
<td>prioxicam</td>
<td>Feldene *</td>
</tr>
<tr>
<td>sulindac</td>
<td>Clinoril *</td>
</tr>
<tr>
<td>tolmetin</td>
<td>Tolectin *</td>
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</tbody>
</table>

**COX II INHIBITORS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Brand Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celecoxib</td>
<td>Celebrex * +</td>
</tr>
<tr>
<td>Meloxicam</td>
<td>Mobic *</td>
</tr>
</tbody>
</table>

* Can affect liver or kidneys. Need to have blood tests every 3-6 months (Complete Blood Count, Liver Function Tests, serum creatinine).
+ Can elevate blood pressure.

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**RULES FOR PATIENTS TAKING NSAIDs**

A. Tell your doctor if you are taking any other prescription or over-the-counter medications. Also if you have any other medical problems, especially stomach ulcers, bleeding tendency, colitis, diverticulitis (or other stomach or bowel disease), kidney disease, asthma or liver disease.

B. Always take NSAIDs with a meal and plenty of liquids.

C. **Don't** exceed the dose prescribed by your doctor if it doesn’t seem to be working to your satisfaction. There is a maximum effective dose for each NSAID and it could be very harmful to exceed that dose.

D. **Don't** take NSAIDs only when you have pain or only when you expect to have pain (such as before a game of golf). NSAIDs may take up to two weeks to reach their full effect.

E. **Don't** take NSAIDs with alcohol or caffeine-containing beverages. These beverages make stomach problems worse.

F. **Don't** simultaneously take other medications containing aspirin compounds or ibuprofen. Taking the prescribed NSAID in addition may cause side-effects from too much NSAID in your BODY onunload="leave()". You can take Tylenol together with any of the NSAIDs.

G. **Don't** drive or operate machinery if your NSAID makes you feel drowsy or dizzy.
7. **Pain Medications:** Eventually NSAIDs will not give you adequate relief. If for some reason you are not able to undergo hip surgery by that time, then your only recourse is to take pain medications, starting with over-the-counter medications such as Tylenol, and progressing to stronger prescription medications from your doctor as necessary.

The following are some commonly prescribed pain medications:

<table>
<thead>
<tr>
<th>Pain Medicine</th>
<th>Generic or Other Names</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin compounds</td>
<td>Anacin, Bayer, Bufferin, Easprin, Excedrin, Ecotrin, Zorpin</td>
<td>ASA, **</td>
</tr>
<tr>
<td>Codeine</td>
<td></td>
<td>A, Rx, ***</td>
</tr>
<tr>
<td>Darvocet</td>
<td>Propoxphene with Tylenol</td>
<td>H, Rx, ***</td>
</tr>
<tr>
<td>Darvon</td>
<td>Propoxphene</td>
<td>H, Rx, ***</td>
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<tr>
<td>Emprin (with) Codeine</td>
<td>Aspirin and Codeine</td>
<td>A, Rx, ASA, ***</td>
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<tr>
<td>Fioricet</td>
<td>Butalbital with Tylenol</td>
<td>H, Rx, ***</td>
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<tr>
<td>Fiorinal</td>
<td>Butalbital with Aspirin</td>
<td>H, Rx, ASA, ***</td>
</tr>
<tr>
<td>Norco</td>
<td>Hydrocodone + Tylenol</td>
<td>H, Rx, ***</td>
</tr>
<tr>
<td>Oxycontin</td>
<td>Oxyco codone</td>
<td>A, Rx, ****</td>
</tr>
<tr>
<td>Percodan</td>
<td>Oxyco codone, Oxycodan</td>
<td>A, Rx, ASA, ****</td>
</tr>
<tr>
<td>Percocet</td>
<td>Oxyco codone with Tylenol</td>
<td>A, Rx, ****</td>
</tr>
<tr>
<td>Talacen</td>
<td>Pentazocine + Aspirin</td>
<td>H, Rx, ASA, ***</td>
</tr>
<tr>
<td>Tylenol</td>
<td>Acetaminophen, Phenaphen</td>
<td>*</td>
</tr>
<tr>
<td>Ultram</td>
<td>Tramadol</td>
<td>H, Rx</td>
</tr>
<tr>
<td>Vicodin</td>
<td>Hydrocodone + Tylenol</td>
<td>H, Rx, ****</td>
</tr>
</tbody>
</table>

Legend to Comments

ASA - contains aspirin  A - addictive  * - degree of pain relief  
Rx - needs prescription  H - habit forming

8. **Glucosamine Sulfate/Chondroitin Sulfate** ("chondroprotective agents or nutraceuticals") are in widespread use for the treatment of arthritis. There is some scientific evidence that they may slow the arthritic process (Journal of Arthroplasty, April 2003), and that they have a pain-relieving, NSAID-effect without the side-effects of NSAIDS (Journal of the American Academy of Orthopaedic Surgeons, March 2001). The dose is 1500 mg of Glucosamine plus 1200 mg of Chondroitin taken once a day. They give the best results when taken together. SAM-e, MSM and CMO are other
neutraceuticals widely used even though there is less evidence for their efficacy.

9. **Hyalgan, Synvisc and Supartz** ("viscosupplementation") are clear liquids purified from rooster combs. They increase the viscosity of joint fluid and the elasticity of the joint cartilage, and are also thought to have a weak NSAID (pain-relieving) effect. It only stays in the joint for about 48 hours, but the improvement can last for six to 12 months. It works best on mild to moderate arthritis. Repeat courses can be given every 6 to 12 months if it works well. FDA approval is only for use in the knee, but it can be used “off label” in the hip joint. A series of three or five injections are given into the joint. You cannot have these injections if you are allergic to eggs or feathers. Synvisc sometimes causes severe inflammation and swelling in the knee. Dr. Huddleston prefers Hyalgin because the side effects are negligible.

10. **Cartilage transplantation** has only been approved for use in the knee, in people under 45, with a small circumscribed area of arthritis. Cartilage cells are removed from the knee, grown in the lab, then transplanted surgically to the affected area. It has not been used in the hip yet, even experimentally, but the future holds promise.

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**On to the Next Section of the Manual:**

**Exercise and Fitness for Patients with Hip Disease**

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KEEPING FIT WITH AN ARTHRITIC HIP

A recent study suggests that people with hip arthritis may fare better if they force themselves to remain as active as possible, even if the exercise causes some pain. Take pain medicine as necessary before exercising. There is no evidence that being active will cause a more rapid deterioration of your arthritic hip. Being active is important for your general health and mental well-being. It also keeps your muscles strong, and this will speed your recovery after surgery. You are the best judge of what you can do. Remain as active as your pain will allow you to be until you decide to proceed with surgery.

Walking a treadmill or jogging will usually aggravate hip pain. The best all-around exercise for you is swimming. The water relieves the stress on your hip as you “walk” about in the shallow end of the pool. Lap swimming is excellent – it involves the use of most of your body muscles. Dr. Huddleston can prescribe a program of “pool therapy” for you if it is available in your area. Bicycling (stationary or mobile) is also well tolerated. If you do not have access to an exercise bike or pool, then walk as much as you can tolerate without causing yourself excessive pain.
ARTHRITIS OF THE HIP JOINT

WHEN SHOULD YOU HAVE HIP REPLACEMENT SURGERY?

If your symptoms are mainly from an arthritic hip, and you are physically fit enough to undergo surgery, when should you consider having your hip replaced? Hip arthritis is not a life-threatening condition: the procedure is “elective.” There are possible complications associated with hip replacement surgery (see Complications of Hip Replacement Surgery) and Dr. Huddleston will only offer it as an option for you to consider. The decision to have the operation is a highly personal matter, and only you can make that decision. If you are confined to a wheelchair and in constant pain, it is a decision that will be quite easy for you to make, even though the operation (any operation) involves taking a certain amount of risk. If your disability is great enough, the potential benefits are worth the risk. If your arthritis is responding to conservative measures, and you can still walk long distances without a cane, you don’t need a hip replacement.

Here are some facts to help you make your decision:

1. Once you have hip arthritis it will never get better. It won’t even stay the same. It will generally progress as time goes by. There are no exercises, diets, vitamins, or minerals (except, perhaps, chondroitin sulfate) which will make any difference. Copper bracelets will definitely not make any difference!
2. The rate of further deterioration varies greatly from person to person. The pain may become unbearable within six months for one person, yet drag on at a tolerable level for several years in another person who has the same degree of arthritis.
3. You will never need a hip replacement if you are willing to live with the pain.
4. You may believe that it is better to delay having the operation in hope that the technology of hip replacement will improve with time. However, the rate of progress in this area is extremely slow, so this is something to consider only if you are very young, or your arthritis is mild and you can easily live with your symptoms.
5. More than 98% of patients who have a hip replacement operation have no major complications which leave them in any way dissatisfied with their replacement.
6. The main arguments against waiting too long are:
   a. The longer your arthritis forces you to “sit around” the softer your
bones become, and the weaker your muscles.
b. If your pain and disability are not responding to conservative measures, and you realize that you are going to have to have the operation sooner or later anyway, you may reasonably conclude that there is no point in waiting. Why put it off for another year or two when you could have spent that time enjoying your life free of pain!

If you are in doubt about whether or not you should have the surgery then a second opinion may give you the reassurance you need. You may also discuss your hip problem with your family physician or a rheumatologist, and other people who have had hip replacements. The nice thing to know is that you need never be crippled because of your hip arthritis, because of the option of hip replacement available to you.

On to the Next Section of the Manual:  
**Total Hip Replacement Surgery**

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The modern **Hip Replacement** was invented in 1962 by **Sir John Charnley**, an orthopedic surgeon working in a small country hospital in England. His work has been one of the great triumphs of Twentieth Century surgery.

The arthritic femoral head (i.e., the femoral head) is removed, and replaced with a metal ball. The ball has a metal stem which is anchored into the hollow space inside the femur bone with bone cement. The worn out socket is replaced with a plastic socket.

The painful parts of the arthritic hip are thereby completely replaced with metal and plastic surfaces. The plastic socket has a very low frictional resistance, and a very low wear rate against the metal ball.

**Hip replacement** was first performed in the United States around 1969.

Many hundreds of thousands of replacements have been performed in the U.S. since then.

**The operation has become fairly routine and the chances that you will be completely happy with the outcome is about 98%**

One of the first three American surgeons to perform this type of surgery was **Charles O. Bechtol**. He started a total hip replacement program in 1969 while he was professor of orthopedic surgery at UCLA. **Dr. Huddleston** studied hip and knee surgery with him for one year as his assistant. The two later because partners in a private practice restricted to total joint replacement. Dr. Bechtol retired in 1984 and Dr. Huddleston took over the practice, and merged the practice with the Southern California
NEWER DEVELOPMENTS IN HIP REPLACEMENT

The major problems with standard hip replacements are: wearing out of plastic sockets, loosening of the bond between the implant and bone (either cemented or un-cemented). In time the cement can crack, directly resulting in loosening.

Secondly, the body reacts to minute fragments of cement, plastic or metal, and attempts to remove them, but unfortunately the process also removes bone adjacent to the particles, leaving the bone structurally weakened. If the implant loosens, a **second surgery** may become necessary to reattach it. There has been much research into the loosening problem. It was widely believed that the solution was to eliminate the cement. This led to the development of the:

*Cementless Hip Replacement* in which the surface of the metal parts is porous, and looks like coral. Bone can grow into the metal pores and bond the implant to the bone without the use of cement. There are many manufacturers and many brands of hip replacement implants. Some designs have had a very poor track record. Fortunately Dr. Huddleston has never used the Sulzer hip implants which had a high rate of failure, or Zimmer’s Durom socket which was recalled in 2008 also because of a high rate of failure.

*The AML Total Hip Replacement* (manufactured by DePuy/Johnson & Johnson) is the most widely used cementless implant in the world, and has the longest track record (since 1978). Dr. Huddleston uses the improved AML hip replacement known as the Prodigy. The long-term results with the AML hip have been excellent. No other hip implant in the world has been shown to have better longevity.

Initially, the cementless hips were used in patients of all ages, but it was soon found that in people with soft bones (osteoarthritis), **the femur bone** does not always bond to the porous metal. Cement is still used with very soft bones, regardless of age. Bone quality can usually be determined from the hip x-ray, but, quite frequently a true assessment of bone quality can only be made at surgery. Dr. Huddleston’s final decision on the question of cement will be made in your best interest. Currently Dr. Huddleston cements less than 5% of the hip replacement he performs.

On the other hand, uncemented socket components have been extremely successful, regardless of the patient’s age. Cement is rarely used on sockets nowadays.

OTHER SURGICAL CONSIDERATIONS DURING HIP REPLACEMENT

**Bone grafts** are occasionally needed to restore bone defects. If so, the bone may be obtained from the discarded femoral head, or from the pelvis,
through a small separate incision. Occasionally it may be necessary to cut tendons in the groin (“Adductor Tenotomy”) if these tendons restrict hip motion. This is done through one or two separate half-inch incisions in the groin, and does not result in loss of function.

It is possible to perform **two hip replacements under the same anesthetic**, and Dr. Huddleston does it in selected cases, but generally does not recommend it, since it greatly increases the risk of complications. If you need two hips replaced, a better course is to have the more painful hip replaced first, and to wait 12 weeks or more before undergoing the second operation.

**SURGICAL EXPOSURE OF THE HIP JOINT**

The hip joint can be approached from the front of the hip (anterior approach), from the back (posterior approach), from the side (trans-trochanteric approach), or from midway between front and side (antero-lateral approach).

With the side-approach the trochanter bone is cut, and later re-attached with steel wires. This was the standard for many years, but is now only occasionally used for re-operations.

**THE POSTERIOR APPROACH** is the one used by most surgeons. Small, unimportant tendons (short rotators) are detached to get to the hip joint, and re-attached later in the operation. Normal walking returns much sooner than with the antero-lateral approach, sometimes in less than six weeks.

**The mini-incision hip replacement** is an important recent development. It is used with the posterior approach. In the past the skin incision was ten or more inches long. With special new instruments, this approach is now possible through an incision as small as three inches in thin patients. In obese patients, the incision is less than half what it would otherwise have been.

A smaller incision means less blood-loss. There is also less trauma to the muscles and ligaments around the hip, so much less pain, and an even quicker return to normal walking. Few orthopedic surgeons have learned the posterior mini-incision. Fewer still can do a perfect hip replacement, with accurate leg length, through such a small incision. **Dr. Huddleston routinely uses the mini-incision posterior approach.**

**THE GLUTEAL SPLIT** is a significant improvement of the posterior approach. The gluteus maximus muscle arises on the pelvis and attaches to a broad flat ligament, the Facia Lata, which in turn attaches to bone at the knee.

In a standard posterior approach about two and a half inches of the gluteal muscle fibers are split to the junction with the Facia Lata, which is incised for a further four inches in the same line (see illustration), for a total of six to eight inches.

It turns out that not cutting into the Fascia Lata hugely facilitates a rapid return to normal walking.
However, splitting the muscle without cutting the fascia gives a very small window through which to do the surgery. Safe surgery through this two and a half inch incision has only recently been made possible by the development of special instruments. One small tendon, the pyriformis, is cut and reattached at the end of the operation. This tendon has been routinely cut in hip surgery for over a hundred years, and cutting and reattaching it is in no way detrimental.

This Gluteal Split hugely shortens the time to normal walking. Most patients can walk with a single cane within two days of surgery and are off the cane after about a week. The key is staying out of the Fascia Lata.

**THE ANTERO-LATERAL APPROACH**, is the second most commonly used. The chance of hip dislocation is thought to be less with this approach. However, there is a trade-off. About one third of the most important hip muscle (gluteus medius) is detached from the bone, and later re-attached. This weakens it, leaving most patients with a limp, sometimes for up to a year.

**IN THE ANTERIOR APPROACH** the whole operation is done through a single incision in the groin. The muscles are not cut, but are spread apart. The ligaments that hold the hip together still have to be cut. The procedure is done under x-rays. The operation is risky, even in the best hands. It is very difficult to line up the femur bone through this incision, and see it clearly. There is much room for error in the placement and sizing of the femoral component, as well as in getting the leg length right.

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**Dr. Huddleston performs the hip replacement surgery using the anterior Approach, or the Gluteal Split.**

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On to the Next Section of the Manual: **Surface Replacement**
ARTHRITIS OF THE HIP JOINT

SURFACE REPLACEMENT

Surface Replacement is an old idea that has been re-engineered as an exciting new alternative to conventional total hip replacement. It has only recently been approved by the Food and Drug Administration for use in the United States.

In 2006 Dr. Huddleston was the first surgeon from Los Angeles to travel to Birmingham, England, to be trained in the Birmingham Surface Replacement (BSR) technique.

The BSR is recommended for active, young adults, ideally male patients not over 60, and females not over 50 years of age. These age limits can be raised for very active people with outstanding bone quality.

The patient-experience with Surface Replacement is more or less identical to total hip replacement as described above. However, the BSR is a technically much more demanding operation for the surgeon than regular hip replacement, and the complication rate is especially high for beginner BHR surgeons. It is harder to work on the socket because the intact ball of the hip is in the way. The incision must be longer than for standard hip replacement. “Edge-wear” occurs if the alignment of the socket is not perfect. This can lead to ALVAL or loosening of the socket (which can occur even if the socket placement is perfect). If the alignment of the cap is less than perfect notching of the “neck” of the hipbone can occur, setting the stage for fracture of the “neck” of the femur bone. About 2% of surface replacement patients suffer fracture of the neck within the first year after surgery (none of Dr. Huddleston’s patients so far).

Click here for more on the Birmingham Surface Hip Replacement.
Hip Implant Designs and Materials

Metal on Metal Hip Replacement vs Ceramic on Ceramic Hip Replacement

There are many hip implant designs available to the surgeon. There is no universal agreement as to which design is best. Each surgeon selects what he believes is best for the patient, or what he was trained to use, or in some cases, what his hospital forces him to use. Find out what implant your surgeon plans to use.

Each type of implant has unique surgical aspects and considerations which can only be learned by experience with many cases. Preferably, your surgeon should have had experience with hundreds of cases of the implant selected.

The basic design of the implant is similar regardless of brand.

The plastic socket (high-density polyethylene) is the hip implant’s weakest link. The plastic wears away at the rate of about one millimeter per year (about 1/40th of an inch), against a metal ball, giving the implant a life expectancy of 10 to 15 years.

Johnson & Johnson’s “Marathon.” polyethylene is one of several recently developed “cross-linked” polyethylenes. The wear rate is slower in the lab and in humans, perhaps extending the life expectancy of the socket to 15 to 20 years.

Microscopic plastic particles are produced by daily wear, even with the cross-linked poly. They migrate between the implant and the bone. The body reacts to these “foreign particles” by producing enzymes which slowly dissolve bone. This may eventually result in loosening of the implant.
The metal parts of the implant are manufactured of Cobalt-chrome or Titanium. There is no agreement as to which is better. In some circumstances, each has advantages over the other. Cobalt-chrome has been used in the manufacture of orthopedic implants for 65 years, and is extremely well tolerated by the body. The AML stem is made of Cobalt-chrome. The socket is made of Titanium. In rare cases patients with metal allergies may have skin rashes, or chronic pain and swelling of the replaced joint which may be due to metal allergy. True rejection of the implant has never been reported. If you are allergic to any metals you need to let Dr. Huddleston know.

A huge breakthrough came with the 2002 introduction to the USA of metal-on-metal hips. Both ball and socket are made of Cobalt-chrome. It is believed that these will never wear out. Patients are allowed greater freedom of activity than with plastic sockets. There is some concern that the long-term frictional release of cobalt or chrome ions from the joint may be harmful to the human body. So far, after over 25 years of use in Europe, there is no evidence that these metal ions might cause cancer. A very small number of patients with metal-on-metal hips develop what seems to be an allergic reaction to the metal, called ALVAL. If that happens, the metal socket may have to be replaced with a plastic socket, or the hip converted to a ceramic-on-ceramic hip. The main symptom of ALVAL is persistent pain after hip replacement.

Note that in about 30% of patients, the metal parts of the hip replacement may trigger airport security devices. Use the plastic Joint Implant Card Dr. Huddleston's staff will give you to show airport security.

In Ceramic-on ceramic-hips the ball and socket are made of ceramic, which is not pottery, but the oxide of any metal, in this case, aluminum oxide. Wear is even less than with metal-on-metal surfaces, and there are no metallic ions to worry about. However, there is a 1 in 25,000 risk of the ceramic components fracturing. Re-operation may be required if either the ceramic ball or ceramic socket fractures. Ceramic fracture leaves behind shards of ceramic, which may damage the joint installed to replace the fractured component.

No one knows the effect of circulating metallic ions on a fetus in the uterus. For this reason a ceramic-on-ceramic or ceramic-on-plastic joint is advisable in women of childbearing age.

Large-Head-Technology. The ball (“head”) of hip replacements has customarily been much smaller than the normal head of the femur because a small ball has less friction against plastic (which therefore wears out slower). A possible complication of surface replacement is fracture of the neck of the femur, which is managed by installing a standard hip replacement stem. Since the socket does not need to be removed, a large head is needed to match the large socket. A few years ago it was realized that these large heads are much less prone to dislocation, a problem that has been most troublesome for the hip surgeon. Surgeons en masse...
switched to the larger heads and sockets for metal-on-metal replacements. Unfortunately, for reasons not yet clear, these larger sockets have had a higher incidence of loosening and ALVAL and have now fallen out of favor.

**THE BEST IMPLANT FOR YOU**

The hip implant parts are expensive, and there are many competing brands. Many hospitals contract with suppliers for a volume discount, and then restrict the surgeon’s choice to the contracted brand. That product may not be the best available, or the best implant for you.

Worse yet, some hospitals carry cheap, bottom-of-the-line, “low demand implants” for older patients, often defined as being over 65. The new metal-on-metal, and ceramic–on-ceramic designs are more expensive, and hospitals often restrict their use, even for younger patients.

You should find out if your surgeon is restricted in his choices by his hospital. If so, find a good surgeon who works out of a hospital that leaves the implant choice to him.

Many older people these days are in good health, live very active lives, and expect to live well into their nineties. Clearly these are “high demand” patients who deserve a high quality hip replacement that will serve them well for the rest of their lives.

Choose the best surgeon, have him tell you exactly what implant he plans to install in your hip (brand name, manufacturer, and what the parts are made of), and then do some research to find out if it is what you want and need.

Dr. Huddleston's hospitals do not restrict his selection of implants. He uses the only the best implants available, manufactured by the most respected company in the world, the Johnson and Johnson Company. His choices and decisions are based solely on what is best for you.

**LEG LENGTH AFTER HIP REPLACEMENT**

A leg that is too short or too long is the most common reason for a lawsuit after hip replacement. A difference in leg length is more than an inconvenience requiring costly and unsightly shoe lifts. It can cause a limp, weakness of the hip muscles and chronic back pain.

The final length of the operated leg is determined by the level at which the “neck” of the femur is cut, the depth to which the socket is machined, and the size of the implants used.

Most surgeons try to make all these decisions before surgery, by measurements made on the hip x-rays. However, x-ray pictures are always magnified, by anywhere from 10% to 25%, compared to the real size of the bones. Most surgeons simply assume a magnification of 18% or so, as a “ball-park number”. In one study, the actual size of the
implants was incorrectly predicted before surgery **60% of the time** (six out of every ten patients!).

There are other sources of error. The anatomical landmarks for determining the level of the “neck” cut are not exact. The depth to which the socket is machined varies, depending on the shape of the socket, and the hardness of the bone.

Accurate leg length measurement is difficult, even with an uncovered patient, lying face upwards. But during surgery the patient is covered with layers of sterile drapes, and the operation is commonly done with the patient lying on the side. The “bottom leg” is bent at the hip and knee, is completely covered, and can not be measured easily for comparison.

Finally, sometimes the surgeon will deliberately lengthen the leg a little for stability. It is vital that the hip be stable, even if the patient has to wear a shoe lift on the opposite side to achieve that aim.

For all the above reasons, the leg length can be off by a quarter inch or more, **and still be within an acceptable standard of care.**

**Dr. Huddleston uses a very accurate method for measuring leg length during the operation. His method has been published in orthopedic journals.**

### THE CORRECT IMPLANT SIZE

Patients return to normal walking much faster if they can put all their weight on the operated leg, starting the day after surgery. Most surgeons do not permit full weight for six weeks with un-cemented implants. This allows time for bone to grow into the implant until it is stable. However, if the fit is perfect, and the implant is totally stable at surgery, many surgeons allow full weight the next day.

If the implant is too large, the femur can fracture as it is driven down inside the bone, so the tendency is to under-size for safety. But, if the implant is very under-sized, the bone may fail to bond to it.

**The correct implant size is therefore very important.**

Most surgeons decide the size from hip x-rays taken before surgery, which is not very accurate, and make their final decision based on the “feel” of the instruments used to prepare the femur during surgery. In one study the size was incorrectly predicted from the x-rays 60% of the time (see “Leg Length” above).

There are twenty four stem sizes available with the Prodigy system, each slightly larger than the next. Dr. Huddleston makes his final selection based on an x-ray taken in surgery, with a metal sizing rod placed inside the femur. Very few surgeons do this. With such accurate sizing the implant fits perfectly every time, and more than 98% of Dr. Huddleston’s patients are allowed to bear full weight on the leg the day after surgery. However, if the bone is found to be very soft at surgery, and an un-cemented implant is nonetheless selected because of your age, weight bearing may be restricted for six weeks.
Dr. Huddleston takes an x-ray of the femur bone during surgery, with a sizing rod in place. This allows very accurate sizing of the non-cemented implant, and allows full weight on the operated leg, starting the day after surgery.

On to the Next Section of the Manual: Other Surgical Alternatives

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OTHER SURGICAL TREATMENT ALTERNATIVES

There are other operations that can be useful in treating hip disease:

1. **Hip fusion (arthrodesis)** was frequently performed before the era of hip replacement. The hip ball is fused to the pelvis. This is a single-operation, permanent-cure for the painful hip. Lost hip motion is made up by extra movement of the knees and spine. You must have a normal spine, normal knees, and a normal opposite hip for arthrodesis to be even considered. Few people today will accept the inconvenience of a stiff hip joint. It is usually only offered to very young people whose work involves heavy manual labor.

2. **An osteotomy of the thigh bone** may be an alternative for very young patients. The femur is cut and re-aligned to change the direction of forces across the arthritic hip. It takes three months for the cut bone to heal and the results are unpredictable and almost never permanent. The procedure is much more popular in Europe than in America.

3. **Femoral Hemiarthroplasty (“half a hip replacement”)** is sometimes offered to younger patients, when the hip ball is damaged, but the socket cartilage is normal, such as in patients who have osteonecrosis (see Introduction to Hip Disease). The socket is not replaced. The femur component is similar to that of a total hip replacement, but it has a large ball, sized to fill the socket. The metal ball moves directly against the socket cartilage, which can wear out and become painful, requiring a second operation to install an artificial socket. In general, Dr. Huddleston does not recommend hemi-arthroplasty for hip disorders, other than for hip fractures in the elderly. These are usually displaced fractures of the neck of the femur (see figure below). The implant is almost always cemented for hip fractures, except in patients under 65 or so, depending again on bone quality.

   Everything in this booklet concerning total hip replacement (complications, postoperative course, short and long-term care, etc.) applies equally to femoral hemi-arthroplasty.
4. **Surface Replacement of the Hip** had a vogue in the early 80’s, but failed unacceptably due to plastic wear. It was re-introduced to the U.S. in 2006 after 12 years of successful use in Europe with a metal-on-metal bearing, and is recommended for men under 60 and women under 50, especially those who are very active in sporting activities. It can be considered in men and women over those ages with good bone quality. It should be the first choice for anyone under the age of 45.

See Surface Replacement, above.

5. **Pseudoarthrosis** (Girdlestone) involves removing the femoral head and leaving the hip without any replacement. The procedure is sometimes used as a last resort treatment for persistently infected hip replacements, or when the bone is totally inadequate for further reconstruction after multiple failed hip replacements. It leaves the patient with a short leg and an unstable hip and the need to use two crutches permanently.

6. **Core Biopsy** involves removing a core of bone about one quarter-inch in diameter from the femoral head using a coring device. It is used in the earliest stages of **osteonecrosis** (see Introduction to Hip Disease) in the hope that it will allow the blood supply to return to the femoral head. Some doctors report 85% success rate with this procedure, but generally the results are much less optimistic. Because there is a danger of fracturing the weakened bone, patients have to be on crutches for six weeks. If the procedure is unsuccessful, you will almost certainly need a hip replacement.

7. **Hip Arthroscopy** has a limited role in the management of hip arthritis. Femoral –Acetabular Impingement (FAO) is thought to be a precursor to hip arthritis in young people. There is a bony “bump” on the front of the femoral neck that impinges against the socket, causing pain. This is thought (but has not been proven) to lead to early hip arthritis. Arthroscopic removal of the bump is commonly performed to relieve
pain, and in the hope of preventing arthritis from developing.

Arthroscopic “clean out of the hip” in advanced hip arthritis is of no benefit.

Arthroscopy is an out-patient procedure which Dr. Huddleston does not perform, but his colleague, Dr. Carlos Guanche, has had as much experience with hip arthroscopy as anyone in the world.

8. Other “possibilities” which patients frequently ask about include:

   a. **Is it possible to restore the cartilage to the joint?** It is now possible to implant new cartilage cells in a young knee with minimal, localized damage. It is not applicable to the hip.

   b. **Does “robot surgery” or computer assisted hip replacement improve the outcome?** Recently the media has focused on attempts at “robot” surgery: little more than a milling machine, used to do a small part (about 10%) of the operation. It prolongs the procedure and has not been shown to be superior to conventional surgery. “Navigation”, i.e. computer guided surgery, may revolutionize hip replacement in the future, but for now is still experimental and cumbersome. It prolongs the operation, and so far improves the technique very little if at all.

   c. **Are custom implants better than standard implants?** Custom implants are extremely expensive because each is manufactured specifically for one patient. They rarely needed, and add very little to the ultimate success of the operation.

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**Currently, the biggest problems associated with hip and knee replacement, are with the materials used in the manufacture of the implants.**

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On to the Next Section of the Manual:
**Blood Transfusion for Total Joint Replacement**

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We do everything we can to minimize blood loss during surgery. Your blood pressure is lowered during the operation to cut down on bleeding, and cut blood vessels are zealously cauterized, and we use the smallest incision possible. **Even so, many hip replacement patients need to be transfused after the operation** because of oozing from cut surfaces, much of it occurring after the operation is over.

The advent of AIDS has highlighted the risks associated with using other people’s blood (see Diseases Transmitted Through Blood Transfusion, below). Dr. Huddleston has always recommended that his patients donate their own blood prior to hip surgery because of the other risks associated with transfusion. The blood is stored and given back to you at the time of the operation (see Autologous Donation below). If you are not able to donate blood for yourself (for whatever reason), it is recommended that you solicit family members or friends to donate on your behalf (see Directed Blood below). Your third option is to use “hospital blood” (see Volunteer Donor Blood below).

1. **Autologous Blood** is blood donated by you and later given back to you. It is stored in a liquid state and is **good for 42 days from the day of collection**. It can be stored frozen for up to a year, but freezing triples the cost and is therefore only used in very special circumstances.

Note that blood already being stored in liquid form cannot be frozen if your surgery is postponed for any reason. Freezing must be done at the time of collection. If you have already given your blood for storage, and your surgery is to be delayed for any reason, we can use the “piggy-back” technique to save a unit of your banked blood that is about to expire. We give it back to you as a transfusion, wait ten minutes, and then take a fresh unit that will be good for another 42 days!

There is no age requirement for storing your own blood, and no specific weight requirement. However, if you are anemic (Hemoglobin under 11 gm/dl), we cannot take your blood. There are also some medical conditions which might preclude you from donating your own blood, such as some...
It is advisable to take minerals and vitamins to help your body replace the blood lost by your donations. Take these from the day of your first donation until the day prior to surgery:

1. Iron (Nu-Iron 150), 1 tablet 2 times a day.
2. Folic acid, 1 mg once a day.
3. Vitamin C, 250 mg twice a day.

2. Directed donor blood is blood donated by a relative or friend. It is carefully labeled and reserved specifically for you. It is rigorously tested for disease, but it is still possible to contract disease through directed blood: the donor may not know he has the disease, and tests may fail to detect it. **Directed donor blood is only given to you after surgery if it is medically necessary to do so.** If you plan to have directed donors, it is best that you first donate a unit (450 cc) of your blood. Then, when your blood group is known, and the bank has a specimen of your blood to use in cross-match tests, suitable donors can be canvassed. Bear in mind that it takes a minimum of 48 hours to process and test blood before it can be transfused.

**WHO CAN GIVE BLOOD FOR YOU?**

Someone who is:

1. Seventeen years or older.
2. Weighs more than 110 pounds.
3. Is in good health at present and does not have anemia.
4. Has never had yellow jaundice or liver disease.
5. Has never tested positive for AIDS.
6. Has not donated blood in the past eight weeks.
7. Has not received a blood transfusion in the past six months.
8. Has never been turned down as a blood donor.
9. Has a compatible blood group (see table below).

Once you know your own blood group the following table will help you to determine who might be a compatible donor:

<table>
<thead>
<tr>
<th>Your Blood Group</th>
<th>You Can Receive Blood From Donors With</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>A+, A-, O+, or O-</td>
</tr>
<tr>
<td>A-</td>
<td>A- or O-</td>
</tr>
<tr>
<td>O+</td>
<td>O+, O-</td>
</tr>
<tr>
<td>O-</td>
<td>O-</td>
</tr>
</tbody>
</table>
Tell the prospective donor to go to the same blood bank where you gave your first unit, and to inform the bank that they want to give a directed unit of blood for you. You do not need to be present.

**3. Volunteer donor blood** is blood donated by a member of the general public unknown to you. Potential donors fill out an extensive health questionnaire and the blood is rigorously tested. There are risks associated with receiving volunteer blood. Sometimes, in emergency situations, we may have to use volunteer blood if the amount of blood pre-stored for you is insufficient. But we would only do so in a rare, life-saving situation. Volunteer blood is rigorously tested and is safer now than it has ever been in the past.

**DISEASE TRANSMISSION THROUGH BLOOD TRANSFUSION**

All blood intended for transfusion is screened for AIDS, but the tests are not sensitive enough. There is a gap ("window"), believed to be between six and 12 months, during which infected persons will test negative. This is the great danger of accepting blood from others. This problem will persist until a test is available which will show positive as soon as an AIDS victim has the virus in his blood. Other diseases can be transmitted through blood; for example, hepatitis. Fortunately the tests for them are more accurate. The chances of getting AIDS through volunteer blood is currently about 1:2,000,000.

See Complications of Hip Replacement Surgery for other possible complications of blood transfusions.

**WHERE TO DONATE YOUR BLOOD**

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 Dr. Huddleston’s 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.
When making donations, please come with someone who can drive you home, since you may feel a little dizzy.

**FORCING YOUR BODY TO MAKE MORE BLOOD.**

Epogen, a new hormone wonder-drug given by injection, can speed up the rate of production of new blood by your own body. It is especially useful if you cannot give blood for yourself. It can be given to anemic patients before surgery, or after surgery if you did not donate sufficient blood and your hemoglobin level is low.

**Jehovah's Witnesses:** Although patients may require one or more units of blood transfusion after hip replacement, such transfusion is not mandatory. We have operated upon many Jehovah’s Witness patients and have been able to avoid transfusion altogether. The main disadvantage is that it takes longer for you to get back to full strength. It may take three months or more on iron and vitamin supplements to return the blood level to normal. Genetically engineered erythropoietin (“Epogen”) given by injection can “force” the body to restore your own blood more rapidly.

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On to the Next Section of the Manual:

**Scheduling Surgery**

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Once you have decided to proceed with surgery, there are a number of things that need to be taken care of before the day of the operation:

1. Select the date and hospital for the surgery (see below).
2. Start blood storage program (see Blood Transfusion for Total Hip Replacement).
3. Start taking iron and vitamin supplements (see Blood Transfusion for Total Hip Replacement).
4. Make an appointment to see the internist (see below).
5. Have the necessary lab work done (see below).
6. Stop taking certain medications in the days before surgery (see Hip Surgery and Your Current Medications).
7. See Dr. Huddleston for a final visit to make sure everything is in order (see Final Office Visit Before Surgery).

SELECTING A DATE FOR SURGERY

Dr. Huddleston’s surgery scheduler will schedule your surgery. Dr. Huddleston is usually scheduled ahead for about four weeks. The surgery scheduler will also assist you with getting your blood storage program started, and with selecting an internist if you do not have one on staff at the hospital where you will have your surgery.

APPPOINTMENT WITH THE INTERNIST

This is major surgery so medical evaluation by an internist is needed before we proceed with the operation. The internist will also see you daily while you are in the hospital to make sure that any medical complications which may develop are promptly recognized and treated.

It is best when your own internist is on staff at the hospital where you will have your surgery. If not, we will select an internist for you who is familiar with joint replacement patients, and who works with Dr. Huddleston on a regular basis. An appointment with the internist is usually made 5 to 7 days
before surgery, unless you have some serious medical problems that need more time to correct. If you have any infection (teeth, bladder, prostate, kidney, uterus, etc.), it should be treated and cleared up before undergoing joint replacement surgery.

**DISEASES SUCH AS DIABETES AND HEART DISEASE DO NOT DISQUALIFY YOU FROM SURGERY, AS LONG AS THEY ARE UNDER CONTROL. SOME CONDITIONS MAY MAKE THE RISK OF JOINT REPLACEMENT TOO GREAT (CHRONIC INFECTION OR A RECENT HEART ATTACK OR STROKE). THE INTERNIST WILL HELP YOU WEIGH THE RISKS OF SURGERY AGAINST YOUR AGE AND GENERAL HEALTH.**

**DUTIES OF THE INTERNIST:**

1. Dictate your complete medical history and physical examination into the hospital transcription system.
2. Order and evaluate necessary lab tests, including: complete blood count, chemistry and electrolyte panel, urine analysis, coagulation profile, electrocardiogram, chest x-ray and any other necessary tests needed to be sure that surgery is not too risky for you.
3. Prescribe any special medications (if any) before and after surgery including anticoagulants to prevent blood clots.
4. Transmit the results of all your lab tests to Dr. Huddleston’s office (Fax: 818-901-7013) and to either Valley Presbyterian Hospital (Fax: 818-902-3997) or Encino Hospital (Fax: 818-907-8630) at least two days prior to the surgery date.
5. See you in the hospital after surgery on the day of surgery, and then daily thereafter while you are in the hospital.
6. Order and monitor (with blood tests) anticoagulant medications needed to help prevent deep vein thrombosis after surgery.
7. Continue to administer and monitor the anticoagulant medications for at least two weeks after the operation.

**PLEASE SHOW THIS SECTION OF THIS BOOK TO YOUR INTERNIST TO APPRAISE HIM/HER OF THESE SPECIAL NEEDS, TO TAKE YOU SAFELY THROUGH YOUR HIP OPERATION.**

If your own internist (or an associate) is not able to see you everyday while you are in the hospital, he or she can still perform the **PRE-OPERATIVE EVALUATION AND CLEARANCE FOR SURGERY**, and fax the report to Dr. Huddleston (fax 818-708-7129). We will then assign an internist to see you and follow along daily while you are in the hospital, and will hand your care back to your own doctor after you leave the hospital.

**IT MUST BE CLEARLY UNDERSTOOD THAT YOU MUST BE SEEN DAILY BY THE INTERNIST WHILE YOU ARE IN THE HOSPITAL.**

On to the Next Section of the Manual: **HIP SURGERY AND YOUR CURRENT MEDICATIONS**
Non-steroidal anti-inflammatory medications should be stopped three days prior to your hip surgery. These medications are listed here. If you are taking aspirin or aspirin-containing drugs such as Percodan, Excedrin, or Anacin, these should be stopped 7 days prior to your surgery. Some of these drugs are listed here. If you are on Coumadin it will have to be stopped, under the supervision of your internist, several days prior to your surgery.

The reason that these medications are discontinued is because they can increase bleeding at the time of surgery.

Extra strength Tylenol, Darvocet, Percocet and Tylenol with Codeine may be taken by mouth up to the night before your operation. Your internist may want you to take certain of your regular medicines (for high blood pressure, diabetes, etc.) with a sip of water on the morning of surgery, even though you are not supposed to eat or drink anything after midnight. You may do so.
A day or two prior to your surgery, you will come to our office for a final preoperative visit to make sure everything is in order. Your vital signs will be checked, allergies and current medications will be reviewed, and you will be given papers to take with you to the hospital. You will also have a chance to ask Dr. Huddleston any unanswered questions you may have. If your internist has not done all the necessary blood tests, we will send you to the hospital to do additional tests.

On to the Next Section of the Manual:
What to Bring to the Hospital
WHAT TO BRING TO THE HOSPITAL

1. Bring this manual with you.
2. **The forms and papers given to you in the office to take to the hospital.**
3. Toiletries.
4. Make-up kit (women).
5. A list of important phone numbers, including those of friends you might want to call while you are in the hospital.
7. The hospital will provide you with a gown to wear in bed but you may bring your own if you wish.
8. A knee-length robe (a longer robe makes walking difficult).
9. Do not bring your own medications - it causes confusion and the nurses prefer to dispense all medication (including vitamins) so that they know what you are getting.
10. Do not bring credit cards, jewelry or other valuable items, and no more than $5 in cash.
11. Some people like to bring their favorite pillow.
12. Medical insurance card(s). (Medicare and/or other)
13. Reading material.
14. Cassette recorder, headphones and tapes if you want music.
15. Crutches or walker: if you already have these have someone bring them to the hospital the day after surgery. If not, they will be provided for you to take home when you leave the hospital.

THE NIGHT BEFORE SURGERY

You can spend the night before surgery at home or in a local hotel. Please be sure to arrive at the hospital on time. The night before surgery, you should take a long shower or bath.

**On the night before surgery do not have anything to eat or drink after midnight. Food in the stomach can cause anesthetic complications. Do not smoke or drink alcohol for 48 hours before surgery. Smoking increases anesthetic risk.**
Alcohol delays emptying of the stomach.

On to the Next Section of the Manual:

Hospital Admission

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Patients are admitted to the hospital the same day as the surgery. Most insurance companies insist that patients not be admitted the day before surgery because of the expense.

If your surgery is the first one that day, the check-in time is 5:30 a.m. If your surgery is later, then you will check in around 8:00 a.m. Please be on time.

When you arrive at the hospital on the morning of surgery, go directly to the admitting office. At both hospitals this is at the main entrance on the first floor. From there you will be taken to the pre-anesthesia area where you will change into a hospital gown, and an intravenous line will be started. The anesthesiologist will see you there and discuss anesthetic options and risks. He will discuss the advantages of general anesthesia (in which you are unconscious) and spinal or epidural anesthesia in which the lower half of your body is completely numb and pain-free, and you will sleep lightly but not be unconscious.

Dr. Huddleston prefers his patients to have spinal or epidural anesthesia, combined with a light general anesthetic or sedation. The incidence of blood clots is lower with epidural anesthesia. The recovery is also smoother, and you will have no pain for several hours after the operation.

With an epidural anesthetic the recovery is smoother and all pain is eliminated for at least three hours after surgery. The incidence of blood clots in the legs is lower after epidural anesthesia. Most doctors having surgery themselves would probably elect to have an epidural over a general anesthetic. The final choice of anesthetic is made by you and the anesthesiologist. You will be given sedatives before being taken to the operating room.
First time hip replacements take 60 to 90 minutes of operating time. You will be in the operating room for about another 45 minutes (for anesthetic induction before, and recovery after, the operation). Revision operations can take up to 4 hours of operating time (or even more). When the operation is over, Dr. Huddleston will meet with relatives or friends in the surgical waiting area to give them a progress report. At Valley Presbyterian Hospital, the waiting area is next to the gift shop on the first floor. At Encino Hospital, it is next to the surgery suite in the basement.

On to the Next Section of the Manual:

What to Expect After Leaving the Operating Room

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ARTHRITIS OF THE HIP JOINT

WHAT TO EXPECT AFTER LEAVING THE OPERATING ROOM

You will wake up in the recovery room. You will be comfortable and usually surprisingly free of pain. You will have “calf pumps” on your legs: pneumatic pumps which help to prevent blood clots. **You cannot be visited in the recovery room,** but can be visited as soon as you get to your room. **You will be in the recovery room for about 2 hours.** Patients at the Valley Presbyterian Hospital with orthopedic problems are then usually moved to the orthopedic floor, 4 West in the New Tower. At Encino Hospital, it is the whole third floor. **Some patients are admitted to the Intensive Care Unit (ICU) for 24 hours** before being transferred to the orthopedic floor. This does not mean that their condition is critical, but only that Dr. Huddleston feels the need for closer monitoring because of their age or preoperative medical problems that increase risk.

PAIN CONTROL

Dr. Huddleston is **fanatical about pain control,** and does everything possible to keep your pain to a minimum. You will be amazed at how little pain you will have. There are two major reasons for this.

The first is that the surgery is **minimally invasive,** and less tissue is cut that can cause pain.

The second is the use of the **pain cocktail,** also known as the “Magic Cocktail”, which is a mixture of medications that is injected into all the deep soft tissues around the wound prior to closing the skin. The mixture consists of a long acting anesthetic, morphine and an anti-inflammatory medication. The pain-cancelling property of this technique is truly “magical”. Many patients have absolutely **no pain at all after the operation.**

As a back-up, in case you do have some pain, you will also have the **PCA Unit (Patient Controlled Analgesia):** a computerized device that attaches to your intravenous line. It enables you to self-administer a small dose of narcotic at the press of a button whenever you feel the slightest pain, eliminating having to call a nurse. Since only small doses of narcotic
are given at a time, you will not be as drowsy as with big-dose injections every 3 hours. The PCA is pre-programmed for your weight and age, so it is not possible for you to over-dose. Most patients also receive an anti-inflammatory medication by IV for 48 hours. After 2 days, the PCA unit will be disconnected because it is cumbersome and impedes your walking progress. If necessary, it may be continued for a few more days. After it is discontinued, pain injections are ordered, to be given every 3 hours if needed. Pain pills are ordered for milder pain.

**Most patients are amazed that they have no pain at all after the operation because of our pain management program.**

**OTHER DRUGS**

Drugs are also ordered for nausea, constipation, and sleep. If you run a fever you will be given extra-strength Tylenol.

**Note that practically every patient runs a temperature up to 99 degrees or so in the first few days after hip replacement. It is so common as to be considered “normal”. If your temperature goes over 100 degrees it starts to be a source of concern.**

All patients get stool softeners, but many patients still develop constipation and need a mild laxative on the second or third day after surgery. All patients are given antibiotics to prevent infection (see Complications of Hip Replacement Surgery) starting just before the operation and for a few days after the surgery.

**You must ask for sleeping pills, pain pills or pain injections because the nurses will not automatically give them. Do not restrict yourself from using the PCA machine or asking for pain medications. Dr. Huddleston does not want you to be in pain. You need not fear that you will become addicted to the pain medication.**

A blood “thinner” (Coumadin) is given after surgery to prevent blood clots from forming (see Complications of Hip Replacement Surgery). The internist calculates the dose by daily blood tests. If the blood becomes too “thin”, bleeding problems can develop. If you do form blood clots, intra-venous Heparin will be started, you will be confined to bed for about three days, and then physical therapy will be resumed.

**While you are in the hospital, please let the nurses or the internist know if you have calf pain, chest pain or shortness of**
You will take Coumadin for about two weeks after your date of surgery, starting in the recovery room. You will be given a “take home” prescription for Coumadin. A fixed daily dose may be prescribed, or the visiting nurses may take your blood at home for testing, and notify the internist of the results. He/she will in turn will notify you as to the dose you should take. (After you run out of Coumadin at home, you should take a single regular Aspirin daily for a further 14 days).

Your blood count (Hemoglobin) will be monitored for a few days, and you will be given iron supplements, Epogen, and blood transfusions as necessary.

**DRAINAGE TUBES**

Suction drainage tubes are usually placed deep in the wound to remove blood which collects after surgery. The blood collected for the first 6 hours is usually filtered and given back to you through your intravenous tube. The drains are removed about 2 days after surgery. Removal is uncomfortable.

Many patients have difficulty passing urine right after surgery and catheterization is then necessary. For this reason, we insert urinary catheters in some of the men and all women during anesthesia, and remove them on the second postoperative day. Removal is not painful. We try to avoid catheters for longer than necessary because urinary infection can develop.

**THE OPERATIVE WOUND**

With the development of new instruments we can do the operation though a single “mini-incision” over the side of your thigh or in the front of your thigh. The dressings are usually changed after the drainage tubes are removed, and as often as necessary after that. Dr. Huddleston does a “plastic” closure to make the scar look as nice as possible.

**PHYSICAL THERAPY**

The physical therapist will get you up on the morning after surgery, and will teach you the right amount of weight to put on your operated leg. You will also be taught all the necessary restrictions to prevent your hip from dislocating (see Restrictions to Prevent Dislocations).

You should pedal your feet up and down every five minutes or so while
you are in the hospital to help prevent blood clots from forming.

Special **pneumatic pumps** will be applied to your legs in the recovery room, and will be kept in place for several days. They massage your calves every forty-five seconds. Most patients find them very comfortable. The pedaling exercise, the pumps and the Coumadin all help to prevent blood clots from forming in your legs.

If you have a cemented or hybrid hip replacement, you will be allowed to bear full weight on your operated leg from the start. However, if you have had an uncemented hip replacement, you may have to keep most of your weight off the operated leg for six weeks or longer if the implant does not fit with extreme tightness. In most cases (98% of patients), you will be able to bear full weight right away.

Most patients by the second or third day after surgery no longer have an IV, and are feeling quite well. **Many patients complain that the operated leg feels “too long” for the first few weeks after surgery, even when the legs are absolutely equal in length** (see Problems You May Encounter at Home). It can take several weeks (sometimes months) for this false sensation to disappear. We usually transfer our older patients from the orthopedic floor to the rehabilitation unit approximately the second or third day after surgery.

**You will be able to go home when your temperature is normal and you are able to get in and out of bed by yourself, and go to the bathroom by yourself. Most patients stay in the hospital three nights. Many of our patients go home after two nights. We have had some who have gone home the morning after surgery!**

**EQUIPMENT YOU WILL NEED AT HOME**

While you are in the hospital, the occupational and physical therapist will help you decide what equipment you will need when you get home. You will definitely need **crutches or a walker**. The hospital will provide these. Crutches are actually easier to handle, but most people feel more secure with a walker. The physical therapist may try you on both.

Unless otherwise instructed, try to go to a single cane (on the opposite side from your surgery) as soon as you can.

**Some of Dr. Huddleston's patients are off all walking aids by one to two weeks. Most of his patients are on one cane by three weeks after surgery. Use a walker or cane for as long as you**
A hospital bed is hardly ever needed at home, but we will be happy to order one for you if you want it. Most insurance plans cover it. We will provide a “reacher” to help you dress, or pick things up off the floor. A toilet seat extension will also be provided so that you do not sit too low on your home toilet. You will need to purchase a thermometer, a shower stool and a rubber bath mat for the shower. If you live in a two-story house, it is recommended that you move a bed downstairs and convalesce there, rather than risk using stairs.

**THE REHAB OR SKILLED NURSING UNIT**

Older patients, especially those who live alone, are advised to stay in the hospital’s Rehabilitation Unit for additional therapy and general care. This will, in any case, greatly speed your progress to full recovery. The Rehab Units at Dr. Huddleston’s two hospitals are superbly geared to the special needs of joint replacement patients. Medicare may cover your stay there. Most private insurance companies will not. In the Rehab Unit, a doctor who is specialized in physical medicine will see you daily. Your internist will also see you there regularly. If you need facility care, and your insurance does not cover the Rehab Unit we can transfer you to Lake Balboa Convalescent Hospital which is covered by all insurance programs including Medicare.

On to the Next Section of the Manual:  
**What to Expect After You Get Home**

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WHAT TO EXPECT AFTER YOU GET HOME

You will be able to go home in a regular sized car. It is better if someone can be at home with you for at least portions of each day to assist you with shopping, meal preparation, etc. Constant nursing care is rarely needed at home. We will arrange for a physical therapist as well as a visiting nurse to see you at home, if your insurance will cover these services (Medicare does). The visiting nurse may draw your blood three times a week so that the internist can monitor the dose of Coumadin you should take, unless a fixed daily dose is prescribed. After you run out of Coumadin at home, you should take a single regular Aspirin daily for a further 14 days.

You must call our office after you get home to set a date for your first office visit, which is usually 6 weeks following the day of surgery. Call and come in at ANY TIME sooner, if any problem develops. Until then, continue all the restrictions which you were taught in the hospital. But get off your crutches or walker as soon as you can, as mentioned above.

After you leave the hospital you are not expected to be an invalid. You will be completely independent when you get home. You will be able to get in and out of bed by yourself, go to the bathroom by yourself and dress yourself. You should change into comfortable regular clothing each morning, and go places, and do things. You can walk as much as you are comfortable doing (up to 2 miles a day). Get off the walker and onto a cane as soon as you feel safe doing so, and get off the cane as soon as you can. If your surgery was on the left hip you can drive an "automatic" once you get home if you are not taking strong pain medications.

The precautions to prevent dislocation must be strictly observed until Dr. Huddleston tells you it is safe to discontinue them.

It is not uncommon to develop some swelling of the knee, foot and ankle in the weeks after surgery. If this occurs, you should elevate your
Wound sutures or staples are usually removed on the fourteenth day after surgery. If you are discharged before that time, they may be removed by a visiting nurse at your home, or you may be asked to come to the office for removal. One day after staple removal you may take a shower. Up to that point the wound should be kept dry. It is best to shower rather than get into a tub. **We recommend avoiding a tub for at least two months after surgery.** A shower stool is helpful so as to avoid slipping while taking a shower.

You should also do the exercises illustrated in **Home Exercises for the First Eight Weeks After Surgery.** You may lie on the operated side when it is comfortable. However, for at least the first 12 weeks after surgery, you should put one or two fluffy pillows between your knees when you lie on either side. This is to make you more comfortable and also to prevent dislocation of the hip joint. We prefer that you **do not attempt to sleep on your side** because the pillows will dislodge once you are asleep and you may then dislocate your hip. You should not cross your legs for the first 12 weeks after surgery. You should not bend your thighs up to a greater than 80 degree angle (see **Restrictions to Prevent Dislocations**). It will therefore be difficult for you to pick up objects from the floor, and also for you to put on your shoes and socks. A **reacher** is helpful for this purpose. You should strictly avoid low chairs, low stools, low toilet seats, and stuffed chairs, since they may cause the hip to dislocate.

Aqua-therapy, also known as pool rehabilitation may be prescribed by Dr. Huddleston. He will direct you to a rehabilitation center with a trained and qualified pool therapist.

**DRIVING AFTER HIP REPLACEMENT SURGERY**

You could drive an automatic as soon as you get home if your left hip has been replaced. However, driving is best avoided until about 6 weeks after the surgery, especially if it is your right hip that has been operated upon. Some patients, however, may need to drive sooner, and this can be discussed with Dr. Huddleston. We can only advise you about the effects of driving on your hip, and not on driving safety, or legal issues. If you have a car accident, **you are on your own!**

**RETURNING TO WORK AFTER HIP REPLACEMENT SURGERY**

How soon you will return to work depends on what you do, and on how motivated you are to get back to work. People who work at a desk could be back by two weeks after surgery, provided they have the means to get to work, but most people take off at least six weeks. If you do heavy manual work you may be off for as long as twelve weeks.
The first office visit after you leave the hospital is usually 6 weeks after surgery. You should call Dr. Huddleston’s secretary to schedule an appointment. Sometimes Dr. Huddleston will have you come in earlier than six weeks to check the wound.
1. **Excessive swelling of your leg and foot**: It is not uncommon to develop some swelling in the first few weeks after surgery. If this occurs, you should elevate your leg whenever you are not up to walking. However, excessive swelling of the foot and lower leg can be due to thrombosis (blood clots) in the veins in the leg. We should be notified if swelling is associated with pain or tenderness in the calf muscles, or if the swelling just seems over-excessive, and doesn’t respond to elevation.

2. **Chest pain, a cough or shortness of breath** may be signs of embolism. Please do not ignore these symptoms. Call us right away.

3. **Drainage from the wound**, or increasing redness around the wound, could signify impending infection. Our office should be notified, and in most instances you will need to come in and let Dr. Huddleston take a look at it.

4. **High fever** could also be a sign of impending infection. You need to take your temperature twice a day for a month after surgery. Take it three times a day if it is elevated over 99 degrees. If you get two readings, at least three hours apart, of over 100 degrees, you need to notify us immediately.

5. **Increasing hip pain**. Pain should be decreasing from day to day. If it seems to be steadily increasing, let us know.

6. **Dislocation of the hip**. If your hip dislocates, you will immediately recognize what has happened. You will have severe hip pain, your foot will “point the wrong way” and you will not be able to walk.

### WHAT TO DO IF YOUR HIP DISLOCATES

If this happens, call Dr. Huddleston immediately and he will meet you in the emergency room of the hospital and relocate the hip. Do not eat or drink anything, since you may need an anesthetic to get the hip back in place. You
7. **The operated leg feels too long.** After hip replacement, many patients complain that the operated leg feels too long. This is usually a false sensation and goes away after a month or two. It is somewhat akin to the felling one gets that the filling is too prominent after the dentist fills a tooth. A week or so later, the filled tooth feels normal! A great deal of effort is put into trying to get the leg lengths correct. For most surgeons accurate measurement is very difficult during surgery. It is common to be off by a quarter of an inch or so. Most people easily adjust to a difference of a quarter-inch, and are hardly aware of it. Many “normal people” have up to a quarter-inch in difference. Sometimes, however, the patient may feel that the leg is an inch or more too long when, in fact, the leg lengths are absolutely equal. This brings us to the difficult concept of “true” and “apparent” leg length differences. True leg lengths are measured from the pelvis to the ankle. Apparent leg lengths are measured from the navel to the ankle. In a normal person, the true and apparent leg lengths are equal. If one hip is pulled outwards (abducted) by tight ligaments, it will feel too long, even though it is not (and the apparent leg length will be longer than the true leg length). If one hip is pulled inwards (adducted), it will feel too short, even though it is not. Dr. Huddleston uses a technique for measuring leg length in surgery that is extremely accurate and almost fool-proof.

8. **Thigh pain.** Patients with cementless hip replacements may have thigh pain for 18 to 24 months after surgery, until the implant is securely locked in place by bone growth. This pain can be expected to be minimal and can be ignored.

**IN GENERAL, THE LEG SHOULD BE GETTING BETTER EACH DAY.**
**IF YOU THINK YOU ARE GETTING WORSE IN ANY WAY, PLEASE GIVE US A CALL.**

On to the Next Section of the Manual:
What To Do If Your Hip Dislocates

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ARTHRITIS OF THE HIP JOINT

WHAT TO DO IF YOUR HIP DISLOCATES

If this happens, call Dr. Huddleston immediately and he will meet you in the emergency room of the hospital and relocate the hip. Do not eat or drink anything, since you may need an anesthetic to get the hip back in place. You may be brought to the hospital by car, but, if you have too much pain, an ambulance may be necessary. Sometimes it takes an open operation to get the hip back in place, but most of the time it can be "pulled" back in place.

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On to the Next Section of the Manual:
Long Term Care of Your Hip Replacement
ARTHITIS OF THE HIP JOINT

LONG TERM CARE OF YOUR HIP REPLACEMENT

The main long-term problems of joint replacements are wear of the socket or loosening of the components' attachment to the bone.

We used to see patients annually after the twelve month office x-ray check-up, but we so seldom find a problem that we now recommend that you return anytime after the first year only if you perceive any problem with the hip.

With time and stress, fixation of cement to bone can fail. It is believed that cementless replacements will be able to withstand more vigorous activities, and have greater longevity than cemented replacements, possibly lasting you for the rest of your life, but no one can guarantee that. If the implant comes loose, movement between it and bone can cause pain and require re-operation.

Most patients are pain-free after 3 months. However, from time to time, especially in the first year, you may have a twinge of pain which you can ignore. If you have pain that does not go away, or seems to increase from day to day, you should come in to see Dr. Huddleston for x-rays and evaluation. It could signify infection or loosening.

The longevity of your hip replacement can be increased by:

AVOIDING stressful activities such as all types of impact sports including: running, jogging, tennis, racquetball, badminton, football, baseball, horseback riding, and other activities. Heavy lifting, weight-lifting, jumping from heights, falls and some exercise machines for the legs are dangerous for you. Never lift or carry more than 60 pounds.

It is important that you not become overweight, since excess weight
increases the stresses on the hip replacement, and can cause loosening. Every pound of weight gained increases the forces on your hip by three pounds!

The possibility of infection occurring around the replacement is another concern.

**For the rest of your life if you develop an infection elsewhere in your body** (for example bladder infection, infected cuts, boils, dental abscesses) this infection can travel via your bloodstream to the replacement.

Therefore, if you develop any infection, you should consult your family physician and have him treat it promptly. Viral infections, such as colds and most sore throats, are not a problem. Dental work can push bacteria into your bloodstream and cause an infection in your joint replacement. We recommend that you take antibiotics before dental work (other than simple cleaning of your teeth). You will be given a plastic card to keep in your wallet containing information about dosage. Note that the American Academy of Orthopedic Surgery used to recommend that antibiotics be taken for dentistry for two years after hip replacement. The Academy now recommends that you do so for the rest of your life.

**ALWAYS NOTIFY YOUR DENTIST OR ANY TREATING PHYSICIANS THAT YOU HAVE A JOINT REPLACEMENT**

If you are to have cystoscopy, bronchoscopy, or colonoscopy you should also be covered by an antibiotic. Doctors vary on their recommendations as to which antibiotics should be used and for how long.

The following are our recommendations:

**Dental, Upper Respiratory, Gastrointestinal and Genitourinary Procedures:**

**Not Allergic to Amoxicillin:** Amoxicillin 500 mg. Four capsules one hour before the procedure.

**Allergic to Amoxicillin:** Keflex or Duricef 500 mg. Five tablets one hour before the procedure.
OR: Clindamycin 600 mg, Zithromax 500 mg, or Biaxin 500 mg 1 hour before the procedure.

**Call your doctor immediately if you develop any infection. Never, ever allow any physician to inject Cortisone or any other medication into or near your artificial joint. It may cause disastrous infection in the hip joint.**
ARThritis of the Hip Joint

TOTAL HIP PRECAUTIONS FOR THE FIRST 6 WEEKS AFTER SURGERY

The following restrictions used to apply to all patients after hip replacement.

For most patients who have had a Gluteal Split or an Anterior Approach hip replacement none of these restrictions may apply and this section can be disregarded.

In the unlikely event the hip is thought not to be fully stable after either of those two approaches, Dr. Huddleston will instruct you to follow these restrictions for six weeks.

Precautions

1. Don't bend your operated hip beyond 80 degrees.
   - Don't raise your knee higher than your hip.
   - Don't sit on sofas or low chairs. Put cushions down first.
   - Use an elevated toilet seat.
   - Don't lean forward while sitting. Get assistance for lower extremity dressing or use your dressing aids.
   - When you sit down, back up until you feel the bed or chair against your legs. Reach back for the bed or armrests of the chair and slide your operated leg straight out in front of you. Don't lean forward as you sit! When you stand up, push up from the bed/chair keeping your operated leg straight out in front of you. Raise yourself without leaning forward. It is in standing up from sitting that you have to concentrate the most on not bending your hip more than 80 degrees.

To sit down:
Special Studies

To stand up, do the reverse.

2. Don't allow your legs to slouch or cross.
   - Keep a pillow or abduction wedge between your legs when you lie down.
   - Keep your legs 3 to 6 inches apart while sitting or use your wedge or pillow.
   - Put a pillow between your legs when you lie on your side.
   - Do not sleep on your side until Dr. Huddleston tells you it is OK.

On to the Next Section of the Manual:
Restrictions to Prevent Dislocation

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**RESTRICTIONS TO PREVENT DISLOCATION**

For at least 2 months after your operation

*(These precautions apply to the OPERATION side of your body)*

**SAFE**

You must not flex the leg above the hip at anytime.

**DANGER**

When sitting, keep knees below hips.

Do not lean forward!

**FOR EXAMPLE:**

When stooping, bend one knee, keep "New
Joint Leg" back. **Never** squat!

When reclining with both legs straight, lean back on hands. **Never** lean forward!

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**On to the Next Section of the Manual:**

**Home Exercises For the First 8 Weeks After Surgery**

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ARThritis OF THE HIP JOINT

HOME EXERCISES FOR THE FIRST 8 WEEKS AFTER TOTAL HIP REPLACEMENT
Try To Do At Least 3 Exercise Sessions Per Day

Very little physical therapy is needed after hip replacement, unless you have specific muscle weakness. Your absolute best exercise after hip replacement is to walk as much as you can, starting as soon as you get home from the hospital. However, if you want to add exercises to your walking program, the following are recommended.

1. **Ankle Exercise:**
   a. Lie flat in bed.
   b. Point your toes toward the foot of the bed.
   c. Point your toes toward your knee.
   d. Move your ankle in a circle.

2. **Knee Isometric:**
   a. Lie on your back with the legs straight.
   b. Tighten your thigh muscles thinking as you do so that you are pushing your knee into the bed.
   c. Hold the contraction for 5 counts and then release.
   d. Do this 5 times.

3. **Buttock Isometric:**
   a. While lying, squeeze your buttock muscles together for a count of 5 and then release.
   b. Do this 5 times.

4. **Hip Flexion:**
   a. While lying, slide the operated side foot up toward your buttock and then slide back.
   b. Do this 5 times.

5. **Knee Extension:**
   a. While lying, place a rolled towel
b. Then contract your muscles so that the foot rises from the bed.
c. Hold for a count of 5 and then release.
d. Do this 5 times.

On to the Next Section of the Manual:
Common Total Hip Replacement Questions

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### COMMON TOTAL HIP REPLACEMENT QUESTIONS

**Consult Dr. Huddleston Regarding The Times**

<table>
<thead>
<tr>
<th>Question</th>
<th>Weeks Post-Operative</th>
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<tbody>
<tr>
<td><strong>Home</strong></td>
<td><strong>5</strong></td>
</tr>
<tr>
<td>1. How long will I use my crutches or walker?</td>
<td>___</td>
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<tr>
<td>2. When may I cross my legs?</td>
<td>___</td>
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<tr>
<td>3. When may I lie or sleep on my operated side?</td>
<td>___</td>
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<tr>
<td>4. When may I put on my shoes and socks without a long shoe horn?</td>
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<td>5. When may I raise my hip higher than 80 degrees?</td>
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<td>6. When may I roll my leg inward?</td>
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<td>7. When may I bend to the floor?</td>
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<td>8. When may I remove the pillow from between my legs?</td>
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<td>9. When may I bathe in a tub?</td>
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<tr>
<td>10. When may I lie on my stomach?</td>
<td>___</td>
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<tr>
<td>11. When may I start sport activities?</td>
<td>___</td>
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<td>12. When may I discontinue use of elevated toilet seat?</td>
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<tr>
<td>Question</td>
<td>Answer</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>13. When may I resume driving?</td>
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<tr>
<td>14. When is danger of dislocation over?</td>
<td></td>
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<tr>
<td>15. When will the swelling go down?</td>
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<tr>
<td>16. How long must I continue to exercise?</td>
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<tr>
<td>17. When may I resume sexual activities?</td>
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</table>

On to the Next Section of the Manual:

**Allowable Activities After Hip Replacement**

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ALLOWABLE ACTIVITIES AFTER HIP REPLACEMENT

The key word is common sense. Even a cemented hip will probably last for your entire lifetime if you stayed in bed and subjected it to no stresses at all! The aim is therefore to minimize stresses. You will be able to take part in physical activities which were impossible before surgery.

You can walk as much as you like. The best recommended activities are walking and swimming. You can ballroom dance, play golf, and ride a stationary or mobile bike. It is best to use spikeless shoes for golf, and to use a golf cart (so that you don’t have to carry a heavy bag of clubs). Bicycling on a level surface is less stressful than biking in hill country. Skiing smooth, groomed slopes in good light is relatively safe. Hard falls, such as from a horse, could result in serious injury to someone with a hip replacement. The femur bone can fracture just below the tip of the femoral implant which is a “weak point”.

Many surgeons place no restrictions at all on their patients who have had metal/metal hip replacements. It is the patient who takes the risk and not the surgeon.

On to the Next Section of the Manual:
Revision Hip Surgery

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Cemented hip replacements may fail after 10 to 15 years, or occasionally sooner. The parts may come loose or wear out, or they may break. In some patients with cementless implants, the porous surfaces may not bond properly to the bone. Loose, worn or broken parts may need to be replaced (“revision surgery”).

Revision surgery is much more complex and technically much more difficult than first-time surgery.

It involves longer operating time and increased blood loss, and may require an increase in the length of the hospital stay. A mini-incision operation is not possible for revision surgery, even though some revision cases are relatively straightforward. Much depends on how difficult it is to remove the prosthesis, and on the quality and quantity of bone left behind after the implant has been removed. The trochanter bone may need to be cut to remove the implant. Wires may be needed to hold the parts together until the bone has healed. Bone grafts from your pelvis and/or from a bone bank may be needed if defects need to be filled with bone. With bank bone, infections can be transmitted in the same way as with blood transfusions (see Disease Transmission Through Blood Transfusion).

There is a chance that your leg may be shorter or longer than it was before the operation. The femur bone can be fractured during surgery, requiring extra repair procedures. The range of motion may be less than after first-time hip replacements. There is a high risk of dislocation for 12 weeks after revision hip surgery, and restrictions must be continued for at least that long to prevent dislocation. Patients who have revision operations are frequently advised to use a cane full-time, in order to protect the replacement from re-loosening.

These complex operations are much riskier than first-time hip
replacement surgeries. All the risks associated with first-time hip replacements are present, but the chances of complications occurring are greatly increased. These are among the most difficult procedures performed in orthopedic surgery. Dr. Huddleston had performed more than 700 such revision total hip operations.

On to the Next Section of the Manual: Complications of Hip Replacement Surgery

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ARTHRITIS OF THE HIP JOINT

COMPLICATIONS OF HIP REPLACEMENT SURGERY

Unfortunately, even the most minor of surgical operations carries some risk of complications occurring. Hip replacement surgery is very successful, and complications are relatively uncommon, considering the complexity of the procedure.

Most complications are temporary setbacks. You have about a 98% chance that you will go through the operation without some significant complication which causes an ongoing problem.

The most common complication is blood clots in the legs. The most serious complication is infection. The most important long-term complication is loosening or wear.

1. **Bloodclots in the veins of the legs** are the most common complication of hip replacement surgery. As long as the clots remain in the legs they are a relatively minor problem. Occasionally they dislodge and travel through the heart to the lungs (pulmonary embolism). This is potentially serious, since (very rarely) death can result from embolism. The chances of embolism are one out of several hundred. The internist will prescribe Coumadin (a blood thinning drug) to help prevent clots from forming after your surgery. Additionally, compressive calf pumps are used and leg exercises are encouraged to prevent blood clots. Blood clots can occur despite all these precautions. They are usually not dangerous if appropriately treated, but may delay your discharge from the hospital by two to three days.

2. **Infection.** Pioneer surgeon John Charnley found that the risk of infection after joint replacement was much greater than with most other operations, unless special precautions are taken. Since bacteria can enter the open wound at the time of the surgery in a regular operating room, he invented the **laminar flow operating room** in which special filters provide clean air, free of most bacteria. In addition, Charnley devised a sterile space suit for the surgeon and his attendants. The suite encloses the entire head and body, and includes a sterile face mask. **Antibiotics** given to you before, during and after the operation further help to lower the rate of infection.

Dr. Huddleston uses all these precautions and has had four deep infections after hip replacement (and three after knee replacement) in twenty-six years as a joint
replacement surgeon. All of these infections were in “immuno-compromised patients”, i.e. patients with inflammatory arthritis who were on steroids or other immuno-suppressing drugs. The risk of deep infection in first-time hip replacement is currently reported as being about 0.5%. Note that superficial wound redness and stitch “abscesses” are common in the first few weeks, resolve quickly on antibiotics, and are not included in these statistics.

The risk of infection in the weeks after the operation is increased if you have rheumatoid arthritis or diabetes, if you have been taking cortisone for prolonged periods of time, if the affected joint has had previous infection, or if you have infection anywhere else in your body (teeth, bladder, etc.) at the time of surgery.

The artificial joint can become infected many years after the operation. The bacteria travel through the blood stream from a source elsewhere in the body, such as from an infected wound, or a gall-bladder infection. Even regular dental work can release bacteria into the blood. Infections of the bladder, teeth, prostate, kidneys, etc. should be cleared up by appropriate treatment well before the day of surgery. Patients who have had joint replacements must take antibiotics by mouth before and after any dental work (see Long-Term Care of Your Hip Replacement) and must have all infections vigorously treated.

3. **Loosening of the prosthesis from the bone** is the most important long-term problem. How long the bond will last depends on a number of factors.
   a. **How well the surgery is done.** This is by far the most important factor. Choose a surgeon who has had a great deal of experience with hip replacement, and preferably one who restricts his practice to joint replacement surgery.
   b. **The quality of your bones.** The harder your bones are, the better the bond will be, and the longer the replacement will last. Osteoporosis is a factor of age, as well as the type of arthritis you have. People with rheumatoid arthritis have especially soft bones.
   c. **How active you are.** Excessive force on the implant can cause the bond to loosen. If you stayed in bed for the rest of your life the implant will probably never come loose! The key thing is to use common sense. (See Allowable Activities After Hip Replacement).
   d. **Your weight.** You should also keep your weight down because every pound you gain adds three pounds to the force on the hip.
   e. **Whether or not the implant is cemented.** At present it is believed that uncemented implants will last longer than cemented ones. We are not certain that this will be the case, even though the results so far are extremely good and promising (see Total Hip Replacement Surgery) with cementless implants.
   f. **The design of the implant.** Small abrasion particles from the implant may play a role in implant loosening. Plastic surfaces shed more particles than metal or ceramic ones.

4. **Wear of the Plastic Polyethylene Socket** starts from the day of surgery. The plastic socket is the weakest link in the implant. The rate of plastic wear against a metal ball is about 0.1 millimeters per year, but is more rapid in very active patients. “Cross-linked” polyethylene promises a wear rate about half that of regular poly. Plastic wear against a ceramic ball is much less in the lab, but this has not yet been shown to be true in the human body. Metal-on-metal bearings will never wear out. Nor will ceramic-on-ceramic implants, but there is a 1/20,000 risk of fracture of the ceramic
ball. Dr. Huddleston uses and recommends metal on metal implants, or ceramic on ceramic implants for those patients who want them, and have a life expectancy of more than fifteen years. In all others he uses cross-linked polyethylene. ("Marathon" Polyethylene from Johnson & Johnson). Paradoxically, Dr. Huddleston may use a large-head metal-on metal implant in older patients with loose ligaments for the stability it confers and not for its wear properties.

5. **Dislocation of the hip replacement** occurs in a small percentage of patients regardless of how good your surgeon is (some surgeons report as high as 4%). With the **Anterior Approach** or the **Gluteal Split** techniques of hip replacement, or the use of a **large femoral head** the risk of dislocation is greatly reduced, although it can still occur. Dislocation means that the metal ball slips out of the plastic socket. In the first six weeks after the surgery, the ball is only held in the socket by muscle tension. During this time, before scar tissue forms around the ball, and before muscle strength returns, the hip is more likely to dislocate.

**Therefore, to prevent dislocation, certain positions have to be avoided for the first six weeks (see Restrictions to Prevent Dislocations).**

The physical therapist will teach you what positions to avoid, and how to safely use your hip replacement during this early phase of your recovery. If the hip does dislocate, it is usually a simple matter for the physician to pull on the extremity and “pop” the hip back into place (see What To Do If Your Hip Dislocates). Revision hip replacements, replacements in people who are grossly overweight and replacements in people with poor muscles are more likely to dislocate. Occasionally patients develop repetitive dislocations, requiring a brace to be worn for several months to prevent further dislocation. Sometimes further corrective surgery is needed to solve the problem.

6. **Extra bone formation** (ectopic bone) around the artificial hip develops less than 1% of the time. It causes the hip to be stiffer than desired. This is more likely to occur in younger males with severe osteoarthritis. Small amounts of ectopic bone appear frequently around hip replacements but do not cause a problem. Very large amounts causing severe stiffness is rare. It can be treated by surgical removal of the bone once it is “mature.” Radiation therapy may be recommended by Dr. Huddleston to try and prevent ectopic bone formation if he believes a particular patient is likely to develop it. Such radiation treatment is administered during the first 2 or 3 days after surgery, or on the day before surgery. If you need radiation, the risks will be discussed with you by the radiotherapy doctor. The risks are negligible.

7. **Fracture of the femur** can occur during hip replacement. This can be a small crack or a major fracture. It is more common during revision hip surgery, but can occur with first time hip replacement. Occasionally the femur may be accidentally perforated during first time or revision hip surgery. It can also fracture later from any trauma, such as falling down stairs. If your femur is accidentally cracked during surgery, you may have to remain on crutches for up to 3 months to allow healing to occur. You may have to remain in the hospital with traction for several weeks. Complete fracture may require separate surgery for fixation. Small cracks may need to be treated with “circlage” wires.

8. **Residual pain and stiffness can occur.** In virtually all cases hip replacement will make a significant improvement in your pain and mobility. In most cases, you will have no pain at all, and the hip will feel “normal.” The completeness of the pain relief, and the degree of mobility is partially determined by your hip problem before surgery.
Rarely, patients have pain after surgery which cannot be explained. About 5% of patients with an un-cemented hip replacement develop mid-thigh-pain (also called "end-of-stem pain"). The cause is unknown but is thought to be related to a mismatch between the rigidity of the implant, versus the elasticity of the bone. Some patients with un-cemented hip replacements develop mid thigh pain. The pain is usually mild, and almost always resolves after 18 to 24 months. It has been found that the larger the diameter if the implant installed the more likely "thigh pain" will develop. For this reason, Dr. Huddleston almost never installs an un-cemented femur implant larger than 17 millimeters in diameter. (See Problems You May Encounter at Home).

9. The length of the leg may be changed by the surgery. Getting leg lengths exactly right can be very difficult. Some leg length difference may be unavoidable. Sometimes the leg will be deliberately lengthened in order to stabilize the hip or to improve muscle function. Shoe lifts may be necessary if the difference is more than a quarter of an inch. When the leg is more than an inch short to begin with, it may be impossible to equalize the legs for fear of damaging the nerves to the legs. In the first weeks after surgery, most patients complain that the operated leg feels "too long" even when the legs are perfectly equal in length. This is an artificial sensation which will resolve itself after a few months (see Problems You May Encounter at Home). Dr. Huddleston has an accurate method for getting the leg lengths correct.

10. Injury to the arteries or nerves of the leg is an exceedingly rare but possible complication. The major arteries of the leg lie close to the front of the hip joint. The damaged vessel can usually be repaired by a vascular surgeon if recognized in time. If the nerves to the leg are injured, they usually recover; but it may take 6 months or more. Occasionally, they don't recover at all. Most patients have some numbness around their wounds which may be permanent.

   a. Sometimes bleeding can occur into the wound in the days after surgery ("hematoma formation") as a result of the use of blood thinners. It may distend the hip and cause dislocation. If it is excessive, it may require reopening the wound under anesthesia to let the blood out.
   b. Occasionally the blood thinners may cause bleeding into the urine (or elsewhere), but this is usually temporary, and not of serious consequence.

12. Anesthetic complications can occur, and very rarely even death can occur from the anesthesia. Your anesthesiologist will see you before surgery and explain the risks involved.

13. Allergy to the metal parts. About 15% of the population has skin sensitivity to some metals. All metal implants release some metal ions into the body. However, reports of proven allergies to metal implants are surprisingly rare. You should notify Dr. Huddleston if you believe you have a metal allergy. People who know they have metal allergies should be tested with extracts of the various metal components of the implant prior to surgery. The tests are not reliable, so they are only performed if a metal allergy is suspected. Allergy to the plastic parts has never been reported. Small particles of plastic or metal from the implant may cause a "foreign body" reaction in the bone, but this is not a true allergy. Some patients with metal implants have had temporary, mild skin rashes, while some have had severe rashes that resolved only with removal of the implant. If you are known to be sensitive to nickel, chromium or cobalt you should probably have a titanium implant, even though there have been reports of allergy to titanium as well.

   **ALVAL.** Patients frequently enquire if the body can “reject” the hip implant. Until recently the answer has been an emphatic “no”. The body does react adversely
to the microscopic particles that abrade off a plastic socket, but the reaction is not rejection but a “histiocytic response” to foreign particles, which can cause the implant to loosen.

Since the advent of large-head, metal on metal hip replacements, a new ominous entity has been identified which has been given the clumsy name of ALVAL (Aseptic Lymphocytic Vasculitis Associated Lesions). A Delayed Type of metal Hypersensitivity (DTH) is induced due to high concentrations of Cobalt and Chromium ions that build up around the joint. This leads to painful inflammation in the joint (“Lymphocytic Vasculitis”). Sometimes necrotic inflammation tissue combined with proteins builds up around the hip and into the pelvis, forming so-called “pseudo-tumors” which can be seen on CT, ultrasound or MRI scans, and can be a perplexing diagnosis for the un-initiated. ALVAL is rare. It is seen most frequently in women.

Symptoms include unexplained pain or discomfort in the hip, swelling of the leg, a noticeable lump near the hip, symptoms from pressure on a nerve, and occasionally a rash.

Sometimes the implant comes loose in association with ALVAL. It is not known if the loosening is caused by ALVAL or if a loose implant is more likely to produce high concentrations of metal ions, which then cause ALVAL.

If ALVAL is suspected, testing for metal sensitivity may help in the diagnosis. Skin patch testing is considered to be useless. A blood test, Lymphocyte Transformation Testing (LTT) is more reliable. Measuring the blood and urine levels of chromium and cobalt can help in the diagnosis of unexplained hip pain. Joshua Jacobs, MD at Rush University is the recognized expert on the diagnosis ALVAL.

The treatment of ALVAL includes removing the metal bearing parts of the artificial joint (whether loose or not), and replacing the ball and socket with a ceramic on plastic bearing surface. Any “pseudo-tumors” can be “scraped out” at the same time.

Note that the term “pseudo-tumor” does not in any way imply that this condition is cancerous. Indeed, so far, after more than twenty-five years of metal-on-metal experience in Europe, there is no evidence that metal ions from a hip replacement might cause cancer.

14. Complications From Blood Transfusions. The risks of getting AIDS from banked blood is believed to be about 1 in 2,000,000. The risk of Hepatitis B is estimated to be approximately 1 in 550 units, and Hepatitis C is 1 in 100. The risk of disease transmission from directed blood (see Blood Transfusion for Total Joint Replacement) may be the same a the risk from ordinary banked blood. The risk of an allergic reaction (hives) is 1 in 500. You can have an allergic reaction to donor blood even though it has been properly cross matched. The risk of a Hemolytic Transfusion Reaction is 1 in 10,000. The risk of a Fatal Hemolytic Transfusion Reaction is 1 in 100,000.

All blood intended for transfusion (including your own) is screened by the blood bank for Hepatitis B virus, Hepatitis C virus, syphilis, Human T Cell Leukemia virus, and the AIDS virus. If cadaver bone is used as part of revision hip replacement, there is some risk of transmitting disease, just as with blood transfusion. The bone is screened for 6 months before being used.
15. **Fat Embolism.** Fat from the bone marrow can get into the circulation and cause lung or neurological symptoms. This is a very rare complication. In very rare cases it can be fatal.

16. **Other minor complications** can rarely occur, such as tape allergies, allergies to medications, skin rashes and so on. You should keep in mind that the chances of any significant complication that permanently affects the overall result and your satisfaction with the joint replacement are very small. Whatever treatable problems might occur along the way, you have about a 98% chance that, in the end, you will be more than satisfied with the end result of your operation.

**Major surgery is not without risk. There are risks in everything we do in life. Our medical staff will do everything we can to minimize the risks that you undertake. The worse your preoperative symptoms are, the more reasonable it is that you take the risk inherent in having a hip replacement.**

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On to the Next Section of the Manual: **Special Studies**

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To assist us in selecting the most appropriate method of treatment, additional studies may be required on an outpatient basis.

1. **Aspiration and Arthrograms.** This is performed if there is suspicion of infection in a hip replacement. A needle is inserted into the joint under x-ray control, using local anesthetic. It is not particularly uncomfortable. Fluid obtained from the hip joint is sent to the laboratory for culture (results usually take 10 days to 2 weeks to be returned to Dr. Huddleston). At the same time, an arthrogram is performed: dye is inserted into the joint to see if it spreads to the space between the implant and bone. These tests are helpful in ruling out the presence of infection and, in some cases, outlining areas of loosening of the implant. The results are not always clear-cut. If the test is scheduled you must tell us if you are allergic to Iodine,. Dr. Huddleston prefers to perform the procedure himself rather than have the radiologist perform it.

2. **Bone Scans.** There are several types of bone scan: (a) The most routine type is done utilizing Technetium Diphosphonaten (TDP). The radioactive material is injected and the whole body is scanned a few hours later. This test is most useful in identifying hairline bone fractures which do not show up on x-ray, and bone tumors. It may be helpful in diagnosing loosening of a hip or knee implant. (b) Another scan is the Sulfur Colloid Scan. This test evaluates the status of the bone marrow in and around the hip joint, and can be helpful in diagnosing osteonecrosis. (c) A Gallium Scan is ordered if there is concern about infection. (d) Another test that may be performed if infection is suspected is an Indium-111 Radioisotope Scan. This requires removing some of your own blood, labeling it with an isotopic material (Indium-111) and re-injecting it. You return a day later, and the joint is scanned. This is a relatively new procedure, sometimes used in combination with other, more routine types of scans. The isotopic agents are relatively innocuous. The amount of radiation is generally not much more than that in a single x-ray.

3. **Magnetic Resonance Imaging (MRI).** MRI has been a diagnostic revolution. It is done using giant magnets. No radiation is involved. It is useful in diagnosing the early stages of osteonecrosis, or in searching for bone tumors.

4. **CAT Scan (Computerized Axial Tomography).** This is used to search for hairline fractures, and also to obtain additional information about the anatomy of the pelvis or thigh bone. Dr. Huddleston uses this technique to identify the amount of bone available for performing a total hip replacement if there is any doubt that the bone is adequate. It is frequently used in such conditions as congenital hip dysplasia, or when
5. **An Epidural Injection** of dilute anesthetic agent is helpful in determining whether a patient’s pain is coming from the hip joint, or from a pinched nerve in the back. This is a fairly common diagnostic dilemma. Dr. Huddleston administers these in the office quite routinely (he had done more than 4000 of these injections, at the last count). The risks and benefits will be discussed with you in the office.

Please feel free to ask Dr. Huddleston any questions you might have. We look forward to taking care of you.

On the whole, total hip replacement has proven to be an extremely beneficial contribution to modern surgery. We are pleased to be able to present you with this manual, which we hope will help you to understand your problem and the possible treatments you can obtain.

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