

## Fracture After Total Hip Replacement

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A periprosthetic fracture is a broken bone that occurs around the components or implants of a total hip replacement. It is a serious complication that most often requires surgery.

Although a fracture may occur during a hip replacement procedure, the majority of periprosthetic fractures occur after a patient has spent years functioning well with a hip replacement. Fortunately, these fractures are rare. However, because more patients are having hip replacement surgery, the number of periprosthetic fractures is expected to increase.

The treatment of these fractures is often challenging in large part because patients are older and may have thinning bone or other medical conditions.

### Description

Most periprosthetic fractures occur around the stem of the metal component placed in the femur. Fractures of the hip socket (acetabulum) are less common.

### Cause

Periprosthetic femur fractures are most often the result of a fall. These fractures can also be caused by a higher energy force such as a direct blow to the side of the hip or motor vehicle collision. The quality of the bone and the energy involved in the traumatic injury determine the type and severity of the fracture.

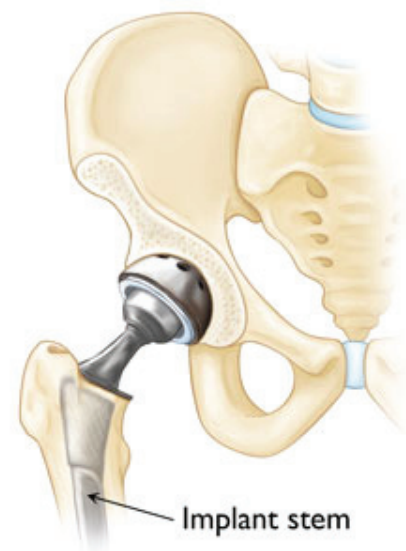
Some factors increase the likelihood of a fracture, including having a condition that weakens bone, such as osteoporosis. In addition, things that predispose people for a fall - such as muscle weakness, poor vision, or balance - also put them at higher risk for these fractures.

A loosened femoral stem is also a major risk factor. This loosening typically occurs over a long period of time, and is most often due to everyday activity. It can also result from a biologic thinning of the bone called osteolysis.

### Symptoms

The most common symptoms of periprosthetic hip fracture include:

- Pain around the hip or thigh
- Swelling and bruising around the hip or thigh
- Inability to bear weight on the injured leg
- Injured leg appears shorter or deformed



Most fractures occur in the femur near the implant stem.

## Doctor Examination

Because these types of injuries are often very painful, someone with a periprosthetic hip fracture will most likely go directly to the emergency room.

In the emergency room, both an emergency room physician and an orthopaedic surgeon will be involved in your care. The affected hip is closely examined. The lower portion of the leg is assessed for good blood flow, as well as to ensure that the main nerve that travels around the hip joint (the sciatic nerve) is also functioning well.

## Tests

X-rays of your pelvis, hip, and femur bones will show your doctor how complex the fracture is. These images can show the quality of the bone, how many pieces of broken bone there are, as well as the extent of displacement (gaps between broken pieces).

In some cases, a computed tomography (CT) scan will also be obtained. These scans provide three-dimensional images of bony structures.

You will likely be admitted to the hospital. Blood and other laboratory tests can provide your doctor with important information about your general health and help prepare you for surgery.

## Injury Stabilization

You will not be permitted to put any weight on the injured leg. Your doctor may place a small traction device on your foot to help keep your leg straight and prevent any further damage.

## Treatment

Most cases of periprosthetic hip fractures require surgery. To determine your individual treatment plan, your doctor will consider several factors, including the type and location of the fracture, the quality of the remaining bone, whether the implant in the femur is loose, and your overall medical health. Patients that require surgery may be in the hospital for several days before the surgery is performed. Often this is because patients with periprosthetic fractures need to be medically stabilized and “cleared” by their team of doctors in order to minimize the inherent risks of the surgery.

The general approaches to treating periprosthetic hip fractures include:

- Open reduction and internal fixation
- Revision of the total joint implants
- A combination of both

### Open Reduction and Internal Fixation

If your implant is still firmly fixed into your femur bone, your doctor may recommend internal fixation to treat the fracture.

During this operation, the bone fragments are first repositioned (reduced) in their normal alignment, and then held together with special screws, cables, or by attaching metal plates to the outer surface of the bone.

In some cases, a bone graft is also used to help the broken bone heal. Allograft bone (bone from a cadaver) acts as a structural support in areas of weakened bone to help promote fracture healing.

### Joint Revision

In some cases of periprosthetic hip fracture, the implant stem is loose. In these situations, the original implant must be removed from the bone and replaced with a new implant. This procedure is called a joint revision.

Revision surgery may require special components. Typically, the implant will have a longer stem. Allograft bone may be used in some cases to supplement weak or missing bone.

### Your Surgery

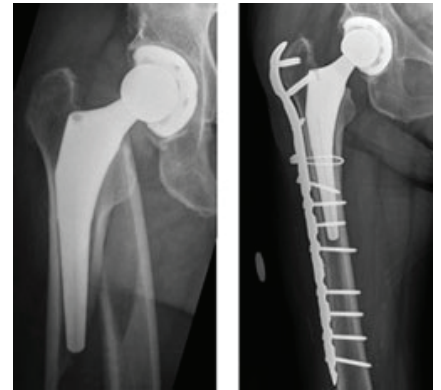
You will most likely be admitted to the hospital and then surgery will be performed as soon as it is medically safe.

### Anesthesia

After admission, you will be evaluated by a member of the anesthesia team. Surgery to treat a periprosthetic hip fracture is most commonly performed using general anesthesia (you are put to sleep). You, your anesthesiologist, and your surgeon will discuss the type of anesthesia to be used.

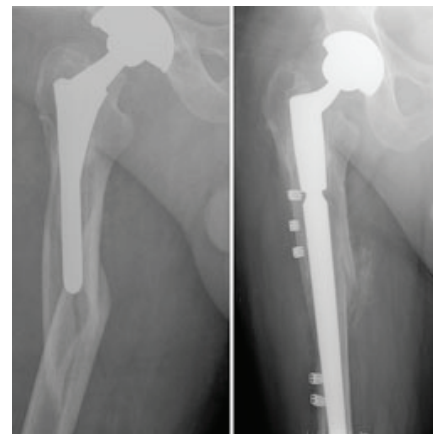
### Procedure

Surgery to fix a fracture around a total hip replacement can be challenging. Factors such as poor bone quality, fracture comminution (multiple bone fragments), and, in some cases, the presence of bone cement, increase the complexity of the case. It is not uncommon for these cases to last more than 3 hours.



**(Left)** This x-ray taken from the front shows a periprosthetic hip fracture. **(Right)** The fracture has been treated with a plate, screws, and cable.

Reproduced with permission from Pike J, Davidson D, Garbuz D, et al: Principles of treatment for periprosthetic femoral shaft fractures around well-fixed total hip arthroplasty. *J Am Acad Orthop Surg* 2009; 17: 677-688.



**(Left)** Doctors have determined that the implant shown in this x-ray is loose. **(Right)** The same fracture after treatment with joint revision surgery.

Reproduced with permission from Della Valle CJ, Haidukewych GJ, Callaghan JJ: Periprosthetic fractures of the hip and knee: a problem on the rise but better solutions. *Instr Course Lect* 2010; 59:563-575.

After surgery, you will be moved to the recovery room, where you will remain for several hours while your recovery from anesthesia is monitored. After you wake up, you will be taken to your hospital room.

## Recovery

You will most likely stay in the hospital for a few days after surgery.

After surgery, you will be on intravenous antibiotics for 24 hours to help prevent infection. In addition, your surgeon will prescribe a blood thinning medication to help minimize the risk of developing a blood clot in your leg (deep vein thrombosis).

## Pain Management

After surgery, you will feel some pain, but your surgeon and nurses will provide medication to make you feel as comfortable as possible. Pain management is an important part of your recovery.

Physical therapy will begin soon after surgery, and when you feel less pain, you can start moving sooner and get your strength back more quickly. Talk with your surgeon if postoperative pain becomes a problem.

## Rehabilitation

In most cases, physical therapy begins soon after the operation. Your surgeon will determine how much weight you can place on your healing leg, and a physical therapist will teach you how to put partial weight on your leg and use a walker safely.

You may also require a hip brace for several weeks after surgery to further protect your hip while the fracture heals. Both physical and occupational therapists may work with you to improve your mobility, and help you safely observe your hip precautions.

The process of regaining strength and the ability to walk may take several months. After the initial hospitalization, you may spend several weeks in a skilled nursing facility or a rehabilitation center in order to improve your strength and general health.

## Possible Complications of Surgery

Complications following surgery for periprosthetic fractures can be serious. The most common complications include:

- Infection
- Blood clots

- Dislocation
- Limb length inequality
- Poor fracture healing
- Repeat fracture
- Lack of in-growth of the new stem placed in the femur bone

In some cases, a repeat operation is necessary to address the complication. It is important to talk with your orthopaedic surgeon about the risks and benefits of the procedure before undergoing surgery.

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