

# Fractures In and Around Joint Replacements

You finally get some pain relief from that hip or knee arthritis with a joint replacement and then the bone around the implant or the implant itself fractures. Why does this happen and what can be done about it? These are the main points covered in this review article. The focus is on fractures of the femur (thigh bone) around hip and knee joint replacements.

The medical term for a femoral fracture around the joint implant is a periprosthetic fracture. Peri means "around" and prosthetic refers to the implant itself. The series of events that lead up to this new injury start with loss of bone density called osteopenia.

Osteopenia is a natural consequence of the aging process but it leads to loosening of the implant. Combine osteopenia with loss of balance and a fall and the result can be a bone fracture. Studies from the Mayo Clinic report up to 2.5 per cent of hip replacements develop a periprosthetic fracture of the femur. The incidence is higher after a second (revision) surgery (four per cent).

The incidence of periprosthetic fractures of knee replacements is a little more difficult to calculate. But estimates place it at 1.3 per cent in Mayo Clinic patients. Other studies report anywhere from a three percent fracture rate linked with infections up to 13 per cent with knee revision surgeries.

And now there is a new group of fractures referred to as interprosthetic fractures. This type of fracture is located between the hip and knee in a patient who has both a hip replacement and a knee replacement in the same leg. This group of patients is fairly small right now but expected to rise in numbers as more and more older adults who remain active develop painful osteoarthritis in both joints.

What are the risk factors for periprosthetic fractures of the femur? Risk factors are divided into three groups: patient, medical, and surgical. Patient risk factors for periprosthetic femur fractures include being female and elderly. Medical risk factors include having inflammatory arthritis, osteoporosis (brittle bones), visual loss, and seizures. Having one of the many neuromuscular disorders such as multiple sclerosis, Parkinson's disease, or Lou Gehrig's disease is also a medical risk factor.

Surgical risk factors can include a previous history of femoral neck fracture, use of certain implants that don't hold up well, any previous hip or knee surgery, and implants that have been in place four years or more. Combined together, these risk factors increase the chances of death associated with a periprosthetic fracture by three times compared with just having a single (hip or knee) replacement.

What can be done for patients with periprosthetic fractures of the femur? The goal is to restore limb alignment and stability with the hope of getting the patient back to his or her prefracture level of activity and independence.

Treatment is guided by a classification system that takes into account 1) what part of the implant is broken, 2) the quality (and quantity) of bone around the implant, 3) location of the fracture, and 4) severity of the fracture. For example, some minor fractures of the bone surface can be left alone. If treatment is needed at all, a small bone graft may be done. Nonoperative care is often reserved for patients who weren't walking before the injury or who wouldn't tolerate surgery due to poor health.

In some cases, the bone fracture can be held together with wires, screws, cables, or metal plates until the fracture can heal. In recent years, a special locking plate device and locking screws have been developed to help hold fractures together in fragile, brittle bones.

Sometimes treatment decisions are based on fractures of the implant itself. In the case of hip replacements, fractures have been reported affecting the tip of the stem (down inside the femur) or the stem itself. Treatment is further defined based on whether or not the broken implant is stable or in danger of shifting.

The authors of this article discuss each type of bone and implant fracture and give other surgeons notes and tips on making the decision as well as information on carrying out the procedure. Pros and cons of each fixation system for both the hip and the knee are discussed as well. Revision of the bone fracture is the first choice but if there are reasons why the implant can't be saved, then it may be necessary to take the first implant out and replace it completely.

Reference: Jason L. Gould, et al. Periprosthetic Fractures of the Femur. In Current Orthopaedic Practice. September/October 2011. Vol. 22. No. 5. Pp. 412-421.