Updated: Care of the Patient with a Hip Fracture

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Abstract

Hip fractures frequently require surgical fixation in even the sickest of patients because of the pain they produce. Mobility, positioning, and activities of daily living (ADLs) become quite challenging for the caregiver in the absence of (or before) surgical repair. In addition, complications associated with immobility can also warrant rapid surgical fixation after injury. The goals of surgery are comfort and mobilization. Caring for a patient with a hip fracture can be challenging for the nurse who must position the patient, manage pain, prevent skin breakdown and other complications, and meet the educational and psychosocial needs of patients and their families. Understanding fracture types and surgical care is important to appreciate the risks associated with surgery and facilitate pre- and postoperative management. This knowledge will equip the nurse to care for this vulnerable patient faced with a life-threatening, life-altering event.

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The Numbers

Hip fractures are common injuries affecting the proximal femur of the hip joint. They result from trauma (usually falls) or pathology like cancer. "Hip fractures are almost always due to a fall, but only 5% of falls result in a fracture." "Hip fracture risk is greatest for a sideways fall that impacts on the greater trochanter." Individuals with osteoporosis are at the greatest risk for a hip fracture because of their weak and diseased bones. Gait, poor balance, and limited vision further contribute to a patient's overall risk, a reason why elderly individuals are more often afflicted.
The American Academy of Orthopaedic Surgeons (AAOS) reports the annual incidence of hip fractures is 352,000 per year. Based on population growth and aging we can expect to see 650,000 fractures yearly by 2050, or 1,800 per day. The incidence of a second hip fracture increases with age. Mortality for a first fracture has been reported at 5.9% with a second fracture mortality rate reported as high as 24.7%, with only 50% of patients able to recover their previous ability to walk. These types of fractures are more common in women (particularly postmenopausal women) and Caucasians. The AAOS reports an average care cost of $26,912 per hip fracture. It is more difficult, however, to quantify the indirect costs associated with these fractures, such as lost income for the patient or caregivers, effects on quality of life, and lost productivity.

A hip fracture involves the bones of the hip joint. The hip joint is made up of the proximal femur, greater and lesser trochanters, the femoral neck and femoral head, and the acetabulum, which is the hip socket. The head of the femur rests within the acetabulum. Both sides of the joint are lined with hyaline cartilage. The labrum is an additional fibrous cartilage that lines the outer edge of the hip socket, deepening the joint and adding to its stability. Multiple muscles and tendons surround the osseous (bone) anatomy of the joint providing support and strength to the strongest weight-bearing joint of the body.

Hip fractures are classified based on their anatomical location. The two most common types of hip fractures are intracapsular (1 to 2 inches from the joint) and extracapsular or rather peritrochanteric (3 to 4 inches from the joint) (Figure 1). Intracapsular fractures are further described as displaced or nondisplaced. Treatment of hip fractures depends on location, but degree of displacement is also considered when determining fixation of intracapsular fractures. In displaced intracapsular fractures, the blood supply to the head may be compromised and avascular necrosis (AVN) or death with collapse of the bone (femoral head) may ensue.

Figure 1.

![Figure 1. Displaced Femoral Neck Fracture. Used with permission from Scottish Intercollegiate Guidelines Network (2005).]

The cartilage structures and the ligaments around the joint support the hip and make up the joint capsule, which encases the femoral head and neck of the femur. Fractures arising in this region are called intracapsular fractures because they arise within the capsule; they are named femoral neck or subcapital fractures (Figure 2). These fractures are at risk for not healing (nonunion) if the broken fragments are either moderately or grossly displaced. Displacement equates with a disruption in the blood supply, which is essential to healing the bone at the fracture site.
Nondisplaced intracapsular fractures can be fixed with cannulated screws or percutaneous pinning (Figure 3). These are less invasive surgical procedures producing small incisions (3 to 4 inches) over the hip. Displaced fractures require a hemiarthroplasty (partial hip replacement as shown in Figure 4) or a complete hip replacement if the joint cartilage is diseased as in advanced states of osteoarthritis at the time of the fracture. Hip replacements, partial or total, are more complex surgical procedures resulting in larger incisions over the hip (10 to 14 inches) and significantly longer surgical time. These patients need to adhere to hip precautions to avoid hip dislocation. Patients must not flex their hip past a 90° angle, cross their legs past their midline (adduction), or overspread their legs (abduction). Pillows can be placed between the legs while in bed to maintain hip precautions.

**Figure 2.**

![Figure 2. Displaced Femoral Neck Fracture.](image)

**Figure 3.**
More distal to the capsule is the trochanteric region. Fractures in this region (3 to 4 inches from the joint) are referred to as *peritrochanteric* or *trochanteric*. Other terms are *basicervical*, *intertrochanteric*, and *subtrochanteric*. These fractures are extracapsular and get their names...
based on the location of the break. Because these injuries have a good blood supply, AVN is less of a problem. However, patients with these fracture types can have a higher mortality rate and be more functionally impaired at discharge.\textsuperscript{6} The goal of surgical care is to obtain good fixation after the bone has been reduced (aligned). This is accomplished by placing the patient in traction on a fracture table and by using x-rays in the operating room.

The greater and lesser trochanter sites are the primary sites for muscle attachment. These areas are a source of an abundant blood supply for the hip, facilitating bone healing after fixation. Peritrochanteric fractures can be fixed with a compression hip screw or intramedullary nails. The goal of surgery is pain control and mobility. The fracture site is secured with metal until the bone can repair itself and create a callous.

Surgical fixation for peritrochanteric hip fracture (Figure 5) is done in a variety of ways. The most common fixation used is a screw that is placed into the femoral head along the path of the neck (Figure 6). The screw is fixed into a plate that lies on the side of the femoral shaft. The screw can slide through a barrel of the plate allowing compression of the fracture site when the patient bears weight. Newer devices include intramedullary nails (IMN) (Figure 7) with sliding screws. These devices are placed within the canal of the femur after the femur is reamed (hollowed).

\textbf{Figure 5.}

![Intertrochanter Fracture](image5.png)

\textbf{Figure 6.}
Figure 6. Compression Hip Screw.

Figure 7.
Preoperative Care

Getting Ready for the Operating Room

On admission to the hospital, patients and their care providers are often anxious, frightened, and in need of information and education. You should provide instruction about preoperative testing, new medications, surgical care, postoperative care, discharge or rehabilitation after surgery, as well as complications and interventions designed to prevent them. Treatment surfaces and over-bed trapezes will help the patient reposition and avoid prolonged pressure over bony prominences. Because skin breakdown arises within the first 24 hours, transferring the patient from the emergency department to a bed should be a key initiative in any hospital. Support stockings and sequential leg pumps or foot pumps help to prevent deep vein thrombosis (DVT), while perioperative antibiotics prevent surgical site infections. When appropriate, patients should be placed on beta-blocker therapy, which has been shown to reduce perioperative cardiac complications in low, intermediate, and high-risk patient populations.4 What becomes routine for hospital staff is new for patients and their families who need information and continuous education about the process and care.

Patients with hip fractures require immediate evaluation to stabilize any medical conditions and optimize them for surgery. Routine studies like electrocardiograms, coagulation studies, blood
counts, and blood type are baseline and required for most patients going into the operating room. The trend is toward fewer tests because most procedures yield limited information for the perioperative phase.\textsuperscript{9} Tests should not delay fixation but rather be done only when needed to evaluate and treat a patient's condition.\textsuperscript{9,10} Although turning and repositioning are imperative to preventing skin breakdown, limiting patient transfers to carts for tests will ensure the patient's comfort as well as reduce additional trauma to the fracture site. Many diagnostic studies can be done at the bedside, or the patient can be transported in the bed. Patients should be informed of the tests they will have, what they can expect, and the purpose of the exam.

Essentially, little can be done to change patients' preexisting risk factors for complications, but early fixation and return to mobilization are essential to improving patient outcomes. Clinical research supports fixation within the first 24 to 48 hours as a means of preventing morbidity and mortality.\textsuperscript{11,12} This can seem quick to most patients and their families, but delays in surgical fixation increase the risk of decubitus ulcers,\textsuperscript{13} and early care reduces length of stay and pain.\textsuperscript{14}

Preoperative nursing care and assessment should focus on pain control, prevention of skin breakdown, bowel and bladder elimination, and the neurovascular exam. Nerve injury can be subtle and should be noted prior to surgery. Patients should be able to dorsiflex and plantar flex the foot easily. Pulses should be documented, and a comprehensive skin examination should take place on admission. Floating the patient's heels (elevating heels off the bed) on the fractured extremity will help to prevent ulcers when pain prohibits the patient from repositioning. Supporting the patient's torso, pelvis, and leg with pillows; placing pillows between the thighs; and keeping the injured extremity supported will protect the patient and keep him or her comfortable between position changes. Patients with hip fractures may be externally or internally rotated and are often shorter on the affected side; nursing care should focus on supporting the leg without manipulating it.

Evaluate urination and bowel habits because retention and constipation can be extremely problematic preoperatively and postoperatively. Foley catheters are often placed preoperatively to facilitate elimination and avoid painful bedpan positioning with further trauma to the fracture site. Constipation preoperatively should be treated to prevent postoperative ileus; fracture pans can facilitate elimination after enemas or laxatives.

\textit{Discharge Planning}

Discharge planning begins on admission. Determine functional status and social support with social work consultations initiated immediately. Patients and families are often anxious about discharge and recognize quickly that hospitalization will be short. Placement ultimately will depend on several variables; assure patients that the staff will work with their situations to determine the most appropriate discharge plan. Most people recognize that a hip fracture is a life-altering event that will result in some temporary or permanent changes in their lifestyle.
**Anesthesia**

Patients are taken to the preoperative area where a nurse reviews the chart and gathers any additional data required by the surgeon or anesthesiologist. Final consents are signed and the patient's surgical site is marked by the patient or the surgeon. Patients need to understand the difference between regional (spinal) and general anesthetics. The anesthesia department obtains consent for their services and reviews these differences with the patients, but patients often ask nurses questions to clarify misconceptions.

Regional anesthesia blocks the patient's sensation and motor function for the surgery and a period of time postoperatively. This can be accomplished in two ways. A spinal injection provides a motor and sensation block for up to a few hours after surgery. It numbs the area below the injection site (lumbar spine). A newer trend is toward femoral nerve blocks. These blocks are either administered by injection or delivered continuously by an indwelling catheter. They deliver a numbing medication that blocks the sensation but not the motor function beyond the injection site. Once the catheter is removed, the femoral nerve block is like the spinal anesthesia in that it dissipates over the few hours after removal, or initial injection.

Spinal anesthesia can be combined with pain medications at the time of induction to provide longer pain control postoperatively. At the time of anesthesia, patients are given intravenous medication to produce a twilight sleep, which keeps the patient in a deep sleep during surgery. Alternatively, patients are given a general anesthetic, which paralyses breathing and provides complete unconsciousness, requiring the use of a breathing tube. Although completely asleep for their operation, patients may feel some mild throat irritation after surgery. These patients will feel their surgical site immediately on arousal from anesthesia.

**Postanesthesia Care Unit**

Patients are monitored in the postanesthesia care unit (PACU) before being transferred to an orthopaedic/medical-surgical nursing unit. They often require an x-ray of their hip to evaluate placement of fixation devices. The patient stays in the PACU until vital signs are stable, pain is controlled, and the spinal anesthesia has worn off. This may take one to several hours. The patient is monitored on a heart monitor during the PACU stay. Some patients require continued cardiac monitoring after the PACU stay and may be transferred for the short-term to a cardiac-monitored unit.

**Postoperative Care Nursing Unit**

*Mobilization*
After surgery, patients are mobilized to prevent complications and further deconditioning because of immobility. Depending on the severity of the fracture and the quality of the bone, patients will be allowed to bear weight on the affected leg as directed by the surgeon. Some weight-bearing orders include full, partial, toe-touch, and protected. Most of the latter are prescribed to protect the fixation but allow the patient to put the foot down for balance. Some patients are required to adhere to strict non-weight-bearing orders. Crutches, but more often walkers, are employed during therapy to facilitate this mobility. If a femoral nerve block has been used for pain management, a knee immobilizer is warranted because the quadriceps muscle may be weak, which can result in buckling of the knee when the patient attempts to ambulate.

**Pain Medication**

Preemptive pain medication schedules allow assistive staff and therapy personnel to mobilize patients quickly. Pain management can best be accomplished with narcotics, nonnarcotic medications, positioning, and ice. Acetaminophen (Tylenol) and nonsteroidal anti-inflammatory drugs (NSAIDs) may be used to manage pain because they result in less confusion and sedation than narcotic analgesics, but oral and intravenous narcotics are often used before and immediately after surgery to manage pain and promote mobility. Preemptive analgesia is being used more frequently across surgical settings. Nurses must call for adjustments in the scheduled dosing based on the patient’s response. Some patients may become too sedated while others may need more pain medication for simple mobility. Patients with percutaneous pinning will typically need less medication, whereas patients with more intensive procedures such as hip screws or replacements will need more, especially during the first several days postoperatively.

**Hydration and Oral Intake**

Attention to hydration and oral intake in addition to glycemic control are important because these elements affect wound healing and the overall recovery of the patient. Intravenous fluids are often employed for the first 24 to 48 hours after surgery to supplement the patient who may often be too groggy to eat or drink adequately. Alternatively, fluid overload in the compromised cardiac patient may happen quickly. Attention to breath sounds and intake and output assessments assist the nurse in discussing fluid challenges with medical staff. Additionally, patients routinely lose blood with surgery and afterwards, or they start out anemic. For those patients, transfusions are required to maintain hemodynamic stability.
Foley Catheter Removal

Foley catheters should be removed as quickly as possible to avoid infection, usually within the first 24 to 48 hours. In the cognitively altered patient, it is important to maintain the catheter to avoid soiling of the surgical incision with urine within the first 48 hours. For the incontinent patient, it is additionally important to cover surgical dressings with occlusive dressings that will not allow contamination with urine or stool. Surgical incisions should be covered throughout hospitalization; some drainage may persist for 48 to 72 hours, especially in the chronically anticoagulated patient. Staples or sutures may be used to close the wound at the time of surgery. Drains are sometimes employed after the operation but are removed 24 to 48 hours after surgery depending upon the output.

DVT Prevention

Hip fracture patients are at risk for DVT. Therefore these patients may be anticoagulated after surgery with blood thinners such as warfarin (Coumadin), a low-molecular-weight heparin (Lovenox), Factor Xa Inhibitors (Arixtra), or aspirin, depending on medical history and risk factors. Provide patients with mechanical prophylaxis such as foot pumps or sequential leg pumps and compression stockings. Rapid mobilization prevents blood clots and other complications such as pneumonia. Spirometry promotes inspiration and prevents pneumonia or atelectasis. Expanding a patient's understanding of potential complications promotes his or her acceptance of the interventions designed to prevent them as well as active participation in the recovery.

Wound Infection Prevention

Wound infection can be avoided with preoperative and postoperative antibiotics, usually a first-generation cephalosporin such as cefazolin (Ancef) or vancomycin in the patient with penicillin allergies. Antibiotics are given once preoperatively and for the first 24 hours after surgery unless a preexisting infection has been diagnosed. Patients can be instructed about repositioning if they are not cognitively impaired, and urinary catheters should be removed as quickly as possible to avoid urinary tract infections. Lung, urine, or other infections can produce an infection in the surgical site. It is important to eliminate infection risks and complete all antibiotic courses initiated on admission.
Complications of Hip Fracture

Complications can arise because of the hip fracture, immobility, comorbid conditions, anesthesia, or surgical repair. Foot drop is a nerve injury and may be present on admission because of nerve injury at the time of fracture, or it can arise postoperatively. The patient with foot drop is unable to dorsiflex the foot. Other complications include blood clots, wound or other infections such as pneumonia, myocardial infarction, and stroke. Orthopaedic complications include hardware failure or nonunion. Hardware failure means that the fixation has failed, and the bones are not aligned as was intended by the fixation device. Infection can cause the hardware failure, but so can suboptimal fixation, noncompliance with weight bearing, AVN, and osteoporotic bone. Hardware failure and infection require reoperation and a new surgical plan. Pain is the chief complaint of patients with hardware failure or a nonunion.

Conservative Care

Conservative care often is not possible in hip fracture cases. Most patients experience severe pain with repositioning, resulting in prolonged bedrest to achieve comfort and eventual healing. Patients can be supported with pillows between their legs to maintain hip anatomy in supine or lateral positions. Nondisplaced femoral neck fractures have the best chance for healing, providing the fracture does not progress to displacement.

Permanent deformities such as shortening will likely occur, rendering most patients unable to walk after a hip fracture when surgery is not performed. Conservative care is reserved for patients who are bedbound or immobile, those with significant risk factors for death as a result of surgery, and those with imminently terminal illnesses. The goal of care for these patients is comfort care. They should be mobilized as tolerated only while receiving adequate analgesia to facilitate mobilization.

Osteoporosis

Osteoporosis is a national health problem. "Patients who survive hip fracture are at high risk of recurrent fractures, but rates of osteoporosis treatment 1 year after sustaining a fracture are less than 10% to 20%." Nurses are critical to ensuring that patients are educated to receive appropriate testing such as dual-energy x-ray absorptiometry (DEXA) scans and prescriptive
treatment like bisphosphonates if the clinical situation warrants. Bisphosphonates are a class of drug that are approved for the prevention and treatment of osteoporosis in postmenopausal women. They increase bone density and decrease bone turnover, which reduces the risk of subsequent fracture. \textsuperscript{16} With educational nursing interventions, improved preventive treatment has been successfully demonstrated. \textsuperscript{15}

\textbf{Discharge}

Most institutions have goals for discharge such as tolerating oral intake, pain management on oral medications, and hemodynamic stability. Helping patients and families understand the expected course on admission alleviates the unknown and facilitates their cooperation. Ambulation is not a criterion for discharge; patients may require rehabilitation or nursing home placement for long periods before they are again mobile. Providing daily updates to the families helps them to prepare. Most patients are discharged to rehabilitation settings; a smaller subset of patients go home. Placement depends on the patient's performance with therapy after surgery, social circumstances, insurance coverage, and facility availability.

\textbf{Home Placement}

Be sure to provide patients who are fortunate enough to be discharged home with as much printed information as possible. Educate them about postoperative complications and how to respond if they occur. In addition, explain their medications, especially if new medications have been added. Advise them to increase fluid and fiber intake and take over-the-counter stool softeners as needed to prevent constipation associated with pain medications and some vitamin supplements. Showering is usually allowed within 2 to 3 days; staples or sutures are removed in 10 to 14 days; and the patient may not drive until the surgeon permits. Provide patients and their caregivers with contact numbers, especially for social services, in case problems arise once they return home. Some patients may realize that they require placement in a rehab setting after they are at home. Most patients are medically managed for 4 to 6 weeks to prevent a blood clot, and blood thinners may be prescribed. Most of these patients leave the hospital using a walker and require outpatient or home physical therapy arrangements in place at discharge to improve balance, gait, strength, and endurance.
Rehab/Skilled Nursing Facility

Most patients require some form of rehabilitation. Acute rehab is usually shorter (10 to 14 days) with intense therapy sessions. Subacute rehab results in a longer stay with shorter sessions, about 3 hours daily, while long-term-care therapy sessions are less intense (1 to 2 hours daily) with nursing home stays lasting up to 3 months or longer. Rehabilitation placement is becoming more difficult for the uncomplicated patient because criteria for placement are becoming more rigorous. Rehabilitation settings establish patient goals on admission to ensure reimbursement and compliance with Medicare regulations. Placing patients in the appropriate program facilitates that compliance and avoids setting up the patient to fail. Aligning everyone’s expectations before placement eliminates anxiety and conflict later in the treatment cycle. Encourage patients and their caregivers to make decisions and become active participants in the hospitalization and discharge planning.

Conclusion

Hip fractures are catastrophic, life-altering events. Prognosis following hip fracture is poor: only 25% of patients recover; 25% die within one year; and 40% require extended nursing home placement. Patients affected are often sick elderly people, which accounts for the poor outcomes described. In addition, many patients and their families are unprepared when faced with the challenge of making rapid healthcare decisions. Surgery and placement happen quickly, which can leave patients feeling frightened and out of control. As primary caregivers, nurses can promote understanding of the treatment interventions and assist patients in making positive choices. Standardized and consistent approaches to care and education alleviate anxiety and facilitate cooperation with the treatment plan. A multidisciplinary approach with nursing at the lead to coordinate care, provide education, monitor patient and caregiver needs, and offer guidance is essential to any program providing services to patients with hip fractures.

About the Author

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**Journals**


**Books**

Meiner: *Gerontologic Nursing, 3rd ed.*

**Patient Education Materials**
Fracture, Hip: Senior Adult Version

Clinical Updates

Detecting and Treating Osteoporosis in Hospitalized Patients

Careful Assessment and Diagnosis Can Prevent Complications of DVT

Web Sites

National Association of Orthopaedic Nurses Detecting

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