

# Hip Fractures and Post-op Rehabilitation

## UCLA Division of Geriatrics

### TREATMENT PRINCIPLES

The goals of hip fracture treatment and rehabilitation are:

- restoration of anatomic arrangement of the limb
- restoration of function of the limb and overall function of the patient

### TYPES OF HIP FRACTURE

The type of hip fracture is important because it determines type of operative repair, post-operative care and rehabilitation. Other important factors that influence choice of operative approach and course of rehabilitation include bone quality (evident at surgery), functional capability of the patient, and the surgeon's experience. Types of fracture, by bone site are:

- Femoral Neck: (45% of fractures): proximal to greater and lesser trochanter; considered *intracapsular* as they are within the capsule of the hip joint; if displaced, may disrupt blood flow to femoral head and predispose to avascular necrosis
- Intertrochanteric: (45% of fractures)—between trochanters; *extracapsular*; well vascularized area
- Subtrochanteric: (10% of fractures)—distal to lesser trochanter

### INCIDENCE OF HIP FRACTURE

There are more than 550,000 hip fractures annually in the US. This figure is expected to double by 2040. Ninety percent of fractures occur in person aged > 50 years old.

### RISKS FACTORS FOR HIP FRACTURE (INDEPENDENT OF BONE DENSITY)

"Large" Risk (RR* > 1.5)	"Small" Risk (RR* < 1.5)	Probable Risk
Age (2-fold increase for each 10 years after age 50)	Heavy alcohol	Dementia
Gender: women > men	Benzodiazepines and other sedating drugs	
Unable to stand from chair without using hands	Caffeine	
History of maternal hip fracture		
Visual impairment		
Prior non-trauma fracture		
Low body weight		

\* RR -- relative risk

## DIAGNOSIS OF FRACTURE

- Clinical findings include hip or groin pain, difficulty ambulating, and inability to bear weight
- Plain films of hip (AP/lateral) is first step in testing
- If initial films are negative, but there is a high index of suspicion (e.g., pain post fall and difficulty standing or walking) can repeat films with hip at 15-20° internal rotation
- MRI is the preferred next step if no fracture is seen plain films
- Bone Scan is also more sensitive than plain film but is less optimal than MRI as the fracture line may not appear until 48-72 hours post injury and co-morbid disease (e.g., arthritis) may make interpretation difficult

## DIFFERENTIAL DIAGNOSIS OF FRACTURE

Fractures of:

- Pubic ramus
- Acetabulum
- Greater trochanter
- Trochanteric bursitis
- Trochanteric contusion

## OPERATIVE DECISIONS

- Non-operative therapy may be viable for younger (<70 years old) patients: non weight bearing status for 6-8 weeks as guided by x-ray
- Choice of operative intervention (e.g., total hip replacement, open reduction with internal fixation) is based on patient age, location of fracture, and surgeon's assessment

## PERIOPERATIVE ISSUES

- Timing of surgery:
  - in the absence of modifiable medical co-morbidity, surgery within 48 hours is associated with lower 1-year mortality (observational data)
- Prophylactic antibiotics:
  - 44% reduced risk of post-op infection with antibiotics; trend toward better outcome when 3 doses (1 pre- and 2 post-operative) are administered compared to single dose pre-operatively
- Nutritional Management
  - oral protein supplementation is associated with shorter stay
- Urinary Tract
  - early removal of foley is associated with less retention and earlier spontaneous voiding
- DVT Prophylaxis
  - Data support the use of low dose heparin, low molecular weight heparin\*, coumadin, and mechanized compression stockings. *Always check with surgeon to discuss choice of DVT prophylaxis*
  - Meta-analysis (of elective hip replacement studies) supports starting low molecular weight heparin pre-op versus post-op (10% versus 15.3% DVT with LESS major bleeding with pre-op treatment).
  - Data are from ELECTIVE hip replacement so unknown if conclusion can be generalized to hip fracture setting.
  - No data for appropriate duration of DVT preventive therapy, but our practice is to continue to 2 weeks post-operatively (perhaps longer if patient remains immobile).

\*Note: FDA issued a warning about low molecular weight heparin in the setting of spinal anesthesia—increased risk of epidural hematomas.

## POST-OPERATIVE CARE AND REHABILITATION

- Weight Bearing  
Determined by surgeon: depends on stability of reduction, bone, and method of fixation (cement permits immediate weight bearing but has associated risk of intraoperative fat embolism and hypotension because it is injected under pressure).
- Physical Rehabilitation  
Early mobilization is safe.
- Total Hip Precautions  
*No adduction past midline*—use abduction pillow when patient in bed  
*No hip flexion beyond 90 degrees*—includes bending trunk forward  
*No internal rotation*—keep toes upright in bed
- Occupational rehabilitation  
May need occupational therapy for assistance with activities of daily living while following hip precautions

## COMPLICATIONS OF HIP FRACTURE REPAIR

- Infection < 5%
- Loss of fixation < 15%
- Nonunion and osteonecrosis late complications (months to years later)
- Dislocation—contact surgeon immediately—*must rule out infection as it is present in 1/3 of cases*

## OUTCOMES OF HIP FRACTURE REPAIR

- Increased mortality for the year after the injury (15-35% mortality for elderly in first year)
- Ambulation is main component of functional recovery: 50-65% regain *previous level* of function, 10-15% only ambulate in the home, 20% become non-ambulatory
- Factors associated with recovery of ambulation:  
Male gender, younger age, absence of dementia, use of assistive device pre-operatively
- Factors associated with institutionalization:  
Age > 80, disorientation, BADL dependence, no involved family, insufficient rehabilitation
- Most recovery occurs within 6 months of injury

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