Hip Fracture in Emergency Department:

Treatment and Management

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SUMAILI A
MD  BSc (Hons)  MSc

Royal National Orthopaedic Hospital
Stanmore,
England
UK
Practice Essentials

• Hip fracture occurs in approximately 341,000 persons in the United Kingdom (UK) each year. The rate of hip fracture increases with age, doubling every 5-6 years after age 60 years.

• In elderly patients, hip fracture most often results from a simple fall. The patient typically complains of pain and inability to move the hip.
With stress fractures in young athletes and nondisplaced fractures, the patient may complain of pain in hip or knee and may be ambulatory.

The British Academy of Orthopaedic Surgeons released new guidelines on the management of hip fractures in patients over the age of 65.
New Guidelines of HIP Fracture

• **Recommendations supported by strong evidence include the following:**

  • Regional analgesia can be used to improve preoperative pain control in patients with hip fracture.
  • In patients undergoing hip fracture surgery, similar outcomes can be achieved with general or spinal anesthesia.
  • Arthroplasty should be used for patients with unstable (displaced) femoral neck fractures.
  • Use of a cephalomedullary device is recommended for the treatment of patients with subtrochanteric or reverse obliquity fractures.
  • In asymptomatic postoperative hip fracture patients, a blood transfusion threshold of no higher than 8g/dl should be used.
  • Intensive post-discharge physical therapy improves functional outcomes.
  • Use of an interdisciplinary care program in hip fracture elderly patients with mild to moderate dementia improves functional outcomes.
  • Multimodal pain management should be used after hip fracture surgery.
Clinical Presentation

- On physical examination, the anatomical position of the extremity provides useful clues to the type of injury, as follows:
  - Femoral head fracture: Posterior dislocation is most common (e.g., a dashboard injury), in which case the extremity appears adducted and internally rotated; with anterior dislocation, the extremity is abducted and externally rotated
Clinical Presentation (continued)

• Femoral neck fracture:
  With partial or completely displaced fractures (types 3 and 4, respectively), the patient has severe pain and lies with the extremity slightly shortened, abducted, and externally rotated; with a stress fracture or severe impaction fractures (types 1 and 2, respectively), the only physical findings may be minor pain with little or no limitation in range of motion.

• Trochanteric fracture:
  With a greater trochanteric fracture, the patient presents with pain, especially with abduction and extension; no deformity may be apparent, but pressure through greater trochanters will result is pain; with a lesser trochanteric fracture, pain occurs during flexion and internal rotation.
Clinical Presentation

• Intertrochanteric fracture: The extremity appears shortened and significantly externally rotated, in contrast to the minimal deformities associated with femoral neck fractures; pain, hip edema and ecchymosis, and pain with any movement may also be noted.

• Subtrochanteric fracture: The proximal femur usually is held in flexion and external rotation.
Diagnosis

- On plain radiographs, antero-posterior (AP) and lateral views demonstrate most hip fractures.
- For patients in whom femoral neck fracture is strongly suspected but standard x-ray findings are negative, an AP view with internal rotation provides a better view of the femoral neck.
- If standard radiograph findings are negative and hip fracture still is strongly suspected, MRI and bone scan have high sensitivity in identifying occult injuries; MRI is 100% sensitive in patients with equivocal radiographic findings.
Treatment and Management

• 1. Pre-hospital Care

• 2. Emergency Department Care
1. Pre-hospital Care

• Pre-hospital treatment of a patient who complains of hip pain should include immobilisation on a stretcher.
• If the patient is a victim of multiple traumas, address the ABCs and immobilise the cervical spine as appropriate.
• If fracture or deformity of the femur is obvious, apply a traction splint and place an intravenous (IV) line for hydration.
• If the patient is hypotensive or tachycardic, initiate crystalloid fluid bolus and place patient on supplement of oxygen.
2. Emergency Department Care

- If the patient is a victim of trauma, attend to the ABCs first and conduct a thorough search for other possible injuries.
- In cases of obvious femur fracture, immobilise the patient, place 2 large-bore IV lines for hydrations and possible transfusion, restrict the patient's oral intake to nothing by mouth (NBM), and obtain specimens for preoperative labs if necessary.
- Orthopaedic treatment decisions vary significantly among different practitioners, thus early consultation for all hip fractures is recommended.
- Initiate appropriate parenteral analgesia as soon as possible.
- Ultrasound-guided femoral nerve blocks may also be used to achieve adequate analgesia.
Fractures of the femoral head are more common in younger patients as a result of major trauma, which is more likely to cause femoral neck fractures in older patients.

- Type 1 - Single fragment fractures (see image below)
- Type 2 - Comminuted fractures (see image below)
- Femoral head fractures. Top diagram is a single-fragment femoral head fracture. Bottom diagram is a comminuted femoral head fracture.
Femoral Head Fractures
Femoral Head Fractures

- Femoral head fractures
  - Type 1: Orthopaedic consultation in the Emergency Department (ED) should be obtained. Treatment is to reduce dislocated femoral head and fracture fragment as soon as possible to avoid avascular necrosis. Small fracture fragments may need to be removed. If a single attempt at closed reduction fails, then open reduction and internal fixation (ORIF) is the next treatment of choice.
  - Type 2: Early orthopaedic consultation for admission and arthroplasty is recommended.
Femoral Neck Fractures

- These are rare among younger patients but are commonly seen in older adults, most often secondary to osteoporosis or osteomalacia. These fractures usually result from minor trauma with falls accounting for 90%, or torsion. From proximal to distal, femoral neck fractures are associated with potential disruption of the vascular supply.
- The incidence of avascular necrosis (AVN) is up to 15% in nondisplaced fractures and increases to nearly 90% with untreated, completely displaced fractures.
- Type 1 - Stress fractures or incomplete fractures (see image below)
- Type 2 - Impacted fractures (see image below)
Neck of Femur Fractures
Type 4 Neck of Femur Fracture

• Completely displaced Femoral Neck Fracture
Femoral Neck Fractures

- Femoral neck fractures
  - Type 1: Some practitioners handle these fractures nonoperatively with initial immobilization in selected patients, while others prefer operative treatment in all patients.

- Types 2, 3, and 4: Management usually includes ORIF or arthroplasty; however, some impacted fractures can be treated conservatively. Early orthopaedic consultation is recommended.
Trochanteric Fractures

• Greater trochanteric fractures usually result from avulsion injuries at the insertion of the gluteus medius. These are most common in children and young athletes (eg, dancers, gymnasts).

• Type 1 - Nondisplaced fractures (see image below)

• Type 2 - Displaced fractures; >1 mm displacement for fractures of the greater trochanter and >2 mm displacement for fractures of the lesser trochanter (see image below)
Type 1 & Type 2
Trochanteric Fractures

• Trochanteric fractures
  – Type 1: Management is most often conservative, and orthopaedic consultation is recommended.
  – Type 2: These fractures usually are treated with reduction and internal fixation, except in older or debilitated patients in whom conservative treatment is appropriate.
Intertrochanteric Fractures

- These extracapsular fractures occur in a line between the greater and lesser trochanters, generally in elderly patients and women secondary to osteoporosis.
- Type 1 - Single fracture line without displacement; stable (see image below)
- Type 2 - Multiple fracture lines (comminution) with displacement; unstable (see image below)
Intertrochanter Fractures
Intertrochanteric

– Apply traction or a traction splint.
– Note the potential for significant blood loss. IV fluid resuscitation is generally recommended.
– Stable and unstable fractures usually are treated with ORIF unless the patient is not an operative candidate for other reasons.

• Early orthopaedic consultation is recommended
Subtrochanteric fractures

- These fractures have a bimodal age distribution and are seen most often in those aged 20-40 years in association with high-energy trauma and in patients older than 60 years secondary to falls on osteoporotic bones.
- Stable: Bony contact of medial and posterior femoral cortices
- Unstable
Subtrochanteric Fractures

– Significant haemorrhage is common, and IV fluid resuscitation is frequently necessary.

– ED application of traction or traction splint is necessary.

– Properly evaluate the entire patient to rule out associated severe injuries.

– Consult orthopaedic surgeon for admission and ORIF for most patients.
Conclusion

Consultations in Multi-Disciplinarily Team:

• Orthopaedic surgery; Vascular surgery, Neurology, Anaesthesiology, Critical care medicine, Radiology, Pharmacy, Pathology, Nursing, operatory theatres’ manager and Physiotherapy.

• Can we be able to perform emergency treatment and management of Hip Fractures?
References

