ORTHOPAEDICS

FOR PRIMARY HEALTH CARE

UNIVERSITY OF CAPE TOWN’S ORTHOPAEDIC DEPARTMENT

Editor: Michael Held
**Learning Objectives**

1. Low-energy hip fractures are often associated with significant osteoporosis
2. Patients with hip fractures need comprehensive medical workup and care
3. Timely surgery and early mobilization reduced complications and mortality in hip fractures

**Introduction**

Fractures of the acetabulum and proximal femur are considered hip fractures. There injuries, as well as hip dislocations, are debilitation injuries and must be treated as a matter of urgency to allow the patient to regain mobilization, in order to avoid the morbidity and mortality associated with being bedridden.

**Assesment**

Clinical

Most patients with hip injuries have groin pain. In some patients with undisplaced or impacted fractures mobilization is still possible. Patients with displaced fractures or hip dislocations are usually not able to weight bear or straight leg raise. The pull of hip muscles will leave the leg in a certain position:

With fractures the leg is held in external rotation, abduction. With posterior dislocation (90% of dislocations) the leg held in flexion, adduction, internal rotation. Most commonly the leg is shorter than the contralateral side.

Imaging:

AP and lateral XR of the hip, as well as a full-length femur films are needed to exclude associated injuries. **Disruption of Shenton’s line, loss of joint congruence, and a difference in femur head shape are indirect signs of an injury.**

In nondisplaced cases the fracture may be occult and not visible on X-rays. MRI is the gold standard for occult fractures, if this cannot be arranged within 24h a CT scan is the next best choice. In hip dislocations, CT scans assist to visualize associated fractures of acetabulum, femur head or neck, and exclude loose bodies in the joint.

X-Ray Pelvis (AP): Left hip fracture with disruption of the Shentons line (yellow).
**Relevant Anatomy**

The hip capsule originates from the acetabular margin, and attaches on the greater and lesser trochanters, and the intertrochanteric line. The femur neck is therefore intracapsular, surrounded by synovial fluid, and not covered in periosteum. This makes the healing potential of these *femoral neck fractures* very poor. Another problem is the disruption of the medial circumflex femoral artery (the main blood supply to the femoral head) which can lead to avascular necrosis of the femoral head. The fractures can be grouped into *displaced or undisplaced* fractures, which guides surgical treatment.

**Peritrochanteric fractures** occur between the less and greater trochanter. They are extra-articular and therefore do not cause medial circumflex femoral artery disruption and have low risk of avascular necrosis.

**Hip dislocation treatment**

These are usually high energy injuries with associated injuries. A structured ATLS approach should be used during examination and initial treatment. Urgent closed reduction in line with the deformity under adequate analgesia and sedation are crucial. Neurovascular examination and documentation before and after the reduction is mandatory.

If unable to achieve closed reduction, the closed reduction under general anesthesia and muscle relaxant in theater is the next step. If still unsuccessful, open reduction must be done.

**Femoral Head fracture**

These are rare fractures and are normally associated with hip dislocations. The hip dislocation must be reduced initially. The fracture can be treated conservatively if they are in a non-weightbearing area, non-displaced and not associated with other injuries. Otherwise and fixation is required.

**AP X-Ray Pelvis**: Left hip dislocation. The Shentons line is disrupted. The hip is internally rotated (lesser trochanter is not visible), and the femoral head appears smaller than the contralateral side (closer to the X-Ray film).
**Hip fracture treatment**

After the exclusion of other injuries (especially distal radius fractures and head injuries) and after neuromuscular structures are assessed the patient should be made comfortable and evaluated for a general anaesthetic (see table). The race against time starts now as early mobilization leads to improved outcomes if patients are treated within 48 hours of injury, thus preventing life threatening complications such as DVT/PE, urinary tract infections and pneumonia. This is considered a surgical emergency and most centres plan the operation on the **next available surgical list**. A continued, coordinated orthogeriatric and multidisciplinary management of these patients with workup for osteoporosis and fall prevention remains the gold standard, which few receive.

**Operative treatment:**

Non-operative treatment is only considered in patients who are unfit anaesthetic and surgery.

For **neck of femur fractures**, open reduction and internal fixation is indicated for most physiologically young patients. Undisplaced fractures will be treated with cannulated screws or a sliding hip screw. Arthroplasty is indicated for elderly patient with displaced fractures.

*For peritrochanteric fractures* a dynamic hip screw is done in stable fracture patterns. In unstable Fractures: Cephalomedullary nail is indicated. (oblique fractures which would displace with dynamic compression of the hip screw, fractures with subtrochanteric extension or medial comminution)

<table>
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<th>Workup for patients with hip fractures</th>
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<tr>
<td>Skin traction with low weight (2kg)</td>
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<td>Analgesia</td>
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<tr>
<td>Rehydration</td>
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<tr>
<td>Monitor Urine output</td>
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<td>Chest X-Ray</td>
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<td>Full Blood count</td>
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<td>Arterial blood gas (with resp.</td>
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<td>compromise)</td>
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**AP Pelvis X-Rays:** Total hip replacement (above) and Dynamic Hip screw (below).
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About the book
Informed by experts: Most patients with orthopaedic pathology in low to middle-income countries are treated by non-specialists. This book was based on a modified Delphi consensus study with experts from Africa, Europe, and North America to provide guidance to these health care workers. The Learning Innovation via orthopaedic Network (LION) aims to improve learning and teaching in orthopaedics in Southern Africa and around the world. These authors have contributed the individual chapters and are mostly orthopaedic surgeons and trainees in Southern Africa who have experience with local orthopaedic pathology and treatment modalities.


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