**Hip Fractures: Intracapsular Neck of Femur Fractures**

**Definition of an intracapsular neck of femur fracture (#NOF)**
- Intracapsular neck of femur fractures (#NOF) occur within the capsule of the hip joint.
- The blood supply to femoral head travels in a retrograde direction via the capsule. As such, any fracture within the capsule could be likely to damage this blood supply (see below, complications).

**Epidemiology of intracapsular neck of femur fractures**
- The classic patient is an elderly female with a low body mass index.
  - This is an example of an insufficiency fracture and therefore most likely to occur in those with other comorbidities.
- In young patients this is more often the result of high energy trauma such as road traffic accidents or falls from a height.
  - As such ATLS principles and investigation for coexisting injury must occur in these patients.

**Risk factors for neck of femur fractures**
- The commonest cause in the elderly is generally a fall onto the side of the fracture.
- The primary risk factors is osteoporosis but also other age-related issues which might make a frail patient likely to fall (i.e. poor vision, poor proprioception, arthritis, dementia).

**Presentation of neck of femur fractures**
- Fall followed by pain in the groin with referred pain to the thigh.
- Limited ability to weight bear.
- Limited range of movement (particularly straight leg raise).
- External rotation with shortening of the limb length in displaced fractures.

**Differential diagnosis of intracapsular neck of femur fractures**
- Extracapsular neck of femur fractures
- Severe osteoarthritis of the hip/fracture osteophytes
- Femoral shaft fractures
- Acetabular/pelvic fractures (including pubic symphysis fractures)
- Septic arthritis of the hip
- Radicular pain from spinal pathology
- Psoas abscess

**Classification of intracapsular neck of femur fractures**
- The most common classification is the Garden classification:
  - Garden I: incomplete and undisplaced fracture
  - Garden II: Complete but undisplaced fracture
  - Garden III: Complete fracture with partial displacement
  - Garden IV: Complete fracture with 100% displacement
Initial management of intracapsular neck of femur fractures

- AP and lateral radiographs of the pelvis and affected hip
  - Full length femur radiographs should be obtained if there is any suspicion of a pathological fracture (such as malignancy)
- Once fracture determined
  - Po analgesia +/- a fascia iliaca block
  - Bloods, including clotting and G&S
  - Fluids if shocked (a lot of blood can be lost into the hip following fracture)
  - Discuss with the orthopaedic on call team

Further management of intracapsular neck of femur fractures

- This depends on the performance status of the patient as well as the displacement of the fracture
- Non-displaced fractures (Garden I+II)
  - Relatively young patients (either chronologically or more important, physiologically) should have urgent internal fixation via 3 or 4 parallel partially threaded cancellous screws
- Displaced fractures (Garden III+IV), or even non-displaced fractures in the context of patients unlikely to tolerate non-weight bearing
  - Replacement of the femoral head to obviate the risks of avascular necrosis (see below)
  - This is most often via a hemiarthroplasty
    - Younger, fitter patients are being offer a primary total hip replacement (THR) in centres able to provide the service

Complications following intracapsular neck of femur fractures

- General risks
  - Anaesthetic risks
  - Blood loss in theatre
  - Venous thromboembolic disease
    - Give anticoagulation +/- thromboembolic prevention stockings as per local protocol
- Internal fixation
  - Avascular necrosis
  - Mal-union or non-union of the fracture
  - Infection of metalwork
- Hemiarthroplasty
  - Dislocation of prosthesis
  - Peri-prosthetic fractures
  - Metalwork failure or acetabular erosion and consequent need for revision

Prognosis of intracapsular neck of femur fractures

- The presence of a hip fracture increase mortality for the first year
- After this period and levels return back to near normal

Common questions

- What is osteoporosis?
  - Osteoporosis is the decline in bone mass and quality, often related to reduced mobilisation and weight bearing, increased age and female sex.
It makes a bone more likely to fracture, occasionally following trivial or inconsequential trauma.

- **What is avascular necrosis?**
  - This is the loss of bone (in this case the femoral head) as a result of impaired blood supply and consequent ischaemia. It occurs due to disruption of the capsular blood supply to the femoral head.

- **What is the typical fractured neck of femur patient?**
  - Elderly, osteoporotic, female.

- **What other fractures are commonly seen in the above group?**
  - Distal radius fractures, vertebral body compression fractures.

- **What is the typical clinical presentation of a patient with an intracapsular neck of femur fracture?**
  - Groin pain and a shortened and externally rotated leg.

- **What is a hemiarthroplasty?**
  - A ‘half’ hip replacement where the femoral head is replaced only. The patient keeps their original acetabulum unlike in a total hip replacement where both femoral head and acetabulum are replaced.