

# The Limping Child:

## 3.) Developmental Dysplasia of the Hip

**Miss Sophie Howles MBBCh MRCS**

Trauma & Orthopaedic Registrar

Birmingham Orthopaedic Training Programme



# Module Overview

- Lecture 1: Introduction
- Lecture 2: Septic Arthritis
- Lecture 3: Developmental Dysplasia of the Hip
  - Epidemiology and Risk Factors
  - Screening
  - Management
  - Complications
- Lecture 4: Perthe's Disease
- Lecture 5: Slipped Upper Femoral Epiphysis



# Developmental Dysplasia of the Hip (DDH)

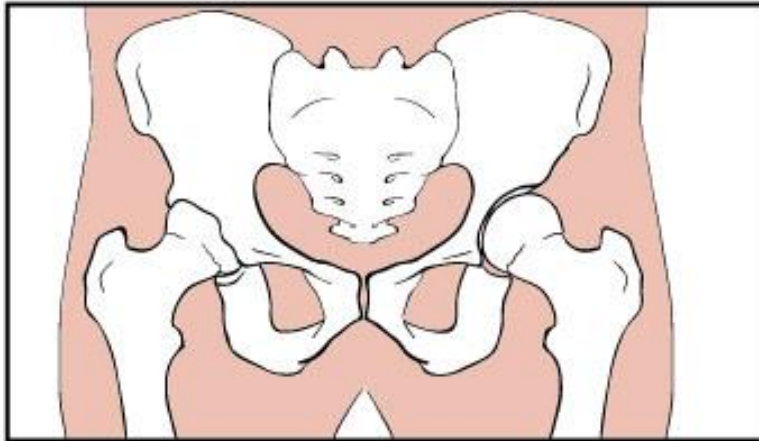
= disorder of development resulting in *dysplasia, subluxation, and possible dislocation* of the hip secondary to capsular laxity and mechanical factors

# Categories of DDH

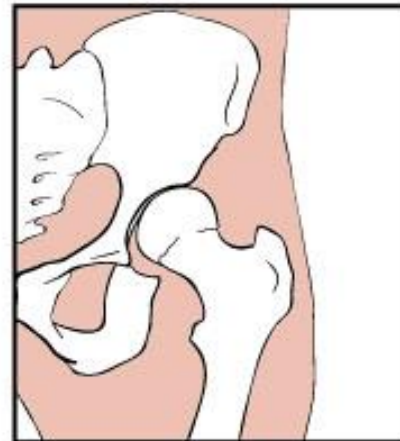
- ***The Dislocated Hip***
  - ***No contact*** between femoral head cartilage and the acetabulum in a resting position
- ***The Dislocatable Hip***
  - Enlocated at rest
  - ***Can be dislocated*** with stress in flexion and adduction
- ***The Subluxable Hip***
  - With stress in flexion and adduction there is ***partial contact*** between the femoral head cartilage and the acetabulum
- ***The Dysplastic Hip***
  - No signs of instability with stress manoeuvres
  - Femoral head and acetabulum are abnormally shaped
  - May or may not develop instability



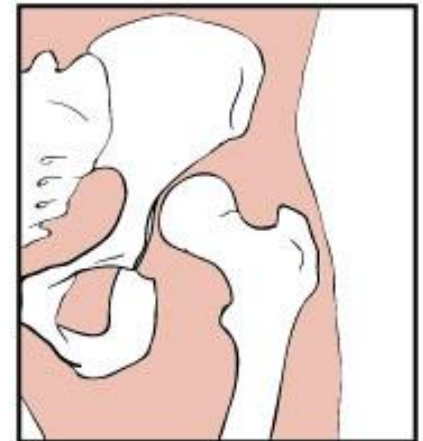
## Normal Hip



Hip Dysplasia



Subluxation



Dislocation

# Epidemiology

- ***Most common*** orthopaedic disorder in newborns
  - *Dysplasia incidence = 1 in 100*
  - *Dislocation incidence = 1 in 1000*
- ***Females > Males*** (6:1)
- Most common in ***left hip*** (60%)
  - due to the most common intrauterine position being left occiput anterior
    - (ie. left hip is adducted against the mother's lumbrosacral spine)
- ***Bilateral*** in 20%



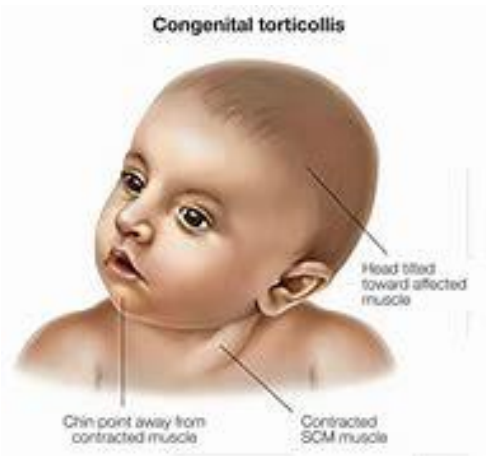
# Risk Factors

- Female gender (approx 4:1)
  - due to increased ligamentous laxity that transiently exists as the result of circulating maternal hormones and the oestrogens produced by the foetal uterus
- First born
  - Due to compression in the unstretched uterus
- Breech presentation
- Oligohydramnios
- Positive family history



# Associated Conditions

- Congenital torticollis
- Congenital hyperextended knee
- Skull/facial abnormalities
- CTEV (clubfoot)
- Metatarsus adductus



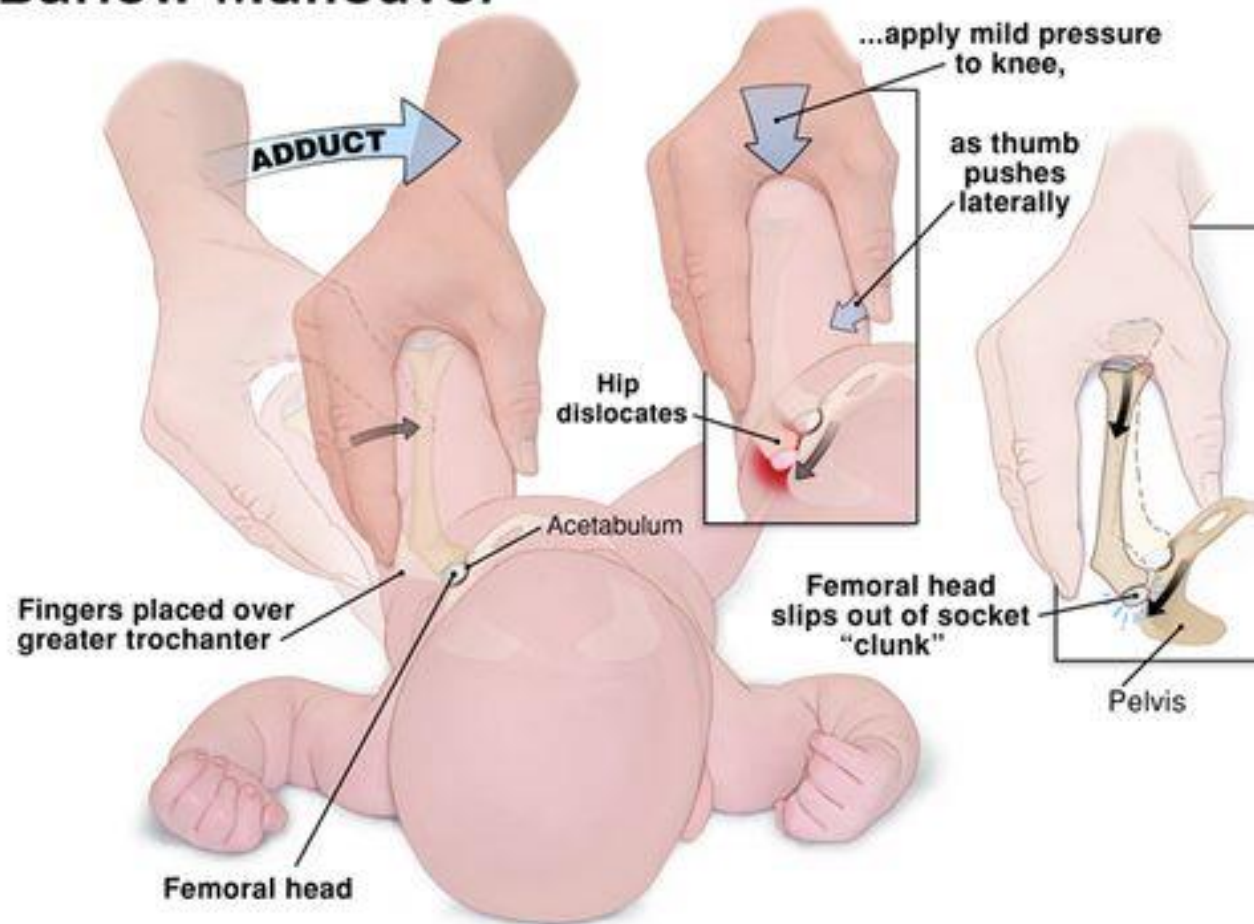


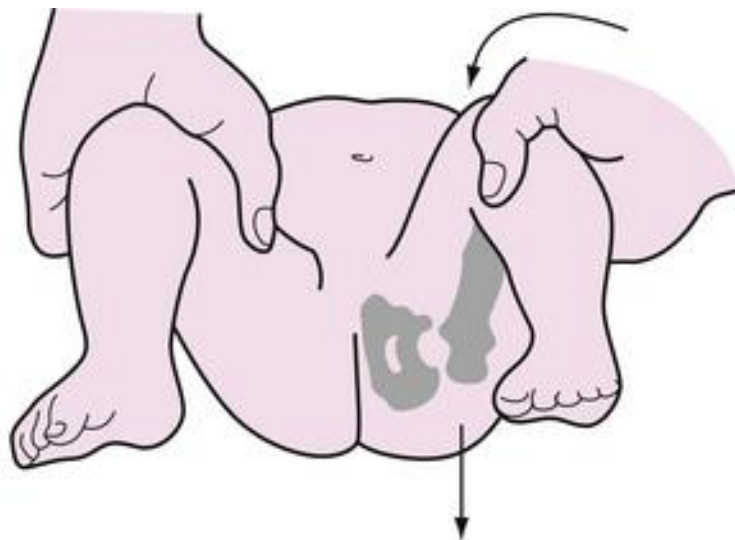
# *Screening in the UK*

- Part of newborn baby check (paediatrician) and 6 week check (GP)
- They will observe:
  - Symmetry of ***leg length*** and level of knees when hips and knees are both flexed
  - symmetry of ***skin folds*** in the groin when baby is in ventral suspension
  - Whether or not legs can be ***fully abducted***
- They will perform the ***Barlow and Ortolani*** manouvres

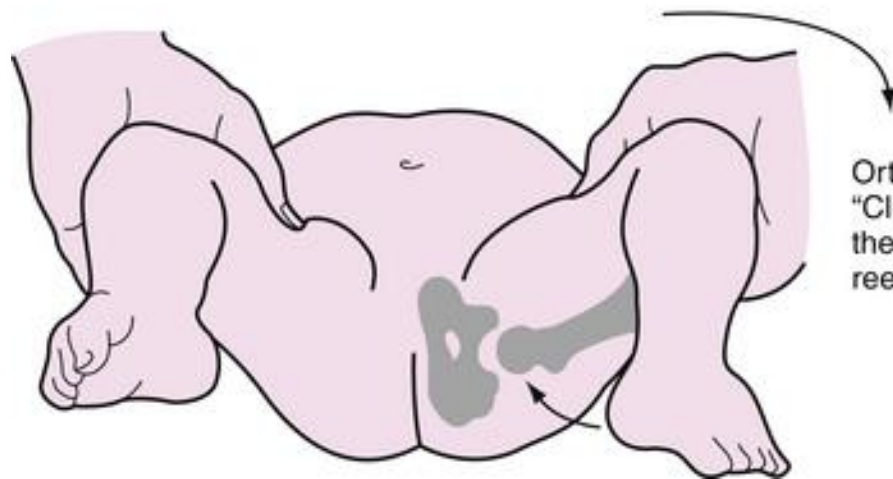


# Barlow Maneuver





Barlow's maneuver:  
"Clunk" of exit as the  
femur is dislocated  
from the acetabulum



Ortolani's maneuver:  
"Clunk" of entry as  
the dislocated femur  
reenters the acetabulum

# Galeazzi Sign



# Screening in the UK

## The NHS NIPE programme national hip risk factors:

- 1) First degree family history of hip problems in early life
  - 2) Breech presentation at or after 36 completed weeks of pregnancy, irrespective of presentation at birth or mode of delivery.
  - 3) Breech presentation at delivery if this is earlier than 36 weeks gestation.
- For babies with **any** of the above risk factors, **hip ultrasound examination** should be arranged
  - In the case of multiple births with these risk factors, all babies in the pregnancy should be scanned



# Treatment

## Non-operative

- **Abduction splinting/bracing (Pavlik harness)**

- **Indication:**

- < 6 months old with reducible hip

- **Contraindications:**

- Teratologic hip dislocation
- Abnormal muscle function
- Patients with spina bifida or spasticity



# Treatment

## Operative

- Closed/open reduction and spica casting
- Indications:
  - 6-18 months old
  - failure of Pavlik treatment
- Indications for open reduction
  - > 18 months old
  - failure of closed reduction

Hip Spica



# Treatment

- **Open reduction and femoral osteotomy**
  - Indications:
    - >2 years old with residual hip dysplasia
    - Anatomic changes on femoral side (e.g., femoral anteversion, coxa valga)
    - Best in younger children (< 4 years old) ☐ after 4 years old, pelvic osteotomies are utilized
- **Open reduction and pelvic osteotomy**
  - Indications
    - Severe dysplasia with significant radiographic changes to acetabulum
    - Used more commonly in older children (> 4 yr) as decreased potential for acetabular remodelling as child ages





# *Complications*

- Proximal femoral growth disturbance
- Limb length discrepancy
- Avascular necrosis
- Osteoarthritis (late)