Developmental Dysplasia Of The Hip

INTRODUCTION

- Developmental dysplasia of the hip (DDH), comprises a spectrum of disorders: an unusually

1. shallow acetabulum without actual displacement of the joint;
2. a shallow acetabulum with subluxation (partial displacement) of the femoral head;
3. frank dislocation during the neonatal period.

INTRODUCTION

- Whether the instability comes first and then affects acetabular development because of imperfect seating of the femoral head, or is the result of a primary acetabular dysplasia, is still not known for sure. Both mechanisms might be important.

EPIDEMIOLOGY

- The reported incidence of neonatal hip instability in Northern Europe is 5–20 per 1000 live births; however, **most of these hips stabilize spontaneously,** and on re-examination 3 weeks after birth the incidence is only 1 or 2 per 1000 infants.
- **Girls** are much more commonly affected than boys (a **ratio of about 7:1**), and the **left hip** more often than the right; in 1 in 5 cases the condition is bilateral.

AETIOLOGY AND PATHOGENESIS

Genetic factors
DDH tends to run in families and even in entire populations.
Two heritable features which could predispose to hip instability are generalized joint laxity and shallow acetabula.

Hormonal change
in late pregnancy may aggravate ligamentous laxity in the infant.

This could account for the rarity of hip instability in premature babies

Intrauterine malposition,
especially a breech position with extended legs, would favour dislocation.

Postnatal factors
play a part in maintaining any tendency to instability.

The position which parents carry their children predominantly affect the DDH

PATHOLOGY

- The acetabulum is unusually **shallow** (shaped like a saucer instead of a cup) and its roof slopes too steeply; the femoral head slides out posteriorly and then rides upwards.
- The capsule is stretched and the ligamentum teres becomes elongated and hypertrophied.
- Superiorly the acetabular labrum and its capsular edge may be pushed into the socket by the dislocated femoral head; this fibrocartilaginous limbus may obstruct any attempt at closed reduction of the femoral head.
- **Maturation** of the **acetabulum** and **femoral epiphysis** is **retarded a**nd the femoral neck is unduly anteverted.

NEONATAL DIAGNOSIS

- The ideal, still unrealized, is to diagnose every case at birth. For this reason, every newborn child should be examined for signs of hip instability.
- Where there is a family history of congenital dislocation, and with breech presentations, extra care is taken and the infant may have to be examined more than once

NEONATAL DIAGNOSIS

- There are several ways of testing for instability.
- In **Ortolani's** test, the baby's thighs are held with the thumbs medially and the fingers resting on the greater trochanters; the hips are flexed to 90 degrees and gently abducted.
- Normally there is smooth abduction to almost 90 degrees. In congenital dislocation the movement is usually impeded, but if pressure is applied to the greater trochanter there is a **soft 'clunk'** as the dislocation reduces, and then the hip abducts fully (the 'jerk of entry').

NEONATAL DIAGNOSIS

- If abduction stops half-way and there is no jerk of entry, there may be an irreducible dislocation.
- Barlow's test is performed in a similar manner, but here the examiner's thumb is placed in the groin and, by grasping the upper thigh, an attempt is made to lever the femoral head in and out of the acetabulum during abduction and adduction.

NEONATAL DIAGNOSIS

- If the femoral head is normally in the reduced position, but can be made to slip out of the socket and back in again, the hip is classed as **'dislocatable'**(i.e. unstable).
- Every hip with signs of instability – however slight – should be examined by ultrasonography.
- This provides a dynamic assessment of the shape of the cartilaginous socket and the position of the femoral head.

PRESENTATION

- Affecting unilateral hip in 2/3 or bilateral in 1/3.

- **Infants**- detected in the routine developmental monitoring.

1. Limited abduction in flexion
2. Limb asymmetry (extra thigh crease)
3. Limb shortening

PRESENTATION

Toddlers

1. Limp
2. Short, externally rotated limb
3. Unilateral tip toe walking
4. Limited abduction
5. Extra thigh crease
6. Waddling gait

PRESENTATION

Adolescent

- Discomfort after exercise (may be knee joint pain)

Adult

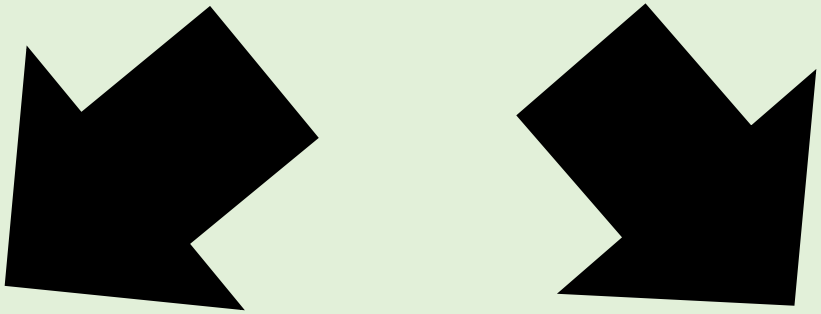
- Pain due to degenerative arthritis

Imaging

- **Ultrasonography** has replaced radiography for imaging hips in the newborn. The acetabulum and femoral head can, with practice, be displayed with static and dynamic ultrasound. Sequential assessment allows monitoring of the hip during an initial period of splintage.
- **X-ray examination** is helpful after the first 6 months. The bony part of the acetabular roof slopes upwards abnormally and the socket is unusually shallow. the relationship of the femoral head to the acetabular socket can be assessed by studying various geometric projections on the x-ray images.

Imaging

Investigations



USS- to confirm or screening (4 & 6 weeks)

X-Ray- from 12 weeks onwards. Not helpful in the initial stages

TREATMENT

AGE GEOUP	MANAGEMENT
Neonate	• **Closed reduction** • **Stabilization** • Pavlik harness allowed controlled movements. • Von Rosen splint rigid. Carries a risk of AVN Effective until 4-6 months. • Maintained until the femoral epiphysis returns to its normal density on X-Ray.

TREATMENT

AGE GEOUP	MANAGEMENT
Infants	• **Harness and splints** are not useful o EUA+ closed reduction. • Then **the Hip spica** cast is applied. o If hip is irreducible- open reduction

TREATMENT

AGE GEOUP	MANAGEMENT
Older child	• Similar approach • Acetabuloplasty
Adolescent and young adults	• Pelvic osteotomies • Femoral osteotomies • Acetabular augmentation • Hip arthroplasty

COMPLICATIONS

1. Avascular necrosis
2. Relative overgrowth of the greater trochanter
3. Osteoarthritis