

DEVELOPMENTAL DYSPLASIA OF THE HIP

DR. M FAROOQ BHAT
ASS. PROF. ORTHOPEDICS

TERMINOLOGY

- CDH [CONGENITAL DISLOCATION OF HIP] has been superseded by DDH in an attempt to describe the range and evolution of abnormalities that occur
- It includes acetabular dysplasia without displacement ; subluxation or dislocation & teratological forms of malarticulation leading to dislocation are also included

- Incidence of neonatal instability in northern Europe is approx 1 per 1000 live births
- Barlow described incidence of 1:60 ; however 60% stabilise by 1 week and 88% by 8 weeks
- Incidence in Lapps and Native Americans 25-50 /1000 live births
- Girls :boys 7:1
- Left more than right and 1 in 5 bilateral

AETIOPATHOGENESIS

- GENETIC FACTORS
- HORMONAL FACTORS; high levels of maternal oestrogen ;progesterone and relaxin in last few weeks of pregnancy
- INTRAUTERINE MALPOSITION : breech position with extended leg
- POSTNATAL FACTORS; they way babies are carried may may contribute to persistence of instability

PATHOLOGY

- AT BIRTH -hip probably normal in shape with stretched capsule
- INFANCY-femoral head dislocates, normal in size, bony nucleus appears late & ossification delayed
- Capsule stretched, leg teres elongated and hypertrophied
- Superiorly acetabular labrum & and capsular edge [limbus]pushed into socket by dislocated femoral head and obstructs attempted closed reduction

- After weight bearing changes are intensified
- Acetabulum and femoral neck remain anteverted
- False acetabulum develops superiorly
- Capsule squeezed between edge of acetabulum and poses muscle develops HOURGLASS appearance
- Surrounding muscles become adaptively shortened

CLINICAL FEATURES

- Every newborn should be screened
- In neonates- Ortolani's test and Barlow's test
- Late features-asymmetry , a clicking hip, difficulty in applying diaper because of limited abduction
- Unilateral dislocation -skin creases asymmetrical , leg slightly short{Galeazi's sign} and ext. rotated

- A thumb in groin may feel missing head
- In bilateral dislocation-abnormal perineal gap and decreased abduction
- Late walking is not a marked feature
- In children who do not walk by 18 months dislocation must be excluded
- A limp or Trendelenburg gait or a waddling gait could be a sign of missed dislocation

ORTOLANI'S TEST

- Thighs are held with the thumbs medially & fingers resting on greater Troch. The hips are flexed to 90 degrees & gently abducted. Normally there's smooth abduction to almost 90 degrees. In CDH , the abduction is impeded, but if pressure is applied to greater trochanter there is a soft 'clunk' as the dislocation reduces , and then the hip abducts fully. If abduction stops halfway and there is no jerk of entry, there may be an irreducible dislocation.

BARLOW'S TEST

- The examiner's thumb is placed in the groin and by grasping upper thigh, an attempt is made to lever the femoral head in and out of the acetabulum during abduction and adduction. If the femoral head is normal in the reduced position , but can be made to slip out of the socket and back in again , the hip is classified as 'dislocatable' i.e unstable.

IMAGING

- USG- radiographically invisible acetabulum and femoral head can be displayed with static and dynamic USG.
- PLAIN X -RAYS. More useful after 6 months and assessment is helped by drawing lines on the x-ray plate to define geometric indices

SCREENING

- Screening in dedicated centres has led to a marked reduction in missed cases
- Risk factors like family history, ethnicity, breech , oligohydramnios, and presence of other congenital deformities taken into account
- Special examination and USG is performed

MANAGEMENT

- ZERO TO 6 MONTHS
- Closed reduction, and maintaining reduction by
- 1. Double napkins Or 2 abduction pillow OR 3 Von Rosen's splint OR 4 Pavlik harness [most preferable]
- Golden rules of splintage are—(a) properly reduced hip before applying splint (b) avoid extreme positions (c) hips should be able to move

PERSISTENT DISLOCATION 6 TO 18 MONTHS

- Closed reduction under general anesthesia or open reduction if closed method fails
- SPLINTAGE -concentrically reduced hip is held in plaster spica in 60 degree flexion,40 degrees of abductionand 20 degrees of internal rotation
- Spica changed at 6 weeks, hip re-assessed and spica re-applied for 6 weeks. Removable splint applied after that for 6 months

PERSISTENT DISLOCATION

18 MONTHS TO 4 YEARS

- TRACTION, ARTHOGRAPHY AND OPEN REDUCTION
- OPEN REDUCTION OF DISLOCATION
- VARUS DEROTATION OSTEOTOMY AND SHORTNING
- IF SHALLOW COVERAGE.. ACETABULOPLASTY WILL BE ADDED -PEMBERTON'S
- OR SALTER INNOMINATE OSTEOTOMY ADDED
- POST OP HIP SPICA APPLIED FOR 3 MONTHS

DISLOCATION OVER 4 YEARS

- Reduction and stabilisation becomes difficult with advancing age
- Between 4-8 years in unilateral dislocation, it is worth attempting though chances of AVN and hip stiffness are over 25%
- Above 8 and particularly bilateral is not treated unless painful or severe deformity because of high complications of operative intervention

COMPLICATIONS

- **FAILED REDUCTION**—failure to achieve concentric reduction is worse than no treatment
- **AVASCULAR NECROSIS-**
- **Persistent dislocation in adults** —once patient is symptomatic can be considered for **TOTAL HIP REPLACEMENT**

THANKS