Chapter 34

DEVELOPMENTAL DYSPLASIA OF THE HIP: DETECTION AND MANAGEMENT

(Adapted with permission from Early Detection and Management of Congenital Dislocation of the Hip, by R. Wayne Grainger, MD, FRCS (C))

Incidence

- 1.6 per 1,000 children born in North America, Scandinavia and United Kingdom
- increased to 25 per 1,000 children in whom the following features are combined:

    1. high risk newborns with generalized laxity of connective tissue
    2. females
    3. positive family history
    4. breech presentation
    5. neural tube defects

Screening

- clinical examination of all newborns
- ongoing assessment through infancy required, as it may not always be picked up in newborn period
- if missed
    1. lesser degrees - persists as a mild subluxation (acetabular dysplasia)
    2. giving rise to premature osteoarthritis in the adult
    3. most severe degrees – avascular necrosis and an abnormal hip necessitating surgery

Procedure

- infant must be quiet, relaxed and handled gently
- the audible (ligamentous) "click" which is not a feature of D. D. H., needs to be differentiated from the palpable "clunk". Neither of these signs is the measure of instability if there is no associated dislocation (reduced by the Ortolani manoeuvre) or dislocatability (dislocated by the Barlow Manoeuvre).

- the following figures 1, 2 and 3 illustrate these manoeuvres in detail.

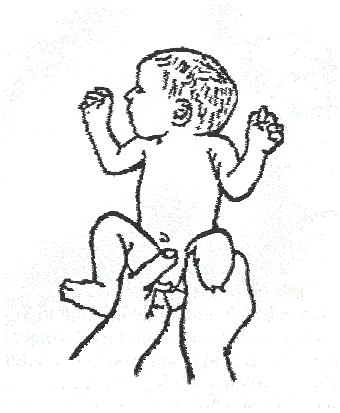

Figure 1

Figure 1 shows the position of the hands for the Barlow manoeuvre when examining for dislocation of the baby's hip (in this instance the left hip). With the infant lying relaxed and the legs towards the examiner, the pelvis is fixed by grasping it at the symphysis (with the thumb) and the sacrum (with the fingers) of the left hand when examining the left hip. The left thigh is then held between the middle digit overlying the greater trochanter posteriorly and the thumb at the upper thigh anteriorly. The flexed leg lies in the palm of the examiner's right hand. Dislocation is tested for by anterior pressure with the right middle digit over the greater trochanter. Movement of the head of the femur into the acetabulum with this pressure confirms that the head of the femur was (posteriorly) dislocated. Next, an attempt is made to see if the femoral head is dislocatable by gentle posterior pressure with the right thumb over the upper left thigh. Posterior movement of the femoral head over the acetabular rim indicates a dislocatable (or unstable) hip.

The Barlow manoeuvre described above is repeated for the right hip by the examiner interchanging the examining and fixating hands. Reduction or dislocation is often accompanied by a palpable (sometimes audible) "clunk". Ligamentous clicks are noted in about 10 % of newborns and are without significance in the absence of mobility of the femoral head.

Figure 2

The Ortolani manoeuvre seeks reduction of the posteriorly dislocated hip as the infant's hips are brought into full abduction. For this manoeuvre, the legs are flexed and adducted as in **Figure 2** and the hips are then gently abducted. In most newborn babies, abduction is possible almost to 180 degrees without significant discomfort. Presence of a palpable, often audible "clunk as the abduction is carried out and as the head of the femur is reduced into the acetabulum indicates the presence of the posteriorly dislocated hip. Instability of the hip joint is not so well detected with this manoeuvre as with Barlow's.

Figure 3 shows a modified combination of Barlow and Ortolani manoeuvres, which is recommended by some for examination of the hip. Ultrasound examination has become the recognized method of choice useful for evaluation of the dislocated hip and unstable hip

Figure 3

Confirmatory investigation

- ultrasound of the hip is most usual to confirm dislocation. X-rays are less helpful in the newborn.

Management

- if the infant's hip is dislocated, it should be reduced and appropriately splinted (maintained in reduction)
- referral to paediatric orthopaedics required for splinting and follow up
- appropriate flexion and mild abduction splinting in a Malmo splint or Pavlik harness 24 hours a day is necessary to obtain the optimal and normal result

* Double or triple diapering has no place in the management of the infant.

- a normal outcome can be expected if the hip is totally stable to clinical examination at the end of the splinting period - usually 12 weeks, occasionally 8 - 10 weeks
- parent teaching
    - includes helping them to feel comfortable holding and caring for their infant
    - reinforces that the splint or harness must stay on 24 hours a day, eg. during diaper changes, sponge bathing etc.

Follow-up

Clinical examination to determine the hips' stability is necessary

1. prior to walking (approximately at 8 months)
2. at the early stage of walking (approximately 12 months)

An x-ray at these times helps in determining that the hip is radiologically normal.

Reference:

1. Grainger, W. Wayne. Early Detection and Management of Congenital Dislocation of the Hip, Perinatal Outreach Program, Partner Newsletter Vol. 5, No. 2; August 1987.