DEVELOPMENTAL DYSPLASIA OF THE HIP (DDH) ● 1/3

INTRODUCTION

- DDH ranges from mild acetabular dysplasia with a stable hip through more severe forms of dysplasia, often associated with neonatal hip instability, to established hip dysplasia with/without later subluxation or dislocation
- Delayed diagnosis requires more complex treatment and has a less successful outcome than dysplasia diagnosed early
- Screening for DDH is part of the newborn and infant physical examination (NIPE)

MORE COMMON IN BABIES WITH:

- Family history of first degree relative with DDH
- Breech presentation during pregnancy
- Hip abnormality on clinical examination
- Structural foot abnormality – congenital calcaneovalgus, fixed talipes equinovarus
- Significant intrauterine moulding – congenital torticollis, congenital plagiocephaly
- Birth weight >5 kg
- Oligohydramnios
- Multiple pregnancy
- Prematurity
- Neuromuscular disorders

SCREENING FOR DDH

- All babies are offered a NIPE to be completed by aged 72 hr, to include:
- questions to the parents to identify risk factors for DDH and a thorough examination for hip abnormalities

Ask parents: “Is there anyone in the baby’s close family, i.e. mother, father, brother or sister, who has had a hip problem that started when they were a baby or young child and that needed treatment with a splint, harness or operation?”

NIPE hip risk factors:

- Family history of first degree relative with hip problems needing orthopaedic treatment in early life, unless DDH has definitely been excluded
- Breech presentation at ≥36 completed weeks of pregnancy, irrespective of presentation at delivery or mode of delivery, **or**
- Breech presentation at the time of birth between 28 weeks’ gestation and term
- In the case of a multiple birth, if any baby falls into either category, all babies in this pregnancy to have ultrasound examination

- Ortolani and Barlow tests, to detect an unstable hip, or hip that is dislocated or subluxed but reducible
  - will not detect an irreducible hip, which is best detected by identifying limited abduction of the flexed hip

HIP EXAMINATION

Observe for

- Symmetry of leg length
- Level of knees when hips and knees are both flexed

Manipulation

- Barlow test (left) and Ortolani test (right) (see **Figure 1**)
- When examining hip stabilise pelvis on opposite side
- Can legs be fully abducted

Barlow test (right hip)

- Hip adducted and flexed to 90°
- Hold distal thigh and push posteriorly on hip joint
- Test is positive when the femoral head felt to slide posteriorly as it dislocates

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Ortolani test (left hip)

- Stabilise pelvis and examine each hip separately
- In a baby with limited hip abduction in flexion, hip is flexed to 90° and gently abducted while examiner's finger lifts the greater trochanter
- Test is positive when the femoral head is felt to locate into the acetabulum

Figure 1

Abnormal examination defined as one of 3 categories:

1. **Dislocated and irreducible.** These hips are out of joint and cannot be brought back into joint by Ortolani manoeuvre (abduction of the flexed hip with pressure on the greater trochanter). Usually abduction is restricted. Such severely abnormal hips are rare. **Refer: Consultant Orthopaedic surgeon Birmingham Children's Hospital**

2. **Dislocated and reducible**. These hips move back into joint during the Ortolani manoeuvre. The sensation felt by the examiner is often referred to as a "clunk". It represents movement of the femoral head in an antero-medial direction over the edge of, and then back into the acetabulum. It is distinct from a "click". {Clicks can be felt, and often heard, when examining a baby's hips. In clicky hips the femoral head and proximal femur do not move abnormally in relation to the pelvis. Clicks probably arise from tendons and ligaments moving over bony prominences and are of no significance. Clicks can be safely ignored.} **Refer: Consultant Orthopaedic surgeon Birmingham Children's Hospital**

3. **Dislocatable.** The femoral head lies within the acetabulum at rest but can be dislocated by the Barlow manoeuvre (Adduction of the flexed hip with pressure on the lesser trochanter). Again the examiner feels a "clunk". This is due to postero-lateral movement of the femoral head**. Refer: Consultant Orthopaedic surgeon Birmingham Children's Hospital**

If you are uncertain please get a paediatric registrar or consultant to review the baby. Uncertain means you are unsure as to what you are feeling during the examination. Until you have felt a few "clunking" hips you will be asking a more senior colleague to re-examine quite a few babies. An ultrasound scan at four to six weeks of age is not a substitute for a confident assessment of the hip in the newborn period.

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PROCESS

SCREEN NEGATIVE - No risk factors on history and normal examination

- No further intervention needed
- Inform parents and document findings
- These babies will be rechecked at their 6–8 week check

SCREEN POSITIVE - Risk factors or abnormal examination as detailed above

- Inform parents of findings and plan for further investigation
- Document findings and plan
- Request urgent/non-urgent outpatient hip ultrasound to be performed in accordance with 'NIPE' guidance and Radiology guideline 'Ultrasound Infant Hip Protocol'
- When requesting on ICE "US Hips up to 9 months of age" you will be prompted to include the indication as well as EDD and gestation at birth.
- Preterm infants (born less than 37 weeks gestation) should have hip USS at EDD plus 4 – 6 weeks. So for example a baby born at 35 weeks gestation would have a scan when they are 5+4 to 5+6 weeks of age i.e. 9 to 11 weeks from the day of their birth.
- Hip scans are not to be arranged for clicky hips
- The results of the scan are communicated to the parents by the radiographer/radiologist performing the scan and the following action taken:
    - If the hips are normal (sometimes referred to as Graf Type I hips) no further scans will be arranged.
    - If the one or both acetabulae are shallow (shallow hips are sometimes referred to as Graf Type IIa or type IIb hips) they are probably simply immature. A repeat scan is organised by the ultrasonographer in one month. If the hips are then normal no further scans are required. If they are still shallow the paediatric Consultant, upon receipt of the scan result, will refer the baby to an orthopaedic surgeon.
    - If the hips are clearly abnormal (very shallow, dislocatable or dislocated, Graf type IIc, III or IV) the paediatric Consultant, upon receipt of the scan result, will refer the baby to an orthopaedic surgeon.
- An outcome decision for all babies should have been made by aged 6 weeks for babies born ≥34+0, and by 40+0 weeks' corrected age for babies born <34+0 weeks

Dislocated/dislocatable/unstable hip – positive Ortolani or Barlow test as above

- Review by middle grade or consultant to confirm diagnosis
- Inform parents of findings and plan for further investigation and management
- Document findings and plan on BadgerNet
- Urgent referral required
    - Referral is made by letter emailed to local paediatric consultant's secretary, who will ensure it is sent to BCH with a copy to the GP and filed on CLIP for future reference.
    - Separate physiotherapy referral, local or BCH, is not required.
    - There is no need to involve local orthopaedic staff either before nor after discharge.
    - The baby will be seen in Orthopaedic clinic at BCH within a few weeks of birth and splintage started then if it is necessary.
    - There is never any need to put a baby in "double nappies"