BACKGROUND INFORMATION

Development dysplasia of the hips (DDH) is a condition with a range of anatomical abnormalities of the hip joint in which the femoral head has an abnormal relationship with the acetabulum. This includes:

- dysplasia - there is an inadequate acetabulum formation (may not be clinically noted)
- subluxation - occurs if the femoral head can be partially displaced out of the acetabulum
- dislocatable - when the femoral head may be displaced from the acetabulum with manoeuvres
- dislocated – the femoral head is completely outside the acetabulum.

Teratologic hip dysplasia refers to prenatal severe fixed dislocation usually associated with genetic or neuromuscular disorders.

Clinically detected neonatal hip instability ranges from 1.6 - 28.5 neonates per 1000. Long term consequences of undiagnosed or untreated DDH leads to pain in the hip, knee and lower back, gait abnormalities, and degenerative changes of the hip joint. During the immediate neonatal period, laxity of the hip capsule predominates, and if considerable enough can cause the femoral head to spontaneously dislocate. If it spontaneously relocates and stabilises within a few days future hip development is usually normal, however if dislocation continues structural abnormalities may develop. Audible and palpable tendinous ‘clicks’ can be confused with true neonatal instability of the hips. These clicks often disappear within the first few weeks after birth. Clinical examination by performing the Barlow or Ortolani tests are used to detect DDH. A positive test for Barlow or Ortolani signs also resolve quickly in more than 80% of infants with hip instability.

More than 60% of neonates have no identifiable risk factors for DDH, with only 1 in 75 infants with identified risk factors for DDH being diagnosed with hip dislocation. Suspicion for DDH may be aroused when the neonate presents with asymmetric thigh or buttock skin folds (30% of neonates will have these without DDH), a positive Allis or Galeazzi sign (relative shortness of the femur with the hips and knees flexed), and discrepancies in leg lengths. DDH is more common in girls than boys (girls 19 in 1000 verses boys 4.1 in 1000 of clinically diagnosed neonates). It occurs three-four times more in the left than the right hip which is probably due to the fetus commonly lying in the left occipital anterior position. This places the left hip posteriorly against the maternal spine and causes limiting movements.

Despite clinical examination and screening practices for DDH until the infant is walking there is a 1:5000 rate of late-onset dislocation of the hips.

KEY POINTS

1. All neonates should have their hips clinically checked by a paediatrician competent in performing the Barlow or Ortolani tests on the first day of birth.
2. The neonate should be tested for DDH by the paediatrician again at the home discharge check.
3. All neonates who are 'high-risk' for DDH and who have normal clinical examination for DDH should be referred to the orthopaedic department at PMH for a clinical examination at 6 weeks of age and hip ultrasound examination arranged if the examination is abnormal.

4. A neonate with definite or suspicious signs of DDH on clinical examination should be referred immediately to the Orthopaedic Clinic at Princess Margaret Hospital (PMH) for review. Consultation preferably should be within 2 weeks (the majority of abnormal physical findings such a 'clicks or clunks' will resolve by this time).

5. Ultrasound is used for hip imaging in the first few months following birth as the femoral head is composed entirely of cartilage, and from 4-6 months of age X-ray’s are more reliable.

**RISK FACTORS**

Neonates with increased risk of DDH include:

- First degree relative with DDH
- Breech delivery
- Females are more predisposed than males
- Oligohydramnios
- Increased birth weight (>4000g)
- Primiparous pregnancy- slight increased risk

Perform ultrasound screening of the hips at 6 weeks of age.

Risk of a positive examination per 1000 newborns for positive family history of DDH is:

- Girls 44 per 1000
- Boys 9.4 per 1000

The Frank breech position is the highest risk for DDH. The breech position leads to increased hip flexion and decreased movement.

Risk of a positive examination per 1000 newborns with breech presentation is:

- girls 120 per 1000
- boys 26 per 1000

A female neonate without other risk factors accounts for 75% of infants diagnosed with DDH. Females are susceptible to the maternal hormone relaxin which may contribute to ligamentous laxity and instability of the hip. DDH is 4-8 times more common in females.

Risk of a positive examination per 1000 of newborns:

- all newborns 11.5 per 1000
- girls 19 per 1000
- boys 4.1 per 1000

Can lead to diminished fetal movement.

Tight abdominal muscles may constrain fetal movement.
MANAGEMENT

1. All neonates are examined following birth for DDH. This examination may be performed by a midwife and the paediatrician clinically competent in performing the Barlow Test and the Ortolani Test.

2. Repeat clinical examination for DDH should be performed by the paediatrician during the discharge check. If an RMO paediatrician is unsure they should then refer examination to the paediatrician registrar or Consultant – the neonate should not be discharged until this is performed.

See NCCU Clinical Guidelines Section 19 Developmental Dysplasia of the hips (DDH) for guidance in performing the Barlow and Ortolani tests.

NEONATE WITH ‘RISK FACTORS’ WITHOUT CLINICAL SIGNS OF DDH

Refer the neonate with ‘risk factors’ but with no signs of DDH to the Orthopaedic clinic at PMH for clinical examination and ultrasound follow-up (as required) in 6 weeks in the following circumstances:

- A history of DDH in a first degree relative
- A breech birth

NEONATE WITH CLINICAL OR ‘SUSPICIOUS’ SIGNS OF DDH

All neonates with clinical or ‘suspicious’ signs of DDH are referred to the Orthopaedic Clinic at Princess Margaret Hospital (PMH). See Neonatal Postnatal Clinical Guideline 8.1 for management flow chart for the referral process and follow up.

A direct phone call is made to a member of the Department of Orthopaedics to discuss immediate referral and arrange an appointment. Complete the ‘Hip Referral Form’ and fax to PMH. If follow-up is required but not urgent then a referral is sent for attending the DDH clinic.

A copy of the form is in this section of the guidelines which can be printed off as required.

DISCHARGE

A discharge letter should be generated and sent to the GP to advise when an orthopaedic referral has been sent to PMH to assess for DDH.

The mother should be counselled regarding referrals, and recommended management for the ‘at risk’ neonate.

REFERENCES

