Developmental dysplasia of the hip

DOI: http://dx.doi.org/10.4038/sljch.v47i1.8421
(Key words: Developmental dysplasia, hip)

Developmental dysplasia of the hip (DDH) is a disorder where the head of the femur is abnormally related to the acetabulum and includes total dislocation, partial dislocation, unstable hip, and radiographic abnormalities of acetabular dysplasia. In 2000, the American Academy of Paediatrics (AAP) formulated guidelines to detect hip dysplasia. In 2014, the American Academy of Orthopaedic Surgeons (AAOS) also developed guidelines. Whilst both AAP and AAOS support universal clinical screening for DDH, AAOS does not advocate universal ultrasound screening.

Aetiology of DDH is still unknown. It is usually unilateral and affects predominantly the left hip. Incidence ranges from 0.06-76.1/1000 live births, differing according to race and geographical location. Breech presentation, a positive family history, and female gender are recognised risk factors for DDH. However, most babies with DDH have no identifiable risk factors. Traditional swaddling, where hips are maintained in an abducted/extended position, has a strong association of DDH. Both AAP and AAOS recommend hip-healthy swaddling techniques to lessen the risk of DDH in swaddled infants.

Hip stability in the neonate is assessed by the Ortolani and Barlow tests. In the Ortolani test there is a clunk as the dislocated hip reduces, and in the Barlow test there is a clunk as the unstable hip dislocates from acetabulum. A click is not a clunk and does not indicate DDH. Positive Ortolani or Barlow signs warrant prompt orthopaedic referral. If results are not conclusive, a follow-up at 2 weeks of age is recommended, follow-up being continued till walking is established. If the results are still equivocal at 2 weeks, an ultrasound scan is warranted at 3 to 4 weeks of life or an orthopaedic referral. Babies with risk factors such as breech delivery, too, must have imaging. The AAP recommendation is ultrasound scan when the baby is 6 weeks old or x-ray when the baby is over 4 months old. AAOS recommends imaging prior to 6 months of life when at least one of the following risk factors are present viz. breech delivery, positive family history of DDH, or prior clinically unstable hip. When the baby is 3 months old, limitation of abduction is the most reliable sign of DDH.

During infancy, ultrasonography is the diagnostic procedure of choice as x-rays are of limited value till the femoral heads start to ossify when the baby is 4 to 6 months old. Ultrasound scans allow visualization of the cartilaginous part of the acetabulum and femoral head. Ultrasonography is not recommended till the baby is 3 to 4 weeks old as early findings such as mild laxity and immature acetabulum frequently resolve spontaneously. Ultrasonography is recommended only for confirmation of a clinical diagnosis, or for babies with risk factors. Universal ultrasonography screening is not recommended and will be unnecessarily costly. Plain x-rays are used after the baby is 4 months old for confirmation of DDH or evaluation of residual dysplasia.

Once hip dysplasia is diagnosed clinically or by imaging, subsequent management should be by an orthopaedic specialist with treatment preferably being started before the baby is 6 weeks old. Aim of therapy is maintaining hip stability, the femoral head being well covered by the acetabulum. Preferred initial treatment involves use of the Pavlik harness which keeps the hip flexed and abducted, causing concentric reduction of the femoral head. Rare complications associated with this therapy include avascular necrosis and femoral nerve palsy. Long-term results indicate a success rate greater than 90%. Pavlik harness is not so effective in babies over 6 months of age and a more rigid abduction brace is needed. Delay in treatment of DDH can lead to sequelae like chronic pain, degenerative arthritis, postural scoliosis, and early gait disturbances.

References


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Joint Editor
The author declares that there are no conflicts of interest.
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