

## **Editorial**

# **Developmental dysplasia of the hip**

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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<sup>1</sup>. In 2000, the American Academy of Paediatrics (AAP) formulated guidelines to detect hip dysplasia<sup>1</sup>. In 2014, the American Academy of Orthopaedic Surgeons (AAOS) also developed guidelines<sup>2</sup>. Whilst both AAP and AAOS support universal clinical screening for DDH, AAOS does not advocate universal ultrasound screening<sup>2</sup>.

Aetiology of DDH is still unknown. It is usually unilateral and affects predominantly the left hip<sup>3</sup>. Incidence ranges from 0.06-76.1/1000 live births, differing according to race and geographical location<sup>3</sup>. Breech presentation, a positive family history, and female gender are recognised risk factors for DDH<sup>3</sup>. However, most babies with DDH have no identifiable risk factors<sup>3</sup>. Traditional swaddling, where hips are maintained in an adducted/extended position, has a strong association of DDH<sup>4,5,6</sup>. Both AAP and AAOS recommend hip-healthy swaddling techniques to lessen the risk of DDH in swaddled infants<sup>5,6,7</sup>.

Hip stability in the neonate is assessed by the Ortolani and Barlow tests<sup>1</sup>. 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<sup>1</sup>. A click is not a clunk and does not indicate DDH<sup>1,2</sup>. Positive Ortolani or Barlow signs warrant prompt orthopaedic referral<sup>8</sup>. If results are not conclusive, a follow-up at 2 weeks of age is recommended, follow-up being continued till walking is established<sup>8</sup>. 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<sup>9</sup>. Babies with risk factors such as breech delivery, too, must have imaging<sup>10</sup>. The AAP recommendation is ultrasound scan when the baby is 6 weeks old or x-ray when the baby is over 4 months old<sup>1</sup>. 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<sup>3</sup>. When the baby is 3 months old, limitation of abduction is the most reliable sign of DDH<sup>1</sup>.

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<sup>9</sup>. Ultrasound scans allow visualization of the cartilaginous part of the acetabulum and femoral head<sup>1</sup>. 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<sup>1,10</sup>. Ultrasonography is recommended only for confirmation of a clinical diagnosis, or for babies with risk factors<sup>10</sup>. Universal ultrasonography screening is not recommended and will be unnecessarily costly<sup>2,10</sup>. Plain x-rays are used after the baby is 4 months old for confirmation of DDH or evaluation of residual dysplasia<sup>2,9</sup>.

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<sup>11</sup>. Aim of therapy is maintaining hip stability, the femoral head being well covered by the acetabulum<sup>11</sup>. Preferred initial treatment involves use of the Pavlik harness which keeps the hip flexed and abducted, causing concentric reduction of the femoral head<sup>11</sup>. Rare complications associated with this therapy include avascular necrosis and femoral nerve palsy<sup>12</sup>. Long-term results indicate a success rate greater than 90%<sup>13,14</sup>. Pavlik harness is not so effective in babies over 6 months of age and a more rigid abduction brace is needed<sup>14</sup>. Delay in treatment of DDH can lead to sequelae like chronic pain, degenerative arthritis, postural scoliosis, and early gait disturbances<sup>12</sup>.

## **References**

1. American Academy of Paediatrics. Committee on quality improvement, subcommittee on developmental dysplasia of the hip. Clinical practice guideline: early detection of developmental dysplasia of the hip. *Pediatrics* 2000; **105**(4 pt 1):896-905.  
PMid: 10742345
2. Mulpuri K, Song KM, Goldberg MJ, Sevarino K. Detection and non-operative management of paediatric developmental dysplasia of the hip in infants up to six months of age. *Journal of the American*

- Academy of Orthopaedic Surgeons* 2015; **23**(3):202-5.  
<https://doi.org/10.5435/JAAOS-D-15-00008>
3. Loder RT, Skopelja EN. The epidemiology and demographics of hip dysplasia *ISRN Orthopedics* 2011; 2011: Article ID 238607.
  4. Alsaleem M, Set KK, Saadeh L. Developmental dysplasia of hip: a review. *Clinical Pediatrics (Phila)*. 2015; **54**(10): 921-8.  
<https://doi.org/10.1177/0009922814555978>  
PMid: 25381225
  5. Van Sleuwen BE, Engelberts AC, Boere-Boonekamp MM, *et al*. Swaddling: a systematic review. *Pediatrics* 2007; **120**(4):e1097-e1106.  
<https://doi.org/10.1542/peds.2006-2083>  
PMid: 17908730
  6. American Academy of Orthopaedic Surgeons, American Association of Orthopaedic Surgeons. Position statement: Swaddling and developmental hip dysplasia. Available from:  
[https://www.aaos.org/uploadedFiles/PreProduction/About/Opinion\\_Statements/position/1186%20Swaddling%20and%20Developmental%20Hip%20Dysplasia\(1\).pdf](https://www.aaos.org/uploadedFiles/PreProduction/About/Opinion_Statements/position/1186%20Swaddling%20and%20Developmental%20Hip%20Dysplasia(1).pdf)  
Accessed 07 January 2018.
  7. Clarke NM. Swaddling and hip dysplasia: an orthopaedic perspective. *Archives of Disease in Childhood* 2014; **99**(1):5-6.  
<https://doi.org/10.1136/archdischild-2013-304143>  
PMid: 24167071
  8. Bolander S. A click is not a clunk: Developmental dysplasia of the hip in a newborn. *Clinician Reviews* 2016; **26**(4):22-23, 28, 32-34.
  9. Imrie M, Scott V, Stearns P, *et al*. Is ultrasound screening for DDH in babies born breech sufficient? *Journal of Children's Orthopaedics* 2010; **4**(1):3-8.  
<https://doi.org/10.1007/s11832-009-0217-2>  
PMid: 19915881 PMCID: PMC2811678
  10. Paton RW, Hinduja K, Thomas CD. The significance of at-risk factors in ultrasound surveillance of developmental dysplasia of the hip: a ten-year prospective study. *Journal of Bone and Joint Surgery British volume* 2005; **87**(9):1264-6.  
<https://doi.org/10.1302/0301620X.87B9.16565>  
PMid: 16129755
  11. Godley DR. Assessment, diagnosis and treatment of developmental dysplasia of the hip *Journal of the American Association of Physician Assistants* 2013; **26**(3):54-8.
  12. Thomas SR. A review of long-term outcomes for late presenting developmental hip dysplasia *Bone and Joint Journal* 2015; **97**-B(6):729-33.  
<https://doi.org/10.1302/0301620X.97B6.35395>  
PMid: 26033050
  13. Murnaghan ML, Browne RH, Sucato DJ, Birch J. Femoral nerve palsy in Pavlik harness treatment for developmental dysplasia of the hip *Journal of Bone and Joint Surgery American volume* 2011; **93**(5):493-9.  
<https://doi.org/10.2106/JBJS.J.01210>  
PMid: 21368082
  14. Gans I, Flynn JM, Sankar WN. Abduction bracing for residual acetabular dysplasia in infantile DDH. *Journal of Pediatric Orthopedics* 2013; **33**(7):714-8.  
<https://doi.org/10.1097/BPO.0b013e31829d5704>  
PMid: 23812157

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*Joint Editor*

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