

ULTRASOUND OF NEONATAL HIPS

Ultrasound of Neonatal Hips

Objective To ensure that all staff follow correct procedure for the identification of developmental dysplasia of the hip and the follow up evaluation.

Objective All sonographers, trainee sonographers, registrars and radiologists performing paediatric ultrasound examinations.

Frequency At the clinician's request for infants who have concerning clinical examination and/or history and who are 6 weeks to 6 months of age (or 0-6 weeks of age at the discretion of orthopaedic surgeon).
If unable to get views on older children consider AP pelvis radiograph.

Procedure The following table describes the process to be followed for ultrasonography of the hips in the paediatric patient.

Step	Action
1	Ask the parent/guardian to remove the infant's clothing from below mid abdomen. The nappy can remain in place for the examination then opened on each side for scanning each hip.
2	Place the neonate in a left lateral decubitus position. Ask the guardian to hold the infant in this position.
3	Use linear array transducer, 9-3 MHz, or higher depending on size of infant. Begin by scanning the right hip in a coronal plane. Scan the hip in mildly flexed position, with the knee positioned anterior to the hip. Identify the right femoral head located within the acetabulum. Save images of the femoral head with and without the alpha and beta angle measurements. Save an additional image demonstrating the percentage coverage measurement. (Several images should be obtained on each side.)
4	Roll the infant into a supine position. Place the right hip in a flexed position and hold the right knee in flexion.
5	Place the transducer in a plane that parallels the proximal femoral shaft. Scan along the femoral shaft towards the femoral head to obtain a "Z" view of the shaft, femoral epiphyseal plate and ischium. Save an image.
6	Dynamic scanning of the hip can be performed in the same plane. Dynamic scanning should only be undertaken if the infant is NOT in a Pavlik harness. To administer a dynamic scan apply approximately 4kg of pressure to the anterior aspect of the flexed knee, pushing the femur posteriorly. Subluxation or dislocation of the hip will be displayed by posterior movement of the femoral head relative to the acetabulum.

ULTRASOUND OF NEONATAL HIPS

Ultrasound of Neonatal Hips continued

7	Place the infant into a right lateral decubitus position and scan the left hip following the above steps.
---	---

Note:	
	Alpha angle: Angle formed by the acetabular roof and the cortex of the mid ilium. The normal value is greater than or equal to 60 degrees.
	Beta angle: Angle formed between the cortex of the mid ilium and the triangular labral fibrocartilage (echogenic triangle). The normal value is less than 77 degrees, but is only useful in assessing immature hips when combined with the alpha angle.
	Bony coverage: The percentage of femoral epiphysis covered by the acetabular roof. A value = or > 50% is considered normal.