

Positioning For AP Pelvis Radiographs

Information for Radiology Staff

Positioning for AP Pelvis:

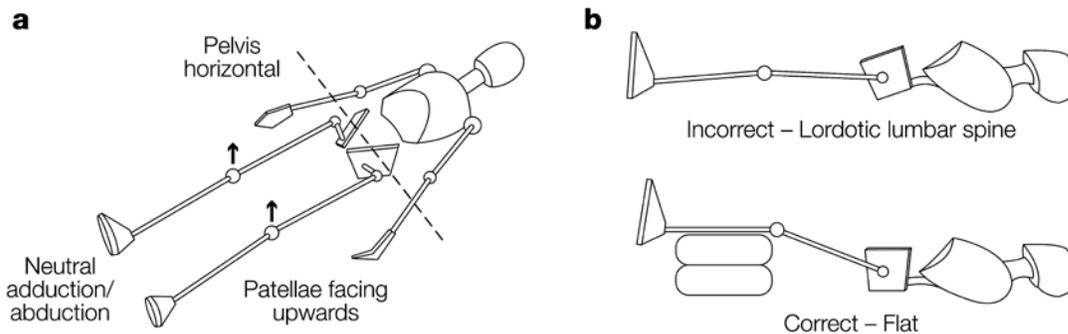


Figure 1: Standardized positioning for an AP Pelvis x-ray

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PLEASE ENSURE THE FOLLOWING:

Neutral Adduction/abduction of the legs.

Neutral rotation of the legs so the patella face upwards.

Flat lumbar spine by elevating the legs, if necessary.

What is the role of radiology in hip surveillance?

Hip displacement cannot be found on clinical exam alone. Radiological monitoring is required. The radiological measure used to monitor hip displacement is migration percentage (MP). MP is defined as the percentage of the ossified femoral head outside of the lateral margin of the ossified acetabulum (Figure 2)²

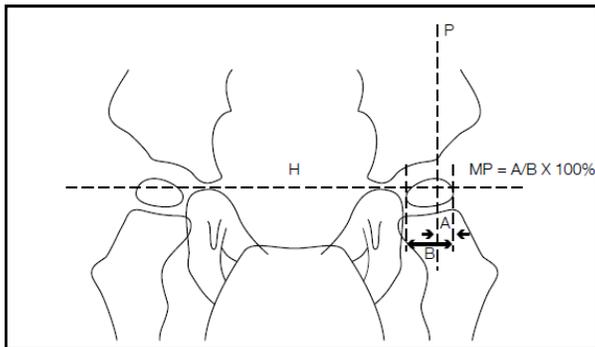


Figure 2: Migration percentage as a measure of hip displacement

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Why is positioning important?

An antero-posterior (AP) x-ray of the pelvis taken in a standardized position (Figure 1a and b) is required to accurately measure the migration percentage and to allow for comparison of sequential radiographs.¹⁻³ MP is affected by the amount of abduction or adduction of the leg.² The legs must, therefore, be positioned in a parallel position. Measurement of the MP requires that the triradiate cartilages be visible and therefore anterior and posterior pelvic tilt must be corrected. This can be done by raising the feet on pillows to flatten the lumbar spine.

What is hip surveillance?

Hip surveillance is the process of identifying and monitoring critical early indicators of progressive hip displacement⁴. Programs in Sweden and Australia have significantly reduced the incidence of hip dislocations, reduced the number of reconstructive surgeries required, and eliminated the need for salvage hip surgeries.^{1, 5-7}

The **Child Health BC Hip Surveillance Program for Children with Cerebral Palsy** aims to ensure that all children with cerebral palsy (CP) and CP-like conditions receive appropriate screening and are referred to a paediatric orthopaedic surgeon at the appropriate time to minimize or prevent complications associated with hip dislocations. The program is based on consensus achieved by stakeholders across the province, including orthopaedic surgeons, physiotherapists, occupational therapists, pediatricians, family physicians, a radiologist and radiology technician, parents, policy makers, and health administrators.

What is hip displacement?

Hip displacement, or subluxation, is the gradual movement of the femoral head laterally from under the acetabulum (Figure 3). It is the second most common deformity in children with CP.⁸ The overall incidence is approximately 30%, with up to 90% of children that are most severely affected being at risk for hip displacement.⁹⁻¹¹ Early surgical intervention, prior to dislocation, is recommended for children with CP to keep the hip in joint, mobile, and pain free.^{5,12}

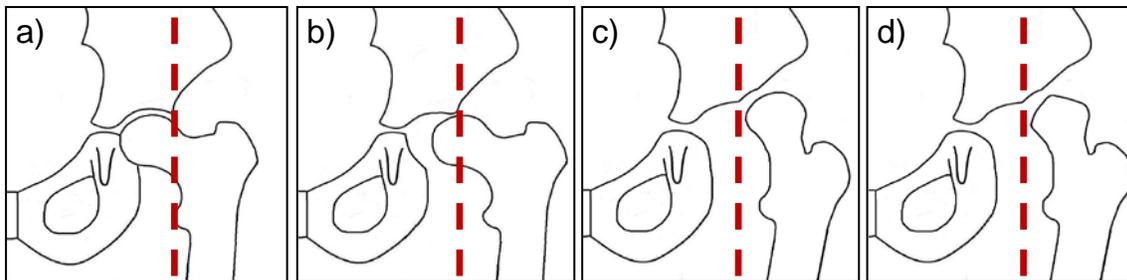


Figure 3: Progressive hip displacement: a) Normal hip, b) Displaced hip, c) Dislocated hip, d) Dislocated hip with damage to the femoral head

References: 1) Dobson F et al. *J Bone Joint Surg [Br]*. 2002; 85-B: 720-726. 2) Reimers J. *Acta Orthop Scand*. 1980;184:1-100. 3) Scrutton D. *Dev Med Child Neurol*. 1989; 31:108-116. 4) Wynter M et al. *J Pediatr Rehabil Med*. 2011; 4: 183-195. 5) Hagglund G et al. *J Bone Joint Surg [Br]*. 2005; 87-B: 95-101. 6) Gordon GS & Simkiss DE. *J Bone Joint Surg [Br]*. 2006; 88-B: 1492-6. 7) Kentish M et al. *J Pediatr Rehabil Med*. 2011; 4: 205-217. 8) Cornell MS *Clin Orthop*. 1995; 340: 165-171. 9) Connelly A et al. *J Pediatr Child Health*. 2009; 45: 437-443. 10) Hagglund G et al. *BMC Musculoskeletal Disorders*. 2007; 8: 101-107. 11) Soo B et al. *J Bone Joint Surg Am*. 2006; 88:121-29. 12) Valencia FG. *Orthop Clin N Am*. 2010; 41: 549-559.