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ADULT HIP JOINT (ACETABULAR) DYSPLASIA
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Figure A
The incidence of hip dysplasia varies with ethnicity but is reported to be 1-3% of the newborn population in western societies (1). Minimal degrees of dysplasia may avoid clinical detection in early childhood and present later in early adult life with premature osteoarthrosis. A longitudinal prospective study of 86 dysplastic adult hips conducted in Japan, where hip joint dysplasia is common, showed the onset of OA in 47% after 8 years and 100% after 10 years. (2)

Risk factors for hip dysplasia include joint hypermobility, a large neonate, or small uterus, and greater risk to the first born child. A breech presentation increases the risk of developmental hip dysplasia to more than 40%. Children, particularly daughters of fathers with developmental hip dysplasia have 12 times the risk of developing the condition themselves. It more commonly affects the left hip and more than 80% of cases occur in females. The deformity is bilateral and 40% with varying severity on either side. (1)

Radiographically there are 2 patterns are dysplasia in the adult hip (3)

**Type I: Sloping acetabular roof**

A line drawn through the medial and lateral ends of the weight-bearing area of the acetabular roof is not horizontal with the outer end, being higher than the inner end. There is consequent anterolateral migration of the femoral head relative to the teardrop. This consequently displaces the weight-bearing load of the hip laterally with compensatory hypertrophy of the labrum and capsule in an attempt to cope with the abnormal stresses. Eventually, the labrum will tear and the hip joint will degenerate.

**Type 2: Short acetabular roof**

In this form the femoral head is well-positioned but the acetabular roof is short and provides insufficient cover. Thus, the load in weight-bearing is distributed across a smaller than normal bone surface area, again resulting in labral tear and hip joint degeneration. A standing pelvic radiograph is the most useful investigation to diagnose adult acetabular dysplasia. (Figure A)

**Radiographic measurements - 3 useful methods may be employed (4)**

1. Shenton’s line. (Fig B)
2. Acetabular index of the weight-bearing zone (Tonnis). Angle is formed between a line parallel to weight-bearing dome & line parallel to into teardrop line.
3. Lateral centre-edge angle of Wiberg. An angle formed by a line drawn perpendicular to a line through the centre of the femoral head and a line from the centre of the femoral head to the superior border of the acetabulum. (Fig C)
Figure C: Acetabular index of the weight bearing zone (Tonnis angle) & Lateral Centre-Edge angle (LCE) of Wiberg.
References

1. Sturridge, S; Bankes, MJK. Acetabular Dysplasia in Adults. J. Bone Joint Surg. 2010

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