

The early diagnosis of congenital dislocation of the hip

The saga concerning the early diagnosis of congenital dislocation of the hip (CDH) continues to expand, and this issue of the *Journal* adds three more papers to the literary store. Two of them report experience with clinical and ultrasound scanning for early diagnosis and the third discusses, in a controversial way, the value of these diagnostic methods.

For orthopaedic surgeons, early diagnosis enables successful treatment to result in normal development of the hip. However, despite scientific advances, numerous problems remain. The legal profession is interested, since some parents seek compensation for the poor results of treatment after what they regard as late or missed diagnosis. What progress has been made in early diagnosis and management?

It has for long been known that early diagnosis is possible (Ortolani 1937) and it is more than 30 years since the papers by Barlow (1962) and von Rosen (1962) caused an enthusiastic explosion of interest. Longer-term results, however, from other centres were not as good as had been hoped, and even with early diagnosis the outcome was not always completely successful. The incidence of hip instability detected in the newborn was much greater than the true incidence of congenital dislocation, yet infants still presented for late treatment at a rate of approximately 0.4 to 0.6 per thousand live births (MacKenzie and Wilson 1981). This represents about one-third of the true incidence of CDH in unselected populations. Either the tests were inadequate or they were badly performed; or perhaps some infants who were apparently normal at birth developed late instability and subluxation. It was shown that dedicated, thorough clinical examination could reduce but not eliminate the rate of late diagnosis (Moore 1989; Macnicol 1990; Krikler and Dwyer 1992).

It is now believed that there is a spectrum of conditions which may be diagnosed during the first few months of life (Catterall 1984). These range from an established dislocation irreducible at birth (which is often missed) to simple neonatal instability, which usually settles completely without treatment. An important group

are those with an eccentrically placed hip; this may go on to acetabular dysplasia with subluxation, although some represent no more than normal variants. Ortolani (1937) suggested the term congenital dysplasia, since it is clear that not all abnormal hips result from congenital dislocation. Klisic (1989) suggested the term Developmental Dysplasia of the Hip (DDH) and this term has now been adopted by the American Academy of Orthopaedic Surgeons. This implies a spectrum of conditions which may evolve over time, and is preferred to 'CDH' for future reports.

One approach to the continuing incidence of late presentation has been to pay increased attention to infants known to be at increased risk. Risk factors include breech position, a family history of DDH, neonatal hip instability, clicking hips, and the presence of other deformities such as abnormal feet, torticollis or plagiocephaly (Cunningham et al 1984; Jones and Powell 1990). In this issue of the *Journal* Boeree and Clarke (p. 525) report the combination of clinical and ultrasound methods of diagnosis for the 'at-risk' group. They found that 7% of all infants required screening at a special clinic and that 6.23% of these needed treatment (4.4 per thousand live births). Nevertheless, they report late diagnosis in 0.2 per thousand. Their risk categories did not include infants born by caesarean section or those who had been cared for in special care units, although Hansson, Nachemson and Palmén (1983) reported a high incidence of hip anomalies in these groups. Ultrasound screening of the high-risk groups did reduce the incidence of late referral, but only to the level reported after the dedicated clinical examination of all cases (Moore 1989; Macnicol 1990). The unhappy conclusion must be that whatever tests are used at birth or later, they need to be applied to all infants and not just to the 'at-risk' population.

Ultrasound examination was introduced in the early 1980s (Graf 1984; Clarke et al 1985; Berman and Klenerman 1986). Its great advantages over radiography are that there is no irradiation and that the cartilaginous femoral head is visualised directly. For enthusiasts, it is 'the solution', but for others it provides a blur of black and white dots and smudges whose interpretation may be a matter of conjecture. Protagonists claim to be able to monitor acetabular development and to separate the signs of immaturity (Graf 2a) from those of serious dysplasia. Examination involves finding the cartilaginous femoral head and observing the acetabulum in relation to it. The orientation of the acetabulum is rarely considered,

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