

## Editorial

# Neonatal hip instability, developmental dysplasia of the acetabulum, and the risk of early osteoarthritis

This issue of Acta presents two articles dealing with (1) early diagnosis of neonatal hip instability (NHI) (Finne et al. 2008), and (2) the associated risk of total hip replacement (THR) in young adulthood (Engesaeter et al. 2008). The problem of nomenclature is immediately apparent, since the article on early diagnosis deals with unstable rather than dysplastic hips; yet the title suggests something else. The difficulties arising from nomenclature are also a source of problems in the THR article.

The unstable hip (dislocated or dislocatable) should be diagnosed shortly after birth, perhaps allowing for the immature hip to “ripen” before a definitive decision to treat is made, i.e. inducible incomplete uncoverage of the femoral head should be allowed 2–4 weeks to correct spontaneously. Ideally, the dysplastic acetabulum (with or without the feature of neonatal instability) should be diagnosed by the age of about 5 years. There is nothing to indicate that acetabular dysplasia is treatable by conservative means, while spontaneous resolution is very common provided that the hip is located (Terjesen et al. 1996, Wood et al. 2000).

How is NHI defined? One of the current difficulties is that there is no consensus about this. It is a problematic solution to define congenital dislocation of the hip as “the institution of orthopedic treatment” as done by Finne et al. (2008), and they do realize that this is a weakness of their study. In the randomized Norwegian studies (Rosendahl et al. 1994, Holen et al. 2002), the decision to treat was based on well-defined clinical and ultrasound criteria. In these studies, the treatment rates were low with clinical screening and selective ultrasound screening (2.0% and < 1%), and the frequencies of late-detected cases (after the age of 1 month) were low (0.7‰ and 0.65‰). In the study by Holen et

al., a subsection of patients with clinical instability or femoral head coverage below the borderline values (47% in boys and 44% in girls) was only treated if repeat examination at two weeks of age confirmed abnormal clinical or ultrasound findings. This is presumably helpful in keeping the treatment rate low. Most importantly, screening in both of these studies was carried out by physicians with long-standing experience. The relatively high incidence of late-detected cases with selective ultrasound screening reported in this issue of Acta can be attributed to varied experience in the examining physicians and to a lack of strict criteria for treatment.

Acetabular dysplasia is a risk factor for the development of osteoarthritis in young adulthood (Russell et al. 2006). Developmental dysplasia of the hip (DDH) is now the accepted term for NHI, but the term also includes those with dysplastic features of the acetabulum and femoral head who do not present with any degree of instability of the hip joint. The article by Engesaeter et al. identifies patients with an established diagnosis of NHI, to see how many of these patients went on to develop osteoarthritis of the hip that was severe enough to warrant total hip replacement (THR) in early adulthood. The authors found a 2.6-fold increased risk compared to non-NHI THR patients, yet with a low absolute risk of 57 per 100,000. It is apparent from their data, however, that the risk of NHI-related severe osteoarthritis increases quite dramatically with age after about 25 years of age (Engesaeter et al., Figure 1). The register-based study identified 95 young THR patients who had osteoarthritis secondary to hip dysplasia, and only 8% of these had been treated for NHI. This is a clear indication that, generally speaking, hip dysplasia is not diag-

nosed in the neonatal period unless clinical instability is found, or—with supplementary selective ultrasound screening—there is a significant degree of static or inducible uncoverage of the femoral head. Recently, it was shown that certain findings from ultrasound (dynamic coverage index  $\leq 22\%$ ,  $\alpha$ -angle  $< 43$  degrees, abnormal echogenicity of the acetabular roof) before treatment of NHI predict poor acetabular development later on (Alexiev et al. 2006). However, neonatal ultrasound measurement of the  $\alpha$ -angle does not appear to correlate with radiological measurement of the acetabular index later on (Castelein et al. 1992). It appears that the methods that are available to screen for acetabular dysplasia without NHI at an appropriate age (4–5 years of age would seem reasonable) are radiographs or MR scans of the pelvis. It remains to be seen whether these methods are risk-effective or cost-effective. A reasonable alternative to childhood detection and treatment of acetabular dysplasia other than late THR is treatment of symptomatic patients with acetabular dysplasia by periacetabular osteotomy in adolescence or later on.

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