Commentary

Protrusio acetabuli: a specific pincer hip disease

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The pincer effect is an infrequent subtype of femoroacetabular impingement (FAI). In our experience, cam deformities are more common, easier to treat and have more consistent post-operative outcomes than the pincer FAI subtype. In pincer morphologies, over-coverage of the femoral head may occur in a critical area, limiting range of motion and leading to joint damage. Protrusio acetabuli is perhaps the most severe pincer form with global involvement. In these cases, surgical dislocation with acetabular rim trimming is preferred to the arthroscopic technique (1).

Hanke *et al*. (2), an expert group, performed over 1,300 surgical hip dislocations in the past 20 years. Their vast experience with this technique enabled a retrospective case-control comparison study of 39 protrusio acetabuli and 86 control hips with another form of pincer FAI. At 10-year follow-up, they noted decreased survivorship in the protrusio group (51% *vs*. 83%, P<0.001) with 12 conversions to total hip arthroplasty 12/39=31%). Readers must keep in mind that these patients underwent a complex intervention by an experienced team. In other hands, the success rate of this procedure may be lower.

In comparison to other pincer hip problems, where impingement is limited, protrusio acetabuli is a specific patho-anatomy that includes global over-coverage and medialisation of the femoral head centre of rotation. Treating the pathology involves detaching/removing the labrum to enable circumferential acetabular rim trimming. Even when performed adequately, abnormal hip centre of rotation is maintained. Both the less invasive procedure required by the limited disease and the less disturbed anatomy of the pincer control group may explain the better clinical results obtained in comparison to the protrusio acetabuli group. In addition, study bias—such as lower pre-operative Merle d'Aubigné score—may play a role. On the other hand, the protrusio group had shorter follow-up, including some patients with 2-year follow-up, while the control group showed a more consistent range (10–13 years). It is likely that, with comparable follow-up, the protrusio group could incur worse survivorship.

The whole FAI concept relies on premature contact between the femoral neck and acetabulum rim. We expect that acetabuloplasty would increase post-operative range of motion. Interestingly, Hanke *et al*. report a small difference in range of motion at final follow-op. This could be explained by loss of motion over time secondary to osteoarthritic changes or by persisting extra-articular impingement, especially in the protrusion group where hip centre of rotation is medialized (3). It would have been interesting to know how much range of motion patients gained in the immediate post-operative period. Nevertheless, it is still being debated whether pain relief derives from acetabuloplasty, labral repair/debridement or concomitant femoral neck osteoplasty.

Acetabuloplasty through surgical hip dislocation is an uncommon procedure for impingement secondary to protrusio acetabuli. The factors associated with better outcome are low body mass index and low pre-operative Tönnis osteoarthritis score. The long-term results from Hanke *et al*. study demonstrated a high rate of degenerative changes despite optimal surgical treatment. Consequently, we believe that surgery should be offered to patients as a way of relieving symptoms but not as an osteoarthritis

prevention tool.

The pincer effect in FAI may be more complex than previously thought. These long-term results prove that we still ignore the best treatment and the best way to prevent osteoarthritis. There is definitely a trend in considering FAI as a dynamic phenomenon rather than a purely hip joint patho-anatomy. Surrounding articulation and muscle biomechanics may be important in the occurrence of FAI hip joint damage and secondary symptoms. It is currently difficult to measure and analyze proximal femur motion with regard to lower spine, pelvis and lower limb movements. For example, during the gait cycle, athletes with nearly normal X-rays could have abnormal pelvic tilt and still experience FAI. This may explain, in part, the success of conservative treatment of some FAI cases. Comparative studies in the form of randomized control trials are currently in progress and should determine the real benefits of FAI surgical treatment options (4).

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Footnote

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