Editorial

Are we failing in hip protrusio treatment?

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Comment on: Hanke MS, Steppacher SD, Zurmühle CA, *et al.* Hips With Protrusio Acetabuli Are at Increased Risk for Failure After Femoroacetabular Impingement Surgery: A 10-year Followup. Clin Orthop Relat Res 2016;474:2168-80.

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In a recent article published in Clinical Orthopaedics and Related Research, Hanke and colleagues (1) reported the longest follow up trial available in the literature about the survivorship of hips with protrusio acetabuli treated with circumferential acetabular trimming through surgical hip dislocation. This group of patients was compared with a group of pincer type femoroacetabular impingement (FAI) without severe overcoverage. Severe pincer impingement (protrusio acetabuli) is an established cause of hip pain and osteoarthritis (OA): the acetabular roof is negatively tilted and typically deep with relative global overcoverage of the femoral head that overlaps the ilioischial line medially and protrudes in the true pelvis; therefore the size of the lunate surface is increased and leads to a pincer type FAI. Safe surgical hip dislocation described by Ganz *et al.*(2) with circumferential rim trimming and labral refixation or reconstruction is the current gold standard treatment for this acetabular morphology. Unfortunately this study underlines a poor expectation of survival in half of the hips with protrusio acetabuli compared with the control group according to Kaplan and Meier method's endpoints (1): conversion to total hip arthroplasty (THA), radiographic progression of osteoarthritis, and Merle d'Aubignè-Postel score less than 15 points.

Those results may discourage surgeons but, we think the published outcomes may be improved.

First, this study collects 10-year-old indications when several keypoints about the relationship between FAI and arthritis were not known. Therefore we agree with the authors' conclusions about the potential benefit with proper patient selection through predictors, i.e., radiographic parameter and age. Second, as mentioned in the article, in a total of 21 hips with an ossified labrum only two cases underwent labral graft reconstruction. One case used the femoral head ligament and the fascia lata in the other. All the others were treated trough a labrectomy. Recent publications reported that labral reconstruction improves hip intra-articular fluid pressurization, hip stability to distractive forces and reduces contact pressure in the hip joint (3,4). Furthermore Bathia *et al.* (5) emphasized how hip labral reconstruction may be a good option for pain and discomfort in patients with a degenerative native labrum and showed the indications for labral reconstruction including ossification or degeneration of the existing labrum. From our point of view, preserving labral integrity has become the main goal in this surgery because an intact labrum provides a biomechanical advantage to the hip. Thus, repair, reattachment, or reconstruction of the labrum may warrant the free range of motion of the hip and slow the progression of arthritis. Therefore, we postulate a higher rate of labral reconstruction may increase patients satisfaction and may decrease failures.

Third, new technologies have been developed in order to minimize the risks and to improve the precision the precision of the surgery (6). For example, three-dimensional reconstruction, analyses, and simulation of hip range of motion are currently available on the market (7). A virtual surgical plan is created and can guide intra-operative navigation, improving the accuracy of surgical correction (8). These software packages may simplify the procedures and, in our opinion, may over-come the three negative predictors related to a suboptimal surgical technique.

Other treatment possibilities for the patient should also be considered. As mentioned by Hanke (1), a comparison of surgical dislocation with other treatment for protrusio acetabuli is not possible due to the lack of reported results.

Furthermore, choices are limited to non-operative treatment, intertro-chanteric valgus osteotomy, arthroscopy, or THA. Recent literature reviews investigating nonoperative management for FAI have stated that these methods improve function and symptoms in patients with prearthritic hip disease, but fail to improve hip range of motion. However, it is important to note these reviews also conclude that the current evidence on this topic is low of quality (9). Additionally, nonoperative management should be limited to six months from symptom onset because a delayed surgery has poorer outcomes (10). Labral tear and Chondral injury continue to degenerate while the patient's symptoms may improve at the beginning of the treatment because of sport avoidance, anti-inflammatory drugs and/or physiotherapy (11,12). As stated by Hanke, intertrochanteric valgus osteotomy does not seem to be a solution because it does not fully address the main bone abnormality, therefore it lost his fashion in the last decade (13). Protrusio acetabuli may also be treated with hip arthroscopy according to recent published papers (14) but the outcomes are preliminary and the technique is quite demanding, therefore we think that arthroscopic treatment of this deformity should be performed in centers with high volumes of hip arthroscopies and recommended in borderline patients with one or more negative predicting factors. Another choice may be a THA because it has clearly shown outstanding results on pain and function, however, survivorship in young patients is shorter (15). Young and/or active people are more prone to revision. Since patients who are candidate for hip preserving surgery are usually young, they may choose this treatment but they should be informed of the high probability of multiple revisions with their subsequent loss of function.

In conclusion we think that, even in the light of suboptimal results, surgical dislocation is still the gold standard treatment for protrusio acetabuli. That said, indications and surgical technique should be strictly respected to avoid high rate of failure. In the future, three-dimensional simulations may be useful to improve our results and studies with higher evidence are required to compare this technique with the other options for severe acetabular dysmorphisms.

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Footnote

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