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CORR Insights

CORR Insights®: Rotational Acetabular Osteotomy for Pre- and Early Osteoarthritis Secondary to Dysplasia Provides Durable Results at 20 Years

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Where Are We Now?

Residual acetabular dysplasia is one of the most frequent causes of hip osteoarthritis (OA) [2]. For young and active patients, joint preserving osteotomies are the treatment of choice to prevent OA and subsequent THA, as these patients are likely to outlive their implants. Among the different surgical options to treat acetabular dysplasia, there has been a shift from femoral toward acetabular-sided procedures [7].

The most common procedure performed in the treatment of acetabular dysplasia is acetabular reorientation. Today, acetabular reorientation is performed by juxtaarticular osteotomies such as the triple-pelvic osteotomy, the Bernese periacetabular osteotomy, and the rotational acetabular osteotomy. As for almost all joint-preserving procedures, advanced age and OA are considered to be associated with an increased proportion of failures [1]. Interestingly, in several recent studies from Japan [4, 6], contrary to findings from Western studies, age and preexisting OA have not been associated in a comparable high percentage of inferior clinical scores, OA progression, or even conversion to THA [1].

In the current study, Yasanuga and colleagues performed one of the few 20-year follow-up studies on the treatment of hip dysplasia with rotational acetabular osteotomy. The results of the study compare well to previously reported long-term data on rotational osteotomies from Japan [4, 6]. Reported outcomes in all of the Japanese studies were found to be superior to those at 20-years following the Bernese periacetabular osteotomy [10].

Where Do We Need To Go?

As Yasanuga and colleagues show in their study, there is a difference in the clinical scores, OA progression, or even conversion to THA, between patients with rotational acetabular osteotomy and those with Bernese

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periacetabular osteotomy. What accounts for this discrepancy? In Western studies, patients with established secondary osteoarthritis, or those who are older than 40 years of age are not considered to be good candidates for pelvic osteotomies.

Future studies on the topic will also need to address confounders such as BMI, lifestyle, and patients' expectations, as these patient characteristics could account for the considerably better clinical and radiographic outcomes reported in Japanese patients compared to Western patients. Anterior femoroacetabular impingement (FAI), a well-described cause of failure to preserve the re-orientated joint, could be another confounder for the poorer outcome after Bernese periacetabular osteotomy in Western populations. FAI is less prevalent amongst Japanese compared to Caucasians [3, 8, 9, 11] and this could have a positive impact on the chances of preserving the re-orientated joint in this cohort. Future studies will need to address these gaps in our knowledge.

How Do We Get There?

It would be interesting to compare the results of the Bernese and the rotational acetabular osteotomies in the same population. The study would likely only assess Japanese patients since rotational acetabular osteotomies are typically not used in Western countries. Such study would test whether medialization of the acetabular fragment, with the associated reduction in the joint reaction forces, which is only possible with the Bernese PAO, provides any clinical benefit. Moreover, such study could test whether the Bernese osteotomy, an abductor-sparing procedure contrary to the rotational acetabular osteotomy, is associated with superior abductor function. In this respect, future studies should avoid the use of measures such as the Merle d'Aubigne score or the Harris hip scores since they have been designed for older patients with THA, rather than a younger patient population. More timely global-, joint-, and disease-specific or generic outcome instruments such as WOMAC index, Oxford hip or knee scores, the University of California at Los Angeles activity scale, or EuroQuol-5 dimension, or several others [5] would most likely better reflect results in younger, more active patients who typically undergo these procedures. Lastly, in future studies, radiological assessment for progression to OA should employ modern imaging, such as MRI, rather than AP pelvic radiographs.

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