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CORR Insights®: Survivorship of the Bernese Periacetabular Osteotomy: What Factors Are Associated With Long-term Failure?

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Where Are We Now?

Developmental dysplasia of the hip (DDH) is one of the most challenging conditions for orthopaedic surgeons to manage. Its natural progression often leads towards secondary osteoarthritis of the hip joint, which can occur as early as

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adolescence [2]. THA is the mainstay of treatment for adults who are not expected to outlive their prosthesis, or in whom only a few revision arthroplasties are anticipated. Adult patients can expect reliable and successful results following THA for treatment of DDH, and oftentimes undergo one revision or fewer [3, 7].

However, younger, more active patients with symptomatic DDH historically have had less-reliable treatment options. Ganz et al. [4] described a reorientation osteotomy whereby a medial and lateral displacement of the acetabular fragment results in a more even distribution of hip-joint forces. While early results of the Bernese periacetabular osteotomy (PAO) have been encouraging, [1] patient-reported outcome data are limited. Moreover, there has been limited study reviewing the factors associated with failure in osteotomy

procedures [7]. Clinicians lack the necessary prognostic data to identify which patients will benefit most from a PAO, and it can be difficult to determine when such procedures should be performed [2].

The present study by Wells and colleagues represents one of the largest and most comprehensive analyses of PAO outcomes at long-term followup. The authors are to be commended for focusing their main outcomes on patient-reported measures. Historically, “failure” following PAO has been defined as a conversion to THA. However, as the authors correctly note, this is not sufficient, and it does not help us determine which patients to operate on, or when in the course of treatment to do so.

Where Do We Need To Go?

Going forward, it will be necessary to determine which patients will most benefit from PAO. Although the study by Wells and colleagues does not directly answer that question, it does offer invaluable data regarding which patients can expect better or worse outcomes.

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Wells and colleagues concluded that patients under 25-years-old, those with a preoperative minimum joint space between 2 mm and 5 mm, and those with good preoperative hip congruency were most likely to report good functional results, and were less likely to require early conversion to THA. Steppacher et al. reported similar findings [7]. Future studies will need to clarify which patients to operate on, and at what point in the course of the condition it is best to intervene. Future studies also need to help inform us about how best to manage those patients with poor prognostic factors. As Kosuge et al. note [5], not surprisingly, it is these young patients with severe dysplasia who are most likely to suffer profound disability. It therefore would seem especially important to focus future efforts on the management and outcomes of this challenging subgroup of DDH patients.

How Do We Get There?

Without high-quality Level I or Level II evidence on the topic, answering these questions will remain difficult. While such data will be practically difficult to obtain, in the interim, if providers are able to remain vigilant and identify—and report on—patients with some of the risk factors identified by Wells

et al., a larger, collective analysis would be useful. Fortunately, adolescents with severe, untreated DDH now present less frequently, and a large, retrospective analysis, or meta-analysis, would be especially valuable, and perhaps necessary to identify which patients are best managed with surgery [6].

It is important to note that patients with more severe disability may in fact benefit the most from acetabular reorientation—despite their greater risk of reoperation. All the factors identified in the present study have been associated with increased disability from osteoarthritis (irrespective of a diagnosis of DDH or a PAO procedure) [5]. Patients with untreated DDH can expect to have poor hip function, and it is possible that intervention through PAO may lead to better patient outcomes and greater quality of life [2, 8].

Going forward, future research must focus on these “high-risk” patients and those with other poor prognostic factors. In the meantime, surgeons should be reminded that proper patient selection for a PAO cannot be calculated with any specific algorithm or guideline, and criteria for surgery should be based on a thorough history, physical, and radiographic examination.

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