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CORR Insights

CORR Insights®: The John Charnley Award: Redefining the Natural History of Osteoarthritis in Patients With Hip Dysplasia and Impingement

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Where Are We Now?

Defining the natural history of osteoarthritis remains the "orthopaedic Holy Grail." Many challenges have kept us from developing a fuller knowledge of the causes of arthritis, including a better understanding of the role of skeletal morphology, the capacity of cartilage to withstand load, the natural process of aging, the impact of disease or genetic factors upon the intrinsic mechanical properties of cartilage, and the cross-talk between cartilage, bone, muscle, nerve and other periarticular tissues. This award-winning paper provides an interesting longitudinal analysis of a cohort of patients with a replaced hip on one side, and a radiographically nonarthritic hip on the other, charting the natural history of the nonoperated hip.

Using a longitudinal study design and a carefully selected group of patients, the authors stratified groups by parameters associated with dysplasia and impingement, and found that degenerative changes occurred earliest in patients with dysplasia, while patients with femoroacetabular impingement did not develop arthritis more rapidly than did patients with structurally normal hips.

Where Do We Need To Go?

The analysis and stratification of specific radiographic parameters is a particularly important part of this analysis, which may allow greater generalizability of the results and application of the analysis in future studies.

Still, there are a number of important issues that remain, such as the relative contribution of acetabular and femoral side morphology in the impingement group, the variability of arthritis progression that is present within each grouping of bone morphology, the potential for undefined underlying primary cartilage abnormalities, and the potential confounding factors associated with using a total hip replacement

This CORR Insights® *is a commentary on the article* "The John Charnley Award: Redefining the Natural History of Osteoarthritis in Patients With Hip Dysplasia and Impingement" *by Wyles and colleagues available at:* DOI: 10.1007/s11999-016-4815-2.

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cohort such as gait alternations and other treatment rendered in the course of being a surgical patient.

Most importantly for surgeons and their patients, is an understanding of whether surgical treatment will change the natural history. Wyles and colleagues speculate on this issue as it relates to surgery for hip impingement, questioning the role of surgery for impingement patterns when those patients with normal morphology and those with radiographic features of impingement were not found to be different.

How Do We Get There?

There is a need for additional natural history studies on the relationship between hip morphology and degenerative changes in a nonsurgical cohort that might be more generalizable to the healthy population. For example, the findings of this study could be further developed by a longitudinal population study on patients with healthy hips on both sides identified in an at risk population such as certain groups of athletes, military recruits, or offspring of patients who develop hip joint arthritis. Likewise, the results of this study strongly suggest that investigating radiographic or advanced imaging parameters in greater detail could help define a more patient-specific assessment that correlates with the natural history of arthritis. Finally, more prospective clinical work is needed to define the role of surgical intervention for both dysplasia and impingement, but especially for impingement procedures where there remains a strong surgical and nonsurgical equipoise.