CORR Insights™: Femoroacetabular Impingement Predisposes to Traumatic Posterior Hip Dislocation

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Posterior hip dislocation in adults generally is viewed to be a result of high-velocity trauma, typically an impact of the knee against the dashboard or high-energy sports injury, while little attention has been paid to the experience that traumatic posterior dislocations sometimes occur after minor trauma. Four recent publications [5, 8, 10, 11] suggest that femoroacetabular impingement (FAI) may cause this type of “motion-induced” hip instability [1], resulting in hip dislocation after varying degrees of trauma, including, sometimes, lower-energy impacts when they occur against a flexed and internally rotated hip.

In the past, traumatic dislocation has been thought to be a function of some degree of inherent hip instability, perhaps from reduced coverage of the femoral head; however, traumatic hip dislocation rarely is seen in hips with acetabular dysplasia. The abovementioned recent observations [5, 8, 10, 11] support the speculation that leverage, rather than insufficient coverage, may contribute to

traumatic hip dislocation, particularly in the setting of some lower-energy injuries. Perhaps related to this, component impingement has been implicated as a cause of prosthetic hip instability, accelerated wear, and unexplained pain in total hip replacements [7, 9]. The retrospective study by Steppacher et al. corroborates the previously published notion that native hips with traumatic posterior dislocations likely are caused by femoroacetabular collisions, as patients with dislocations in their series were more likely to have morphologic features of FAI, including cam deformities and retroverted acetabulae. Their study had limitations, which they discussed, including the absence of a matched control group assembled for this study (they instead used data from previously published normative cohorts), and the impact of head and rim fractures on their interpretation of radiographic measurements. Even so, their conclusions seem valid, and they fit into the context of the developing literature on this subject [5, 8, 10, 11].

As concluded by Steppacher et al., an explanation for low-energy dislocations most likely is the early interaction between an aspherical femoral head and/or a prominent acetabular rim acting as a fulcrum, making these hips more susceptible to traumatic dislocation. Different activities and vocations, may share common attributes of rapid, forceful, repetitive hip flexion and internal rotation [11]. In light of the kinematic attributes described in several studies [2–4, 6], it is conceivable that these motions, performed in hips with restricted motion, can induce subluxations with subsequent shear stresses (posterior acetabular rim, femoral head), that can produce pathologic changes (posterior labral damage, femoral head lesions) even in the absence of complete dislocations. Future studies, using clinical findings for computational models will shed further light into the phenomenon of motion-induced recurrent joint separations that potentially result in subluxations or even complete dislocations of the hip.

This CORR Insights™ is a commentary on the article Femoroacetabular Impingement Predisposes to Traumatic Posterior Hip Dislocation by Steppacher and colleagues available at DOI: 10.1007/s11999-013-2863-4.

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