Common Acetabular Fracture Patterns in Patients With Femoroacetabular Impingement

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Purpose: Our objective was to determine the most common acetabular fracture types in patients with femoroacetabular impingement (FAI). We hypothesized that the most common type of acetabular fracture seen in patients with FAI differs from the most common type seen in those without FAI.

Methods: After IRB approval, a retrospective medical review was performed using ICD-9 and 10 and CPT codes to identify patients with a diagnosis of acetabular fracture treated operatively and nonoperatively between 2005 and 2017. Patients were excluded if they were greater than 55 years of age or skeletally immature. Medical records were reviewed for demographic information, mechanism of injury, and fracture patterns. AP pelvic post-reduction radiographs were examined for morphological features of FAI. Patients determined to have morphology consistent with FAI were compared to control groups without FAI morphology. Analysis were conducted in SAS.

Results: Between 2005 and 2017, 219 patients with acetabular fractures were identified for inclusion in our study. Of those patients, 221 (87%) met radiographic criteria for FAI and 33 (13%) did not meet radiographic criteria for FAI and were used as a control group. In both men (n = 155) and women (n = 66) with FAI, the most common type of acetabular fracture was associated transverse plus posterior wall (AO/OTA 62B1b/c), with a frequency of 34.8% in women and 27.1% in men. This fracture pattern was seen at a higher rate in FAI patients than expected due to chance alone ($P < 0.0001$). Associated transverse plus posterior wall fractures occurred in 14.3% of women and 9.5% of men in the control group, which is not significantly greater than expected by chance. The most common fracture pattern seen in the control group was posterior wall (AO/OTA 62A1) (24.2%) and associated posterior wall posterior column (AO/OTA 62A2.3) (24.2%).

Conclusion: Patients with FAI have a significantly increased incidence of associated transverse plus posterior wall acetabular fracture compared to patients without FAI. This suggests that there may be a unique mechanism of acetabular fracture in patients with FAI due to their abnormal hip morphology.