

Differences in Acetabular Rim Thickness in Patients with Unilateral Symptomatic Pincer-Type Femoroacetabular Impingement

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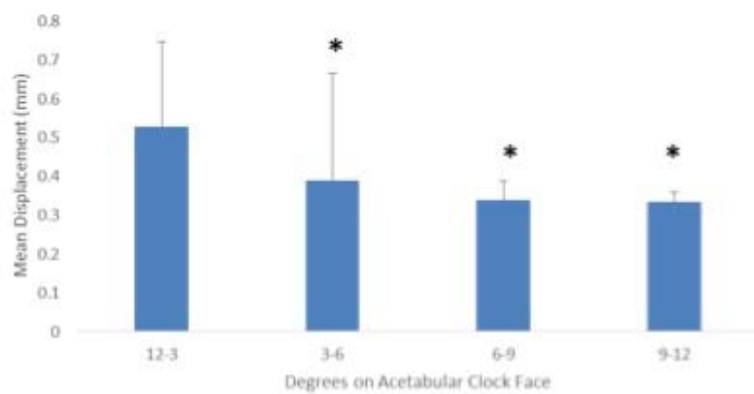
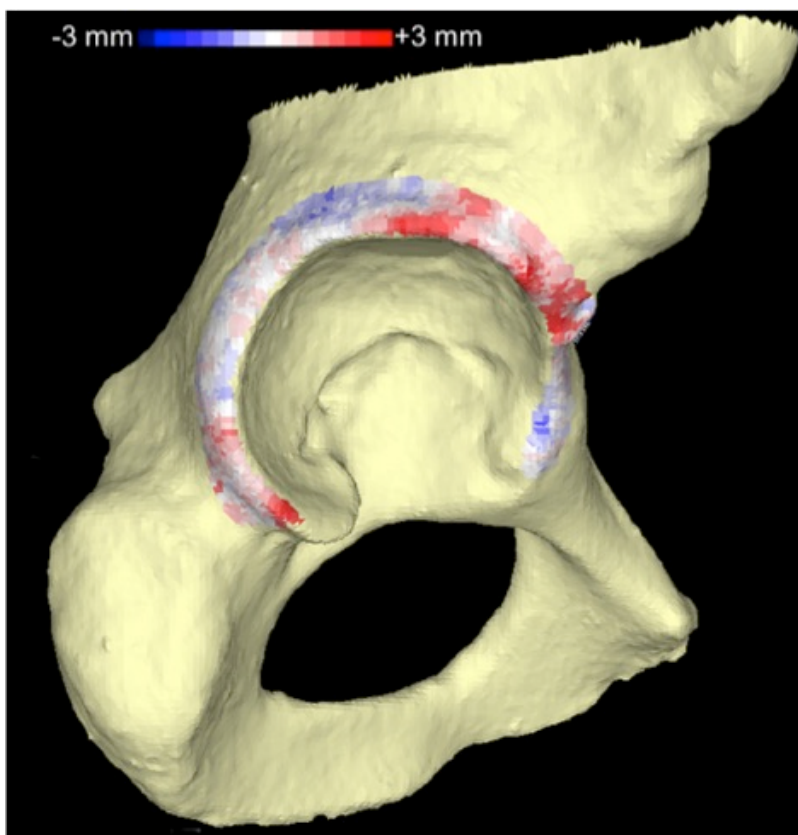
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Objectives: The objective of this study was to identify the location and magnitude of difference in acetabular rim morphology between the symptomatic and asymptomatic acetabula in a cohort of patients with symptomatic unilateral pincer-type FAI.

Methods: After IRB approval, computed tomography (CT) scans of 43 patients (22 males, 21 females) diagnosed with unilateral pincer-type FAI were obtained. CT images of both hips were imported in DICOM format and segmented into 3-dimensional (3D) hemi-pelvises using 3D reconstruction software (Mimics, Materialise, Leuven, Belgium). The point-cloud data of the asymptomatic hemi-pelvis was mirrored onto the symptomatic side. Protrusion of the symptomatic side was recorded as a positive value and appeared as red on the color map (Figure 1). Data was collected in 3° intervals and analyzed by quadrant using the clock face method; reflecting the 12-3, 3-6, 6-9, and 9-12 o'clock positions.

Results: The symptomatic acetabular rim was on average 0.39 ± 0.36 mm thicker than the corresponding location on the asymptomatic rim. When the acetabular clock face was broken up into quadrants, reflecting the 12-3, 3-6, 6-9, and 9-12 o'clock positions, the 12-3 o'clock position demonstrated the greatest difference between symptomatic and asymptomatic sides (Table 1). The 12-3 o'clock quadrant demonstrated significantly greater difference between symptomatic and asymptomatic sides (0.53 ± 0.22 mm) as compared to the 3-6 o'clock position (0.39 ± 0.27 mm; $p=0.006$), the 6-9 o'clock position (0.34 ± 0.05 mm; $p<0.001$), and the 9-12 o'clock position (0.33 ± 0.03 ; $p<0.001$). There was no correlation between gender and magnitude of difference at any location.

Conclusion: Small changes in acetabular rim morphology, on the order of 0.5 mm or less can be the difference between symptomatic pincer-type FAI and the asymptomatic state. Knowledge of the healthy, unaffected side in unilateral FAI may provide a better template for rim recession rather than broadly applying previously described anterior or lateral center-edge angle parameters.



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