

## Zona Orbicularis Thickness: Association with Outcomes After Hip Arthroscopy

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**INTRODUCTION:** The zona orbicularis(ZO), a ring of tissue around the femoral neck, is an important stabilizer for the hip joint in distraction. This study aims to evaluate the relationship between ZO thickness and functional outcomes for patients undergoing hip arthroscopy for acetabular labral repair.

**METHODS:** This prospective study included patients who, after failing conservative treatment, underwent primary hip arthroscopy for symptomatic labral tears secondary to femoroacetabular impingement by a single surgeon. Patients were enrolled for this study prior to surgery and completed surveys for modified Harris Hip Score(mHHS), international Hip Outcome Tool(iHOT), Hip Outcome Score Sports Specific Score(HOS-SSS), Hip Outcome Score Activities of Daily Living(HOS-ADL), and Non-Arthritic Hip Score(NAHS). Excluded patients were <18 years of age, had Tönnis grade $\geq$ 2, hip preoperative MRI arthrogram, two blinded board-certified musculoskeletal radiologists measured the ZO of the affected hip in the coronal plane utilizing the slice with the largest femoral head diameter; adjudicated measurements were used in the final analysis. The patients were divided in the bottom 25%, middle 50%, and top 25% based on ZO thickness. Multivariate linear regression was used to compare continuous variables, and categorical variables were compared using chi-squared tests. This study was approved by the IRB.

**RESULTS:** The present study included 115 patients(48.7% female; mean age $\pm$ SD:35.0 $\pm$ 11.55). Multivariable linear regression analyses adjusting for demographic, radiographic, and intraoperative findings demonstrated that the patients in the top 25% cohort experienced significantly superior postoperative mHHS, iHOT, HOS-SSS, HOS-ADL, and NAHS scores(all  $p<0.05$ ) up to 5 years of follow-up when compared to other cohorts. There were no significant differences in baseline PROMs between cohorts, regardless of patient ZO thickness (all  $p>0.05$ ).

**CONCLUSION:** Increased ZO thickness in arthroscopic acetabular labral repair patients is significantly associated with improved postoperative functional outcomes but is not associated with preoperative symptoms. Maintaining ZO integrity during hip arthroscopy may minimize iatrogenic instability and promote superior patient outcomes.

**SIGNIFICANCE:** The ZO is an essential structure in the hip joint and should be preserved when performing a capsulotomy to improve functional outcomes after surgery.