

# Editorial Commentary: Arthroscopic Treatment for Diminutive Hip Labral Size: Go Big or Go Home?



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**Abstract:** The diminutive (or hypoplastic or hypotrophic) hip labrum presents a unique surgical challenge in the setting of femoroacetabular impingement syndrome for many hip arthroscopists. Insufficient labral tissue leads to increased risk for suture cutout or overeversion, with resulting loss of suction seal when attempting arthroscopic repair. Although some surgeons have demonstrated clinical improvement after performing primary refixation of the diminutive labrum, others have reported inferior outcomes for patients with labral width <4 mm compared with patients having normal or larger labral width. Alternative treatment methods, including labral reconstruction or labral augmentation with autograft or allograft, may be effective, based on select single-surgeon studies. As further research is needed to fully evaluate outcomes of these techniques, hip arthroscopists should recognize the difficult task at hand and be prepared to use assorted treatment options to augment a diminutive labrum. Larger labra can maintain contact with the femoral head after repair, and techniques such as labral base fixation can help to preserve this interaction and recreate the suction seal.

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Although there are many controversial topics within the realm of hip arthroscopy, arthroscopic repair of acetabular labral tears is widely considered to be a valuable surgical advancement that has led to improved patient outcomes in the setting of femoroacetabular impingement syndrome (FAIS). Multiple studies have shown the increased benefits of repairing the native labrum, which preserves structural integrity and maintains the suction seal of the hip as opposed to debridement.<sup>1,2</sup> However, not all labral tears are amenable to repair, as severe fragmentation, segmental defects, labral ossification, and even variations in the native shape and size of the labrum can make anatomic refixation very difficult to impossible. The diminutive (or hypotrophic/hypoplastic) labrum, classically defined as labral width <4 mm, is one such anatomic variation that can vex even the most seasoned hip arthroscopist.

Arthroscopic treatment of the diminutive labrum is difficult because of multiple factors. First, the small circumferential size of the labrum leads to high risk for

tissue cutout when passing and tying high-tensile sutures. Second, the diminutive labrum is easily over-everted when it is tied to suture anchors, which can then cause a loss of the native suction seal of the hip.<sup>3</sup> Larger labra can maintain contact with the femoral head after repair, and techniques such as labral base fixation can help to preserve this interaction and recreate the suction seal.<sup>4</sup> A diminutive labrum, on the other hand, is not amenable to multiple suture passes, which obviates the ability to use a mattress/labral base fixation construct.

Kaplan, Samim, Burke, Baron, Meislin, and Youm report in their study, "Decreased Hip Labral Width Measured via Preoperative Magnetic Resonance Imaging Is Associated With Inferior Outcomes for Arthroscopic Labral Repair for Femoroacetabular Impingement,"<sup>5</sup> that diminutive or hypoplastic labra (labral width <4 mm measured on magnetic resonance imaging [MRI]) yield poor clinical outcomes compared with labra wider than 4 mm after arthroscopic labral repair and osteoplasty for femoroacetabular impingement correction. This study adds discrete data to anecdotal evidence that have been described by many hip arthroscopists. In their cohort of 107 patients, there were large deviations in patient-reported outcome scores when stratified by labral width: only 47% to 63% of patients with labral width <4 mm achieved a minimal clinically important difference (MCID) for the

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modified Harris hip score (mHHS) 2 years after surgery, versus 89% to 93% of patients with labral width >4 mm. This study is limited, as it retrospective and lacked the gold-standard arthroscopic validation for the preoperatively measured labral width on MRI scans. However, the authors performed a thorough comparative analysis at multiple regions of interest on the labrum throughout the acetabular clockface, using their previously validated method for measuring labral width with MRI. Therefore, their results should be valued and considered a cautionary tale for surgeons facing the task of treating the diminutive labrum.

In comparison, 2 other recent studies have reported on outcomes after performing arthroscopic labral repair in patients with diminutive labra. Drager et al.<sup>6</sup> reported that their cohort of 173 patients with intraoperative measurements of labral width <4 mm were able to achieve MCID (70% to 85%) and patient acceptable symptom state (PASS) (57% to 71%) at rates similar to a matched cohort of patients with labral width 4 to 7 mm at 1-year follow-up. In a study including 571 patients, Brinkman et al.<sup>7</sup> stratified patients into quartiles based on labral width measured intraoperatively and found no differences in percentage of patients achieving MCID or PASS based on labral size. The contrast of outcomes in these studies with those of Kaplan et al.<sup>5</sup> are likely multifactorial. First, these 2 studies measured intraoperative labral width, which differs from the preoperative MRI measurements from Kaplan et al.<sup>5</sup> Without intraoperative validation of their MRI measurements, we cannot be certain that 4-mm widths as measured on MRI correspond precisely to 4-mm widths measured intraoperatively. Further, surgeon preferences in labral repair methods (knotted versus knotless anchors, number of anchors, location of fixation points, suture versus tape) can affect labral healing and clinical outcomes when dealing with tenuous tissue. Rehabilitation protocols that differ between surgeons can also lead to differing results. As the evidence presented by Kaplan et al.<sup>5</sup> highlight the unpredictable outcomes that can result from treating the diminutive labrum, surgeons who have had successful results should be encouraged to report and share their treatment algorithms.

Armed with these data validating the difficulty in treating the diminutive labrum with arthroscopic repair, the need for alternative surgical options is evident. One such option is to resect the native diminutive labrum and perform a labral reconstruction using autograft or allograft. White et al.<sup>8</sup> reported that in a cohort of 29 patients who underwent bilateral hip arthroscopy with one side undergoing primary labral repair and the other side undergoing primary labral reconstruction using iliotibial (IT) band allograft, hips with labral repair had a 31% failure (reoperation) rate, whereas hips with labral reconstruction had no failures at mean 56-month follow-up. The study did not specifically analyze

whether smaller native labral size was a risk factor for failure in the repair group, but the lead surgeon cited “labral tissue <2 to 3 mm” as an indication for primary reconstruction in his practice. Performing labral reconstruction in the primary setting is far from a consensus practice, however, as exemplified by the letter written to the editor by many high-volume hip arthroscopists in response to the White et al. article.<sup>9</sup>

Another approach is to augment the diminutive labrum by directly incorporating supplemental graft in the repair with native tissue. There are sparse data available for this technique, but Philippon et al.<sup>10</sup> reported that a cohort of 33 patients who underwent labral augmentation with IT band autograft showed significantly better outcomes at 2 years compared with a matched cohort of patients undergoing labral reconstruction. Other surgeons have reported using rectus tendon autograft or allograft for augmentation, but published results are still pending. Although additional studies are needed to further validate this treatment option, augmentation of the diminutive labrum, by increasing the functional labral diameter without removing the native tissue, appears to be another viable option.

In conclusion, Kaplan et al.<sup>5</sup> have provided evidence supporting the observations of many hip arthroscopists: that a diminutive hip labrum presents a unique and difficult pathology to treat through arthroscopic repair in patients with FAIS. Some surgeons have had better success with primary repair, whereas others favor “going big” with primary labral reconstruction or augmentation, but it is evident that we are far from any consensus on the proper treatment for the diminutive labrum. The challenge remains for our growing community of hip arthroscopists to advance the understanding and treatment of this “small” but certainly not insignificant problem.

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