

Editorial Commentary: Differences in Femoral Torsion Measurements Based on Axial Versus Axial–Oblique Magnetic Resonance Imaging Sequences—Let’s Begin to Standardize Hip-Preservation Techniques to Improve Research and Clinical Outcomes



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Abstract: Femoral torsion is an important measure in patients with femoroacetabular impingement presenting with limited hip range of motion. However, femoral torsion may be measured using computed tomography or magnetic resonance imaging and on axial or axial–oblique sequences. Recent research shows that femoral torsion measurements differ based on the magnetic resonance imaging sequences on which this parameter is measured. In some cases, this may be clinically relevant in the sense that a derotational femoral osteotomy may be considered when otherwise it would not be. As more research is published within the specialized field of hip preservation surgery, we must begin to standardize our research and clinical techniques such that outcomes may be appropriately compared across studies.

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A few years ago, one of my mentors told me, “Hip surgery is where shoulder surgery was 20 years ago.” The field of hip-preservation surgery is rapidly evolving. In recent years, we’ve learned more about the effects of femoroacetabular impingement (FAI) and adult hip dysplasia on future osteoarthritis¹; the importance of hip capsular management in patients undergoing hip arthroscopy^{2,3}; the suction seal of the acetabular labrum and the significance of labral repair/reconstruction versus debridement^{4,5}; and even various patient positioning techniques during hip arthroscopy and the risks of perineal nerve and soft-tissue complications.^{6–8} As more and more research is published within this specialized field, we must begin to standardize our research and clinical techniques such that outcomes may be appropriately compared across studies.

The study reported in this issue by Alter, Kunze, Newhouse, Bessa, DeFroda, Williams, and Nho,⁹ entitled “Assessment of Femoral Torsion on Magnetic

Resonance Imaging is More Reliable Using Axial–Oblique Sequences Compared With Standard Axial Slices in Patients With Femoroacetabular Impingement Syndrome,” provides a comparison of the agreeability of femoral torsion measurements on axial and axial–oblique magnetic resonance imaging sequences in patients with FAI. The authors should be praised for their work on this topic and for demonstrating more reliable measurements with the use of axial–oblique slices. Although the clinical significance of the differences between these measurements remains unclear, perhaps the most important outcome of this study is recognizing the importance of reporting various preoperative and intraoperative techniques in the treatment of hip preservation patients such that we can begin to standardize these techniques across surgeons. At a minimum, we can make sure to avoid grouping studies with heterogeneous techniques.

As Kraeutler et al.¹⁰ demonstrated in 2018, femoral torsion is an important measure in patients with FAI presenting with limited hip range of motion. Large abnormalities in femoral torsion may actually outweigh the effect of cam impingement in patients with internal rotation deficits.¹⁰ In these cases, the use of a derotational femoral osteotomy (DFO) with or without concomitant hip arthroscopy should be considered.

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However, as Alter et al.⁹ point out, there is heterogeneity across studies regarding femoral torsion measurement methodology, the imaging modalities used for measurement, and which measurements constitute normal femoral torsion versus ante-/retrotorsion. Thus, it is important to begin to establish standardized guidelines regarding appropriate imaging modalities, imaging sequences, and femoral torsion measurements which warrant treatment with DFO.

Although the difference in axial and axial-oblique measurements of femoral torsion is clinically insignificant for the majority of patients, this difference does become relevant in patients with extreme abnormalities.⁹ In select cases, this difference may lead a surgeon to recommend a DFO based on the magnetic resonance imaging sequence used to measure femoral torsion. This is an example of how minute details are important not only in appropriately assessing and treating patients but also in reporting methods such that comparisons can be made across studies. Let's begin to standardize our techniques so that we can further advance our field.

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