

Editorial Commentary: Microinstability After Cam Osteochondroplasty Results From Over-Resection—Everything in Moderation



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Abstract: Cam impingement is one of the most common pathologies treated with hip arthroscopy. While it is a common treatment, it can be difficult to achieve the perfect osteochondroplasty, one that neither over- nor under-resects the head–neck junction. Clinical studies and now biomechanical analysis show over-resection of cam lesions can result in inferior clinical outcomes from microinstability.

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The study by Ng, El Daou, Bankes, Rodriguez y Baena, and Jeffers entitled “Cam Osteochondroplasty for Femoroacetabular Impingement Increases Microinstability in Deep Flexion: A Cadaveric Study” is an elegant biomechanical study of the effects capsulotomy and, more profoundly, cam resection have on hip motion and microinstability.¹ The authors used 12 cadaveric hips with cam femoroacetabular impingement (FAI) and tested range of motion, translation and microinstability after capsulotomy, femoroplasty, and capsule closure. They found some of the usual findings, such as increased external rotation after capsulotomy that corrected after closure.² However, the most interesting finding was the 31% increase in microinstability at 90° of flexion after the osteochondroplasty. This led to the conclusion that surgeons should be careful not to over-resect during osteochondroplasty.

Over-resection is a serious concern and probably happens a lot more than surgeons are aware as we strive for the perfect sphere. Over-resection may occur because, as has been repeatedly shown, that the most common reason for revision hip arthroscopy is untreated or undertreated FAI.³ This may lead surgeons to lean toward more bone removal. However, when over-resection

occurs, it has very devastating effects, with greater conversion to total hip arthroplasty, lower patient-reported outcome scores, and lower minimal clinically important difference and patient acceptable symptom state rates.⁴ Avoidance of over-resection is not a new concept. This was one of the focus points of a technique article we published 2013.⁵ The break of the labral suction seal when an over-resected head–neck junction enters the acetabulum was, and still is, a concern.

However, in the methods, the authors assure us there was no over-resection, but the results show flexion instability. If we are to assume there was no over-resection, then what happened at 90°? This topic deserves further inspection, but I presume this to mean that a certain amount of cam morphology serves a positive purpose on hip joint function, in the form of stability. Just like a seat-post clamp tightens as the cam engages, the hip becomes more stable by virtue of the cam morphology. Cam mechanics works for metal, but chondrolabral tissue? The same bump that may confer additional stability results in excess cartilage pressure and eventual breakdown.

Another possible example of the stability conferred by cam morphology is in patients with dysplasia.⁶ Very often the appearance of the femoral neck is flat. If one were to “fix” that impingement with an osteochondroplasty, first you would likely encounter soft bone since it is not impinging, and second, you may encounter a poor outcome. The flat neck may be what confers stability to these most vulnerable hips; proceed with caution.

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The Goldilocks, everything-in-moderation principle seems to hold true again, this time in terms of cam osteochondroplasty. So where is this happy medium? How much resection does one cam need? Are we aiming for a particular alpha angle or offset? Should we strive for a relative change in the alpha angle or offset? The challenges moving forward for hip arthroscopists include identifying true cam impingement (not those alpha angles masquerading as such), and precisely recontouring such that excessive chondrolabral pressure is alleviated but not so much that iatrogenic microinstability occurs. Sounds easy!

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