

Editorial Commentary: Using a 70° Arthroscope to Evaluate the Biceps Tendon and Rule Out Bicipital Tunnel Disease Is Better Than Using a 30° Arthroscope... but Still Inadequate



Abstract: In a well-constructed study using both cadaveric and in vivo models, Sheean et al. found that use of a 70° arthroscope significantly improves visualization of the long head of the biceps tendon and zone 1 of the bicipital tunnel compared with a standard 30° arthroscope during shoulder arthroscopy. Enthusiasm for the added visualization afforded by the 70° arthroscope, however, should be tempered by the fact that zone 2 of the bicipital tunnel and the biceps tendon within remain hidden from view along with any pathology it harbors. Clinicians should not over-rely on diagnostic shoulder arthroscopy when assessing for bicipital tunnel disease.

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The extra-articular segment of the long head of the biceps tendon and its fibro-osseous enclosure, termed the “bicipital tunnel,”¹ has gained recent attention in the literature as a common harbor of pathologic lesions.¹⁻³ Several studies have demonstrated the limits of standard diagnostic arthroscopy to fully evaluate this region.²⁻⁵ With this in mind, Sheean et al.⁶ sought to answer a simple yet important question: Can we improve visualization during diagnostic arthroscopy by using a 70° arthroscope? They clearly demonstrated the answer to be *yes* and should be commended for their valuable addition to the literature. I encourage readers to consider their findings as an important *component* of the diagnostic process, but caution that even evaluation with a 70° arthroscope fails to fully evaluate the bicipital tunnel. Decisions regarding when and where to tenodesis the biceps should be made preoperatively to avoid errors that may accompany false negative arthroscopy findings.

Sheean et al.⁶ convincingly demonstrated using both cadaveric and in vivo models that the use of a 70° arthroscope improves visualization of the bicipital groove (zone 1 of the bicipital tunnel) by 7 and 12 mm, respectively. Despite this improved visualization, the bicipital tunnel remains largely hidden from view. The bicipital tunnel¹ is divided into 3 zones: zone 1 represents the traditional bicipital groove and extends from the articular margin to the inferior margin of the subscapularis tendon. As Sheean et al.⁶

showed, this portion of the bicipital tunnel can be visualized nearly entirely with the addition of the 70° arthroscope. Zone 2 of the bicipital tunnel, which we have referred to as “no man’s land” because of its relative invisibility from arthroscopic evaluation, continues to elude inspection even with the addition of the 70° arthroscope, however. Zone 3 represents the subpectoral region.

We previously demonstrated a 47% prevalence of hidden bicipital tunnel disease among 277 patients with chronic biceps-labrum complex symptoms.² One of the limitations we acknowledged at the time was our exclusive use of a 30° arthroscope during diagnostic arthroscopy, and we noted that “a 70° arthroscope could possibly visualize a greater percentage of the tendon.” Armed with the findings of Sheean et al.,⁶ it is likely that we may have actually been able to identify a portion of lesions occurring in the distal portion of zone 1 (groove), which were included among the number of hidden lesions, had we used a 70° arthroscope. However, many of the lesions that were encountered during our study² and those reported by others³⁻⁵ extend well into zone 2 as far as the proximal margin of the pectoralis major tendon.

Even using a 70° arthroscope, many potentially symptomatic lesions may still go unrecognized if you believe, as I do, that clinically relevant pathology is not limited to zone 1 (groove) and extends through zone 2. How then, do we decide to act on that which we still cannot see?

Physical examination remains central to the decision as to when and where to perform a biceps tenodesis. In a recent prospective study,⁷ we found that preoperative

bicipital tunnel palpation and the O'Brien Sign had negative predictive values of 96% and 93%, respectively, for hidden extra-articular bicipital tunnel disease. As such, hidden lesions can be essentially ruled out by preoperative examination allowing the surgeons to more confidently act on when they see through the arthroscope. Biceps tenodesis should be a preoperative decision and not be left to the presence or absence of findings during diagnostic arthroscopy.

Sheean et al.⁶ performed an excellent study based on sound methodology and convincingly showed that our diagnostic capabilities for evaluating the bicipital tunnel are significantly improved if we use a 70° arthroscope. They convincingly argue that the use of a 70° arthroscope should become a standard of practice during diagnostic arthroscopy. Readers should be aware that clinically significant lesions may still lurk beyond even this improved field of view. Over-reliance on diagnostic arthroscopy may cause surgeons to forsake unrecognized lesions resulting in persistent symptoms. As such, using a 70° arthroscope to evaluate the biceps tendon and rule out bicipital tunnel disease is better than using a 30° arthroscope... but still inadequate.

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