

Regarding “A 70° Arthroscope Significantly Improves Visualization of the Bicipital Groove in the Lateral Decubitus Position”



We read with great interest the article by Sheean et al.¹ that focused on addressing the recently highlighted failure of standard glenohumeral arthroscopy to adequately visualize areas of predilection of pathology of the long head of biceps (LHB) tendon. We agree that this is an important clinical issue because systematic review has shown that failure to adequately evaluate the tendon can lead to rates of missed diagnoses as high as 30% to 50%.²

Recently, the use of a grasper,^{3,4} direct tenoscopy of the bicipital groove,⁵ and use of a 70° scope¹ have been evaluated as potentially useful strategies to address the inadequacies of standard techniques. We would like to highlight some of the issues with these strategies. First, to our knowledge, none of the authors of previous studies that report tendon excursion using a grasper^{3,4} routinely use this technique in clinical practice. Although the use of a grasper does confer greater visualization than pulling the LHB into the joint with a probe, it results in unacceptable iatrogenic injury to the tendon.⁶ The data from these studies should therefore be interpreted with caution as they overestimate the visualization that is typically achieved in vivo. Sheean et al.¹ suggest that the use of a 70° arthroscope should be routine. Although we agree that it confers advantages in visualization of other pathology (e.g., subscapularis tears) we feel that its utility for the assessment of LHB pathology may have been overstated. Although a statistically significant advantage in terms of increased visualization was reported, this does not necessarily equate to an important clinical advantage. Currently the minimal clinically important difference with respect to the length of the LHB visualized in order to reduce the rate of missed diagnoses is not known, so the value of the increased visualization of 26.3 ± 6.2 mm (70° arthroscope) versus 14 ± 4.7 mm (30° arthroscope) reported by Sheean is not clear. However, what is clear is that several authors have highlighted that pathology frequently occurs in the most distal part of the tendon^{4,7} and this area is not visualized using the described technique.

Moon et al.⁷ reported outcomes from 36 patients who underwent rotator cuff repair followed by open subpectoral tenodesis. The LHB was categorized into the three zones described by Denard et al.,⁸ zone A, the

proximal 2.5 cm of the tendon, zone B, between 2.5 and 5.6 cm and zone C, distal to 5.6 cm. The incidence of tears was 100% in zone B and 77.8% in zone C. Degenerative changes were observed for all cases in zones A and B and in more than 80% of cases in zone C. Moon et al.⁷ described those lesions occurring in zones B and C as “hidden” because they are not visualized at arthroscopy. Although Sheean et al.¹ demonstrated that a 70° scope does allow greater visualization, the numerical values presented allow us to reasonably conclude that these most distal areas still cannot be visualized using this strategy. On that basis, although a 70° scope may (and this is not proven by clinical results) increase diagnostic yield, a “normal” arthroscopy is still unable to exclude pathology, and the surgeon must give more value to information gained from the patient’s history and clinical examination rather than the absence of intraoperative findings when deciding if there is an indication for either tenotomy or tenodesis.⁹

We have recently described a technique for more complete evaluation of the LHB using biceps tenoscopy.^{5,10} This requires no additional equipment and is easy to perform. It has the advantage of being able to visualize the full extent of the bicipital groove and the LHB up to the musculotendinous junction. It also allows retrograde instrumentation, which gives the potential to treat pathology within the groove, for example, debridement of tendinopathic lesions and excision of adhesions/osteophytes.

We would also like to make a final comment on the limitations of the study reported by Sheean et al. They state that because they performed their study in the lateral position, it is unclear as to the extent to which these results are generalizable to shoulder arthroscopy performed in the beach chair position.¹ We feel it is useful to share our data on this. When using a 30° scope, we found that an optimally positioned arm in the beach chair position demonstrates a trend toward improvement in LHB tendon excursion compared with a lateral decubitus position but this was not significant (beach-chair positions, mean excursion 32.7 ± 4.23 mm; 95% CI, 28.6-36.8 mm, lateral decubitus, 29.9 ± 3.89 mm; 95% CI, 25.7-34 mm). On that basis, it was concluded that choosing the beach-chair position over lateral decubitus or removing the arm from traction in lateral

decubitus to optimally position it are unlikely to confer an important clinical advantage with respect to the length of tendon that could be visualized using standard arthroscopic techniques.⁶

In closing, we feel that although the use of a 70° scope may confer some advantages, its major limitation is likely to be a high false negative rate because of inability to visualize most of zones B and C. For that reason, we feel that biceps tenoscopy represents a potentially more useful strategy but we accept that clinical results are needed, and multicenter prospective evaluation of this technique is planned in order to determine its role in the diagnosis and management of LHB pathology.

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Authors' Reply



Our thanks to Drs. Saithna, Old, and MacDonald for their letter,¹ which gives us the opportunity to clarify the main point of our article,² which is

The improved visualization of the bicipital groove, medial sling, and subscapularis that is afforded by the 70° arthroscope confers a great advantage in diagnosing and surgically addressing subscapularis tears and associated long head of the biceps lesions and instability.

A recent study has shown that 90% of patients with subscapularis tears have associated instability of the long head of the biceps or partial tears of the biceps tendon within the bicipital groove.³ This association of significant pathologic processes at the top of the bicipital groove highlights the utility of the 70° arthroscope in making that diagnosis and affording the visualization that is necessary to surgically fix the problem.

Drs. Saithna, Old, and MacDonald suggest that biceps tenoscopy would be a better tool for visualizing the entire biceps tendon.^{4,5} However, neither of their articles that they referenced is currently accessible online, so we were not able to learn anything about their technique or results. This is obviously an unproven procedure at this point in time, so we cannot recommend discarding a proven technique (use of the 70° arthroscope) for an unproven technique (biceps tenoscopy). However, the concept is intriguing, and we look forward to further reports by the authors on their results.

Finally, the relative importance of the location of biceps pathology remains controversial. We have long held the opinion that tenodesis in the proximal portion of the bicipital groove is effective at relieving pain generated at any point in the tendon of the long head of the biceps. Our logic is that tenodesis at the top of the