

Editorial Commentary: Biceps Tendon Tenderness... Is It Enough to Guide Surgical Management?



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Abstract: Pathology of the long head of the biceps tendon is often encountered concurrently with rotator cuff tears. Although both preoperative and intraoperative evaluations may play a role in the decision-making process of when and how to treat the biceps, it can still be a conundrum. The more straightforward tests and reliable evaluation methods we have in our repertoire, the more likely the appropriate treatment choice to address the pathology will be made. The subpectoral biceps test is a helpful examination maneuver as part of the preoperative biceps evaluation.

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Evaluation and treatment of pathology of the long head of the biceps brachii tendon in the shoulder have challenged surgeons for decades. To confound things further, concurrent rotator cuff and/or labral pathology is frequently present, with studies showing up to 75% of patients presenting with anterior shoulder pain having such concomitant pathologies.¹⁻³ Although some studies have shown benefit to addressing the biceps concurrently with associated rotator cuff pathology, isolating the biceps as a primary pain generator can prove difficult.^{3,4} Numerous attempts have been performed to determine how best to evaluate biceps pathology and subsequently guide treatment decision making, but there is not a clear consensus and no “perfect test” to address these issues.

For these reasons, it was with great interest that I read “Clinical Outcomes After Biceps Tenodesis or Tenotomy Using Subpectoral Pain to Guide Management in Patients With Rotator Cuff Tears,” by Dwyer, Kia, Apostolakis, DiVenere, Dyrna, Cote, Arciero, and Mazzocca.⁵ Of the 128 patients evaluated in the study, 68 had positive subpectoral biceps test (SBT) results (tenderness to palpation on examination of the biceps tendon as it courses under the pectoralis major tendon

with the arm in an adducted and internally rotated position). All patients who had positive preoperative SBT results underwent tenodesis or tenotomy, with 94% of those patients having resolution of their subpectoral tenderness at final follow-up. In addition, 93% of patients with positive SBT results had gross pathologic changes of the tendon evident on arthroscopic examination. Overall, patients had excellent improvement in all outcome measures tested.

Whereas some studies have shown the utility of using a 70° arthroscope to increase visualization of the biceps intraoperatively, other studies have shown there can still be “hidden lesions” and lesions in the extra-articular portion of the tendon that are not accessible arthroscopically.⁶⁻⁸ In particular, Taylor et al.⁸ have shown that pathology can be present within the bicipital groove and within zone 2 of the biceps tendon, which is out of the field of view arthroscopically. In addition, other studies have shown that in some cases of chronic biceps tendon pathology, underlying biceps inflammation does not always correlate with either preoperative magnetic resonance imaging or intraoperative arthroscopic evaluation findings.^{9,10} Therefore, surgeons should use caution when relying on those advanced modalities alone when making treatment decisions to avoid potential false-negative results.

Equipped with this knowledge, we are compelled to go “back to the basics,” more specifically, the physical examination. Taylor et al.¹¹ described the “3-pack” examination of the biceps-labral complex, which is an active compression test (O’Brien sign), throwing test, and bicipital tunnel palpation. Similarly to their study, the study by Dwyer et al.⁵ found direct palpation of the

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tendon to be highly sensitive for arthroscopically confirmed pathology. I have found each of these examination techniques to be helpful in guiding potential treatment decisions clinically. It is beneficial to try to make the decision about how to treat the biceps preoperatively, whenever possible, based on a multitude of factors (specific examination tests and imaging findings, patient age, activity level and/or work status, expectations, and so on). The most proximal (zone 1) biceps pathology is often best confirmed arthroscopically, but in many cases the diagnostic arthroscopy is just 1 component of the overall evaluation.

Although there are multiple anatomic structures very near one another in the anterior shoulder that may be potential pain generators, in many patients the biceps tendon is easily palpable as it courses through and below the bicipital tunnel. It is for this reason I found the study by Dwyer et al.⁵ especially valuable, because it bolsters the findings we often find to be true in practice. We now have further supportive confirmation that a positive physical examination finding may be improved by performing a biceps procedure. Taylor et al.¹¹ showed that direct palpation of the bicipital tunnel had a positive correlation to biceps pathology, and now Dwyer et al. have shown subpectoral biceps tenderness to have a similar positive correlation. Dwyer et al. contend that the subpectoral location is the most optimal location to palpate the tendon, because direct palpation anteriorly could yield a potential false-positive finding in the case of a subscapularis tear with medial biceps subluxation. This is a small but reasonable difference in examination technique, and palpation of both areas is therefore warranted. In addition, a positive SBT result may guide technique decision making, because a tender biceps below the pectoralis may best be treated with a subpectoral tenodesis with tunnel decompression versus a supra-pectoral tenodesis (as is often performed in combination with a rotator cuff repair) or even a tenotomy (which may not fully decompress the bicipital tunnel).

The SBT is not a perfect clinical test, however. Dwyer et al.⁵ also found that patients with negative preoperative SBT results still had gross pathologic changes evident in the tendon arthroscopically in 65% of cases. That is a rather high false-negative rate but not abnormally so for a single clinical test. As stated before, shoulder pathology can be multifactorial and confounding, and there are multiple zones within the biceps tendon that may have varying degrees of pathology. Perhaps this is where direct palpation anteriorly and the arthroscopic evaluation of the proximal tendon also come into play. Regardless, the more tools we have in our armamentarium to help us isolate individual anatomic structures, the better we will be at

forming a complete and appropriate treatment plan. With this study, Dwyer et al. provide us with confirmation that the physical examination, in particular the SBT, is both valuable and reliable in helping guide our decision making regarding the biceps tendon. It remains imperative that a comprehensive history, examination, imaging, and intraoperative evaluation all be incorporated in the overall final treatment decision, but Dwyer et al. have given us further evidence that, whether you perform a tenodesis or a tenotomy, if the biceps has tenderness on examination, cut it!

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