



Editorial Commentary: When You Have a Hammer, Everything Looks Like a Nail—Tenodesis of a Normal Biceps Tendon at the Time of Arthroscopic Rotator Cuff Repair Should Be Avoided

Brian B. Gilmer, M.D., Editorial Board

Abstract: Because of difficulties in diagnosis of pathology of the long head of the biceps tendon and a desire to prevent later complications, there may be a tendency to perform a biceps tenodesis even when pathology is mild. Surprisingly, in this multivariate analysis of a large database, tenodesis of the biceps was associated with increased odds of revision rotator cuff repair. Although the statistical power of these findings must be viewed in light of the limitations of “big data,” surgeons must still use all available tools to avoid treatment of normal anatomy.

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If you are routinely performing a tenodesis of the long head of the biceps tendon (LHBT) in all rotator cuff repair (RCR) cases, even in the presence of minimal to no pathology, this article should give you pause. In “The effect of concomitant biceps tenodesis on reoperation rates following rotator cuff repair: A review of a large private-payer database from 2007 to 2014,” Erickson, Basques, Griffin, Taylor, O’Brien, Verma, and Romeo¹ found that not only does tenodesis at the time of arthroscopic RCR result in a higher risk of reoperation, but also that the rate of revision surgery to perform a tenodesis when it was not performed at the time of the index procedure is quite low.

First things first: Erickson et al.¹ emphasize that their findings should not be used as evidence against treatment of the LHBT when pathology is present and correlates with preoperative findings. Instead, they challenge the unconscious acceptance of an insidious thought progression we have all at least considered before, maybe even with the arthroscope in our gloved hand. It goes something like this: Diagnosing biceps pathology is really hard, but treating it is easy, effective,

and low risk; I am just going to treat the biceps so that I do not have to worry about it later.

What your unconscious mind was really saying in that moment is that clinical decision making regarding the biceps is complicated by unreliable physical examination maneuvers,² limitations in preoperative imaging,³ and failure of arthroscopic examination to reveal the entire tendon or “hidden lesions” within the bicipital groove.⁴ The association between LHBT pathology and rotator cuff pathology is quite strong and has been quoted to be as high as 60% to 70%.^{4,5} Tenodesis, whether arthroscopic or open, is effective and has a generally low rate of complications.⁶ Taken to its logical end, it is not hard to see how an innocent and unassuming LHBT might be removed from the glenohumeral “crime scene” before he gets himself into trouble.

While the authors’ findings are interesting, so are the methods. This type of “big data” study will become increasingly popular with easier access to large databases, but it will be unpopular among some of us who find it a little too cerebral to be trusted. Like it or not, the use of big data is probably here to stay, so it is important that we learn to interpret this type of study before inviting it into clinical application. As highlighted in a recent Editorial in the journal, the power gained by large numbers must be balanced by careful interpretation and a thorough understanding of what information

can and cannot be obtained from these databases.⁷ Our authors are highly skilled and thoughtfully list the relevant limitations prominently within the abstract. Specifically, data about rotator cuff tear size, whether the biceps was ruptured, and whether a biceps tenotomy was performed were not available.

One potential implication is that larger, chronic cuff tears are more likely to have associated LHBT pathology and are therefore more likely to undergo tenodesis. In that case, the groups are not equal, and the findings simply reflect the fact that massive and/or chronic tears are more likely to require revision RCR than small or partial tears. One might argue that integrity of repair is not necessarily correlated to outcomes, and that may be true, but because the database does not contain outcome data, revision RCR is a surrogate for a poor outcome and this has limitations compared with primary outcome data. Who would have thought we would be longing for the familiar American Shoulder and Elbow Surgeons, Disabilities of the Arm, Shoulder and Hand, Simple Shoulder Test, and Constant scores of yore?

Furthermore, because the database is unable to identify those who had undergone tenotomy or who presented with LHBT rupture, these patients are included in the no-tenodesis group. It is possible that they represent a significant portion of this group and could artificially deflate the rate of revision surgery for tenodesis because secondary tenodesis would have been unlikely in these patients.

Then, there are the statistics. Erickson et al.¹ should be applauded for tackling such complex statistical analysis and presenting it in a logical and readable fashion, but even still, the astute reader may closely examine Table 2 in the article and wonder if there is an error. The raw data presented on the left-hand side actually show a lower rate of revision RCR at any time (3.39%) in the “scope tenodesis” group than the “no-tenodesis” group (5.26%). However, on the right-hand portion of the table, the odds ratio is greater than 1, indicating that the presence of having a tenodesis is associated with revision RCR. In other words, the raw data do not reflect the same association as the processed data, and it is only in the course of the multivariate analysis that the association is revealed.

The trend toward increasing rates of tenodesis over the study period is not particularly surprising, but the preponderance of arthroscopic tenodesis compared with open tenodesis may reveal an emerging trend. The debate between arthroscopic and open tenodesis is waning, as was expertly summarized in a recent Editorial Commentary⁸ on the 2016 Best Clinical Research Award—winning article by Green et al.⁹ It increasingly seems that there is no difference, and it

may be that clinical practice is starting to reflect our acceptance of these data. As techniques improve and technology facilitates suprapectoral tenodesis that can be performed quickly, safely, and effectively with the arthroscope, this trend will likely continue in the way that all-arthroscopic RCR gradually replaced open and mini-open techniques despite the presence of equivalent long-term outcomes.

In summary, a higher reoperation rate in patients undergoing tenodesis does not mean that tenodesis is inferior to no treatment for LHBT pathology. Rather, it means that we must remain vigilant to treat only pathology because there may be risk associated with “prophylactic” surgery. Next, we must improve our ability to detect and classify LHBT lesions preoperatively and intraoperatively, understand which arthroscopic findings affect outcomes and therefore warrant treatment, and identify whether there is any functional loss when removing the LHBT from within the glenohumeral joint in vivo.

References

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