Orthopedic Evidence Annotation

Holtby R, Razmjou H. Accuracy of the Speed's and Yergason's Tests in Detecting Biceps Pathology and SLAP Lesions: Compared With Arthroscopic Findings. *Arthroscopy: The Journal of Arthroscopy and Related Surgery.* 2004;20:231-236.

This article directs its focus to the usefulness of clinical tests in diagnosing various biceps tendon pathologies. Specifically, the purpose of this study was to explore the cause of variation in diagnostic accuracy tests by comparing Speed's and Yergason's tests with a gold standard of arthroscopic surgery. The authors address the importance of understanding how these tests will produce varying results based on the patient populations to whom they are employed. Additionally, the authors allude to the challenge of few clinically meaningful diagnostic tests for biceps tendon pathology.

A prospective design was established in this study, where patients (n=152) who complained of shoulder pain were clinically examined by a physician. Of the larger group physically examined, fifty subjects (n=50) met specific inclusion criteria for arthroscopic surgery, which related to chronic pain, instability, and functional disability. Any imaging, including MRI or radiography, performed on the day of the physical examination was not revealed to the physician until after exploratory arthroscopy was performed. The results of Speed's and Yergason's tests for diagnosing biceps tendon pathology and SLAP lesions during physical examination were then compared with the findings of exploratory arthroscopic surgery.

Upon surgical intervention, it was found that 2 patients had bicipital tendonitis, 10 had partial biceps tears, and 2 had complete ruptures. Additionally, arthroscopy revealed that 15 patients had type I SLAP lesions, 12 patients had type II, and 1 patient had a type IV SLAP lesion. For Yergason's and Speed's tests, sensitivity values were then calculated to be 43% and 32%, specificity values were 79% and 75%, positive predictive values were 60% and 50% and negative predictive values were 65% and 58%, respectively. Likelihood ratios for Yergason's test, were 2.05 and .72, and for Speed's test 1.28 and .91. The level of evidence according to the American Academy of Orthopedic Surgeons is a Level I diagnostic study.

There is conflicting information confirming the validity of Speed's and Yergason's tests in diagnosing bicipital tendon pathologies when comparing this study to previous reports. Based on the relatively high specificity values of these tests, a positive finding is likely to be a true positive. However, I would be less likely to trust the precision of a negative test result based on the low sensitivity values of both tests and the likelihood of false negative tests. Because the values of the likelihood ratios are not significant in influencing diagnosis, it seems these tests may not be useful to apply clinically in making a diagnosis of bicipital tendonitis or SLAP lesions. If I am applying these tests to patients similar to those in this study, I would be likely to seek more definitive diagnostic tools, such as imaging or arthroscopy. It would have been helpful to have more information from this study in regards to the descriptive statistics of patient population to which these tests were applied in order to best determine whether the results are highly applicable to the population an athletic trainer typically treats.

Evaluating and applying the results of studies of diagnostic tests.

I. Are the results of the study valid?

Primary guides:

- **Was there an independent, blind comparison with a reference standard?**

Yes; the surgeon who performed the arthroscopic surgery was blinded to the original data collection forms, and was therefore, unaware of the findings from clinical examination, including imaging, until after arthroscopy was performed.

- **Did the patient sample include an appropriate spectrum of patients to whom the diagnostic test will be applied in clinical practice?**

A total of 152 patients were examined upon complaints of shoulder pain. Of those subjects examined, 50 subjects (16 women and 34 men) between the ages of 24-79 met criteria for arthroscopy. The spectrum of pathology included rotator cuff tears, bicipital tendonitis, biceps tendon rupture, and several types of SLAP lesions. There is no mention of how these patients may have acquired these various pathologies. Because there is such a wide age range represented by the sample population, an athletic training clinician may only see similar patients in a non-traditional or clinic-based setting.

- **Did the results of the test being evaluated influence the decision to perform the reference standard?**

No; more than half of the patients with a negative clinical test result underwent the gold standard surgical examination. Criteria for surgical intervention included:

1. persistent pain and functional disability more than 6 months, not responsive to adequate conservative treatment, with a positive impingement test confirmed with local anesthesia or clinical or investigative signs of rotator cuff tears, labrum, or biceps lesions;
2. symptoms referred to the acromioclavicular joint lasting more than 6 months with radiographic changes in that joint; or
3. symptomatic shoulder instabilities.

- **Were the methods for performing the test described in sufficient detail to permit replication?**

The Speed's and Yergason's tests themselves were not described; it can be assumed that the reader has previous knowledge of employing these tests or that other resources can be pursued for more specific information in regards to both tests. The arthroscopic procedure, however, was described in detail; the patient position, surgical portal, structures being examined, and criteria for positive biceps tendon pathology were reported.

II. What are the results of the study?

- **Are likelihood ratios for the test results presented or data necessary for their calculation provided?**

Yes, both positive and negative likelihood ratios are reported as well as explanations of whether or not these calculations were found to be significant. Incidentally, neither the positive nor negative likelihood ratios were significant enough to alter pre-test to post-test probabilities.

III. Will the results help me in caring for my patients?

As a clinician, the results of this study are most beneficial in addressing the high potential for false-negative results when using either the Speed's or Yergason's tests to clinically

diagnose biceps tendon pathology. Although the specificity values for both tests are relatively high, implying that these tests would be less likely to produce false positive results, the lack of significant likelihood ratios suggests that these two tests will not be beneficial in supporting a clinical diagnosis. Based on this information, as a clinician, it seems appropriate that when addressing patients with symptomatic shoulder instability similar to those described in this study, it may be worthwhile to seek more meaningful diagnostic tools. Ultimately, though, because there are such few tests to provide meaningful information in regards to biceps tendon pathology, I still may use these tests as additional clinical tools when appropriate. The results of these tests, however, are unlikely to change the course of treatment I provide.