Dynamic Chiropractic

SPORTS / EXERCISE / FITNESS

Glenoid Labrum Tears, Part I

A recent article in the American Journal of Sports Medicine[1] illustrates a growing trend with regards to orthopedic tests. The trend is to question what has previously been taught and maintained in practice (primarily through tradition). This meas that old tests must be tested for sensitivity, specificity, positive and negative predictive value and validity. If new tests are designed, they also must meet the rigors of testing. In other words, we must test the test! This particular study focused on a new test for the glenoid labrum. Tears of the glenoid labrum are relatively common, yet a sensitive test has been elusive.

We who teach orthopedic tests have a natural curiosity as to how the designer of the test was inspired. We often assume that the designer of the test sat down and used his or her knowledge of the anatomy of the area to work out a logical stretch or compressive maneuver and then applied that design to a cadaver.

The next step would be to test patients. The authors of this current study did what most designers probably have done in the past: they listened to their patients. The authors noted that patients complained of reproduction of their pain with a particular position of the shoulder. At surgery, these patients were found to have labral tears. The authors then studied what actually was occurring in cadavers with the test position. Then they used a retrospective study and compared test results with surgical findings. In so doing, they have found what may be a very sensitive and specific test for labral tears.

The glenoid labrum of the shoulder is somewhat analogous to the meniscus of the knee in that it deepens the joint socket. For the shoulder, this means added stability. When the integrity of the labrum is lost, instability is likely to develop. Labral tears may result from dislocations of the shoulder; however, more recently, labral tears that are not as overtly traumatic may occur at the superior labrum through biceps overconcentration. Wherever the tear occurs, tests to "catch" the tear and reproduce the patient's pain or create a pop, click or clunk have largely been based on a strategy similar to Apley's compression test for meniscal tears in the knee. It was hoped that the labrum tear would be discovered by abducting the arm, adding a compressive load along the humerus into the glenoid, then maintaining the load while rotating the humerus internally and externally.

The current test is unlike these compressive approaches based more on the relationship between biceps contraction and superior labral tears (often referred to as SLAP lesions: superior, labrum, anterior to posterior). Ironically, the authors call the test the active compression test. A side benefit of the test was its ability to determine if patients had acromioclavicular injury.

The active compression test is performed with the patient standing. The patient brings the arm to 90 degrees of forward flexion with the elbow fully extended. The patient then adducts theï examiner (standing behind the patient) directs a downward force at the patient's forearm (the patient's elbow remains extended). The test is then repeated by directing a downward force with the forearm supinated (palm-up).

For this study, a positive test occurred when the first test caused pain that was reduced or eliminated with the second test position. The distinction between acromioclavicular (AC) injury versus glenoid labrum injury was based on where the pain was felt. Pain felt "at the top" of the shoulder indicated AC injury, whereas pain felt "deep" in the shoulder indicated labrum injury.

The authors are quick to point out that if pain is not reduced or eliminated by the second test, the test is not "positive." They also point out that the patient should resist the examiner's downward force, not the opposite (examiner resisting patient's upward force).

Surprisingly, this test sequence produced a very reliable detection of labrum tears and AC injury. For detecting labrum abnormalities, the sensitivity was 100%; the specificity was 98.5%; the positive predictive value was 94.6%; and the negative predictive value was 100%. For AC abnormalities, the sensitivity was also 100%; the specificity was 96.6%; the positive predictive value was 88.7%; and the negative predictive value was again 100%. These statistics were arrived at by comparing active compression test results with findings at surgery.

The main criticism might be that patients who were not detected with the test maneuver or MRI to have a labrum tear might have had one and not been included in the study. In other words, the test is probably not 100% sensitive, yet it does appear to be quite specific. The good news in these days of managed care is that MRI may not be the "gold standard" for labrum pathology. More studies and comparisons need to be conducted.

Next month, I will continue this discussion with a comparison of the sensitivity and specificity of other new labrum tests and MRI in the detection of labrum tears.

Reference

1. O'Brien SJ, Pagnani MJ, Fealy S, et al. The active compression test: a new and effective test for diagnosing labral tears and acromioclavicular joint abnormality. Am J Sports Med 1998;26:610-613.

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