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Glenoid Labrum Tears, Part II

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Last month, we discussed a new test for glenoid labrum tears called the active compression test (ACT).¹ This test was unusual compared to most other labrum tests in that it involved a muscle test, a change in arm position and the patient's response as the determination of whether a labrum tear or acromioclavicular injury was present. As a reminder, 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 the arm 10 to 15 degrees across the chest. With the arm fully internally rotated (thumb down), the examiner (standing behind the patient) directs a downward force at the patient's forearm (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 sensitivity and specificity for labrum tears was 100% and 98.5% respectively. Other labrum tests have been developed and tested over the last few years. This month, we will review a few of these tests and their relative value in the evaluation of labrum tears.

The original test for glenoid labrum tears was the "clunk" test first described in the 1980s.² The clunk test combined testing for instability while mechanically challenging the labrum. The patient lies supine while the examiner abducts the shoulder past 90 degrees with one hand while pressing the proximal humeral head anteriorly (similar to the apprehension test). From this position the examiner rotates the shoulder internally and externally. A positive response was a deep "clunk" felt by the patient. In addition, the patient might feel a pain or catch prior to the clunk.

During the '80s, many sports doctors were also adding axial compression through the elbow to the glenoid while performing the clunk test. This was recently tested and named the "crank" test.³ As described in this study, the patient is tested either seated or supine. The patient's arm is abducted in the scapular plane to 160 degrees. Applying an axial force through the elbow into the glenoid, the examiner internally and externally rotates the humerus. Unlike the clunk test, there is no anterior directed force of the proximal humerus with the crank test. The authors indicated that a positive test was either pain during the maneuver (especially external rotation) with or without a click, and reproduction of the patient's symptoms, such as pain or catching. The sensitivity of the crank test in this study was 91%; specificity was 93%; the positive predictive value was 93%; and the negative predictive value was 90%. It should be noted that many of the patients used in the study had already failed a conservative period of treatment. Snyder et al.⁴ described a similar test, but the shoulder was abducted to 90 degrees and was described as a specific test for superior labrum tears.

Another test designed to detect superior labrum tears is referred to as the anterior slide test.⁵ SLAP lesions (superior labrum anterior to posterior) are specific lesions of the labrum at its attachment with the biceps tendon at the superior anterior glenoid. It is suspected that sudden contraction of the biceps may lift the labrum off the glenoid and result in a tear. This tear can then proceed posteriorly. The patient is seated, hands on the iliac crests and thumbs pointing posteriorly. The examiner stands behind the patient and places one hand over the top of the shoulder and the fingers on the anterior joint. The other hand presses the humerus upwards and forwards through the patient's elbow while the patient attempts to resist the movement by pushing back against the examiner's force. A positive test is either a pain in the front of the shoulder and/or a pop or click in the same area. The sensitivity of the test was 78.4%; the specificity was 91.5%.

In a study of 54 patients, the sensitivity and specificity of magnetic resonance imaging (conventional and arthrogram) was compared to that of the physical examination.⁶ Surprisingly, the sensitivity of MRI was 59% and the specificity was 85%. It must be noted that this is lower than a number of other studies. The physical examination yielded a sensitivity of 90% with a specificity of 85%. The physical examination for labrum tears included the load and shift test, apprehension sign and relocation test, inferior sulcus sign, and the crank test. Positives included finding instability and/or clicking on examination. According to the authors, the clinical examination appears to be as (or more) valuable in detecting glenoid labrum tears without the added cost and time of an MRI evaluation. It should also be noted that CT arthrograms are

considered the gold standard for labrum tears, not MRI. MRI is not as sensitive in detecting inferior and posterior tears. Anterior and superior tears are more apparent. On MRI, it is often difficult to distinguish between normal variations of the labrum from pathology. The introduction of saline MR arthrography and gadolinium MR arthrography may improve the standard MR evaluation.

CT arthrograms are not performed as often as MR simply because of the logistics of the examination. Arthrograms require an experienced radiologist: someone accustomed to performing many examinations a week that is proficient at the injection and distribution of the contrast. It requires some "manual labor" on the part of the radiologist who must move the patient's arm around in an effort to distribute the contrast material. Finally, arthrograms are uncomfortable or painful for the patient whereas MR is painless.

Given the rather significant possibility of false positives and false negatives with imaging, it is recommended that the physical examination be the initial guide for determining if a labrum tear is present and a conservative approach used in all cases where a labrum tear is not suspected. If a labrum tear is suspected, it is important to note that there are no clear studies on the success of conservative management. There is a bias in many of the above studies because the patients who entered the studies had attempted a three-to-six-month trial period of conservative care and had failed. Therefore, what is not known from these studies is how many patients with tears did recover without the need of surgery. It is likely that most patients with significant tears who continue vigorous overhead activity are unlikely to have healing of the tear and will likely seek surgery. From my own experience with patients with labrum tears, it is the rare exception that conservative management is effective, yet it does occur.

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[IMAGE]

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