

The Latest Information on the Neer and Hawkins Impingement Signs

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Although we rely on functional and orthopedic tests to help us find the sources of pain in our patients, most of the tests we use are seldom based on cadaver studies or arthroscopic findings. Compromise of the subacromial space often leads to tendinopathy, bursitis and eventual cuff tears.

Two recent articles^{1,2} have analyzed two common impingement tests that will help us further in determining the source of a patient's shoulder pain, and manually, where to treat. Figure I (in the October 16 issue of *Dynamic Chiropractic*) demonstrates Neer's impingement sign. The examiner passively elevates the shoulder to its maximal degree of internal rotation while stabilizing the scapula. Note that the arm could be even more internally rotated than shown. Figure II (also in the October issue) demonstrates Hawkins' test. The patient's shoulder is passively flexed to 90° with a maximal internal rotation.

One of the problems using cadaver studies for these tests is that the dynamic mechanism in shoulder elevation - where the humeral head is depressed by the cuff muscles, or if the cuff muscles were weak, the deltoid would create excessive elevation - cannot be taken into account.³ Another problem is that cadaveric specimens lack tissue edema that adds to the impingement signs.

Studies appear to demonstrate that both tests can affect similar structures. A good generality is that the Neer position more often creates acromial contact with the medial acromion on the greater tuberosity and rotator cuff tendons, especially on the bursal side of the cuff. The Hawkins' position is more likely to create contact with the rotator cuff and the coracoacromial (CA) ligament. However, both tests are consistently positive for what is known as "internal impingement": excessive contact between the under surface of the cuff tendons, especially the supraspinatus and the posterior superior glenoid rim. This is especially prevalent in the throwing athlete with laxity or instability during abduction and external shoulder rotation. Internal impingement is not the same as the more common subacromial impingement. Interestingly, the cadaver studies¹ showing the positive internal impingement in both tests revealed that the undersurface of the subscapularis was more often found with the Hawkins position over the Neer position. Friction massage to the *subscapularis* insertion on the lesser tuberosity or fascial release on the *subscapularis* belly may be indicated, especially if painful to live subjects on resistive testing. In the usual subacromial or "external impingement," the CA ligament often hypertrophies. Palpation of this ligament may also prove to be painful, though friction massage applied directly to the CA ligament may be beneficial.

The study by MacDonald, et al.,² gives us the most practical information about these two impingement signs. The diagnostic accuracy of these signs was compared to arthroscopic findings. Both tests were similar for finding rotator cuff disease (partial or complete cuff tearing) but the Hawkins' sign was more sensitive for subacromial bursitis. The problems with these tests are that although positive, other pathoses can also be present and positive predictive value is low. Having a low positive predictive value means that a positive test does not necessarily indicate a cuff problem or bursitis. The most important conclusion of this study regarding these tests is that when they are

both negative, there is a high level of prediction that rotator cuff tendinopathy, tearing or bursitis can be ruled out.²

References

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3. Burns WC, Whipple TL. Anatomic relationships in the shoulder impingement syndrome. *Clinical Orth and Rel Res* 1993;294:96-102.

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