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Discography as a Surgeon's Tool: A Commentary

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Among other duties, the surgeon's task in performing a pain control operation is to diminish the pain that the patient perceives. The first element in this process is patient selection. The spine surgery literature contains numerous admonitions with respect to patients with on-going litigation, compensation, emotional, psychiatric, and addiction problems. These situations may preclude a good result from surgery. Discography certainly does not alter this situation. Patient selection for discography includes the same caveats as for any other spine patient requiring a diagnostic test [1].

Discography is another test that may predict a good result from surgery. There are four conditions that determine the test to be positive: 1) the reproduction of pain produced by increasing the pressure in the disc is concordant with the patient's usual symptoms; 2) the pressure required to produce symptoms is considerably less (usually less than one third of what the normal disc can withstand); 3) the morphology of the disc is abnormal; and 4) another nearby disc when tested at the same sitting produces no pain. If any one of these conditions is not met, the test is not positive. For the surgeon a non-positive discography precludes the use of anterior fusion for pain alone.

The only true evaluation of the predictive value of a pre-surgical test is the correlation between the test and results of surgery. Colhoun et al. [2] prospectively evaluated 137 patients with concordant pain response. In this group 89% had significant improvement of symptoms at two years. Pressure readings were not recorded and normal control disc level was not required. Walsh et al. [5] studied asymptomatic volunteers with discography. They recorded a 0% false-positive rate for the test when significant pain and abnormal morphology were required for a positive test. Derby et al. [3] segregated concordant pain responses into high-pressure versus low-pressure (chemically sensitive) discs. Interbody fusion produced an 89% favorable outcome in the low pressure group. Non-surgical management had an 88% unfavorable result in the other treatment arm of the low pressure group. In a national, randomized, prospective study including our group, 90% had significant pain improvement by SF 36 and Oswestry scores with anterior lumbar interbody fusion (ALIF) for discogram positive (utilizing the previously stated four conditions) discs.

Rhyme et al. [4] reported a follow up study of 36 patients with positive discography treated non-operatively. A curious condition of inclusion into this group included *normal* plain radiographs. Clearly the authors were not focused on a pre-surgical group as the vast majority of patients presenting for discography have abnormal plain films.

We have found one other useful aspect of discography. In patients with isthmic spondylolisthesis and low back pain predominant symptoms, bilateral-lateral fusion at the level of the spondylolisthesis is an acceptable treatment alternative. Results in the literature have varied between 50% and 90% good to excellent. We studied 17 consecutive patients with low back predominant symptoms who were considering spinal fusion [1]. Fifty percent had concordant pain at a *different* level than their spondylolysis level. Thus, it is our strong recommendation that patients with low back pain predominant symptoms from spondylolisthesis (as opposed to patients with leg pain predominant symptoms) who are being considered for spinal fusion surgery, undergo discography as a required part of their pre-operative evaluation.

Like any other test in the area of spine diagnostics, discography may be misinterpreted. Patients with a positive test but minimal symptoms to begin with are not candidates for surgery. Also patients with psychiatric, somatic, or other pain perception abnormalities probably have a higher incidence of false-positive results and will certainly have a less predictable surgical result. Concordant pathology at more than two levels requiring three or more fusion levels is less predictably alleviated with surgery.

As a faculty member at Academy Instructional Courses, I have argued the con-side in numerous discography debates. As Coordinator of the Spine Section of the Annual Review Course at the Academy Meeting, I advised against discography until about six years ago. The evolution of the four conditions required for a positive test and the use in selected patients for surgery in my own practice has changed my opinion.

References

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