LUMBAR DISCOGRAPHY
AN ANALYSIS OF ONE THOUSAND CASES*

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"Diagnostic disk puncture with injection of opaque medium demonstrates disk ruptures and protrusions and tells if the patient's symptoms originate from the punctured disk. The method seems to be of great practical value."

LINDBLOM

The first case of discography was reported by Lindblom in 1948. Since his original investigation less than 2,000 cases have been recorded in the world literature. The first case of discography in the United States was reported from the Cleveland Clinic by Wise and Weiford in 1951. The next 89 cases, performed at the same institution, were reported by Gardner et al. and an additional 165 cases were reported later by Wise et al. The present series consists of our last 1,014 consecutive cases. The analysis was performed with the aid of an electronic computer.

The purpose of this study is to define, interpret, and evaluate lumbar discography. The data have been only compiled and analyzed, i.e., they have not been corrected or changed in any respect.

Of the 1,014 patients who underwent lumbar discography, 32.8 per cent (333) were women whose average age was 42.6 years, and 67.2 per cent (681) were men whose average age was 42.3 years. There were 493 patients who subsequently underwent laminectomy. Of the 404 patients who had herniated discs verified at operation, 32.4 per cent (131) were women whose average age was 43.1 years, and 67.6 per cent (273) were men whose average age was 42.5 years.

DEFINITION

Lumbar discography is a procedure in which a radiopaque medium is injected into a lumbar intervertebral disc. It is more than a roentgenogram of an injected interspace. Lumbar discography includes:

1. The roentgenogram of the injected disc, that is, the discogram.
2. The response of pain of the patient to the injection.
3. The resistance of the disc to the injection as determined by estimating the force against the plunger needed to inject the medium. (This last aspect of discography is only presently being evaluated.)

Every discogram (roentgenogram of an injected disc) was described two times: first, by the person who had just performed the procedure and, secondly, by someone unfamiliar with the clinical picture or the response of pain, usually on the following day. This second and objective description is the one included in this study.

TECHNIC

In every case, before discography, spinal fluid dynamics and analysis were performed to exclude the likelihood of a tumor or other lesion obstructing the subarachnoid space. The entire procedure was explained to the patient; in this way the response of pain would be described more precisely and recorded.

Our technic of lumbar discography was fundamentally that outlined by Lindblom, except that a specially constructed discog-
raphy table was employed (Fig. 1). Routinely both the 4th and 5th lumbar discs were examined. The 3rd lumbar disc was examined only in selected cases when pathologic change was indicated by the clinical picture.

The steps of the technic are:

1. The patient is placed on the discography table and knee rest is adjusted.
2. Procaine hydrochloride (1 per cent) is used in the skin.
3. A 2-inch, 21-gauge spinal needle is inserted in the mid line through the interspinous ligament.
4. The tip of the needle is located roentgenographically.
5. If in correct position, a 3½-inch, 26-gauge spinal needle is then passed through the 21-gauge needle into the intervertebral disc.
6. The tip of the 26-gauge needle is again located roentgenographically.
7. Before each injection the patient is warned that the injection itself might produce pain. Also the patient is instructed to locate any pain that might be produced by the injection.
8. One and one-half to 2 cc. of 50 per cent Hypaque is injected into each interspace.
9. After each injection of the disc, roentgenograms are made.
10. During this time the patient is asked whether or not he experienced pain and, if he did, to describe its location. All roentgenograms—anteroposterior and lateral, are made before removing the needles, and with the patient remaining on the discography table. Removing needles before exposing the roentgenograms will produce artifacts, in that the Hypaque will pass through the hole from the puncture in the annulus into the epidural space.
11. The procedure is recorded on a prepared form in the patient's chart.
12. The next day the discograms are described again, this time by someone unfamiliar with the patient or his response to the injection as described above.

CLINICAL DIAGNOSIS

The clinical (pre-discography) diagnosis of the 1,014 patients who underwent lumbar discography is summarized in Table 1.

The accuracy both of the clinical diagnosis and of the clinical localization was determined. The “clinical diagnosis” refers only to the presence or absence of a herniated disc, but the “clinical localization” includes the exact level of a suspected herniated disc as determined by clinical examination. The accuracy of the clinical diagnosis was 80 per cent, whereas the accuracy of the clinical localization was 67 per cent.