Neurosurgical Techniques

Eben Alexander, Jr., Editor
Removal of Protruded Lumbar Intervertebral Discs

JOHN RAAF, M.D.

Department of Neurological Surgery, Good Samaritan Hospital and Medical Center, and the Division of Neurological Surgery, University of Oregon Medical School, Portland, Oregon

Removal of a protruded lumbar disc has become so common it is surprising to the newcomer in the neurosurgical field that 35 years ago the procedure was rare. The classic paper of Mixter and Barr\(^3\) entitled "Rupture of the Intervertebral Disk Without Involvement of the Spinal Canal" read in Boston at the annual meeting of the New England Surgical Society, September 30, 1933, changed the whole concept of ruptured intervertebral discs and opened a large new field in neurological surgery. Neurosurgeons whose practices span the last 35 years have seen an evolution in the operative procedure with many digressions from what seems to the author to be the simplest and most effective method of surgical treatment. In the infancy of protruded lumbar disc surgery, a wide bilateral laminectomy was done, the posterior dural sac opened, nerve roots separated, the anterior dura incised, and, finally, the protruded portion of the disc exposed and removed. This extensive procedure is not desirable in the usual case of protruded lumbar disc; equally cumbersome and dangerous is the transabdominal anterior approach.

A certain number of patients with protruded lumbar discs should have spinal fusions in conjunction with the removal of the protruded portion of the disc. Indications for the fusion depend on age, occupation, symptoms, and roentgenographic findings. In brief, young and middle-aged patients who hope to return to heavy physical labor, who have had much back pain over a long period, and whose roentgenograms may indicate some instability of the lower lumbar spine are considered for fusion. In my own series, 25% of the patients with protruded lumbar discs had spinal fusions at the same time the protrusion was removed. When a fusion is to be done, a modified Hibbs fusion utilizing bone from an iliac crest is the operation of choice.

Myelography

Unless there is some definite contraindication, such as a history of sensitivity to iodine, Pantopaque myelography is considered desirable prior to all operations for protruded lumbar disc. A myelogram more definitely establishes the exact level of the protrusion and rules out cauda equina tumor; clinical symptoms and signs cannot always be relied on to do this. Myelography may reveal protruded discs at two levels or the presence of some other lesion causing the symptoms. In the author's series,\(^4\) clinical diagnosis was found to be 80% accurate. Myelography as a supplement to clinical examination reduces errors in diagnosis to 7%.

Reactions to Pantopaque are rare.\(^2\) There has been only one severe reaction in over 2000 Pantopaque studies in our hospital. If there is a history of allergy to iodides, some other contrast medium such as air may be used. A "needle defect" occasionally is erroneously thought to represent the presence of a protruded intervertebral disc. Since 96% of protruded lumbar discs are found at the L4-5 or L5-S1 level, the needle used to perform the myelogram should be introduced at the L3-4 or L2-3 level. It is true that the higher the needle is placed, the more tedious the removal of the contrast medium. If it becomes necessary to introduce a second needle at a more caudal level to remove the oil, the first needle should never be removed until the procedure has been completed because cerebrospinal fluid and oil may leak from the dural puncture site of the removed needle.

Anesthetic

In most cases, the author prefers the use of spinal anesthesia, employing a hypobaric solution. If the myelogram is done just prior to the scheduled operation and if the diagnosis is confirmed, the needle used for the Pantopaque study is left in place; the patient is