Unilateral facetectomy approach for lateral lumbar disc herniation

EDDY GARRIDO, M.D., AND P. NOEL CONNAUGHTON, M.D.

Departments of Neurosurgery and Radiology, Lancaster General Hospital, Lancaster, Pennsylvania

Forty-one patients with herniated lumbar discs in a lateral location underwent unilateral complete facetectomy for removal of their disc herniation. The diagnosis was made by computerized tomography in all patients. The follow-up period varied between 4 and 60 months, with an average of 22.4 months. All patients underwent dynamic lumbar spine x-ray films with flexion and extension exposures at various times during their follow-up period.

The results were excellent in 35 patients, good in three, and poor in three. One patient suffered spinal instability postoperatively and required lumbar fusion because of back pain. Unilateral facetectomy gives an excellent view of the affected nerve root and the herniated disc, and the risk of spinal instability is very low.

KEY WORDS · facetectomy · disc herniation · lumbar spine · radiculopathy · surgical technique

Unilateral herniated lumbar discs can be classified into three types: 1) centrally herniated disc in which the herniation is in the midline of the spinal canal; 2) posterolaterally herniated disc or paramedian herniation in which the disc is herniated to the left or right of the spinal canal; and 3) laterally herniated disc in which the herniation is located in the neuroforamen or lateral to it, compressing the nerve root exiting at that level (for example, compression of the L-5 nerve root by the L5–S1 laterally herniated disc). Laterally herniated discs are also termed far-lateral discs, extreme lateral discs, or foraminal or extraforaminal herniated discs. Prior to the development of high-resolution computerized tomography (CT) this type of disc herniation was often missed.

Myelography is usually negative in such cases since the disc rupture occurs beyond the boundaries of the subarachnoid space. The frequency of lateral disc herniation has been reported as between 5% and 10% of all herniated discs.

Patients with a laterally herniated lumbar disc present special problems for surgical removal. The disc fragment(s) or herniation is often hidden under the facet joint. In order to obtain accurate visualization of the affected nerve root and the disc herniation, we believe it is necessary to remove the entire facet joint. We are reporting our experience with 41 patients who underwent unilateral facetectomy for removal of their lateral disc herniation.

Summary of Cases

Forty-one patients were reviewed. There were 26 men and 15 women, ranging in age between 22 and 77 years (average 48 years). In 26 patients no history of trauma or lifting injury was described. All patients had severe leg pain following the distribution of the affected nerve root. Back pain was present in 25 patients. A motor deficit was detected in 23 patients and 28 had reflex

Fig. 1. Computerized tomography scan showing a large lateral disc herniation (arrow) filling the entire neuroforamen.

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abnormalities. The diagnosis was made by CT in all patients (Fig. 1).

The disc herniation was located at the L4–S1 level in 13 cases, at L4–5 in 17 patients, at L3–4 in 10 cases, and at L2–3 in one patient. Unilateral hemilaminectomy with complete facetectomy was carried out in all cases (Fig. 2). Thirty-nine patients had free disc fragment(s) compressing the nerve root; two patients had bulging discs and a narrow foramen.

Lateral lumbar spine x-ray films were taken in flexion and extension views in 39 patients at various times ranging from 3 to 60 months (average 18.5 months) after the surgery. One patient suffered spinal instability with spondylolisthesis postoperatively which required posterolateral fusion 1 year later due to persistent low-back pain.

The follow-up period varied between 4 and 60 months (average 22.4 months). The results were excellent in 35 patients with total resolution of pain and the ability to return to previous activities and occupation. Three patients had good results with mild residual back and/or leg pain and some restriction of physical activities. In three patients the results were poor with persistent low-back and leg pain and inability to return to work.

Discussion

The clinical presentation of the patient with a herniated lumbar disc in a lateral location is not different, in our experience, from that of patients with herniated lumbar discs in other locations, although a higher proportion had a focal neurological deficit and the L3–4 level was relatively more frequently affected. We could not identify a specific clinical syndrome as reported by others.1

Radiographic Studies

Diagnosis is best established by CT scanning.5,13–15,18 In our experience, magnetic resonance imaging was not as useful as CT in identifying these herniated discs. Discography with or without CT appears to be helpful in equivocal cases.2,9,12,16 The typical finding on CT scans is that of high-density material displacing the fat within the foramen or lateral to it. A neurofibroma19 or metastatic carcinoma may look similar to a herniated disc. A conjoined nerve root is usually of lower density than disc material and does not usually cause problems in the differential diagnosis.7

Surgical Approach

The surgical procedure was carried out through a midline incision with unilateral partial hemilaminectomy and complete unilateral facetectomy. The affected nerve root was visualized in the spinal canal and then followed laterally along the neuroforamen. The herniated disc fragments were then removed without undue retraction of the nerve root. The contents of the disc space were also emptied.

Other approaches to laterally herniated discs have been developed in order to spare the facet joint during removal of the disc. The paramedian or posterolateral approach, lateral to the facet joint, involves retraction or splitting of the paraspinal muscles.4,12,20 The view into the neuroforamen is somewhat limited with this approach but it appears to be specially suited for extraradicular herniations lateral to the facet. In general, neurosurgeons are not familiar with the anatomical area in this approach. The intraspinal approach with partial facetectomy1,2 also spares part of the facet joint but provides only partial exposure of the area of pathology. A combined intraspinal and paramedian approach has also been described.9

Effects of Facetectomy

There is limited information available regarding the long-term effects of complete unilateral facetectomy. Hazlett and Kinnard4 found no cases of spinal instability in a group of 28 patients who underwent unilateral facet joint removal with and without discectomy. Fankhauser and de Tribolet4 did not report any cases of spinal instability in 52 patients with unilateral complete facetectomy for lateral disc herniation, although their follow-up period was relatively short. The incidence of instability becomes more significant in patients undergoing wide decompressive laminectomy and multiple facetectomies.10,17 In our experience only one of 41 patients suffered spinal instability following unilateral facetectomy and discectomy.

In summary, unilateral facetectomy for lateral disc herniation is a technically simple operation. It gives a good exposure of the area of pathology and is associated with a very low risk of spinal instability. The clinical results of this procedure are excellent in the majority of cases.
References


E. Garrido and P. N. Connaughton

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Address reprint requests to: Eddy Garrido, M.D., 1671 Crooked Oak Drive, Lancaster, Pennsylvania 17601.