



Dynamic Chiropractic – November 19, 1993, Vol. 11, Issue 24

Nonoperative Treatment of Lumbar Radiculopathy

By Brad McKechnie, DC, DACAN

Surgery is often recommended as the definitive treatment for lumbar radiculopathy when disc herniation is demonstrated with imaging techniques. Recent attention has focused on the success of nonoperative conservative intervention with patients that have documented radiculopathy and herniated discs. Weber¹ reported a ten year controlled follow-up study in 1983 which documented the same neurologic recovery in groups treated surgically and nonsurgically. One of the questions raised by the study dealt with how the lumbar disc responded in nonoperatively treated cases.

Teplick and Haskin² reported on 11 lumbar radiculopathy patients in which there was unequivocal regression or disappearance of the lumbar herniated disc on follow-up computed tomography studies. In this study, two patients were without symptoms and nine had symptoms attributable to the herniated lumbar disc. In this latter group, all nine patients had regression or disappearance of the disc herniation on follow-up CT scan, and had clinical resolution of their lumbar radiculopathy. Additionally, Teplick and Haskin also reported on a case of cervical disc regression with conservative management. In 1992, Delauche-Cavallier et al., reported on 21 patients with CT diagnosed lumbar herniated nucleus pulposus in which nerve root pain completely resolved after conservative treatment. Follow-up computed tomography scans demonstrated complete disappearance of five herniated discs, obvious decrease of five discs, and moderate decrease in four others. There were no changes in size noted in seven lumbar discs. The study also indicated that major decreases in size of herniated lumbar discs were more frequent with larger herniations.³

Maigne et al.,⁴ followed 48 patients treated by conservative measures of lumbar disc herniation and performed initial and follow-up computed tomography studies. They noted the tendency for the majority of lumbar disc herniations to spontaneously and significantly decrease in size after conservative treatment and this decrease in size could occur early on in the recovery period. Of the 48 patients in the study, nine had disc herniations decrease by about 25 percent, eight had disc herniations decrease in size by 50-75 percent, and the remaining 31 patients in the study had 75-100 percent decrease in size of the disc herniation. They

also noted that the largest herniations were those which had the greatest tendency to decrease in size.

In examining the natural history of sciatica associated with disc herniation, Bush et al.,⁵ noted that a high proportion of patients with discogenic sciatica make a satisfactory recovery with aggressive conservative management and this recovery is accompanied by resolution of disc herniations in a significant number of cases. This study also indicated that the presence of neurologic signs was certainly not an absolute indication for surgery. Additionally, the authors felt that the intervertebral disc pathomorphology that might seem best suited for surgical resection (the large herniation) shows the most significant incidence of natural regression.

In 1989, Ellenberg et al.,⁶ reported on two patients with definite lumbar radiculopathy and evidence of herniated lumbar disc material on computed tomography scans who had complete resolution of their radiculopathy under conservative care. In both cases, repeat computed tomography scans demonstrated major resolution of herniated disc material. Ellenberg et al.,⁷ also reported on the first prospective study in patients with proven radiculopathy and definite disc herniations who improved with nonoperative management to determine what occurred to the herniated disc material. They studied 18 patients who had evidence of lumbar radiculopathy consisting of lower extremity pain or paresthesia, positive straight leg raise testing, myotomal weakness, reflex asymmetry, electromyographic evidence of radiculopathy, and CT scans that demonstrated definite disc herniation corresponding to the side and level of clinical radiculopathy.

Repeat CT scans were performed 6-18 months later, after complete clinical improvement of radiculopathy. Fourteen of the original 18 patients completed the study, with 13 classified as nonoperative successes. The remaining patient underwent lumbar disc surgical excision. The repeat CT scans revealed that 43 percent of the disc lesions resolved completely, 36 percent of the disc lesions improved, and 21 percent of the disc lesions were unchanged. They also noted that in nonoperated patients there was no difference in outcome whether they had resolution, improvement, or no change in disc herniation at follow-up.

The authors concluded that patients with definite radiculopathy and definite disc herniations can improve with nonoperative treatment. Additionally, patients without demonstrated resolution or improvement in the disc herniation may still show a complete clinical improvement without recurrence over a two and one-half year follow-up period.

According to Bush,⁵ it seems likely that intervertebral disc herniation resolution occurs when the nuclear material is exposed to the environment of the epidural space. Mechanisms that may come into play for resolution of intervertebral disc herniations include a gradual dessication of the high water content from the disc herniation, thus reducing the compression around the affected nerve root; gradual enzymatic degradation of the proteoglycans of the herniated disc; additional phagocytic activity associated with neovascularization; and decreased activity of inflammatory mediators.³⁻⁷ There is a tendency for larger herniations to respond more dramatically than smaller herniations.^{3,4,5} This may be because the smaller herniations may not be exposed to the environment of the epidural space and are protected from dehydration and neovascularization.

References

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Brad McKechnie, DC, DACAN

Pasadena, Texas



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