

Nonoperative Management of Herniated Cervical Intervertebral Disc With Radiculopathy

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FROM ABSTRACT:

Study Design:

All patients underwent a systematically and uniformly applied treatment program with increasing intervention as further pain control was needed.

Objectives:

The role of surgical versus nonsurgical treatment of patients with cervical disc herniation has not been adequately studied.

The majority of published data reflects surgical outcomes, with little available data regarding the outcome of nonoperatively treated patients.

Frequently, these patients are treated surgically if they have neurologic loss or radiculopathy that persists after rest or minimal intervention.

In the authors' clinic, patients with cervical herniated nucleus pulposus and radiculopathy are treated with an aggressive physical rehabilitation program.

Methods:

Twenty-six consecutive patients with cervical herniated nucleus pulposus and radiculopathy were evaluated by an investigator other than the treating physician.

The follow-up time was more than 1 year in all patients.

Data analyzed included symptom level, activity and function level, medication and ongoing medical care, job status, and satisfaction.

Inclusion criteria included a focal cervical disc protrusion of less than 4 mm identified on magnetic resonance imaging and a major complaint of extremity pain compatible with cervical radiculopathy.

Exclusion criteria included severe central canal stenosis, symptomatic cervical myelopathy, or condition that precluded participation in the rehabilitation program.

Management consisted of traction, specific physical therapeutic exercise, oral anti-inflammatory medication, and patient education.

The majority of patients presented with neurologic loss.

Results:

Twenty-four patients were successfully treated without surgery. **[24/26 = 92%]**

Twenty patients achieved a good or excellent outcome, of these 19 had disc extrusions.

Two patients underwent cervical spine surgery.

Twenty-one patients returned to the same job.

Conclusion:

Many cervical disc herniations can be successfully managed with aggressive nonsurgical treatment (24 of 26 in the present study).

Progressive neurologic loss did not occur in any patient, and most patients were able to continue with their preinjury activities with little limitation.

High patient satisfaction with nonoperative care was achieved on outcome analysis.

THESE AUTHORS ALSO NOTE:

Typically, surgery for disc herniations occurs when a patient has significant extremity or myotomal weakness, severe pain, or pain that persists beyond an arbitrary conservative treatment period of 2-8 weeks.

“For nonvalidated reasons, cervical disc extrusions have been frequently considered a definite indication for surgery.”

In this study, all patients had a magnetic resonance imaging (MRI) scan showing a cervical herniated nucleus pulposus that extended at least 4 mm from the margin of the parent disc space:

A contained HNP was defined as a focal extension of the disc of a minimum 4 mm and contained behind the posterior longitudinal ligament (PLL) or outer anulus.

An extrusion was defined as nuclear material that extended beyond the confines of the outer anulus and PLL.

All patients had a primary complaint of arm pain corresponding to the disc noted to be abnormal on their MRI study.

Patients were excluded if they had previous cervical spine surgery; or severe central spinal stenosis (central canal diameter < 12 mm); or if they had clinical findings of myelopathy.

“All patients were treated with ice, relative rest, a hard cervical collar worn for up to 2 weeks in a position to maximize arm pain reduction (all patients), NSAIDs for 6-12 weeks, manual and mechanical traction in physical therapy, followed by home cervical traction (all patients), and progressive strengthening exercises of the

shoulder girdle and chest with training in postural control and body mechanics training." **[Important: all patients did office followed by home traction]**

"A physical rehabilitation program was used for all patients, including instruction in body mechanics and adaptation of the basic and advanced activities of daily living and occupation to proper cervical spine mechanics."

"A specific upper and lower body strength and endurance and posture program was used as well as cervicothoracic spine stabilization training."

"The duration of this portion of the program was 3 months, at which time the patient was discharged to an independent exercise program."

"Forceful joint manipulation was not used."

Results were graded as follows:

- Excellent: no limitations in activities, no pain, fully satisfied with outcome.
- Good: minimal limitations in activity level, minor pain complaints of neck pain only, fully satisfied with outcome.
- Fair: minor activity limitations (restriction from the most strenuous activities), minor complaints of neck and occasional extremity pain.
- Poor: major activity limitations, persistent marked pain in the neck or arm.

RESULTS

20/26 patients had extruded discs.

6/26 patients had contained disc herniations.

One extruded disc patient and one contained disc patient were not able to complete the nonoperative program and were treated surgically.

All of the patients with multilevel degenerative changes had some degree of stenosis, but none had severe stenosis (< 12 mm).

All patients had a predominance of radicular upper extremity pain as their chief complaint.

20/24 of the nonoperative patients had objective neurologic loss (83%).

22/24 nonoperatively treated patients returned to full work duties (92%).

21/24 patients returned to the same job as before their injuries (88%).

21/24 nonoperative patients had a good or excellent outcome (83%).

89% of the nonoperative patients with disc extrusions achieved a good or excellent outcome.

80% of the patients with contained disc herniations achieved a good or excellent outcome.

The 4 patients with a fair outcome had multilevel degenerative changes.

"All patients with motor loss reached clinical neurologic improvement (i.e., resolved their neurologic deficit)."

"No patients achieved an outcome in the poor category."

DISCUSSION

"The traditional approach to symptomatic cervical disc herniation with radiculopathy has been rest, analgesics, and surgery."

The "nonoperative treatment in the patients in the present study averaged 9 months." **[Very Important]**

It is thought that cervical disc herniation with extrusion should be surgically managed because fragment migration could compress the nerve root or spinal cord, resulting in worsening, or paralytic type of neurologic injury. However, none of the non-operatively patients suffered either of these complications.

"A small percentage of patients with cervical herniated nucleus pulposus do require surgery for radiculopathy. However, the majority can be treated successfully with a carefully applied and progressive nonoperative program."

"Inflammation of neural elements appears to play an important role in radiculopathy in the cervical spine as in the lumbar spine."

"Reabsorption of extruded disc material itself probably occurs in the cervical HNP as it does in the lumbar disc HNP." Because of this reabsorption, "an extruded disc actually may have a more favorable nonoperative prognosis than contained disc pathology." **[Important]**

"Until there is a randomized clinical trial comparing surgery and nonsurgical care, it is important to consider that aggressive nonoperative care is indicated in every cervical disc herniation patient before a decision for surgical intervention." **[Very Important]**

"The presence of radicular neurologic loss or nuclear extrusion should not be used solely as the criterion for surgical intervention." **[Important]**

KEY POINTS FROM DAN MURPHY

- 1) The most important point made by this article is that herniated cervical discs, even extrusion of the cervical disc, with radiculopathy (motor and sensory signs), can be successfully conservatively managed by a regime that consists primarily of exercise, traction, and mobilization.
- 2) The second most important point made by this article is that herniated cervical discs, even extrusion of the cervical disc, with radiculopathy (motor and sensory signs), rarely require surgery, even if they have significant extremity weakness or severe pain longer than 8 weeks.
- 3) The third most important point made by this article is that herniated cervical discs, even extrusion of the cervical disc, with radiculopathy (motor and sensory signs), should always be conservatively managed before surgery is warranted.
- 4) In this study, the success rate for conservative management of patients with herniated cervical discs, including extrusion, with radiculopathy was $24/26 = 92\%$.
- 5) In this study, the success rate for conservative management of patients with herniated cervical discs, including extrusion, with radiculopathy was $21/26 = 83\%$.
- 6) Patients are unlikely to achieve good results with conservative management if the central canal stenosis is < 12 mm, or if they have clinical findings of myelopathy.
- 7) In this study, all patients did office and home mechanical traction.
- 8) The intense, in office portion of the physical rehabilitation program was 3 months.
- 9) The "nonoperative treatment in the patients in the present study averaged 9 months." **[Very Important]**
- 10) Multilevel degenerative changes with disc herniation worsens the clinical outcome with conservative management, but these patients still did not require surgery.
- 11) Extruded disc material reabsorbs better than a contained disc, giving a more favorable nonoperative prognosis. **[Important]**
- 12) "The presence of radicular neurologic loss or nuclear extrusion should not be used solely as the criterion for surgical intervention." **[Important]**
- 13) The patients did not receive "forceful joint manipulation."
- 14) In this study, "no patients achieved an outcome in the poor category" with conservative nonsurgical management.