

## **HERNIATED LUMBAR DISC**

Patients with sciatic nerve pain under treatment by their own physician who fail to improve after four weeks – refer to a Neurologist, Orthopedic Surgeon, Physiatrist, or Neurosurgeon for consultation and/or treatment.

### **I. BACKGROUND**

A herniated lumbar disc is a condition in which there is protrusion of the intervertebral disc. Herniations occur most commonly through a posterolateral defect, but midline herniations may occur. Resulting compression of the spinal nerve root causes inflammation and pain, often along the anatomic course of the nerve. In the lumbar spine, this most often occurs at the L4-L5 and L5-S1 disc levels, causing involvement of the corresponding L5 and S1 nerve roots. As a result of both mechanical and biochemical changes around the nerve root, the patient will experience pain, paresthesia, and possibly weakness in one or both lower extremities, usually below the knee. The rare herniations at the L1, L2, and L3 levels are usually associated with vague pain, paresthesia, and weakness above the knee. Back pain may or may not be a presenting complaint with any herniated lumbar disc.

Most acute lumbar disc herniations occur in patients between 35 and 55 years of age, whereas spinal stenosis usually occurs in patients over 50 years of age. Spinal stenosis may mimic a herniated disc. Patients with spinal stenosis in addition to low back pain will give a history suggestive of neurogenic claudication (pain on walking) and will present radicular signs and symptoms caused by degenerative changes involving the intervertebral discs and the facet joints.

### **II. DIAGNOSTIC CRITERIA**

#### **A. Pertinent Historical and Physical Findings**

Back pain is usually the first symptom and may or may not abate as the pain and paresthesia begins to radiate down the lower extremity. Motion of the spine is limited due to pain and muscle spasm. The neurological examination may be normal if the compressed nerve is still functional, or it may yield objective evidence of impaired nerve conduction (e.g. atrophy, weakness, sensory alteration or diminished reflex) depending upon the anatomic nerve root affected. Signs of nerve root tension (e.g. positive straight leg raising, bow-string test, Lasgue's test) may also be present.

When the L4-L5 disc herniates, it usually causes pressure on the L5 nerve root resulting in weakness of the great toe extensor or other dorsiflexor muscles of the foot and sensory loss along the medial aspect of the foot to the great toe, but it may be associated with a knee reflex abnormality. When the L5-S1 disc herniates, it usually causes pressure on the S1 nerve root, resulting in weakness of the plantar flexors of the

foot and a sensory deficit in the posterior calf area and lateral aspect of the foot in addition to a diminished Achilles' reflex.

#### B. Appropriate Diagnostic Tests and Examinations

1. Clinical examination by Neurologist, Neurosurgeon, Physiatrist, Orthopedic Surgeon.
2. Plain radiographs of the lumbosacral spine may be indicated.
3. MRI Imaging is the prime diagnostic test in evaluating a herniated disc suspect, which in addition to the disc would evaluate tumor, infection, fracture and congenital abnormalities.
4. CT Scan may be ordered if there is a specific bone problem that may be better delineated by that test, or when MRI imaging is contraindicated (e.g., metal imbedment or severe claustrophobia).
5. Electrodiagnostic studies may be done three or four weeks following the onset of symptoms to diagnose and assess the extent of nerve dysfunction and may be necessary to correlate the affected level by the findings on the above testing. This should include both needle EMG and nerve conduction studies.
6. Myelography is rarely indicated and is done as an outpatient procedure. It may be performed with a CT Scan in an instance where the above studies leave some question.

#### C. Inappropriate Diagnostic Tests and Examinations

1. Myelography
2. Thermography
3. Spinoscopy
4. Dermatomal Somatosensory Evoked Potential

### III. TREATMENT

#### A. Outpatient Treatment

##### 1. Non-operative Treatment

- a. Short period of bed rest, up to 2 days, with analgesics, muscle relaxants, and nonsteroidal anti-inflammatory drugs. Complete bed rest for long periods may be deleterious to the body and should be closely monitored.
- b. Physical therapy and/or rehabilitation
- c. Injection of trigger points, spinal nerve blocks

##### Outpatient Procedure

- d. Finite course of chiropractic spinal manipulation
- e. Epidural steroid injections

## Outpatient Procedure

- f. Pain clinic – chronic phase
- g. Orthotics

### B. Inpatient Treatment

#### 1. Non-operative Treatment

Rarely is there indication for admission but in some cases inability to control pain may require a short period of hospitalization.

#### 2. Operative Treatment

##### a. Indications

- 1. Failure of non-operative treatment to improve function
- 2. Quality of patient's life significantly impaired
- 3. Presence of significant or progressive neurological deficit

##### b. Procedure Options

- 1. Laminectomy with discectomy
- 2. Laminotomy with discectomy
- 3. Microdiscectomy
- 4. Percutaneous discectomy (in developmental phase)
- 5. Interbody fusion
- 6. Posterior or lateral bony fusion
- 7. Transpedicular fixation

##### c. Indications for Discharge

- 1. Uncomplicated
  - a. One day following microdiscectomy or percutaneous discectomy
  - b. One to two days after open discectomy
- 2. Complicated
  - c. After wound infection, thrombophlebitis, spinal fluid leak, or other significant complications have been controlled
  - d. Home health care may be required for a short period.

procedures

- e. Physical modalities and/or rehabilitative
  - 1. Some monitoring of the patient's activities may be necessary.
  - 2. Patient should be instructed in walking program with a gradual increase in their physical activities.
  - 3. Strengthening exercises or work simulation activities may be indicated for some patients.

C. Estimated Duration of Care

In both non-operative and operative treatment, return to pre-operative occupation or a transfer to a less demanding physical position will depend on the degree of improvement and physical impairment.

D. Modifiers (age, sex, and co-morbidity)

Patients with symptoms suggestive of cauda equina syndrome will require a different approach to treatment. Cauda equina syndrome is usually caused by a central herniated disc. Symptoms include low back pain, unilateral or bilateral leg pain and weakness, saddle anesthesia, and paralysis with loss of bladder and bowel control. Once this diagnosis is suspected, the patient should undergo prompt neurodiagnostic evaluation. Early surgery is recommended; however, there is no evidence that neurologic recovery will be effected.

**PROTOCOL HISTORY:**

Passed: 9/1/1992  
Amended: 5/17/1993  
Amended: 11/19/2002  
Amended: 5/5/2009  
Amended: 4/3/2018