

HERNIATED NUCLEUS PULPOSUS (RUPTURED INTERVERTEBRAL DISC)

A herniated disc (herniated nucleus pulposus) [HNP] is a major cause of severe, chronic, and recurrent back pain. Herniation, either complete or partial, of the nuclear material in the vertebral areas of L-4 to L-5, L-5 to S-1, or C-5 to C-6, C-6 to C-7 is most common and may be the result of trauma or degenerative changes associated with the aging process.

CARE SETTING

Most disc problems are treated conservatively at the community level, although diagnostics and therapy services may be provided through outpatient facilities. Brief hospitalization is restricted to episodes of severe debilitating pain/neurological deficit.

RELATED CONCERNS

Disc surgery
Psychosocial aspects of care

Patient Assessment Database

Data depend on site, severity, whether acute/chronic, effects on surrounding structures, and degree of nerve root compression.

ACTIVITY/REST

- May report:** History of occupation requiring heavy lifting, sitting, driving for long periods
Need to sleep on bedboard/firm mattress, difficulty falling asleep/staying asleep
Decreased range of motion of affected extremity/extremities
Inability to perform usual/desired activities
- May exhibit:** Atrophy of muscles on the affected side
Gait disturbances

ELIMINATION

- May report:** Constipation, difficulty in defecation
Urinary incontinence/retention

EGO INTEGRITY

- May report:** Fear of paralysis
Financial, employment concerns
- May exhibit:** Anxiety, depression, withdrawal from family/SO

NEUROSENSORY

- May report:** Tingling, numbness, weakness of affected extremity/extremities
- May exhibit:** Decreased deep tendon reflexes; muscle weakness, hypotonia
Tenderness/spasm of paravertebral muscles
Decreased pain perception (sensory)

PAIN/DISCOMFORT

- May report:** Pain knifelike, aggravated by coughing, sneezing, bending, lifting, defecation, straight leg raising; unremitting pain or intermittent episodes of more severe pain; radiation to leg/feet, buttocks area (lumbar), or shoulder or head/face, neck (cervical)
Heard "snapping" sound at time of initial pain/trauma or felt "back giving way"
Limited mobility/forward bending
- May exhibit:** Stance: Leans away from affected area
Altered gait, walking with a limp, elevated hip on affected side
Pain on palpation

SAFETY

May report: History of previous back problems

TEACHING/LEARNING

May report: Lifestyle sedentary or overactive

Discharge plan **DRG projected mean length of inpatient stay: 4.9–6.5 days**

considerations: May require assistance with transportation, self-care, and homemaker/maintenance tasks
Refer to section at end of plan for postdischarge considerations.

DIAGNOSTIC STUDIES

Spinal x-rays: May show degenerative changes in spine/intervertebral space or rule out other suspected pathology, e.g., tumors, osteomyelitis.

CT scan with/without enhancement: May reveal spinal canal narrowing, disc protrusion.

MRI: Can reveal changes in bone, discs, and soft tissues and can validate disc herniation/surgical decisions.

Provocative tests (discography, nerve root blocks): Determine site of origin of pain by replicating and then relieving symptoms. Can also be used to rule out sacroiliac joint involvement.

Electrophysiological studies—electromyoneurography (EMG) and nerve conduction studies (NCS): Can localize lesion to level of particular spinal nerve root involved; nerve conduction and velocity study usually done in conjunction with study of muscle response to assist in diagnosis of peripheral nerve impairment and effect on skeletal muscle.

Myelogram: Rarely performed, but when done, may be normal or show “narrowing” of disc space, specific location and size of herniation.

Epidural venogram: May be done for cases where myelogram accuracy is limited.

NURSING PRIORITIES

1. Reduce back stress, muscle spasm, and pain.
2. Promote optimal functioning.
3. Support patient/SO in rehabilitation process.
4. Provide information concerning condition/prognosis and treatment needs.

DISCHARGE GOALS

1. Pain relieved/manageable.
2. Proper lifting, posture, exercises demonstrated.
3. Motor function/sensation restored to optimal level.
4. Disease/injury process, prognosis, and therapeutic regimen understood.
5. Plan in place to meet needs after discharge.

NURSING DIAGNOSIS: Pain, acute/chronic

May be related to

Physical injury agents: nerve compression, muscle spasm

Possibly evidenced by

Reports of back pain, stiff neck; decreased tolerance for activity

Walking with a limp, inability to walk; preoccupation with pain, self/narrowed focus

Guarding behavior, leans toward affected side when standing

Altered muscle tone

Facial mask of pain; distraction

Autonomic responses (when pain is acute)

Changes in sleep patterns; physical/social withdrawal

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Pain Control (NOC)

Report pain is relieved/controlled.

Verbalize methods that provide relief.

Demonstrate use of therapeutic interventions (e.g., relaxation skills, behavior modification) to relieve pain.

ACTIONS/INTERVENTIONS	RATIONALE
<p>Pain Management (NIC)</p> <p>Independent</p> <p>Assess reports of pain, noting location, duration, precipitating/aggravating factors. Ask patient to rate on scale of 0–10 (or other scale as appropriate).</p> <p>Maintain bedrest briefly during acute phase. Place patient in semi-Fowler’s position with spine, hips, knees flexed; supine with/without head elevated 10–30 degrees; or lateral position.</p> <p>Instruct in logrolling technique for position change if patient requires.</p> <p>Assist with application of brace/corset. Instruct patient in how to self-place brace with assistance, then independently.</p> <p>Limit activity during acute phase as indicated. Intersperse rest periods, shortening rest interval and length as patient improves.</p> <p>Place needed items, call bell within easy reach.</p> <p>Instruct in/assist with relaxation/visualization techniques.</p> <p>Instruct in/encourage correct body mechanics/body posture.</p> <p>Provide opportunities to talk/listen to concerns.</p>	<p>Helps determine choice of interventions and provides basis for comparison and evaluation of therapy.</p> <p>Bedrest in position of comfort decreases muscle spasm, reduces stress on structures, and facilitates reduction of disc protrusion.</p> <p>Reduces flexion, twisting, and strain on back, especially when nerve impingement impairs patient’s ability to move legs.</p> <p>Often used briefly during acute phase of ruptured disc or after surgery to provide support and limit flexion/twisting. <i>Note:</i> Prolonged use can increase muscle weakness and cause further disc degeneration, nerve impairment.</p> <p>Decreases forces of gravity and motion, which can relieve muscle spasms and reduce edema and stress on structures around affected disc.</p> <p>Reduces risk of straining to reach.</p> <p>Refocuses attention away from pain, aids in reducing muscle spasm/tension; and promotes tissue oxygenation/healing.</p> <p>Alleviates stress on muscles and prevents further aggravation of injury.</p> <p>Ventilation of worries can help decrease stress factors present in illness/hospitalization. Provides opportunity to give information/correct misinformation.</p>
<p>Collaborative</p> <p>Provide orthopedic bed or firm mattress.</p> <p>Administer medications as indicated: Nonsteroidal anti-inflammatory drugs (NSAIDs), e.g., nabumetone (Relafen), ibuprofen (Motrin, Advil), etodolac (Lodine), diflunisal (Dolobid), ketoprofen (Orudis), meclufenamate (Meclomen).</p>	<p>Provides support and reduces spinal flexion, decreasing spasms.</p> <p>Suppresses pain and inflammation, decreases edema and pressure on nerve root(s). <i>Note:</i> Epidural or facet joint injection of anti-inflammatory drugs may be tried if other interventions fail to alleviate pain.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Pain Management (NIC)</p>	
<p>Collaborative</p>	
<p>Muscle relaxants, e.g., cyclobenzaprine (Flexeril), baclofen (Lioresal), diazepam (Valium), carisoprodol (Soma), methocarbamol (Robaxin).</p>	<p>Relaxes striated muscles, decreasing pain. <i>Note:</i> Because these drugs act centrally on the brain, drowsiness, dizziness, and lightheadedness may occur, especially during initial therapy, raising safety concerns.</p>
<p>Analgesics, e.g., acetaminophen (Tylenol) with codeine, meperidine (Dermerol), hydrocodone (Vicodin), butorphanol (Stadol), fentanyl (Duragesic), morphine (MS Contin).</p>	<p>May be required for relief of moderate to severe pain, usually during periods of exacerbation of symptoms. Used with caution for relief of chronic pain because concerns of dependency must be balanced with patient's functional abilities/quality of life resulting from drug use.</p>
<p>Apply physical supports, e.g., lumbar brace, cervical collar.</p>	<p>Support of structures decreases muscle stress/spasms and reduces pain.</p>
<p>Maintain traction if indicated.</p>	<p>Sometimes used to remove weight bearing from affected disc area, increasing intravertebral separation and allowing disc bulge to move away from nerve root.</p>
<p>Consult with physical therapist.</p>	<p>Individualized program (including hot and cold packs, ultrasound, massage, therapeutic exercises, and pool therapy) can relieve muscle spasm and strengthen back, extensor, abdominal, and quadriceps muscles to increase support to lumbar area.</p>
<p>Apply/monitor use and effects of cold or moist hot packs, diathermy, ultrasound.</p>	<p>Increases circulation to affected muscles, promotes relief of spasms, and enhances patient's relaxation.</p>
<p>Instruct in postmyelogram/postepidural block care when appropriate, e.g., force fluids and lie flat or at 30-degree elevation, as indicated for specified period of time.</p>	<p>Decreases risk of postprocedure headache/spinal fluid leak.</p>
<p>Assist with/instruct in use of electrical stimulation, e.g., TENS unit.</p>	<p>Decreases stimuli by blocking pain transmission.</p>
<p>Refer to rehabilitation/pain management clinic.</p>	<p>Coordinated team efforts may include physical and psychological therapy to deal with all aspects of chronic pain and allow patient to increase activity and productivity.</p>

NURSING DIAGNOSIS: Mobility, impaired physical

May be related to

Pain and discomfort, muscle spasms
Restrictive therapies, e.g., bedrest, traction
Neuromuscular impairment

Possibly evidenced by

Reports of pain on movement
Reluctance to attempt/difficulty with purposeful movement
Impaired coordination, limited ROM, decreased muscle strength

DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:

Immobility Consequences: Physiological (NOC)

Verbalize understanding of situation/risk factors and individual treatment regimen.
Be free of complications.
Demonstrate techniques/behaviors that enable resumption of activities.

Mobility Level (NOC)

Maintain or increase strength and function of affected and/or compensatory body part.

ACTIONS/INTERVENTIONS	RATIONALE
<p>Bed Rest Care (NIC)</p> <p>Independent</p> <p>Perform/assist with passive and active ROM exercises. Encourage lower leg/ankle exercises. Evaluate for edema, erythema of lower extremities, calf pain/tenderness, presence of Homans' sign.</p> <p>Provide good skin care; gently massage pressure points after each position change. Check skin under brace periodically.</p> <p>Encourage diet high in fiber and adequate fluid intake.</p> <p>Note emotional/behavioral responses to immobility. Provide diversional activities.</p>	<p>Strengthens abdominal muscles and flexors of spine; promotes good body mechanics.</p> <p>Stimulates venous circulation/return, decreasing venous stasis and possible thrombus formation.</p> <p>Reduces risk of skin irritation/breakdown.</p> <p>Reduces risk of constipation related to decreased level of activity. Forced immobility may heighten restlessness, irritability. Diversional activity aids in refocusing attention and enhances coping with limitations.</p>
<p>Exercise Therapy: Ambulation (NIC)</p> <p>Provide for safety measures as indicated by individual situation.</p>	<p>Depending on area of involvement/type of procedure, imprudent activity increases chance of spinal injury. (Refer to CP: Disc Surgery, ND: Trauma (spinal), risk for)</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Exercise Therapy: Ambulation (NIC)</p> <p>Independent</p> <p>Assist with activity/progressive ambulation.</p> <p>Demonstrate use of adjunctive devices, e.g., walker, cane.</p> <p>Collaborative</p> <p>Administer medication for pain approximately 30 min before turning patient/ambulation, as indicated.</p> <p>Apply antiembolism stockings as indicated.</p>	<p>Activity depends on individual situation but usually progresses slowly according to tolerance.</p> <p>Provides stability and support to compensate for altered muscle tone/strength and balance.</p> <p>Anticipation of pain can increase muscle tension. Medication can relax patient, enhance comfort and cooperation during activity.</p> <p>Promotes venous return, reducing risk of DVT.</p>

<p>NURSING DIAGNOSIS: Anxiety (specify level)/Coping, ineffective</p> <p>May be related to</p> <p>Situational crisis</p> <p>Threat to/change in health status, socioeconomic status, role functioning</p> <p>Recurrent disorder with continuing pain</p> <p>Inadequate relaxation, little or no exercise</p> <p>Inadequate coping methods</p> <p>Possibly evidenced by</p> <p>Apprehension, uncertainty, helplessness</p> <p>Expressed concerns regarding changes in life events</p> <p>Verbalization of inability to cope</p> <p>Muscular tension, general irritability, restlessness; insomnia/fatigue</p> <p>Inability to meet role expectations</p> <p>DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:</p> <p>Anxiety Control (NOC)</p> <p>Appear relaxed and report anxiety is reduced to a manageable level.</p> <p>Identify ineffective coping behaviors and consequences.</p> <p>Assess the current situation accurately.</p> <p>Demonstrate effective problem-solving skills.</p> <p>Develop plan for necessary lifestyle changes.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Coping Enhancement (NIC)</p> <p>Independent</p> <p>Assess level of anxiety. Determine how patient had dealt with problems in the past and how he/she is coping with current situation.</p> <p>Provide accurate information and honest answers.</p> <p>Provide opportunity for expression of concerns, e.g., possible permanent nerve damage/paralysis, effect on sexual ability, changes in employment/finances, altered role responsibilities.</p> <p>Assess presence of secondary gains that may interfere with the wish to recover and may impede recovery.</p> <p>Note behaviors of SO that promote “sick role” for patient.</p> <p>Collaborative</p> <p>Refer to community support groups, social services, financial/vocational counselor, marital therapy/psychotherapy, as appropriate.</p>	<p>Aids in identifying strengths and skills that may help patient deal with current situation and/or enable others to provide appropriate assistance.</p> <p>Helpful in clarifying misconceptions, identifying actual risk. Enables patient to make decisions based on knowledge.</p> <p>Most patients have concerns that need to be expressed and responded to with accurate information to promote coping with situation.</p> <p>Patient may unconsciously experience advantages such as attention, control of others, relief from responsibilities. These need to be dealt with positively to promote recovery.</p> <p>SO may unconsciously enable patient to remain dependent by doing things that patient should do for self.</p> <p>Provides support for adapting to changes and provides resources to deal with problems.</p>

<p>NURSING DIAGNOSIS: Knowledge, deficient [Learning Need] regarding condition, prognosis, treatment, self-care, and discharge needs</p> <p>May be related to</p> <p>Misinformation/lack of knowledge Information misinterpretation, lack of recall Unfamiliarity with information resources</p> <p>Possibly evidenced by</p> <p>Verbalization of problems; statement of misconception Inaccurate return demonstration Development of preventable complications</p> <p>DESIRED OUTCOMES/EVALUATION CRITERIA—PATIENT WILL:</p> <p>Knowledge: Disease Process (NOC) Verbalize understanding of condition, prognosis, and treatment.</p> <p>Knowledge: Treatment Regimen (NOC) Initiate necessary lifestyle changes. Participate in therapeutic regimen.</p>
--

ACTIONS/INTERVENTIONS	RATIONALE
<p>Teaching: Disease Process (NIC)</p> <p>Independent</p> <p>Review disease/injury process and prognosis. Stress activity restrictions/limitations, e.g., avoid riding in car for long periods, refrain from participation in aggressive sports.</p> <p>Give information about and instruct in proper body mechanics and exercises. Include information about proper posture/body mechanics for standing, sitting, and lifting, and use of supportive shoes.</p> <p>Investigate appropriateness of using pneumatic continuous passive motion (CPM) supports when sitting.</p> <p>Discuss medications and side effects: e.g., some medications cause drowsiness (analgesics, muscle relaxants); others can irritate gastric mucosa/aggravate ulcer disease (NSAIDs).</p> <p>Recommend use of bedboards/firm mattress, small flat pillow under neck, sleeping on side with knees flexed, avoiding prone position.</p> <p>Discuss dietary needs/goals.</p> <p>Avoid prolonged heat application.</p> <p>Review use of soft cervical collar.</p> <p>Encourage regular medical follow-up.</p> <p>Provide information about what symptoms need to be reported for further evaluation, e.g., sharp pain, loss of sensation/ability to walk, change in bowel/bladder control.</p>	<p>Helpful in clarifying and developing understanding and acceptance of necessary lifestyle modifications. Full knowledge base provides opportunity for patient to make informed choices. May enhance cooperation with treatment program and achievement of optimal recovery.</p> <p>Reduces risk of reinjuring back/neck area by using muscles of thighs/buttocks.</p> <p>Many individuals with low back pain have difficulty sitting for any length of time. This has a direct negative impact on work and leisure activities. The superficial soft-tissue effects of massage and vibration are usually short lived. CPM slowly moves the spine through the ranges of lordosis on a continuous basis while the individual is seated, whether riding in/driving a car, sitting at a desk, or reclining at home.</p> <p>Reduces risk of complications/injury.</p> <p>May decrease muscle strain through structural support and prevention of hyperextension of spine.</p> <p>High-fiber diet can reduce constipation; calorie restrictions promote weight control/reduction, which can decrease pressure on disc.</p> <p>Can increase local tissue congestion; decreased sensitivity to heat can result in thermal injury.</p> <p>Maintaining slight flexion of head (allows maximal opening of intervertebral foramina) may be useful for relieving pressure in mild to moderate cervical disc disease. Hyperextension should be avoided.</p> <p>Evaluates resolution/progression of degenerative process; monitors development of side effects/complications of drug therapy; may indicate need for change in therapeutic regimen.</p> <p>Progression of the process may necessitate further treatment/surgery.</p>

ACTIONS/INTERVENTIONS	RATIONALE
<p>Teaching: Disease Process (NIC)</p> <p>Independent</p> <p>Answer questions about treatment alternatives, e.g.: Chemonucleolysis;</p> <p>Surgical interventions.</p>	<p>As an alternative to surgery, the enzyme chymopapain may be injected into the disc (dissolves the mucoprotein disc material without effect on surrounding structure). Although many patients experience relief, the procedure is not widely done because of side effects, including allergic reaction to the enzyme.</p> <p>Microdiscectomy may be performed to excise fragments of the disc with a comparatively lower risk than more invasive surgery. Laminectomy with/without spinal fusion may be performed when conservative treatment is ineffective or when neurological deficits persist.</p>

POTENTIAL CONSIDERATIONS following acute hospitalization (dependent on patient's age, physical condition/presence of complications, personal resources, and life responsibilities)

Adjustment, impaired—disability, requiring change in lifestyle, assault to self-esteem, altered locus of control.

Pain, chronic—prolonged physical/psychosocial disability.

Therapeutic Regimen: ineffective management—complexity of therapeutic regimen, decisional conflicts, economic difficulties, perceived benefits, powerlessness.

Disuse Syndrome, risk for—severe pain, periods of immobility.