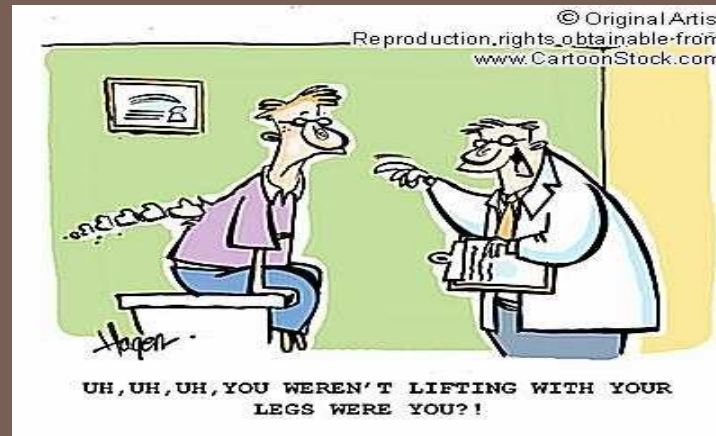


BACK PAIN AND INTERVERTEBRAL DISC DISEASE



Sheryll Mae M. Coulombe, MSN, RN-BC

Low Back Pain

- Affects ~80% of adults in United States at least once
- Second only to headache as most common pain complaint
- Leading cause of job-related disability
- Major contributor to missed work days



Etiology and Pathophysiology

- Most often due to musculoskeletal problem
- Localized or diffuse
- Radicular pain
 - Irritation of nerve root
- Referred pain
 - Source of pain is another location



Low Back Pain

- Lumbar region
 - Bears most weight
 - Is most flexible
 - Contains nerve roots
 - Has poor biochemical structure



Low Back Pain: Risk Factors

- ❑ Lack of muscle tone
- ❑ Excess body weight
- ❑ Poor posture
- ❑ Cigarette smoking
- ❑ Prior compression fractures
- ❑ Congenital spinal problems
- ❑ Family history of back pain



Low Back Pain: Risk Factors

- Occupational risk factors
 - Repetitive lifting
 - Vibration
 - Extended periods of sitting
 - Health care personnel engaged in patient care



Chronic Low Back Pain

- Lasts longer than 3 months
 - Involves repeated incapacitating episode
- Often progressive
- Various causes
 - Degenerative or metabolic disease
 - Weakness from scar tissue
 - Chronic strain
 - Congenital spine problem



Chronic Low Back Pain

□ **Spinal Stenosis**

- Narrowing of spinal canal
- Acquired conditions
 - Osteoarthritis, RA, tumors, trauma
- Inherited conditions
 - Congenital spinal stenosis
 - scoliosis



Spinal Stenosis

- Pain in low back and radiates to buttocks and leg
- ↑ with walking/prolonged standing
- Numbness, tingling, weakness, heaviness in legs and buttocks
- Pain ↓ when bends forward or sits down



Low Back Pain

□ **Spondylolysis**

- Structural defect, forward displacement, heredity

□ **Spondylolisthesis**

- Vertebrae slides forward
- Graded 1-4



Low Back Pain

- Overall Goals
 - Satisfactory pain relief
 - Return to previous level of activity
 - Correct performance of exercises
 - Adequate coping
 - Adequate self-help management

Low Back Pain

Interprofessional Care

- Health Promotion
 - Proper body mechanics
 - “Back School program”
 - Appropriate body weight
 - Proper sleep positioning
 - Firm mattress
 - Stop smoking

Low Back Pain

Interprofessional Care

- Weight reduction
- Sufficient rest periods
- Local heat and cold application
- Physical therapy
- Exercise and activity throughout day
- Complementary and alternative therapies

Low Back Pain: Interprofessional Care

- Treat as outpatient if not severe
 - NSAIDs, muscle relaxants
 - Massage
 - Back manipulation
 - Acupuncture
 - Cold and hot compresses
- Severe pain
 - Corticosteroids, opioids



Low Back Pain: Interprofessional Care

- Drug Therapy
 - Mild analgesics
 - Antidepressants
 - Gabapentin (Neurontin)
- Minimally invasive treatments
 - Epidural corticosteroid injections
 - Implanted devices to deliver analgesia
- Surgery

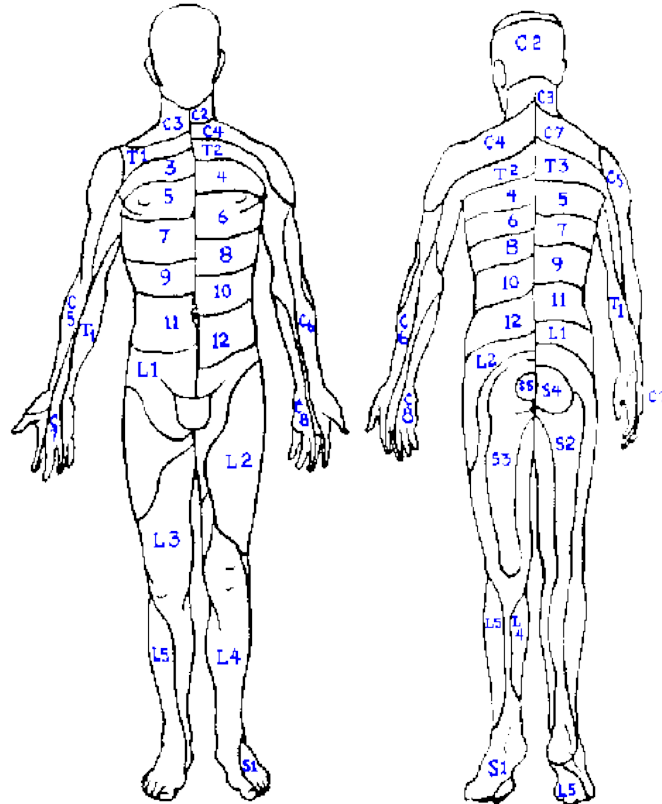


Low Back Pain

Nursing Diagnoses

- Acute pain
- Impaired physical mobility
- Ineffective coping
- Ineffective health management

Intervertebral Disc Disease



Intervertebral Disc Disease:

Etiology and Pathophysiology

- Intervertebral discs separate vertebrae and help absorb shock
- Disease involves deterioration, herniation, or other dysfunction
- Involves all levels

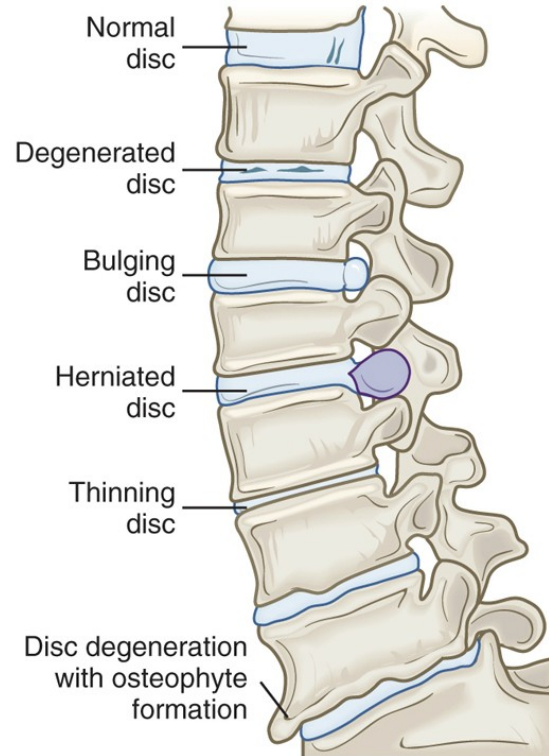


Degenerative Disc Disease

- **DDD: Etiology and Pathophysiology**
 - Loss of elasticity, flexibility, & shock-absorbing capabilities
 - Disc becomes thinner as nucleus pulposus dries out → load shifted to annulus fibrosus → progressive destruction → pulposus seeps out (herniates)



Degenerative Disc Disease



Intervertebral Disc Disease:

Etiology and Pathophysiology

- Radiculopathy
 - Radiating pain
 - Numbness
 - Tingling
 - ↓ Strength and/or range of motion



Intervertebral Disc Disease

Clinical Manifestations

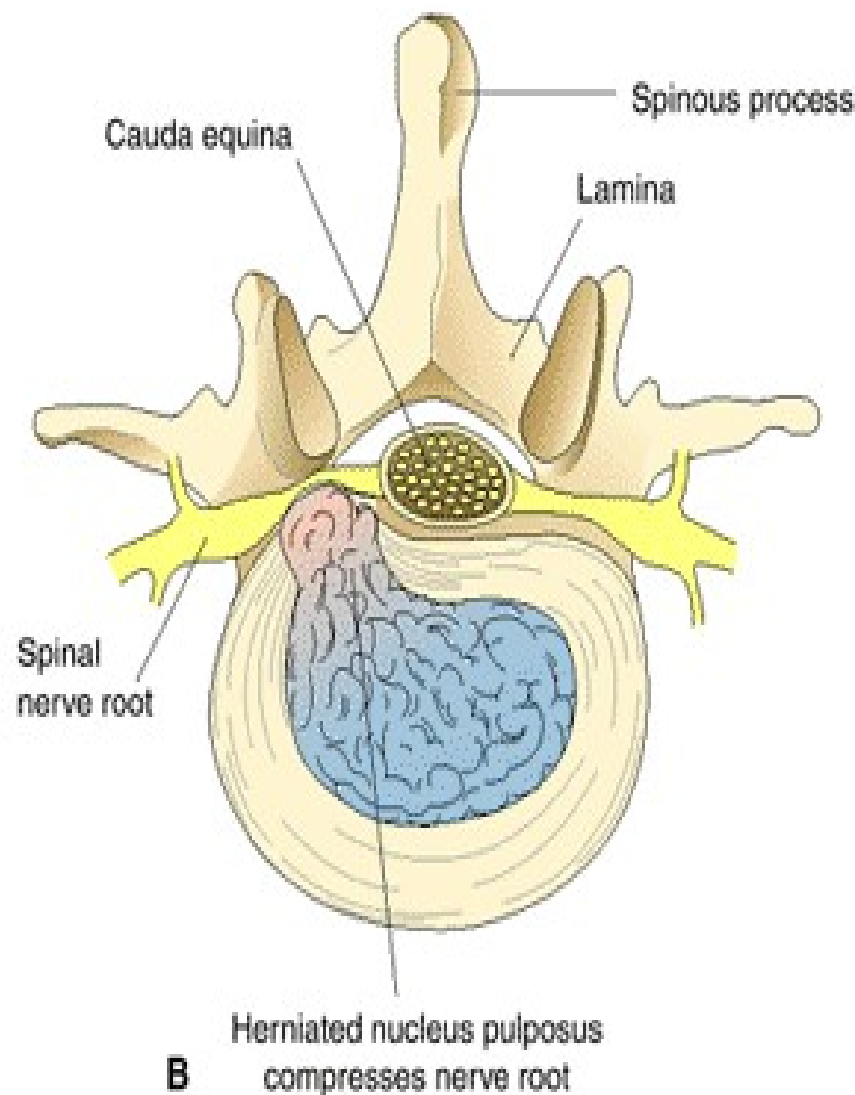
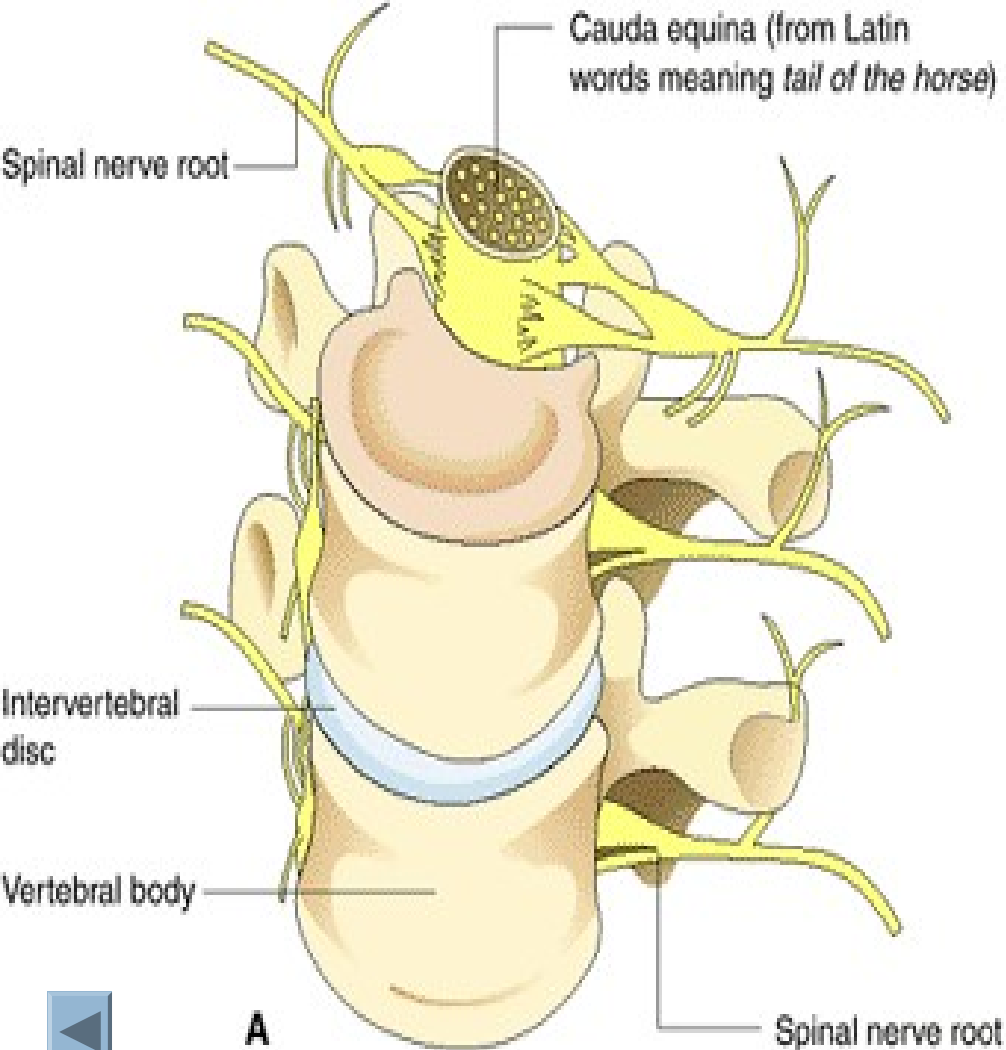
- Low back pain
- Radicular pain
- +Straight leg raise
- ↓ or absent reflexes
- Paresthesia
- Muscle weakness



Clinical Manifestations

- Multiple nerve root (cauda equina) compression
 - Severe low back pain
 - Progressive weakness
 - Increased pain
 - Bowel and bladder incontinence
 - Medical emergency





Clinical Manifestations

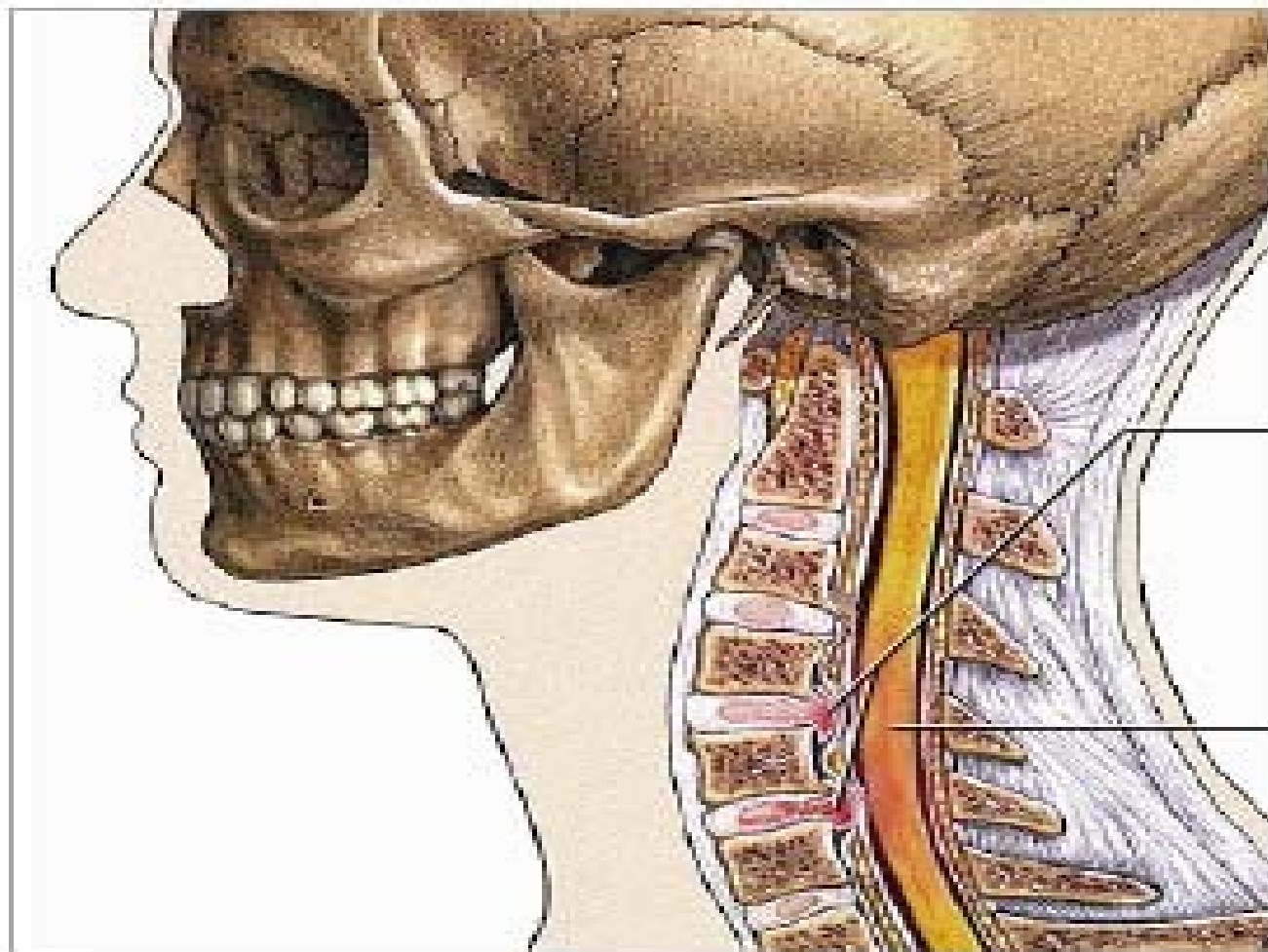
- Cervical disc disease
 - Pain radiates to arms and hands
 - ↓ reflexes and handgrip
 - May include shoulder pain and dysfunction



Intervertebral Disc Disease Diagnostic Studies

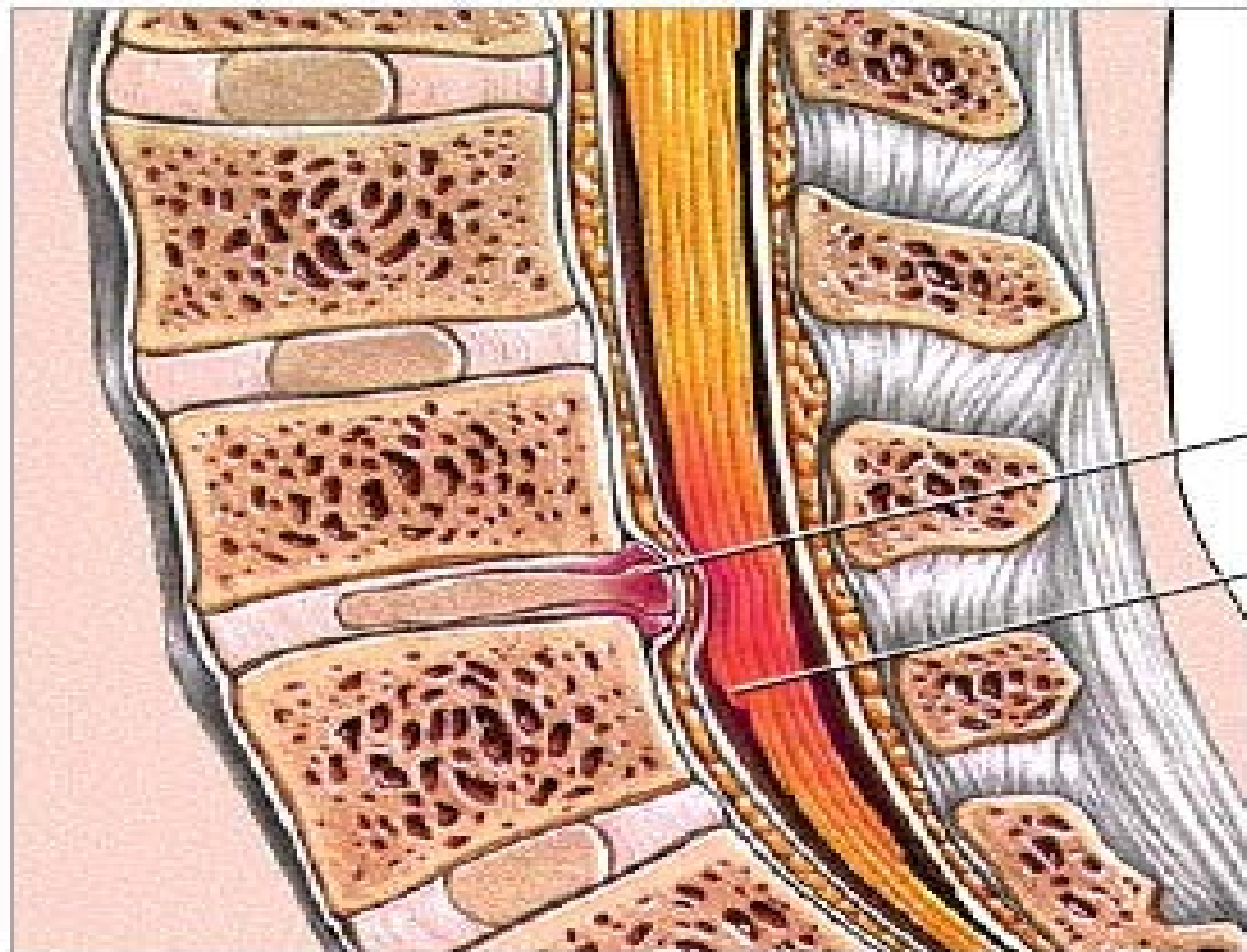
- X-rays
- Myelogram, MRI or Ct Scan
- Epidural venogram or discogram
- EMG





Herniated
intervertebral
discs

Spinal cord
compression



Herniated
disc

Spinal cord
compression

Intervertebral Disc Disease

Interprofessional Care

- Conservative Therapy
 - Limitation of movement
 - Local heat or ice
 - Ultrasound and massage
 - Skin traction
 - Transcutaneous electrical nerve stimulation (TENS)



Intervertebral Disc Disease

Interprofessional Care

- Back-strengthening exercises
 - Twice a day
 - Encouraged for a lifetime
- Teach good body mechanics
- Avoid extremes of flexion and torsion
- Most patients heal in 6 months



Intervertebral Disc Disease

Interprofessional Care

- Drug therapy
 - NSAIDs
 - Short-term corticosteroids
 - Opioids
 - Muscle relaxants
 - Antiseizure drugs, antidepressants
- Epidural corticosteroid injections



Intervertebral Disc Disease

Surgical Therapy

- Indicated when
 - Conservative treatment fails
 - Radiculopathy worsens
 - Loss of bowel or bladder control
 - Constant pain
 - Persistent neurologic deficit



Intervertebral Disc Disease

Surgical Therapy

- Intradiscal electrothermoplasty (IDET)
 - Minimally invasive outpatient procedure
 - Denervates nerve fibers
- Radiofrequency discal nucleoplasty (coblation nucleoplasty)
 - Needle inserted similar to IDET
 - Breaks up nucleus pulposus



Intervertebral Disc Disease

Surgical Therapy

- Interspinous process decompression system
(X Stop)
 - To treat lumbar stenosis
 - Titanium: fits into mount placed on vertebrae
 - Lifts vertebrae off pinched nerve

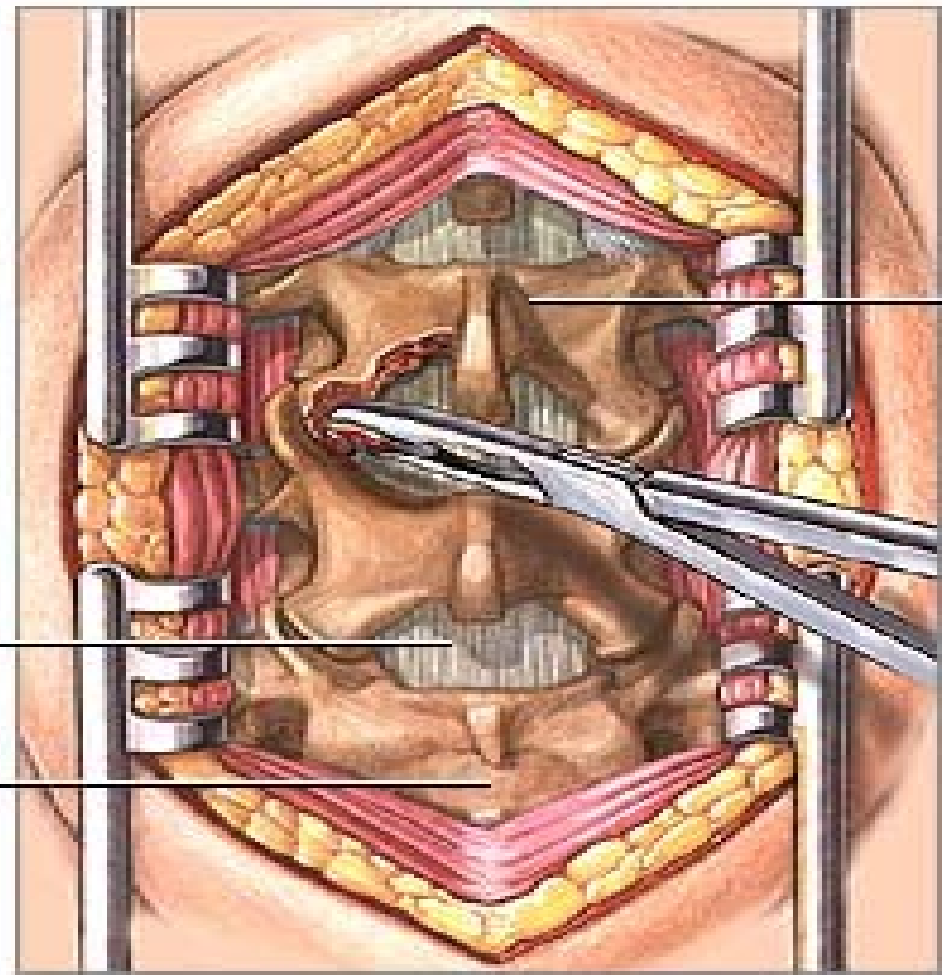


Intervertebral Disc Disease

Surgical Therapy

- Laminectomy
 - Surgically remove disc through excision of part of vertebra
- Discectomy
 - Surgically decompress nerve root
 - Microsurgical or percutaneous technique



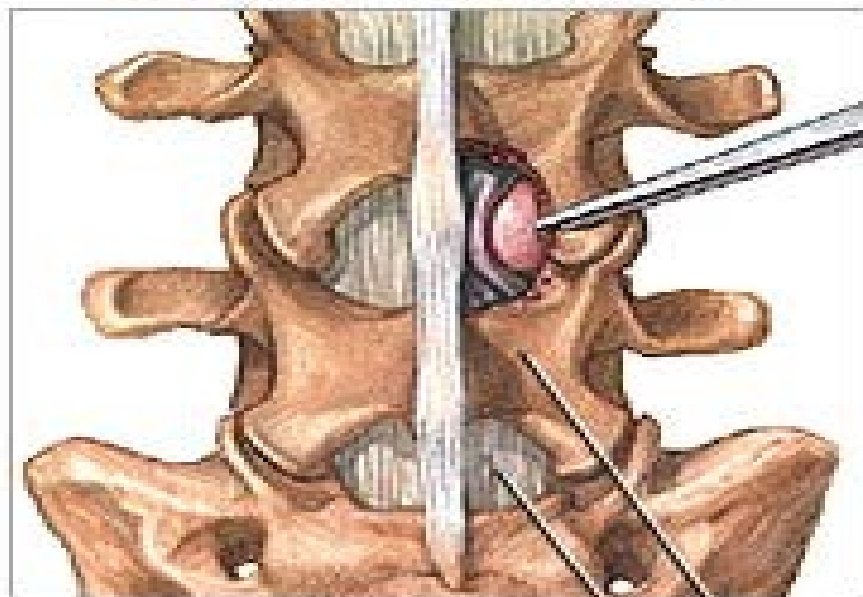


Lamina

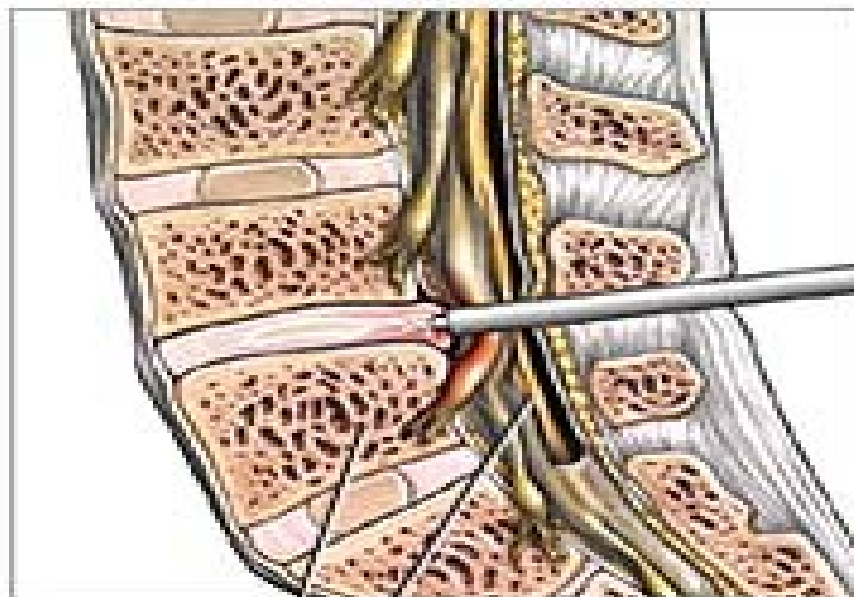
Spinal cord

Cervical
vertebrae

Removal of lamina

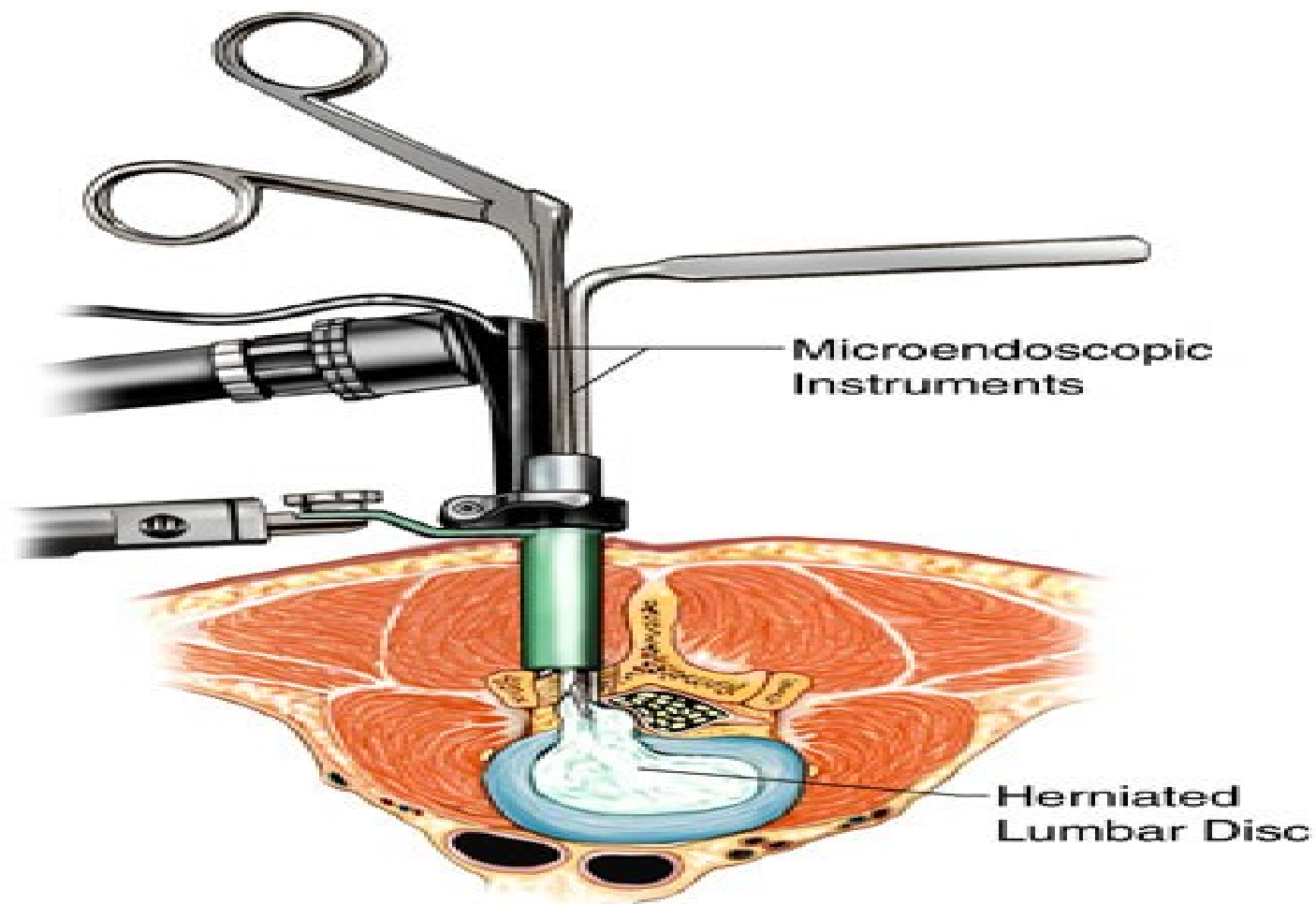


Removal of disc



Vertebrae

Spinal cord



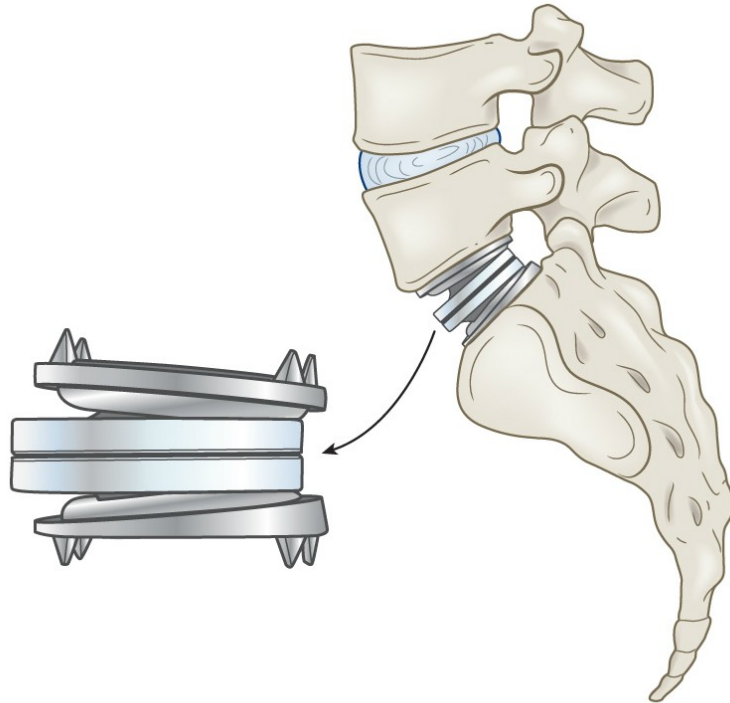
Intervertebral Disc Disease

Surgical Therapy

- Artificial disc replacement
 - Charité or Prodisc-L disc for lumbar DDD
 - Prestige cervical disc system
 - Surgically placed in spine through small incision after damaged disc is removed
 - Allows for movement at level of implant



Charité Disc



Intervertebral Disc Disease

Surgical Therapy

- Spinal fusion
 - Spine is stabilized by creating ankylosis (fusion) of contiguous vertebrae
 - Uses a bone graft from patient's fibula or iliac crest or from donated cadaver bone
 - Metal fixation can add to stability
 - Bone morphogenetic protein (BMP) to stimulate bone growth of graft



Intervertebral Disc Disease

Nursing Management

- Vital Signs
- Wound Inspection
- Motor strength
- Urinary retention
- Positioning (logroll)
- Home Care





Spinal Surgery:

Postoperative

- Opioids for 24-48 hours
- Patient-controlled analgesia (PCA)
- Switch to oral drugs when able
- Muscle relaxants
- Assess and document pain intensity and pain management effectiveness



Spinal Surgery: Postoperative

- Potential for cerebrospinal (CSF) leakage
- Monitor for and report severe headache or leakage of CSF
 - Clear or slightly yellow drainage on dressing
 - + for glucose
- Frequently assess for peripheral neurologic signs



Spinal Surgery:

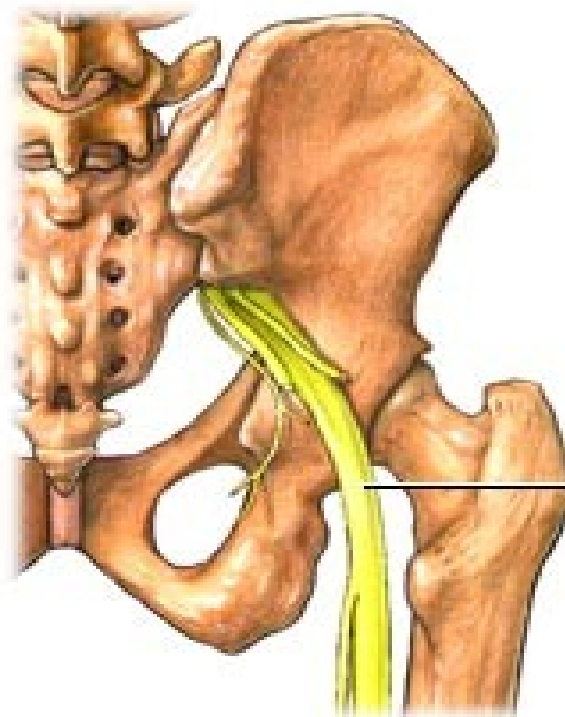
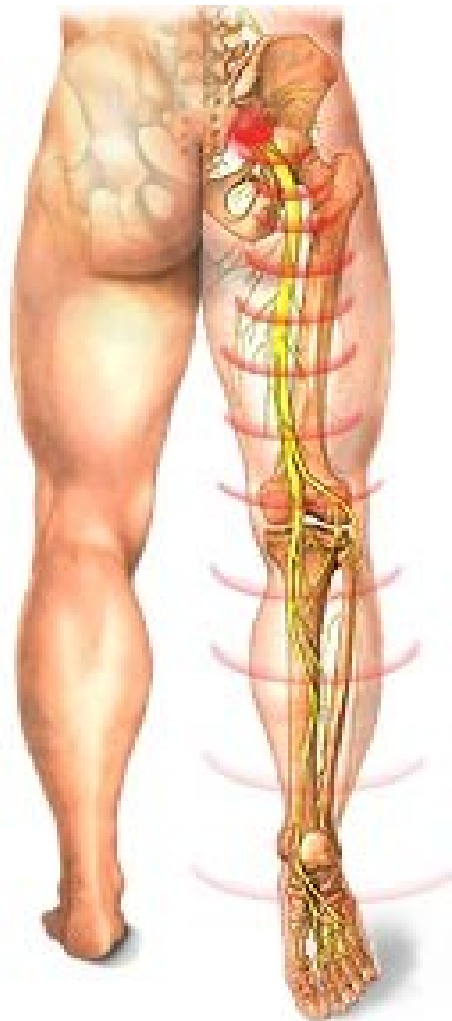
Postoperative

- Monitor GI and bowel function
 - Administer stool softeners
- Monitor and assist with bladder emptying
 - Loss of tone may indicate nerve damage
- Notify surgeon immediately if bowel or bladder incontinence



Spinal Surgery: Postoperative

- Teaching regarding activity
 - Proper body mechanics
 - Avoid prolonged sitting or standing
 - Encourage walking, lying down, shifting weight
 - No lifting, twisting
 - Use thighs and knees to absorb shock
 - Firm mattress or bed board



Sciatic
nerve

Pain from sciatica radiates from the buttock down the leg and can travel as far as the feet and toes

Nursing Management Drugs for Spasticity

- Baclofen (Lioresal)
- MOA: acts within the spinal cord to suppress hyperactive reflexes with no direct effects on skeletal muscle
- Adverse Effects: CNS effects, GI symptoms, urinary retention, no antidote for overdose and withdrawal

THE END