BACK PAIN AND INTERVERTEBRAL DISC DISEASE

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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

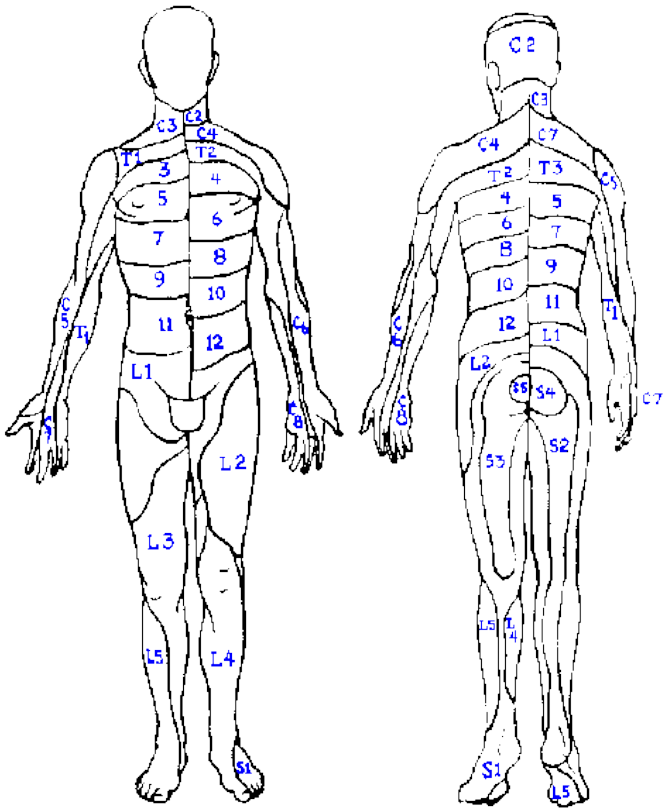
Low Back Pain: Interprofessional Care

- 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



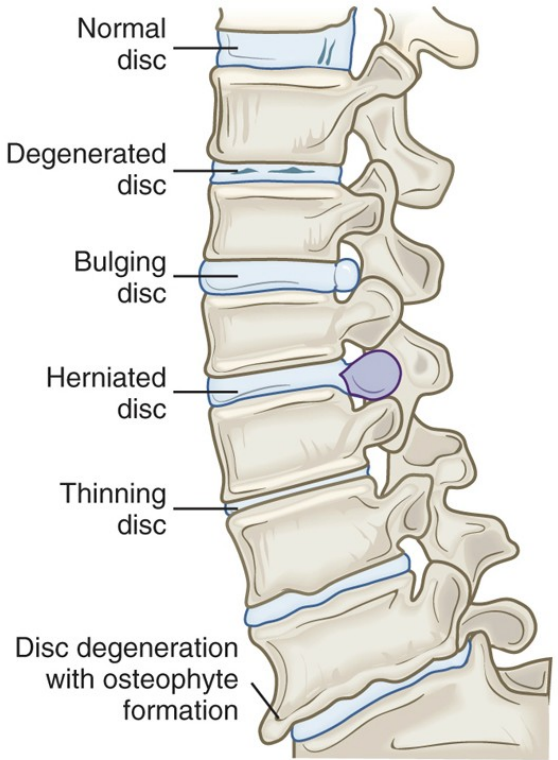
Intervertebral Disc Disease: Etiology and Pathophysiology

- 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

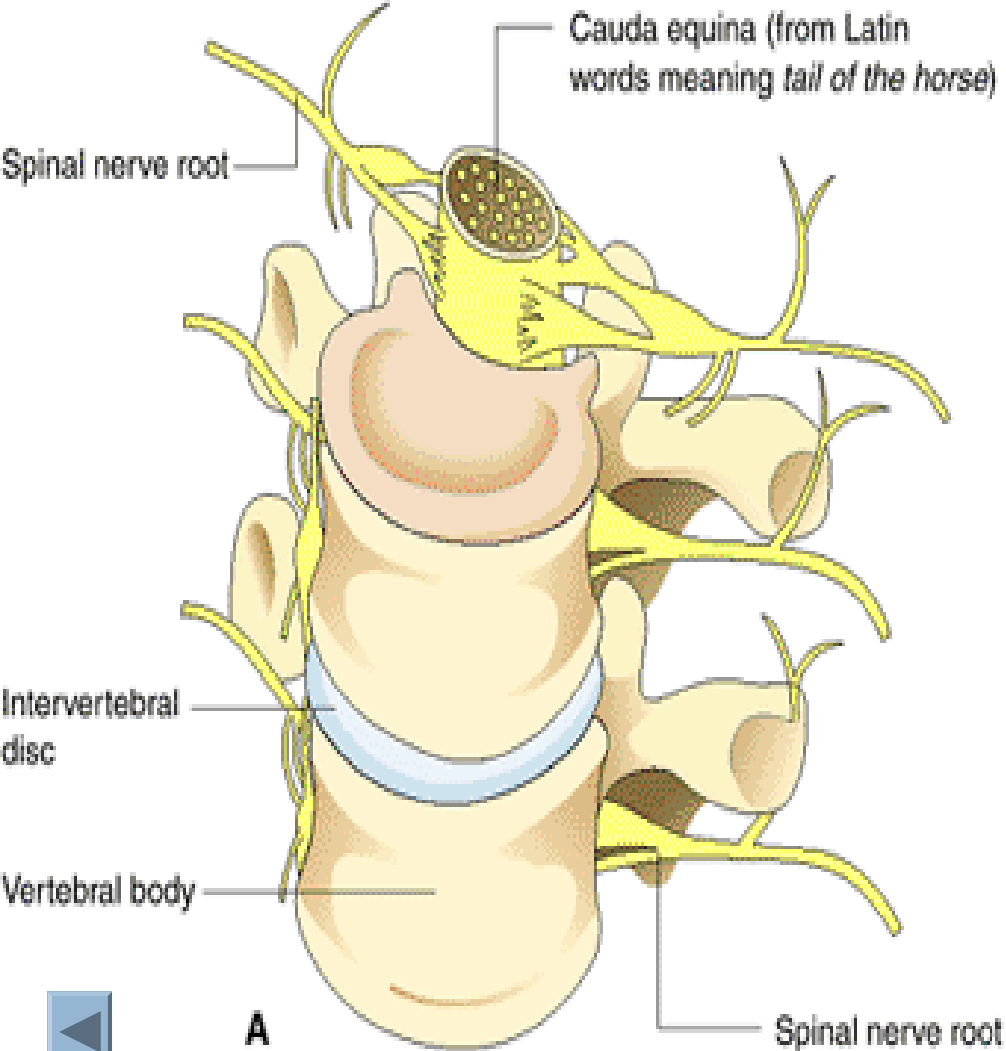
Intervertebral Disc Disease Clinical Manifestations

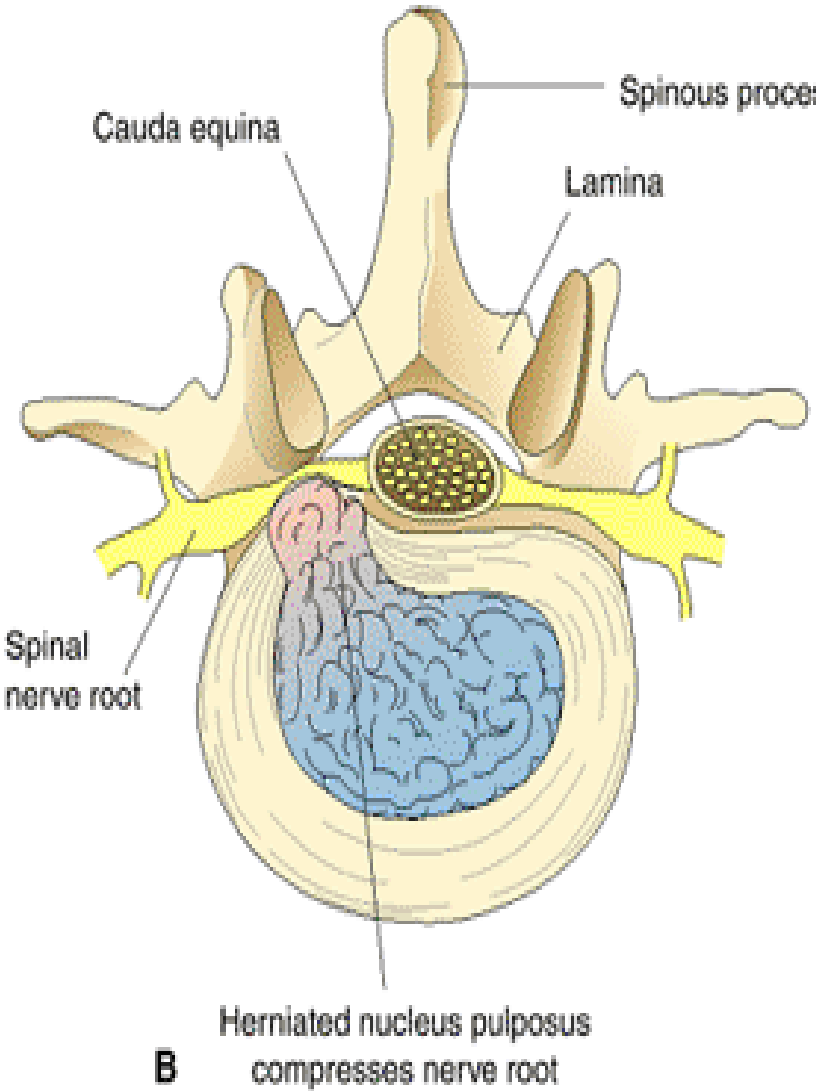
- Low back pain
- Radicular pain
- +Straight leg raise
- ↓ or absent reflexes
- Paresthesia
- Muscle weakness

Intervertebral Disc Disease

Clinical Manifestations

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


Cauda equina (from Latin words meaning *tail of the horse*)
Spinal nerve root
Intervertebral disc
Vertebral body
Spinal nerve root
A


Spinous process
Cauda equina
Lamina
Spinal nerve root
Herniated nucleus pulposus compresses nerve root
B

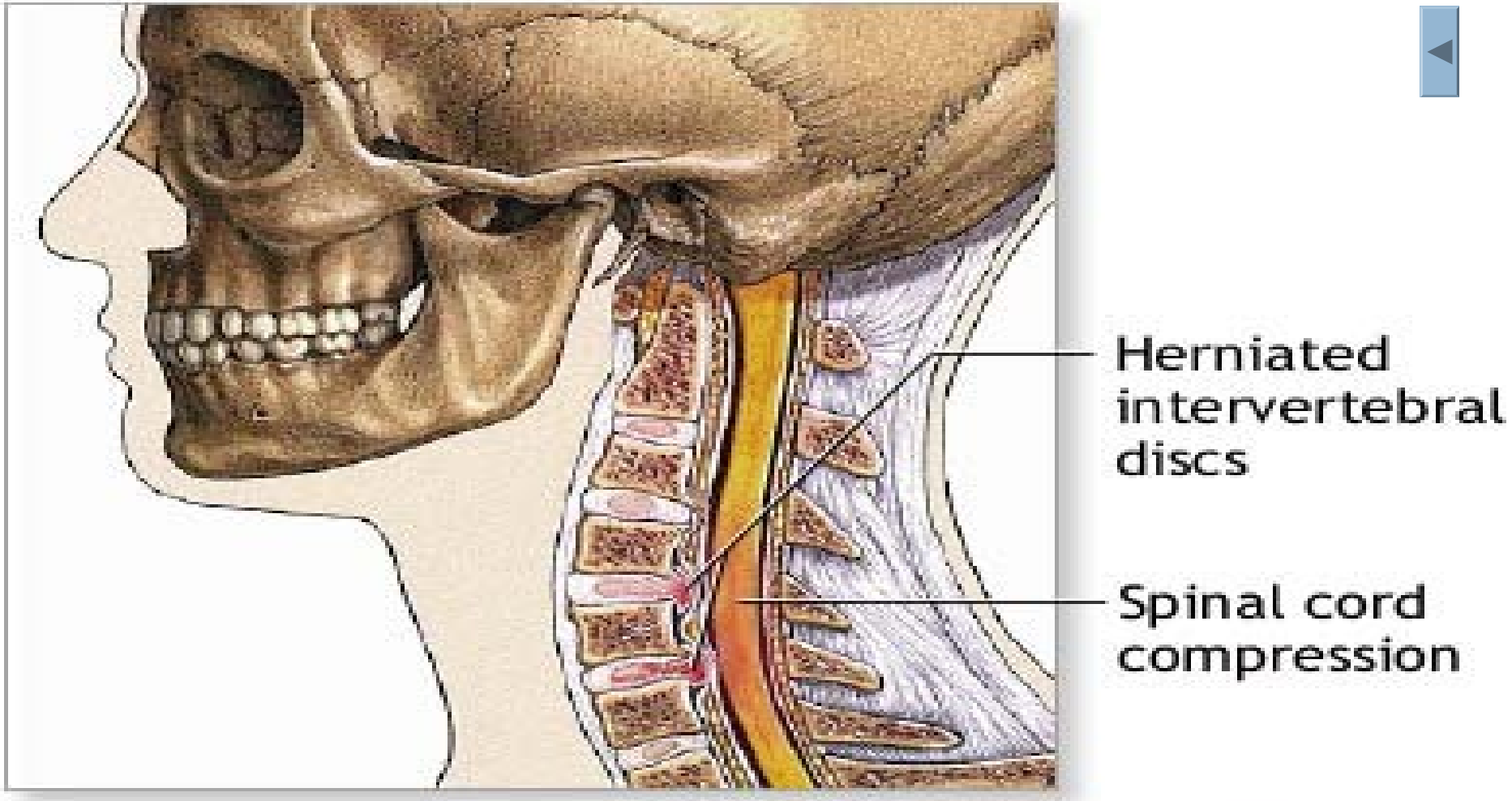
Intervertebral Disc Disease

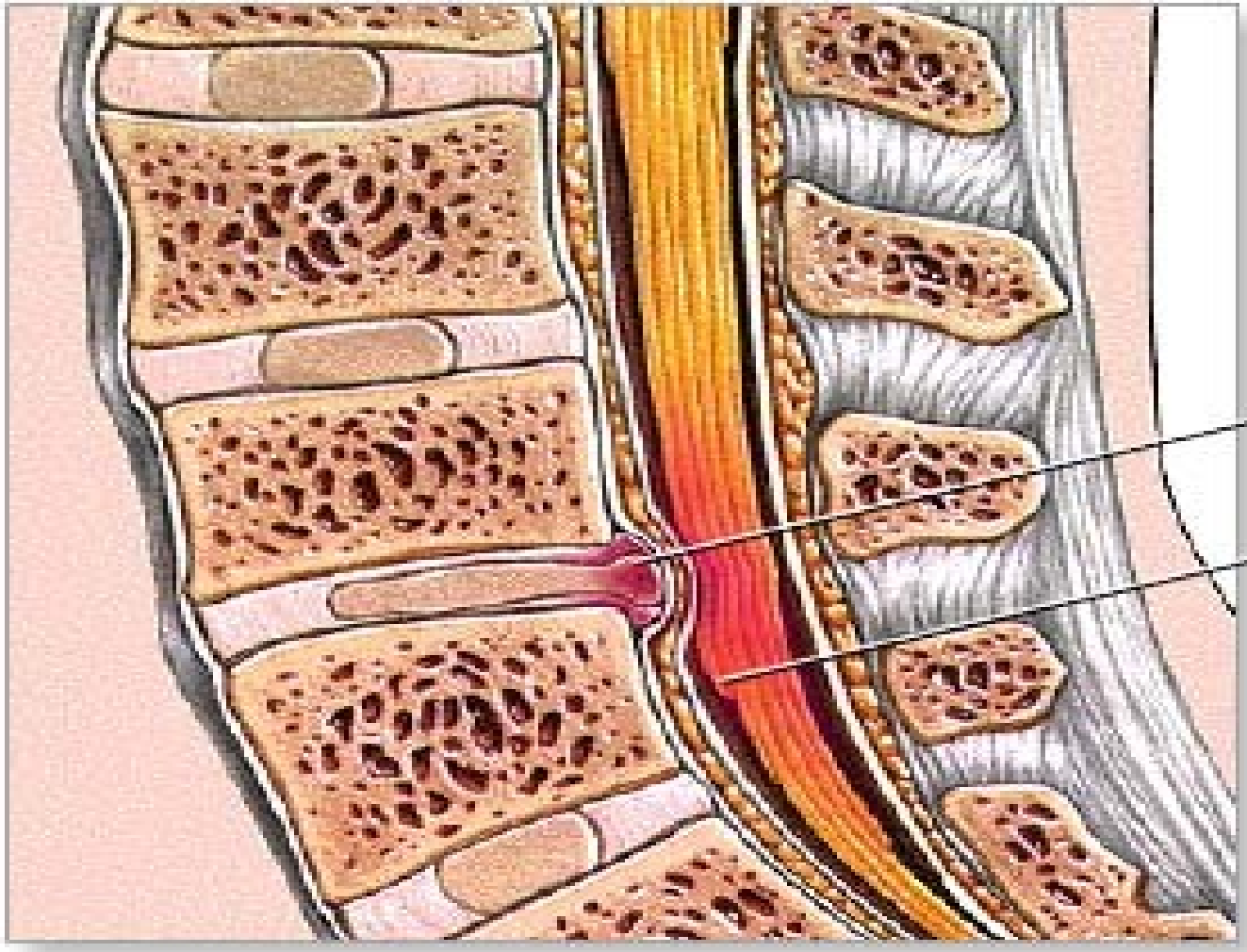
Clinical Manifestations

- 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





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

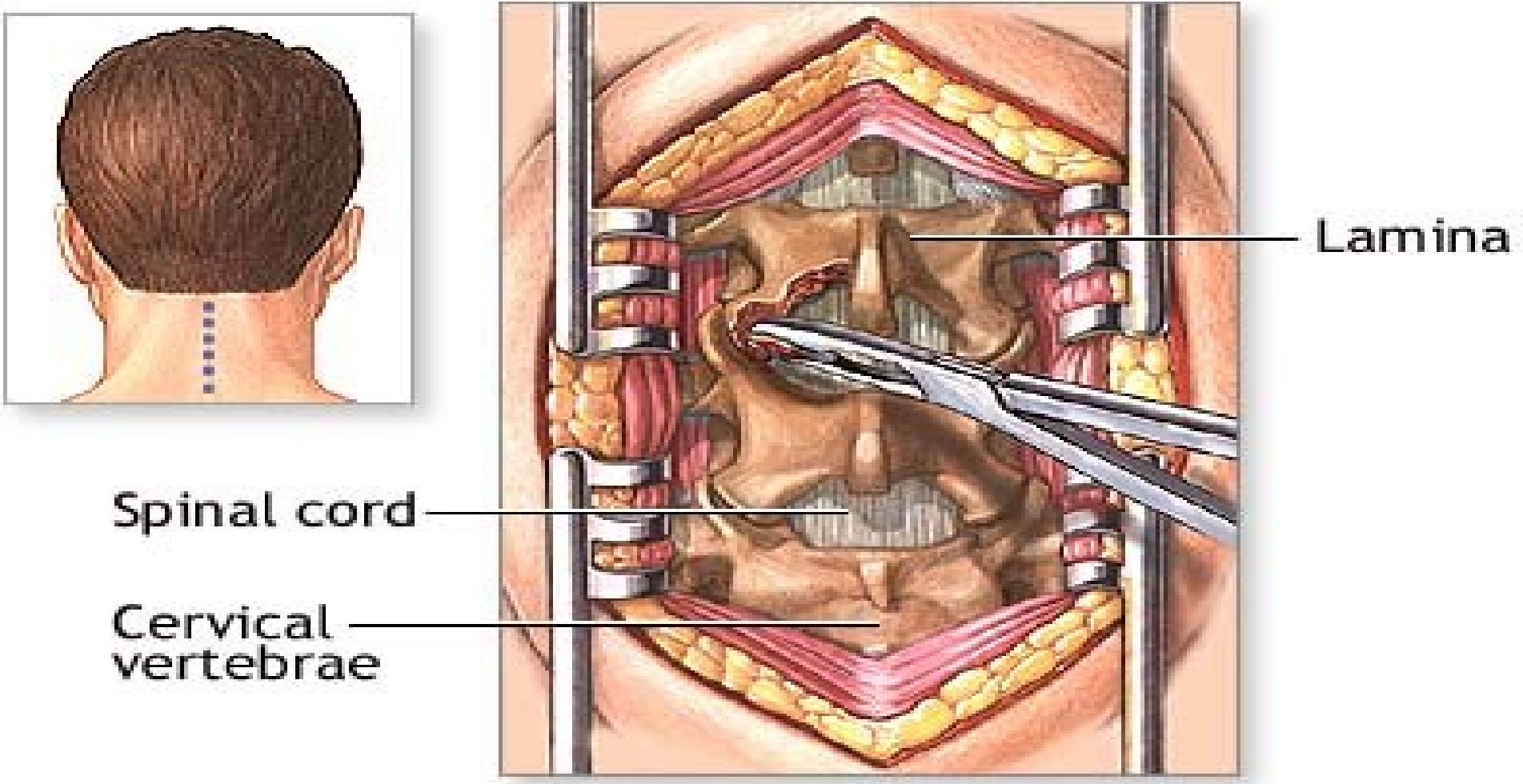
Intervertebral Disc Disease
Surgical Therapy

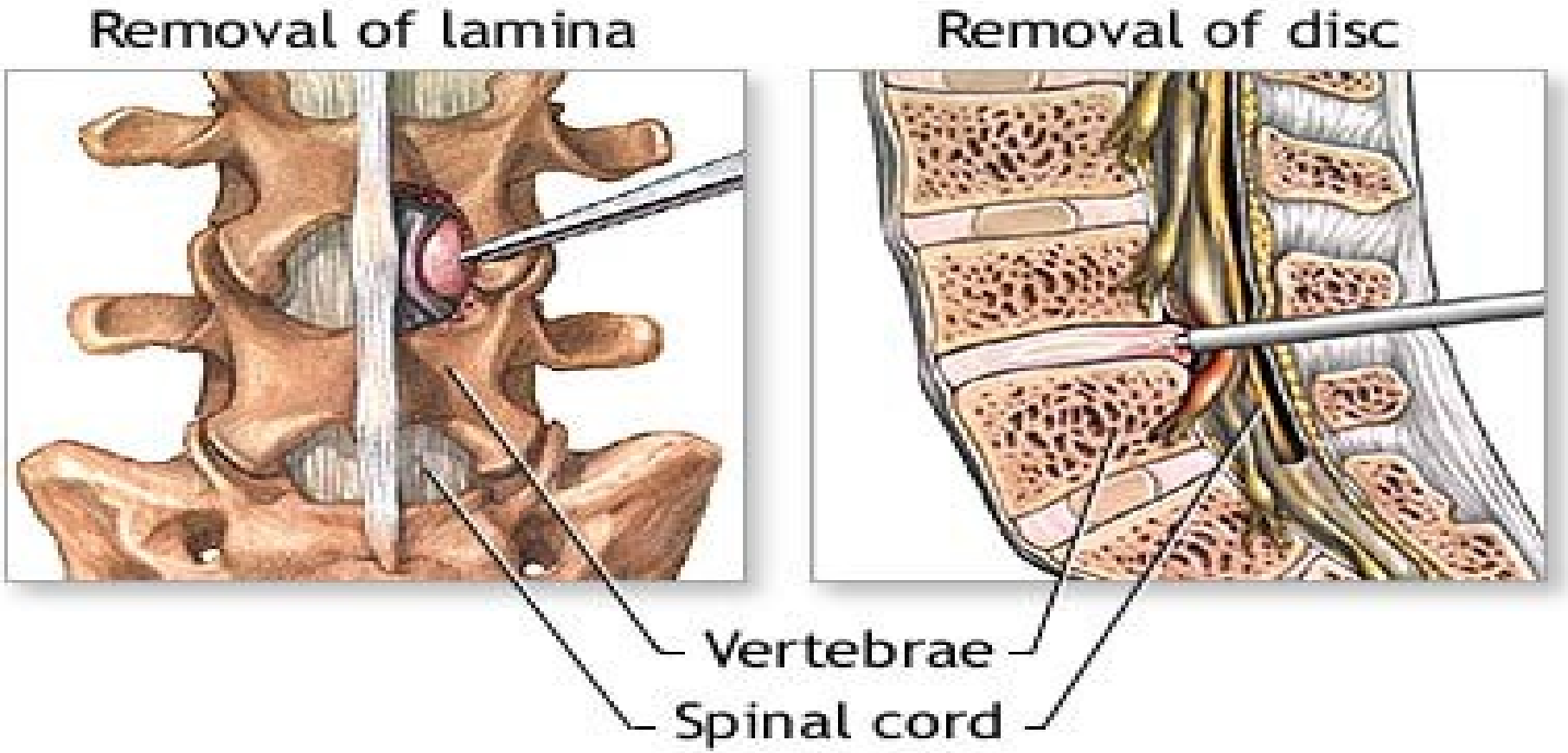
- Interspinous process decompression system

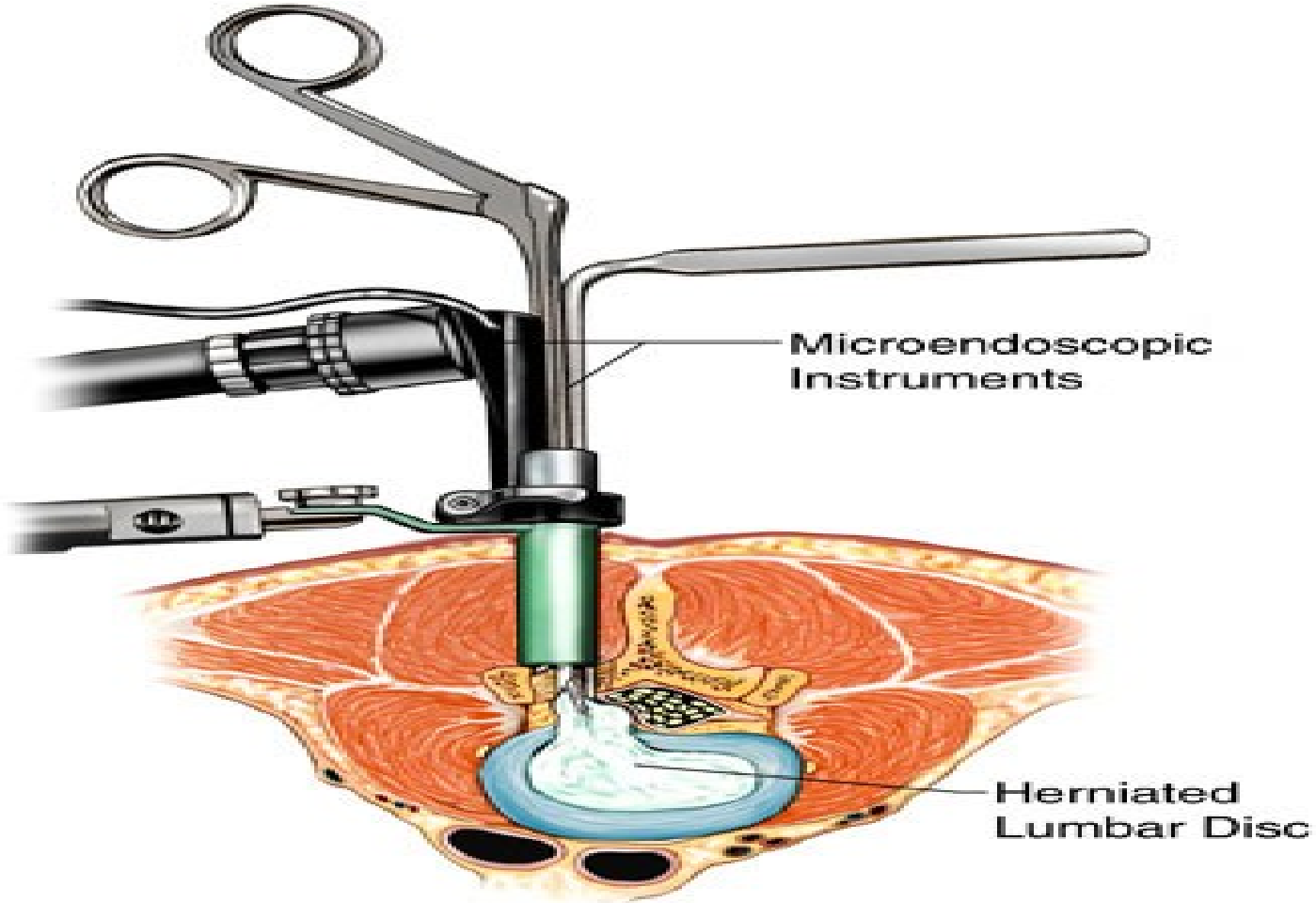
  (X Stop)
  - To treat lumbar stenosis
  - Titanium: fits into mount placed on vertebrae
  - Lifts vertebrae off pinched nerve

Intervertebral Disc Disease
Surgical Therapy

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



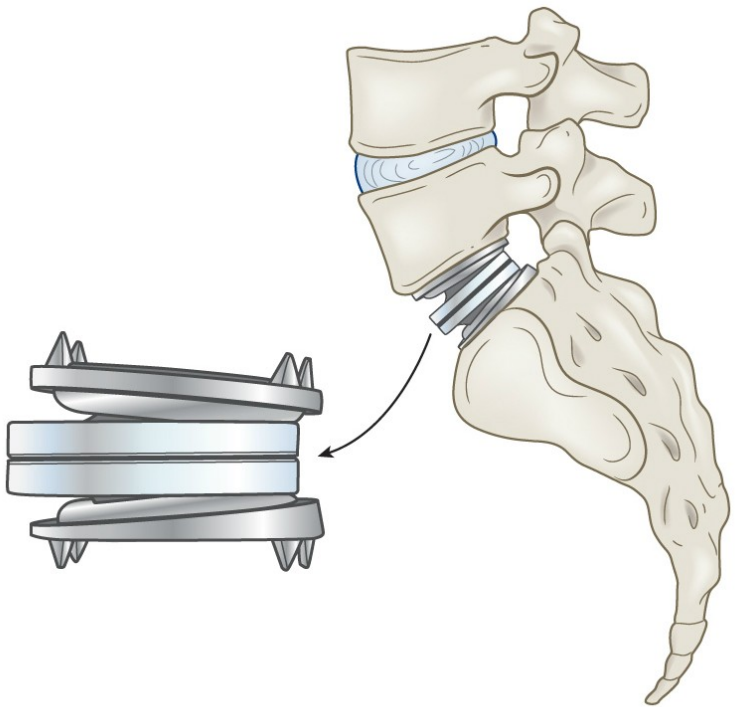

Removal of lamina
Removal of disc
Vertebrae
Spinal cord


Microendoscopic
Instruments
Herniated
Lumbar Disc

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 grown of graft

Intervertebral Disc Disease
Nursing Management

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

Nursing Management 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

Nursing Management Spinal Surgery: Postoperative

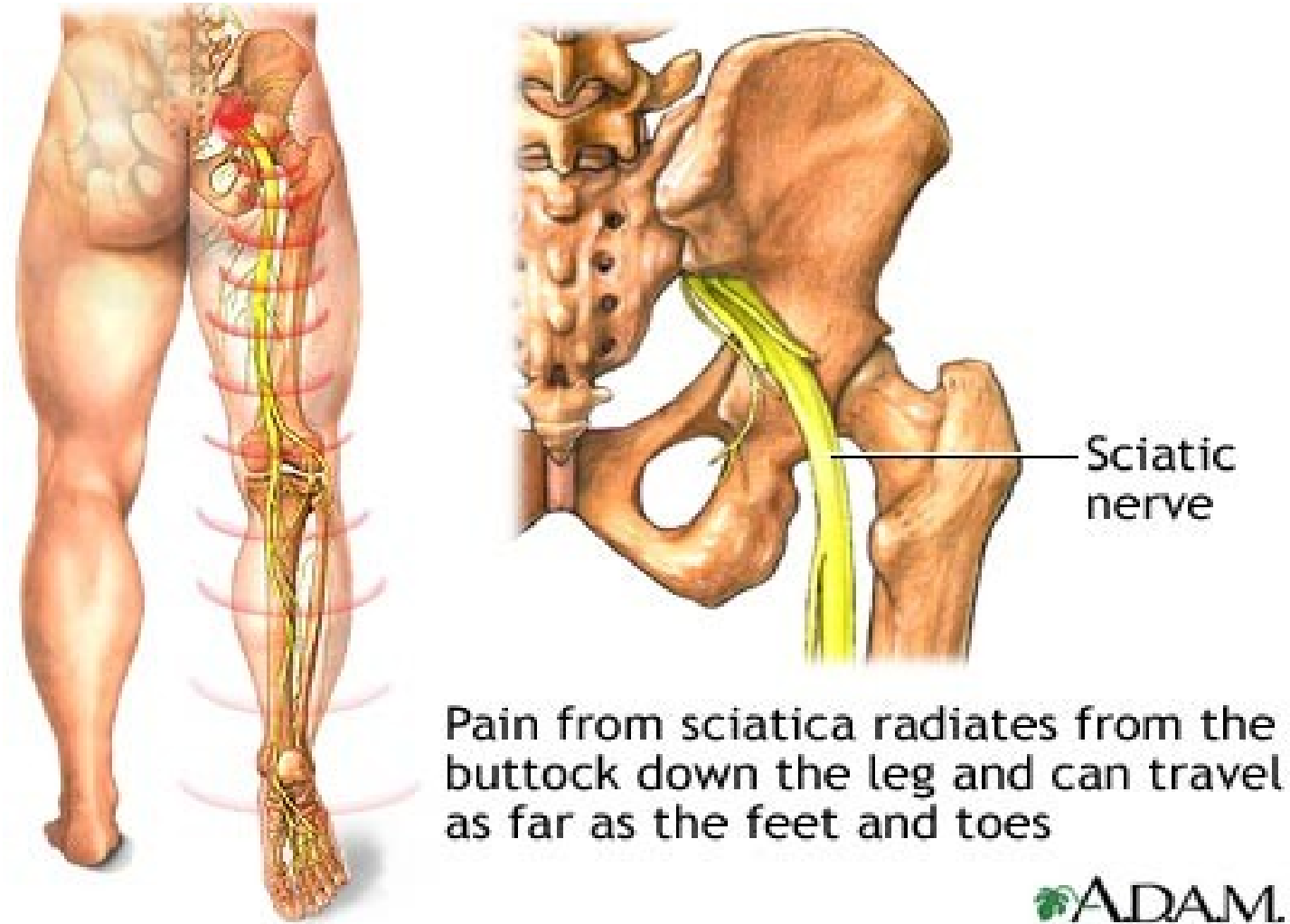
- Potential for cerebrospinal (CSF) leakage
- Monitor for and report severe headache or leakage of CSF
  - Clear or slightly yellow drainage on dressing
  - + for glucose
- Frequently assess for peripheral neurologic signs

Nursing Management 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

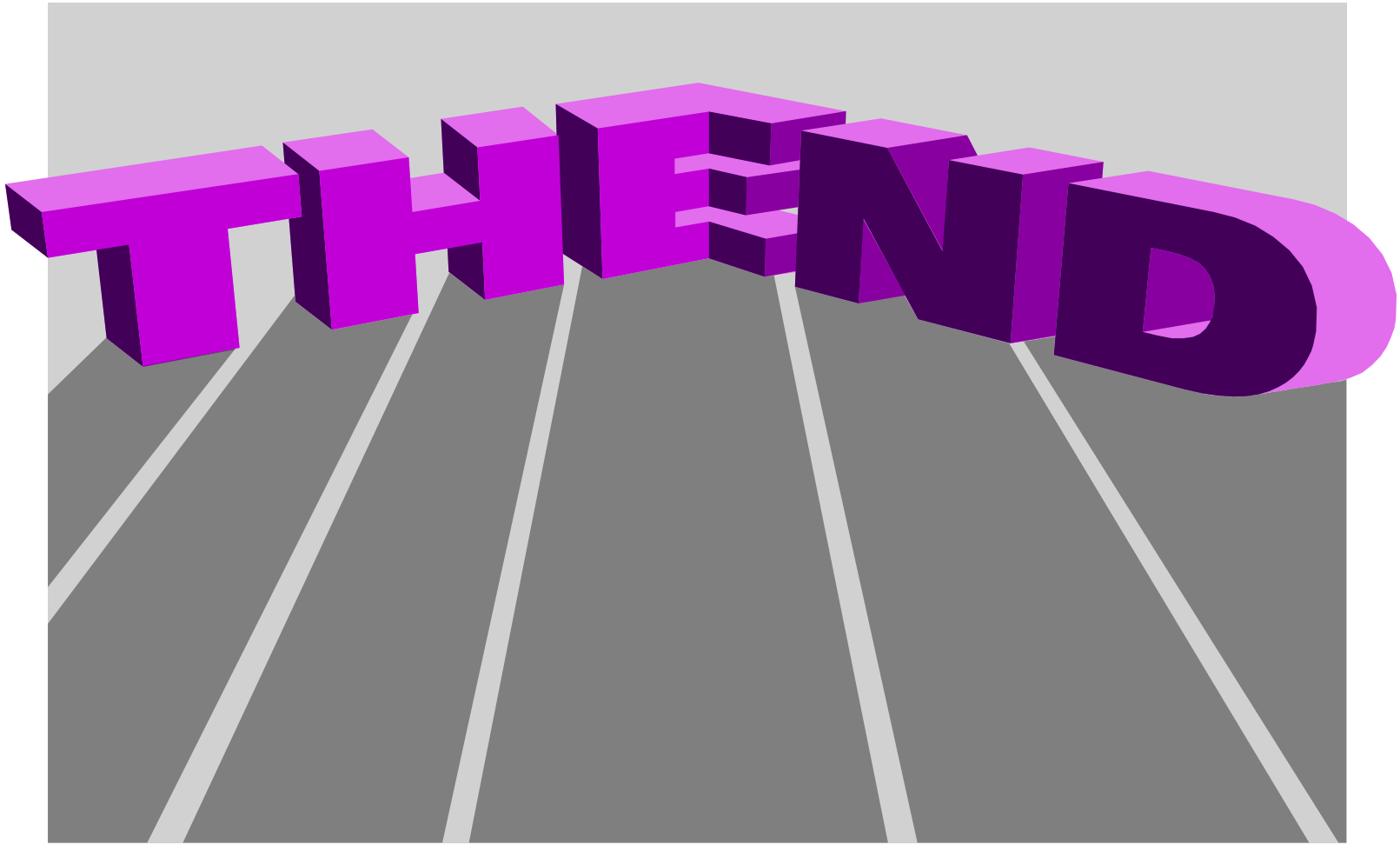
Nursing Management Spinal Surgery: Postoperative

- 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
A.D.A.M.

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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