pain relief and healing of the involved disk by fibrosis. Conservative treatment is usually prescribed for 2 to 6 weeks. After that time, surgery may be considered. The treatment regimen depends on the severity of the manifestations but usually includes one or more of the following (Hickey, 2003):

- Decreasing activity level
- Avoiding flexion of the spine (e.g., do not lift, bend, or twist)
- Wearing a support garment, such as a corset or cervical collar
- Following a prescribed exercise program
- Using a firm mattress
- Taking prescribed medications for pain, inflammation, and muscle spasms

Some clients achieve pain relief with transcutaneous electrical stimulation (TENS) or transcutaneous neural stimulation (TNS). Another pain relief intervention is bed rest. It is important that the client use a firm mattress. The client should lie so that the pull on the affected nerve is reduced. Clients with lumbar involvement should usually flex the knees and elevate the head of the bed to about 30 degrees. After 4 days or less of bed rest, the client may begin walking and an exercise program designed by the physical therapist. This program includes teaching proper body mechanics and positioning, exercises to strengthen the back and decrease muscle spasms, massage, and the application of heat. Most clients report a good recovery after conservative management.

Medications used to treat back pain include nonnarcotic analgesics, anti-inflammatory drugs such as the nonsteroidal agents (NSAIDs), muscle relaxants, and sedative-tranquilizers.

Surgery
Surgery is indicated for clients who do not respond to conservative management or have serious neurologic deficits. Several surgical interventions are used to treat a ruptured intervertebral disk. The type of surgery chosen depends on the location of the disk and the stability of the spinal column.

- A laminectomy, the type of surgery most often performed, is the removal of a part of the vertebral lamina. The surgery is done to relieve pressure on the nerves. It is often combined with removal of the protruding nucleus pulposus (nucleotomy). Nursing care for the client having a laminectomy is discussed in the box below. A disectomy is the removal of the nucleus pulposus of an intervertebral disk. Disectomy may be performed alone or along with a laminectomy.
- Spinal fusion is the insertion of a wedge-shaped piece of bone or bone chips between the vertebrae to stabilize them. The bone is usually taken from a client donor site, such as the iliac crest. A spinal fusion may also be performed through a spinal implant with a device called a BAK (a hollow titanium cylinder with holes) which is packed with grafted bone from a donor site and placed in the space where a disk is removed. Although not appropriate for all clients requiring a spinal fusion, this does require a short hospital stay and convalescence.
- Foraminotomy is an enlargement of the opening between the disk and the facet joint to remove bony overgrowth compressing the nerve. The location and size of the incision vary according to the surgeon’s preference and the location and

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**NURSING CARE OF THE CLIENT HAVING A POSTERIOR LAMINECTOMY**

**PREOPERATIVE TEACHING**

- Demonstrate and ask the client to practice logrolling; explain that it will be done by the nurses for the first day or two, and then the client can do it alone. To ensure healing, the spinal column must remain in alignment when turning and moving.
- Explain the importance of taking pain medications regularly and of asking for them before the pain is severe. Include information about the possibility of the pain being much the same after surgery. Pain is easier to control if medications are taken before the pain is severe. Pain may be the same following surgery for a herniated intervertebral disk because edema due to surgery irritates and compresses the nerve roots.
- Demonstrate the use of a fracture bedpan and ask the client to practice its use. The client usually must remain flat in bed for a period of time following surgery. A fracture bedpan is more comfortable for clients who must lie flat.
- Explain that the client may need to eat while lying flat. This position prevents flexion of the spine.
- Demonstrate and ask the client to practice deep breathing, the use of the incentive spirometer, and leg exercises. Ask the client to practice these skills. These measures prevent respiratory and circulatory complications.

**POSTOPERATIVE CARE**

- Maintain the client in a position that minimizes stress on the surgical wound. For clients with cervical laminectomy:
  a. Elevate the head of the bed slightly.
  b. Position a small pillow under the neck.
  c. Maintain the position of the cervical collar.
For clients with lumbar laminectomy:
  a. Keep the bed flat or elevate the head of the bed slightly.
  b. Place a small pillow under the head.
  c. Place a small pillow under the knees, or use a pillow to support the upper leg when the client lies on one side. These positions minimize stress on the surgical wound and suture line. A cervical collar provides stability and prevents flexing or twisting the neck.
- Turn the client every 2 hours, using the logrolling technique. Teach the client not to use the side rails to change position. Maintain proper body alignment in all positions. The client’s body is turned as a single unit (usually with a turning sheet) to avoid movement of the operative area. Pulling on the side rails puts stress on the operative area and may also cause misalignment of the vertebral column.
NURSING CARE OF THE CLIENT HAVING A POSTERIOR LAMINECTOMY (continued)

- Monitor the client for signs of nerve root compression.
  a. Cervical laminectomy: Assess hand grips and arm strength, ability to move the fingers, and ability to detect touch.
  b. Lumbar laminectomy: Assess leg strength, ability to wiggle the toes, and ability to detect touch.

- Assess for nerve root injury. Assess the client’s ability to dorsiflex the foot (lumbar laminectomy) and the client’s grip strength (cervical laminectomy). Assess the client who has had a cervical laminectomy for hoarseness. Report hoarseness to the physician and further assess the client’s ability to swallow. Nerve root compression may cause permanent damage, resulting in footdrop (in lumbar laminectomy clients) and hand weakness (in cervical laminectomy clients). Damage to the laryngeal nerve may cause permanent hoarseness. Impaired ability to swallow puts the client at risk for aspiration.

- Assess for urinary retention. The client should void within 8 hours after surgery. If the physician allows, let males stand to urinate. Early ambulation increases respiratory and circulatory function and decreases the risk of thrombophlebitis of the lower extremities. The vertebral column should remain in alignment while the client sits and stands. Safety must be considered throughout care.

- Assess for leakage of cerebrospinal fluid. Assess the dressing for increased moisture. Check the sheets for wetness when the client is lying supine; check for clear liquid running down the back when the client is sitting or standing. Gently palpate the sides of the wound to detect a bulge. Use a Dextrostix strip to assess any leakage for the presence of glucose, a positive indicator of cerebrospinal fluid. Although uncommon, leakage of cerebrospinal fluid greatly increases the risk for infection of the wound and of the meninges.

- Assess for hematoma formation as manifested by severe incisional pain that is not relieved by analgesics and decreased motor function. Report these findings to the surgeon immediately. A hematoma may form at the surgical site. If untreated, it may cause irreversible neurologic deficits, including paraplegia and bowel/bladder dysfunctions (Hickey, 1997).

- Assess for pain using a scale from 0 (no pain) to 10 (severe pain). Administer prescribed analgesics on a regular basis, or teach client to use PCA analgesia, if prescribed. Discuss client concerns about pain that is unrelieved by surgery. Compression of the nerve root over time results in edema and inflammation. Because of surgery-induced edema, the client is likely to experience either the same pain or perhaps more severe pain in the period immediately after surgery. This pain usually persists for several weeks after surgery. In addition, many clients who have had a lumbar laminectomy have muscle spasms in the lower back, abdomen, and thighs for the first few days after surgery.

- Assess for infection by taking and recording vital signs at least every 4 hours; report increased body temperature. Assess the wound and dressing for signs of infection: increased redness, drainage, pain, and pus. Use sterile technique to change dressings. The surgical client is always at risk for infection; the client with a laminectomy is also at risk for arachnoiditis. This inflammation of the arachnoid layer of the spinal meninges results from wound infection or contamination during surgery and may cause the formation of painful adhesions.

- Encourage deep breathing and the use of the incentive spirometer every 2 hours; coughing may be discouraged. Anesthesia and immobility depress respiratory function. Coughing may be discouraged because it can disrupt healing tissues, especially in clients having a cervical laminectomy.

- Increase mobility as prescribed. (The time frame for ambulation is prescribed by the physician; the routine here is representative.) Clients often sit on the side of the bed and dangle their legs the evening after surgery or the first day thereafter. Many clients ambulate the first or second postoperative day. To help the client out of bed, first elevate the head of the bed. Then bring the client’s legs over the side of the bed at the same time that the upper body moves into the upright position. Clients should not ambulate without assistance until they are no longer dizzy or weak. Early ambulation increases respiratory and circulatory function and decreases the risk of thrombophlebitis of the lower extremities. The vertebral column should remain in alignment while the client sits and stands. Safety must be considered throughout care.

NURSING CARE

Nursing care for the client with a ruptured intervertebral disk may be provided through information in community and work settings, during conservative treatment, and during pre- and postoperative treatment. The pain of the ruptured disk is often discouraging and debilitating, and may well affect the client’s ability to work.

Prevention

Proper body mechanics may help prevent the occurrence of a ruptured intervertebral disk. Teaching the proper method of lifting and moving heavy objects should begin when children enter school. This information should also be given to all workers who have lifting as part of their responsibilities; including nurses. The guidelines for proper body mechanics are as follows:

- Begin activities by spreading the feet apart to broaden the base of support.