**Nursing Implications for Diagnostic Tests**

**Lumbar Puncture**

**Preparation of the Client**
- Ensure a signed consent form (this consent may be obtained as part of the general consent given on admission to the hospital or agency).
- Ask the client to empty the bladder before the procedure begins.
- Help the client to assume a lateral recumbent position near the side of the bed. The client should assume the fetal position (knees flexed toward the head, head bent toward the chest), with the hands clasped around the knees.

**Client and Family Teaching**
- A local anesthetic is injected into the skin over the area of the needle insertion. This medication may cause a burning sensation.
- A long, thin needle is inserted into the lower back below the level of the spinal cord. Cerebrospinal fluid is withdrawn.
- The cerebrospinal fluid pressure is measured with a calibrated tube called a manometer.
- There may be slight pain down one leg during the procedure.
- It is important to remain still during the procedure.
- A small dressing is used to cover the place where the needle was inserted.
- After the procedure, remain flat in bed for the number of hours prescribed by the physician (this ranges from 4 to 24 hours). The nurses will take your vital signs and look under the small dressing at regular intervals.
- Drink fluids so that your body can replace the fluid that was withdrawn.
- If you have a headache or backache, ask for medications for pain.
- Notify your health care provider if you notice increased pain or drainage from the area where the procedure was done.

**Postprocedure Nursing Care**
- Take and record vital signs as indicated by agency standards.
- Monitor neurologic status at least every 4 hours for 24 hours following the procedure.
- Monitor the puncture site for leakage of cerebrospinal fluid or hematoma formation.
- Ensure that the client voids within 8 hours of the procedure.
- Encourage increased intake of fluids (up to 3000 mL in 24 hours).
- Administer analgesics as prescribed for pain.

Calcium channel blockers, such as nimodipine (Nimotop), are under investigation and have been used in clinical trials to reduce ischemic deficits and death from stroke. They block glutamate, an excitatory neurotransmitter, to reduce the sensitivity of neurons to ischemia.

Corticosteroids, such as prednisone or dexamethasone have been used to treat cerebral edema, but the results are not always positive. If the client has increased intracranial pressure, hypomolar solutions (such as mannitol) or diuretics (such as furosemide) may be administered. Anticonvulsants, such as phenytoin (Dilantin), and barbiturates may be prescribed if increased intracranial pressure causes seizures.

**Treatments**

The treatments used in the medical management of a stroke include surgery, physical therapy, occupational therapy, and speech therapy.

**Surgery**

Surgery may be performed to prevent the occurrence of a stroke or to restore blood flow when a stroke has already occurred. In people who have had TIA's or are in danger of having another stroke, a carotid endarterectomy at the carotid artery bifurcation may be performed to remove atherosclerotic plaque (Figure 41–3). Nursing care for the client in the initial postoperative period following a carotid endarterectomy is described in the box on page 1314.

When an occluded or stenotic vessel is not directly accessible, an extracranial-intracranial bypass may be performed. Bypass of the internal carotid, middle cerebral, or vertebral arteries may be required. The indications for the bypass are symptoms of ischemia caused by TIA’s or a mild completed stroke. The procedure reestablishes blood flow to the affected area of the brain.

**Physical /Occupational/Speech Therapy**

Physical therapy may help prevent contractures and improve muscle strength and coordination. Occupational therapy provides assistive devices and a plan for regaining lost motor skills that greatly improve quality of life after a stroke. In addition, the client with a communication disorder requires speech therapy.

![Figure 41–3](image-url) Carotid endarterectomy. A, The occluded area is clamped off and an incision is made in the artery. B, Plaque is removed from the inner layer of the artery. C, To restore blood flow through the artery, the artery is sutured, or a graft is completed.