3.7 **Lumbar Puncture**

**Objectives**

By the end of this section you should know how to:

- Prepare the patient for a lumbar procedure;
- Collect and prepare the necessary equipment;
- Assist the doctor in performing a lumbar puncture.

**Related information**

A lumbar puncture is performed by a doctor using an aseptic technique. A lumbar puncture needle is inserted between the 3rd and 4th lumbar vertebrae or the 4th and 5th lumbar vertebrae to gain access to the subarachnoid space below the spinal cord in the region of the causa equina. A manometer is attached to the end of the needle via a two-way tap and the cerebro spinal fluid (CSF) is allowed to flow into the manometer to record intra-spinal pressure. Queckenstedt’s test may be performed at this point (see below). When pressure recordings are completed the manometer is occluded and 2-3 mls of CSF is allowed to flow into sterile specimen containers. The doctor will observe the colour, consistency and opacity of the CSF as well as the presence or absence of blood. On completion the needle is removed and the puncture site sealed with an occlusive dressing such as Mepore.

**Queckenstedt’s test**

This test is performed to determine if there is an obstruction in the spinal subarachnoid pathway. This may be due to a fractured or dislocated vertebra or a tumour. Normally, there is a rapid rise in intra-spinal pressure when the jugular vein is compressed and this rapidly returns to normal when the pressure is released. If an obstruction is present, the rise and fall of intra-spinal pressure will be much slower.

**N.B.** This test is only performed to investigate the possibility of a spinal lesion. It is never performed when any intra-cranial lesion is suspected as raised intra-cranial pressure could increase the risk of brain damage.

**Indications for lumbar puncture**

A lumbar puncture is performed:

- To obtain a specimen of CSF for diagnostic and investigative purposes in patients suspected of having meningitis, encephalitis or malignant tumour;
- To identify the presence of blood in CSF following trauma or suspected subarachnoid haemorrhage;
- To introduce radio opaque fluid into the subarachnoid space for radiographic investigation;
- To identify raised intra spinal/cranial pressure, to introduce intra-thecal medication such as antibiotic therapy or cytotoxic agents.

**Equipment**

- Trolley
- Sterile dressings pack
- Sterile drapes
- Sterile surgical gloves
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**Equipment cont…**

- Sterile surgical gown
- Lumbar puncture needles (19, 20, 23 G)
- Spinal manometer
- Two way tap
- Alcohol based antiseptic lotion for cleansing the skin
- Local anaesthetic
- Syringes and needles for administration of local anaesthetic
- Local anaesthetic (Lignocaine 1% 2 x 5mls)
- White capped universal containers x 3 (for bacteriology, cytology and biochemistry)
- Occlusive dressing (Mepore)
- Gauze swabs
- Airstrip dressing
- Watch with seconds hand for Queckenstedt’s test
- Bag for soiled disposables

**Position of the patient**

The patient should lie in a lateral position at the edge of the bed with knees drawn up to the abdomen.  
**N.B.** Very occasionally this procedure may be performed with the patient sitting straddled on a chair, facing the back of the chair with head resting on folded arms. This position may be more suitable for a very obese or a dysphoric patient.

**Procedure**

- Perform hand hygiene;
- Prepare and collect equipment;
- Ensure patient’s privacy;
- Assist the patient into the appropriate position;
- Expose lumbar region;
- Assist the doctor during the procedure;
- Ensure the puncture site is covered with occlusive dressing following completion of the procedure;
- Dispose of equipment as per hospital policy;
- Perform hand hygiene.

**After care**

- Lie patient flat with only 1 pillow to reduce post-dural puncture headache;
- Ask patient to lie flat for 6 –12 hours following the procedure;
- Observe puncture site for staining;
- Observe patient for orientation, restlessness, drowsiness, nausea, cerebral irritability (fitting, twitching, spasticity or weakness of limbs) and report same to doctor immediately;
- Ask patient to report any headache and administer analgesia as prescribed;
- Report to doctor if unresolved.
REFERENCES: