

NEURO-SURGERY:

Sitting Position

Advantages:

- Facilitates access for posterior fossa or surgical spine surgery
- Improves cerebral venous decompression
- Lowers intracranial pressure (ICP) - for ICP reading, zero A-line transducer at ear level
- Promotes gravity drainage of blood and cerebral spinal fluid (CSF)
- Increased lung volumes & FRC, decreased work of breathing

Risks:

- Venous Air Embolism (VAE) - *see attached handout*
- Tension Pneumocephalus - air entry into epidural/dural spaces can lead to brain herniation
- Macroglossia - extreme head flexion/prolonged oral airway presence promote obstruction of venous and lymphatic drainage of the tongue
- Quadriplegia - acute flexion of neck stretches cord at C5 compromising regional cord perfusion (rare)
- Neurological sequelae (posterior fossa surgery)
 - Trigeminal injury (Bradycardia/Cushings Reflex)
 - Glossopharyngeal, Vagus injury (bradycardia, hypotension, impairment of gag reflex)
 - Resection of tumors on the floor of the 4th ventricle may damage respiratory centers and require mechanical ventilation post-operatively
 - Sciatic nerve injury due to pressure on ischial tuberosities

Contraindications

- Pt's with increased VAE risk (R to L shunt, Patent Foramen Ovale)
- Extremes of Age (> 70 yo)
- Uncontrolled hypertension
- COPD

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Anesthetic Management

• Induction:

- Fentanyl 2-5 mcg/kg
- Lidocaine 1 mg/kg
- Thiopental 3-5 mg/kg, Propofol 1-2 mg/kg, or Etomidate 0.2-0.3 mg/kg
- Vecuronium 0.2 mg/kg

• Maintenance

- O₂-Air and 1-1.5% Isoflurane
- Incremental boluses of Fentanyl or
- Propofol target-controlled infusion

• Ventilation, etc.

- Intermittent positive pressure ventilation - low - normal PaCO₂
- *Insertion of Pulmonary Artery flotation catheter*
- *Inflation of anti-gravity suit*
- Slow stage patient positioning
- Placement of precordial Doppler probes
- Placement of transducers at heart level

• Monitoring - General

- EKG
- NBP/Arterial line
- Temperature
- Nerve Stimulator
- Foley Catheter

• Monitoring - Specific

- ET CO₂
- Precordial Doppler (3rd - 6th Intercostal space/Right sternal border)
- Esophageal Stethoscope
- TEE
- *Pulmonary Artery Pressure*

• Positioning Key Points

- Establish position slowly
- legs at heart level, slightly flexed at knees
- Headholder frame clamped to *back* section of table to allow prn rapid lowering
- Padded footboard to prevent plantar flexion
- Arms crossed in lap for easy IV access, elbows flexed 90 deg or less
- Padding under buttocks, knees, heels, elbows (no skin contact with frame)
- Cervical, thoracic, and lumbar spine should be in alignment

• Postoperative Evaluation

- upper airway assessment/cranial nerve function

**italics indicate not routinely done at LAC*

