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
**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