

General Principles of Perioperative Neurosurgery

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MEDICATIONS

- ASPIRIN:**
 To evaluate the safety of continuing acetyl salicylic acid (ASA) in patients undergoing brain tumor resection. Cessation of ASA in patients with cardiovascular disease is associated with a known increased risk of thrombotic events, especially in patients with coronary stents. Of the 452 patients analyzed, there were no statistical differences detected between the groups (stopped ASA preop or continued uninterrupted) for outcomes including bleeding complications, need for reoperation, or thrombotic complications.
 CONCLUSIONS: In this analysis, perioperative low dose ASA use was not associated with increased risk of perioperative complications.
Rahman M "Effects of Perioperative Acetyl Salicylic Acid on Clinical Outcomes in Patients Undergoing Craniotomy for Brain Tumor." World Neurosurg. 2015 Jul;84(1):41-7.
- stomach protection:
 - 1) PPI
 - 2) H2-blockers – risk of thrombocytopenia
- METFORMIN** should be held 48 hours before any surgery, and should not be restarted post-op until patient has fully recovered and is eating and drinking normally
 N.B. especially important in **angiography** – risk of *lactic acidosis* - hold metformin 48 hours after angiography.
- B-BLOCKERS**
- in intubated patients who are sufficiently alert to experience discomfort from endotracheal tube, low doses of short-acting anesthetics such as **PROPOFOL** or **DEXMEDETOMIDINE** can be used to avoid marked hypertension, anxiety, or dyssynchrony with ventilator.

NAUSEA AND VOMITING

- post-operative nausea and vomiting may:
 - 1) adversely affect **ICP**
 - 2) may negatively impact recent **cervical** surgical procedures

FEEDING

Dobbhoff tube – see p. 2209 >>

MINIMALLY INVASIVE HEMODYNAMIC MONITORING

VIGILEO MONITOR

- volemia monitoring in mechanically ventilated patients without arrhythmias.
- requires central line and A-line.

Goals:

CO (cardiac output) > 3

SV (stroke volume) > 70

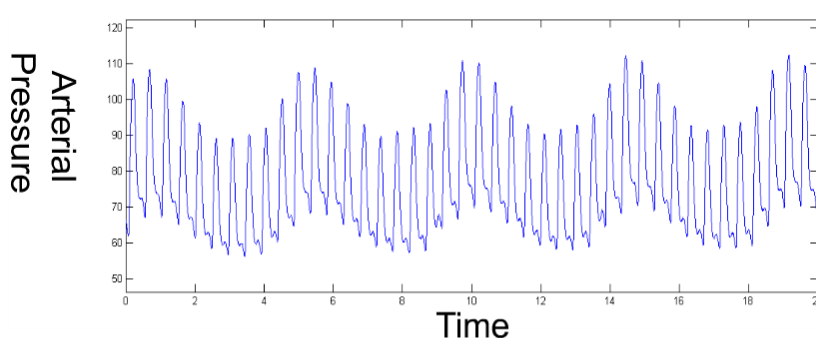
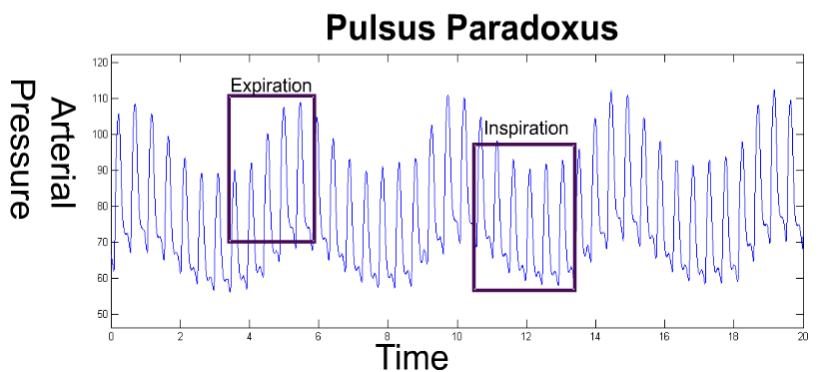
SVV (stroke volume variation) < 10

- intrathoracic pressure changes due to ventilation – it is reflected in systolic BP; in normovolemia that fluctuation should be < 10

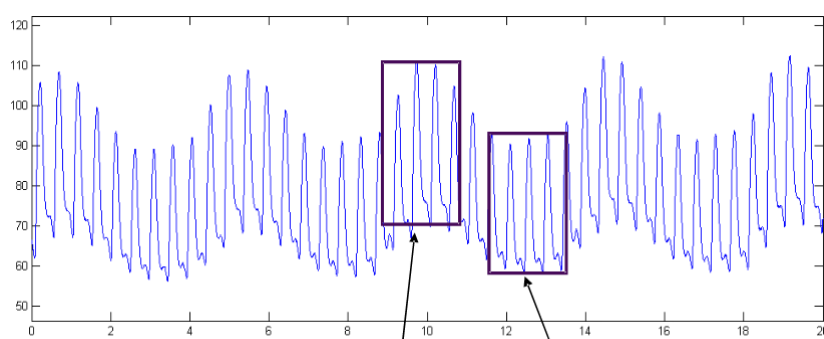
In a normal individual who is breathing spontaneously, blood pressure decreases on inspiration

The exaggeration of this phenomenon is called pulsus paradoxus

F.Michard



A phenomenon that is the reverse of the conventional pulsus paradoxus has been reported during positive pressure breathing



$$SVV = \frac{SV_{\max} - SV_{\min}}{SV_{\text{mean}}}$$

POSTOPERATIVE PAIN

- **KETOROLAC** (Toradol) - safe for postoperative pain management in pediatric population - there is no association between ketorolac use and clinically or radiographically significant hemorrhage.
Marlin Dustin Richardson, Nicholas O. Palmeri, Sarah A. Williams, Michelle R. Torok, Brent R. O'Neill, Michael H. Handler, and Todd C. Hankinson "Routine perioperative ketorolac administration is not associated with hemorrhage in pediatric neurosurgery patients" Journal of Neurosurgery: Pediatrics, Jan 2016 / Vol. 17 / No. 1 : Pages 107-115

POSTOPERATIVE INFECTION

SPINE

- operative washout and drainage; practically never need to remove hardware; some experts leave even bone grafts in place
- antibiotics for ≥ 6 weeks (ESR and CRP need to normalize)