

## **Interactive Clinical Session II**

Challenges for Clinicians 2010

Department of Anesthesia & Critical Care

The University of Chicago

Moderator: Dr. Tung

Discussants:

Dr. Tung

Dr. Zafirova

Dr. Woo

A 5'9" 40 yr M is scheduled for revision of a Roux en Y gastric bypass due to anastomotic stricture.

His original (laparoscopic) procedure was performed 9 months ago. At that time, he weighed 450 lbs, and had the following comorbidities:

- \*HTN (treated with Atenolol 50 mg PO qd)
- \*Type II diabetes (treated with a combination of glipizide and Lantus insulin)
- \*Obstructive sleep apnea (nighttime CPAP 10/5)
- \*Anxiety (treated with PRN Ativan 5 mg PO)
- \*DVT treated with Lovenox x2 weeks

His anesthetic, surgery, and initial postoperative recovery were notable for patient reports of intraoperative awareness reported by the patient, but not the chart. Atenolol was continued perioperatively, intubation was achieved via awake fiberoptic bronchoscopy, and postoperative pain was well controlled with PCA dilaudid. He was discharged to home on POD #4 on Lovenox

Over the next 3 months, he developed recurrent vomiting and dysphagia. Endoscopy revealed anastomotic narrowing, but attempts at balloon dilation were unsuccessful. Due to worsening symptoms and abdominal pain, he and his surgeon have now opted for surgical revision.

Since his initial operation he has lost 100 lbs. He remains on atenolol although his blood pressure has improved slightly. He no longer requires insulin but continues on glipizide 10mg. However, his repeated vomiting, dysphagia and abdominal cramping have significantly worsened his anxiety. He now takes 5 mg ativan nightly, has recently started Percocet for abdominal symptoms, and notes sufficient difficulty sleeping that he cannot use his nighttime CPAP.

In the preoperative area he is fidgeting and appears anxious about intraoperative awareness and another awake fiberoptic bronchoscopy. He is NPO including medications. BP is 130/90, HR is 98, and fingerstick glucose = 180 mg/dl. Physical exam is uncomplicated and his airway is a MP III. He has a beard. During the

preoperative handshake, the surgeon estimates the likelihood of opening the abdomen at >50%.

### **1. Would you administer atenolol prior to induction?**

Current SCIP guidelines require continuing beta blockade in patients chronically on a beta blocker due to increased risk of postoperative complications due to BB withdrawal. However, this patient recently had surgery, and his need for beta blockade may be evolving. Moreover, it is likely that a component of his high preoperative heart rate is due to anxiety. Finally, large scale retrospective trials suggest that patients with no RCRI risk factors are unlikely to benefit, and may be harmed by, beta blocker administration.

Shammash JB, Trost JC, Gold JM, Berlin JA, Golden MA, Kimmel SE. Perioperative beta-blocker withdrawal and mortality in vascular surgical patients. *Am Heart J.* 2001 Jan;141(1):148-53

Hoeks SE, Scholte Op Reimer WJ, van Urk H, Jörning PJ, Boersma E, Simoons ML, Bax JJ, Poldermans D. Increase of 1-year mortality after perioperative beta-blocker withdrawal in endovascular and vascular surgery patients. *Eur J Vasc Endovasc Surg.* 2007;33:13-9

Talati R, Reinhart KM, White CM, Phung OJ, Sedrakyan A, Kluger J, Coleman CI. Outcomes of perioperative beta-blockade in patients undergoing noncardiac surgery: a meta-analysis. *Ann Pharmacother.* 2009;43:1181-8

Lindenauer PK, Pekow P, Wang K, Mamidi DK, Gutierrez B, Benjamin EM. Perioperative beta-blocker therapy and mortality after major noncardiac surgery. *N Engl J Med.* 2005;353:349-61

### **2. Would you place an epidural for postoperative pain control in this patient?**

Although no clear diagnosis of chronic pain exists in this patient, his history and physical exam are suggestive of benzodiazepine dependence and an ongoing requirement for oral narcotic (percocet) pain therapy. While an epidural generally allows equivalent pain therapy with less opioid, it also introduces other well known risks. In addition, the outcome benefit of epidural analgesia may only be significant for patients at high risk for cardiorespiratory complications.

Swenson JD, Davis JJ, Johnson KB. Postoperative care of the chronic opioid-consuming patient. *Anesthesiol Clin North America.* 2005;23:37-48

Hanna MN, Murphy JD, Kumar K, Wu CL. Regional techniques and outcome: what is the evidence? *Curr Opin Anaesthesiol.* 2009;22:672-7.

Chia YY, Liu K, Wang JJ, Kuo MC, Ho ST. Intraoperative high dose fentanyl induces postoperative fentanyl tolerance. *Can J Anaesth.* 1999;46:872-7.

Horlocker TT, Wedel DJ, Rowlingson JC, Enneking FK, Kopp SL, Benzon HT, Brown DL, Heit JA, Mulroy MF, Rosenquist RW, Tryba M, Yuan CS. Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy. American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines (Third Edition). *Reg Anesth Pain Med* 2010;35:in press

### **3. Would you perform another awake fiberoptic intubation?**

Although awake fiberoptic intubation was used for his original procedure, the details for that decision are not available. Since that time he has lost 100 lbs and due to increased anxiety would strongly prefer not to undergo awake fiberoptic bronchoscopy again.. However, he now has a beard and his airway exam is still a MP III. Even if you choose to induce anesthesia before securing the airway, would you then administer muscle relaxant?

Kheterpal S, Martin L, Shanks AM, Tremper KK. Prediction and outcomes of impossible mask ventilation: a review of 50,000 anesthetics. *Anesthesiology.* 2009;110:891-7

Kheterpal S, Han R, Tremper KK, Shanks A, Tait AR, O'Reilly M, Ludwig TA. Incidence and predictors of difficult and impossible mask ventilation. *Anesthesiology.* 2006;105:885-91

Langeron O, Masso E, Huraux C, Guggiari M, Bianchi A, Coriat P, Riou B. Prediction of difficult mask ventilation. *Anesthesiology.* 2000;92:1229-36.

Lieutaud T, Billard V, Khalaf H, Debaene B. Muscle relaxation and increasing doses of propofol improve intubating conditions. *Can J Anaesth.* 2003;50(2):121-6.

Peterson GN, Domino KB, Caplan RA, Posner KL, Lee LA, Cheney FW. Management of the difficult airway: a closed claims analysis. *Anesthesiology.* 2005;103:33-9.

You decide not to place an epidural or administer a preoperative beta blocker. You decide to intubate via direct laryngoscopy. Induction of anesthesia is straightforward, but intubation requires multiple laryngoscopies and you are forced to use a 7.0mm endotracheal tube. The case proceeds smoothly but with abdominal insufflation, the BIS monitor reads 65 despite 500 mcg fentanyl, 6 mg midazolam, an end-tidal anesthetic gas level of 1.4 MAC, and full paralysis with rocuronium. The BIS monitor reports an EMG level of 0 and SQI = 100%. BP = 108/60, HR 92,

### **4. Would you increase the anesthetic gas level or give more midazolam?**

In volunteer studies, BIS readings of 65 suggests an increased likelihood of awareness when compared to anesthetic depths of 45-50. Moreover, chronic beta blocker use in this patient may prevent use of heart rate as a monitoring tool and the patient's history of chronic narcotic and benzodiazepine use may increase his anesthetic requirement. Finally, he may have been aware during the anesthetic for the original procedure. In clinical use, however, data supporting the use of BIS monitoring to reduce awareness are mixed. Recent studies have suggested little benefit to BIS guided anesthetic titration when compared to anesthetic titration using end-tidal anesthetic gas.

Myles PS, Leslie K, McNeil J, Forbes A, Chan MT. Bispectral index monitoring to prevent awareness during anaesthesia: the B-Aware randomised controlled trial. *Lancet*. 2004;363:1757-63

Avidan MS, Zhang L, Burnside BA, Finkel KJ, Searleman AC, Selvidge JA, Saager L, Turner MS, Rao S, Bottros M, Hantler C, Jacobsohn E, Evers AS. Anesthesia awareness and the bispectral index. *N Engl J Med*. 2008;358:1097-108

Glass PS, Bloom M, Kearse L, Rosow C, Sebel P, Manberg P. Bispectral analysis measures sedation and memory effects of propofol, midazolam, isoflurane, and alfentanil in healthy volunteers. *Anesthesiology*. 1997;86:836-47

ASA Task force in Intraoperative Awareness. Practice Advisory for Intraoperative Function Monitoring. *Anesthesiology* 2006;104:847-64

You decide to give an additional 4mg Midazolam with no change in HR, BP, or BIS. In addition, you unplug the BIS monitor to reduce your own heart rate.. The surgeon informs you that due to excessive adhesions, he must open the abdomen to complete the case.

3 hours later, the surgeons are closing. Total IV fluids = 2500cc, U/O = 150cc, EBL = 60cc. As you prepare for emergence, you perform a cuff leak test to check for glottic swelling, and find no leak even at 20cm H<sub>2</sub>O.

### **5. Would you extubate this patient postoperatively?**

This patient has OSA, anxiety, possibly chronic pain, and a positive cuff leak test (no air leak), and a history of difficult intubation with multiple attempts. Upper airway swelling may predispose to post-extubation stridor, postoperative respiratory compromise, and possibly reintubation. Leaving him intubated, however, will require ICU admission, sedation and mechanical ventilation.

Epstein SK, Ciubotaru RL, Wong JB. Effect of failed extubation on the outcome of mechanical ventilation. *Chest*. 1997;112:186-92.

Ochoa ME, Marín Mdel C, Frutos-Vivar F, Gordo F, Latour-Pérez J, Calvo E, Esteban A.

Cuff-leak test for the diagnosis of upper airway obstruction in adults: a systematic review and meta-analysis. *Intensive Care Med.* 2009;35:1171-9

Kriner EJ, Shafazand S, Colice GL. The endotracheal tube cuff-leak test as a predictor for postextubation stridor. *Respir Care.* 2005;50:1632-8.

Lee CH, Peng MJ, Wu CL. Dexamethasone to prevent postextubation airway obstruction in adults: a prospective, randomized, double-blind, placebo-controlled study. *Crit Care.* 2007;11:R72.

You decide to extubate the patient. In the PACU he is agitated and delirious. After several challenging hours, however, he calms down and is discharged to the floor. The remainder of his hospital course is uneventful and he is discharged to home, symptoms resolved, 6 days later.