At Last!!! Should we feed women in labor and should we use Cricoid Pressure during General Anesthesia in Parturients?

Since first hearing Geraldine O’Sullivan’s presentation of her research on a randomized, controlled trial of food intake during labor I have been waiting for the publication of this large trial. It now has arrived and is in the BMJ 2009;338: b784. This was a large trial of 2,426 nulliparous, non-diabetic women at term who were randomized to receive either a light diet or water during labor. The primary outcome was spontaneous vaginal delivery rate with a secondary outcome of duration of labor.

As all of us are aware that there has been a conflict in the past between anesthesiologists and obstetric care providers as to whether women should be fed in labor. The obstetric care providers have felt that nourishment is essential to the labor process and may promote spontaneous vaginal delivery while anesthesiologists have been concerned about the risks of pulmonary aspiration of gastric contents if general anesthesia was required.

In this study, the light diet group were advised to have a low fat, low residue diet (e.g. bread, biscuits, vegetables, fruit, low fat yoghurt, isotonic drinks), eaten at will while the water only group had ice chips and water only. The policy in the hospital at the time of trial was no eating during labor and all women in the trial were informed of
that. The light food diet was available on the labor ward or women could bring in their own food.

Results: 2443 nulliparous women were randomized with 17 excluded. 1219 were in the eating group and 1207 in the water only group. 137 women ate nothing during labor. Of those in the water only group 20% failed to adhere to the protocol and ate. Of those in the eating group 29% chose not to eat. By intention to treat there was no significant difference in the SVD rate (44% eating; 44% water only group). There also was no significant difference in the duration of labor (597 eating; 612 water group).

In the discussion the authors point out that there was no evidence of harm from eating but there was insufficient power in the study to say that conclusively given the current low incidence of acid pulmonary aspiration in parturients. Probably the current practice of neuraxial anesthesia for emergency delivery and use of antacid prophylaxis are the reasons for the low risk of acid aspiration. This study does not show any benefit on delivery mode from women eating during labor nor harm from a policy of water/clear fluids only. An excellent study and one that should be read in its entirety!

North American readers may not be familiar with Dr. Richard Vanner. In obstetric anesthesia circles he is well known for his work on cricoid pressure and its effects on upper and lower esophageal sphincter tone. In response to an article in the International Journal of Obstetric Anesthesia he has written an editorial titled Cricoid
Pressure (IJOA 2009;18:103-5). In this, he firstly discusses a report by Fenton and Reynolds on nearly 5000 emergency cesarean sections under general anesthesia in Malawai (IJOA 2009;18:106-110). Nearly 3000 of these cases had cricoid pressure on induction and 24 regurgitated gastric contents. Eight died. There was a lower risk of regurgitation in women who did not have cricoid pressure applied but Fenton and Reynolds had pointed out that it could be that the individuals reporting in this retrospective study may have been loath to report that they did not apply cricoid pressure in those that died.

After addressing the issues of the study Vanner discussed the technique of cricoid pressure and whether or not it is effective. Evidence supporting the effectiveness of cricoid pressure comes from cadaver studies and from case reports where gastric contents are seen when cricoid pressure is released. Reviews on the subject point out there are no published RCTs on this as many feel that type of study is unethical. As a result, Vanner says we can not assume that cricoid pressure is not effective. Although French anesthesiologists are not thought to use cricoid pressure a survey in 1998 found that it was routinely applied in 88% of maternity units. In an abstract from France of an RCT which looked at cricoid pressure in patients at high risk of regurgitation there was no regurgitation in 65 with cricoid compared to 3 cases in the 65 where it was not used.

Vanner then goes on to discuss the potential problems of an inadequate view at intubation when cricoid pressure is applied. His concluding statements are that “cricoid
pressure probably is effective at preventing regurgitation on induction of anaesthesia” and that “cricoid pressure” should be “released if intubation is difficult.” An excellent review on this subject!

Some Familiar Topics!
1. How to Avoid Epidural Vein Cannulation
A systematic review explored RCTs that looked at ways to avoid vein cannulation during obstetric epidural catheter placement (Mhyre JM et al. Anesth Analg 2009;108:1232-42). Thirty RCTs were included with an overall incidence of IV catheterization of 6.2%. A reduction in epidural vein cannulation during epidural catheter placement was found with positioning the patient in the lateral (vs sitting) position), injecting fluid through the epidural needle pre-catheter insertion, using a single vs multiorifice catheter, using a wire-imbedded polyurethane catheter vs nylon catheter and limiting depth of insertion to 6 cm or less. There was insufficient evidence to support use of paramedian vs midline approach, smaller epidural needle or catheter.

2. Cell Salvage:
King et al (IJOA 2009;18:111-7) reported the results of the first 6 months following introduction of cell salvage to their unit. They used it in 46 patients with a median blood loss of 800 mL and a heterologous transfusion rate of 22% (10 cases). Three patients did not receive processed blood whose postoperative Hgb indicated it might have been warranged while 19 did receive cell salvaged blood. The EBL in those who did not receive processed blood was 600
mL. There was one case of massive hemorrhage. The most common indication for use of the cell saver was placenta previa and other common indications were “fibroids” and low preoperative hemoglobin.

This report adds to the number of cases where cell salvage has been used successfully without evidence of amniotic fluid embolism. As noted in an earlier OB Div News the ASA guidelines for obstetric anesthesia include the use of cell salvage in cases of massive hemorrhage.

3. Maternal Heart Rate Variability
All of us are familiar with the effects of meperidine on the fetal heart rate with loss of variability in the trace. Weissman et al have now reported on meperidine’s effects on maternal heart rate variability. (IJOA 2009;18:118-24). In this prospective observational study 64 consecutive women who asked for analgesia were recruited. These women had the option of choosing an epidural or parenteral opioid analgesia.

Heart rate variability analysis has been described in several reports, mainly looking at it as a means of predicting those women who will develop hypotension. It is thought to reflect autonomic modulation of the heart rate. In this study there were 33 women who had an epidural and 31 who received meperidine. There was a significant decrease in high frequency power in the women who received meperidine vs those who had an epidural. This is thought to indicate decreased vagal control of HRV, possibly by a decrease in respiratory sinus arrhythmia. As well there was
an increase in the normalized low frequency spectral power and an increase in heart rate, possibly reflecting sympathetic innervation. This could mean less effective pain control.

Other Articles to Read

**Madden BP.** Pulmonary hypertension and pregnancy. (Review) *IJOA 2009;18:156-64*

**McKeen et al.** We “can do it” does not mean we “should do it”; obesity, umbilical cord prolapse, and spinal anesthesia in the knee-chest position. *Can J Anesth 2009;56:168-9.* An interesting and appropriate, letter in response to a case report in a previous issue of the journal along with the original authors’ reply.

**Kheterpal S et al.** Prediction and outcomes of impossible mask ventilation: a review of 50,000 anesthetics. *Anesthesiology 2009;110:891-7.* Neck radiation changes, male sex, sleep apnea, Mallampati III/IV and beards were independent predictors.

**Dresner et al.** Anaesthesia for caesarean section in women with complex cardiac disease: 34 cases using the Bruan Spinocath® spinal catheter. *IJOA 2009;18:131-6.*

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