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Introducer Sheath Malfunction Producing Insidious Air Embolism

To the Editor:—In their article, Cohen *et al.*[1] state that the Arrow AK-09803 sheath introducer will "obviate the potential for error." Unequivocally, neither this product nor any other introducer which contains only a duck-bill or self-sealing valve will prevent air embolism as stated. The danger lies in the fact that some physicians will use these products thinking that air embolism cannot occur. When any sheath introducer is used without a catheter, the introducer port must be closed to prevent air embolus.

Most manufacturers suggest using a separate obturator. The Walrus Introducer may be closed by turning a screw cap clockwise. We agree with Cohen *et al.*'s suggestion and have made this screw cap non-removable on the new Walrus "Hi-Flo" Introducer.

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In Reply:—I am pleased that our report has led to the redesign of the introducer sheath in question, thus contributing to increased patient safety.

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Should Epidural Fentanyl be Given for Labor and Delivery in a Patient with Severe Pulmonary Hypertension?

To the Editor:—Recently, Robinson and Leicht[1] described the use of low-dose epidural bupivacaine and fentanyl in a patient with severe pulmonary hypertension. We wish to comment on this article and to question whether the addition of fentanyl provides the patient with better analgesia than that which could have been provided with the same concentration and infusion rate of bupivacaine given without fentanyl.

Neither our clinical practice or the data published by Glover[2] supports the practice of adding fentanyl to 0.125% bupivacaine when using a continuous local anesthetic infusion at an infusion rate of 10 ml/h. A continuous 0.125% bupivacaine infusion with 1/400,000 epinephrine should provide adequate analgesia for most patients without the addition of fentanyl.

Even though the incidence of respiratory depression is low with highly lipophilic epidural opiates, the chance, nevertheless, still exists. This report might be more significant if the patient had not had adequate pain relief with bupivacaine alone, and then subsequently experienced significant relief with the addition of epidural fentanyl or if the infusion rate could have been significantly decreased. The use of fentanyl in this particular case did not appear to provide the patient

with any greater benefit than might have been provided with 0.125% bupivacaine alone. Why subject this patient to a potential unnecessary risk?

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2. Glover DJ: Continuous epidural analgesia in the obstetric patient: A feasibility study using a mechanical infusion pump. Anaesthesia 32:499–503, 1977

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In Reply:—In response to Drs. Ackerman and Juneja's question regarding the epidural administration of a low-dose bupivacaine/fentanyl solution in a parturient with severe primary pulmonary hypertension (PPH), we offer the following comments. Our aim with regard to the management of a parturient with PPH is to provide excellent analgesia without concomitant hemodynamic perturbation, as both pain and hemodynamic changes are poorly tolerated by these patients. Both of these goals were accomplished using the technique as described in the case report.[1] With these concerns in mind, we feel the risk of inadequate analgesia with low-dose bupivacaine without fentanyl greatly outweighs the slight risk of respiratory depression secondary to epidural bupivacaine with fentanyl; in other words, we feel the technique possesses a favorable risk:benefit ratio. Indeed, the risk of unrecognized respiratory depression in a patient who is postoperatively monitored in the ICU should be very remote. Furthermore, we are unaware of any case report of significant respiratory depression in a parturient following epidural fentanyl/local anesthetic for labor analgesia. Notwithstanding, Negre *et al.*[2] recently studied the ventilatory effects of epidural fentanyl in healthy males, and found no effect on respiratory rate, minute ventilation, or end-tidal CO_2; however, the slope of the CO_2 response curve was less than control for up to 2 h post-injection. Therefore, these patients' reserve is probably less; and, consequently, they do require close monitoring of respiration at least for several hours.

Ackerman and Juneja suggest that 0.125% bupivacaine with 1:400,000 epinephrine as a continuous epidural infusion without fentanyl should provide adequate analgesia for most patients. We agree that epinephrine may act to enhance the effectiveness of local anesthetic solutions (by a mechanism that is not yet entirely known); however, we question the use of even small doses of epinephrine administered as a continuous epidural infusion to parturients with severe PPH. The hemodynamic manifestations of that technique are unknown in these patients, and, indeed, may be deleterious.

Data reported by several others, including some of the early work published on this subject,[3] suggest that when even a high concentration (*i.e.*, 0.5%) of bupivacaine is administered epidurally for labor, the addition of fentanyl results in a more rapid onset and more complete analgesia. We continue to use low-dose bupivacaine/fentanyl solutions for continuous analgesia for labor and delivery in parturients with severe cardiac disease. However, we wish to re-emphasize that invasive monitoring and slow titration of the low dose local anesthetic/narcotic solution is required for epidural analgesia in these patients.

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