set a precedent. Two dictums are relevant here. First, do not allow a fetal disaster deteriorate into a maternal disaster. Second, it is always preferable to give a dead baby to a living mother than to give a dead mother to a living husband.

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To the Editor:—Although I read with interest the case report by Schaut *et al.*, their report raises the concern that inhalation induction of anesthesia with sevoflurane for emergency cesarean section should be considered a "suitable alternative" when intravenous access is not available.[1] Whereas the authors endeavor to justify their decision, they minimize the significance of the maternal risk involved. The authors correctly state that the parturient undergoing emergency cesarean section is considered to have a full stomach and acknowledge the risk for aspiration. However, they do not clarify that the parturient has decreased lower esophageal sphincter tone and increased intragastric pressure and that the stimulus of uterine traction during cesarean section delivery places the parturient at extremely high risk of regurgitation. Additionally, laryngeal reflexes are absent during the stage of general anesthesia described in this case, and spontaneous ventilation with an unprotected airway makes this patient particularly susceptible to aspiration.

The authors also contend that infiltration with local anesthetics may take several minutes to accomplish and that the technique is no longer taught in most obstetric residencies.[2] However, this technique is described in major obstetrics textbooks.[3,4] Additionally, an informal survey of staff obstetricians practicing at our institution revealed that all are familiar with local anesthetic infiltration for cesarean section, and most state that they would use this technique in an obstetrical emergency. Although the authors described a case with good maternal and fetal outcome, the risk involved and the potential for an unfavorable outcome advocate against suggesting inhalation induction with sevoflurane as a "suitable alternative" for emergency cesarean section.

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To the Editor:—We read the recent case report by Schaut *et al.* (ANESTHESIOLOGY 1997; 86:1392-4) describing a sevoflurane induction for emergency cesarean delivery. We cannot agree that the approach described is a reasonable alternative. The choice of an inhalation induction is not new to obstetric management and may be warranted under some extremely rare situations; however, to proceed without first establishing intravenous access seems to be an unnecessary risk. Bonica's classic text describes mask inhalation induction with cyclopropane, and it is stated that ". . . when cesarean section is planned, an endotracheal tube is introduced with the aid of succinylcholine".[1] Anesthesiologists are experts at establishing vascular access. An internal jugular or subclavian catheter can be rapidly inserted, and a proper induction conducted. In addition, the induction of general anesthesia, under any circumstance, should not be undertaken without the application of routine monitors. If the obstetrician is so desperately inclined to begin the operation,

it can be started with local anesthetic infiltration, allowing extra time to gain intravenous access and apply the necessary monitors. If mask anesthesia is used in the obstetric population, it is commonly taught to maintain cricoid pressure until the airway is secured to reduce the risk of regurgitation of gastric contents. Finally, when intravenous access was finally secured in this case, the use of succinylcholine would have assured the most rapid onset of intubating conditions.

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To the Editor: — Schaut *et al.* should be congratulated on their use of inhalation induction with sevoflurane for immediate delivery of a parturient with no accessible veins (ANESTHESIOLOGY 1997; 86:1392-4). Their quick thinking and quick action resulted in a live, apparently healthy, infant being delivered within 5 min of the patient's arrival in the operating room. Rapid sequence intravenous induction with cricoid pressure followed by endotracheal intubation is the usual standard of care, but in this case, the delay in pursuing this "standard" might have resulted in a brain-damaged infant for which the anesthesiologist could have been blamed.

The authors correctly state that there is a serious risk of maternal morbidity and mortality *if aspiration occurs* (italics added). The perception among some anesthesiologists is that one would be foolhardy to use a face mask for any obstetric anesthetic and very fortunate if pulmonary aspiration did not occur. But how frequently did aspiration occur before the introduction of rapid sequence induction, cricoid pressure, tracheal intubation, and H_2 receptor antagonists?

Ether and chloroform, and later cyclopropane, were commonly administered without tracheal intubation for more than 100 yr after Simpson introduced pain relief in childbirth in 1847.[1] Opponents initially criticized the use of anesthesia on medical and moral and religious grounds.[2] One medical opponent went so far as to state that, "In the lying-in chamber . . . pain is the mother's safety, its absence her destruction."[3] In response, Simpson collected 800 cases of ether or chloroform administration in childbirth without a death from his own practice and those of colleagues in the British Isles and Europe.[3] His report may have been biased in some aspects, but it seems unlikely that an anesthesia-related death could have escaped publicity.

Almost a century later, in 1946, Mendelson reported 66 cases of pulmonary aspiration of stomach contents in 44,016 pregnancies.[4] Five deaths occurred from aspiration of solid material, but there were no deaths among the 40 parturients who were known to have inhaled liquid and who developed the chest radiograph findings of Mendelson's syndrome. Between 1942 and 1952 in one large English city, there were no anesthetic deaths in 3,048 domiciliary open-drop obstetric anesthetics.[5] At the Women's Hospital in Kathmandu, Nepal in 1982-1983, there was one material death, a result of uncontrollable hemorrhage, among 420 open-drop ether anesthetics given by junior obstetric residents for cesarean section.[6]

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The safety record of the mask or open-drop method may be a result of the fact that vomiting is most likely to occur in light anesthesia during induction or emergence when warning signs of swallowing, breath holding, and salivation allow time for the patient to be turned onto her side. Vomiting does not occur during maintenance of deep inhalational anesthesia (Guedel stage III, plane i or ii).[7] Pulmonary aspiration as an important cause of anesthesia-related maternal death was not emphasized until the 1940s and 1950s by Mendelson[4] and others,[8] but the policy of "mandatory" tracheal intubation, especially when it fails, may actually do harm.[7,9]

When general anesthesia is essential, there are advantages to mother and fetus in the use of tracheal intubation, neuromuscular blockade, and light anesthesia with controlled ventilation. On the other hand, aspiration is sufficiently rare during inhalational anesthesia *via* face mask that this may be a rational and defensible choice in difficult circumstances. We may do our patients a disservice if we are afraid to use an "obsolete technique" because of exaggeration about its dangers.

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