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*In Reply:*—All the pregnant women included in our study were non-smokers and were referred to our hospital from different parts of the State of Tennessee. All patients spent 4–6 h in a smoke-free environment in our hospital before the blood samples were obtained.

Our own results from a previous study showed that carboxyhemoglobin levels of 3–6% decrease  $P_{50}$  by 2.5–4 mmHg.<sup>1</sup> We certainly agree that carboxyhemoglobin levels of about 3% is not the principal mechanism for a decrease in  $P_{50}$  in preeclamptic pregnant patients. We did conclude in our paper that elevation in CoHb levels was *partly responsible* for a decrease in  $P_{50}$  in preeclampsia. In addition to CoHb, certain hormones including prostaglandins may be responsible for a decrease in  $P_{50}$  seen in patients with preeclampsia. Several of these hormones are known to cause shifts in  $P_{50}$ .<sup>2,3</sup>

Finally, we agree that 2,3-DPG levels play a role in oxygen dissociation from hemoglobin. However, measurement of 2,3-DPG levels is not necessary for  $P_{50}$  determinations. However, studies from various investigators show that 2,3-DPG levels are either unchanged or slightly elevated in pregnancy.<sup>4</sup>

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## Polyvinylchloride Endotracheal Tubes are Hazardous for CO<sub>2</sub> Laser Surgery

*To the Editor:*—In their report on 523 patients who underwent general endotracheal anesthesia with plain polyvinylchloride (PVC) endotracheal tubes for operations using the CO<sub>2</sub> laser, Pashayan *et al.*<sup>1</sup> report one tube fire and near misses in 50% of their cases. The latter were cases where the laser had contacted PVC endotracheal tube but no combustion occurred. Their protocol of using a reduced inspired fraction of oxygen in helium is prudent, but the authors' adherence to the use of PVC endotracheal tubes is puzzling.

Pashayan *et al.* cite a study<sup>2</sup> indicating that PVC tubes are less flammable than red rubber tubes on contact with a propane torch. However, the opposite conclusion has been reported by Patel and Hicks<sup>3</sup> using a CO<sub>2</sub> laser *in vitro* and by another study of the effects of tube fires caused by the laser on dog tracheas.<sup>4</sup> Furthermore, PVC can produce copious toxic combustion products, such as HCl.<sup>5</sup>

The use of either a red rubber tube wrapped with appropriate metal foil tape or a metallic endotracheal tube would improve patient safety in these cases. Foil wrapping is inexpensive and, if done carefully, a relatively smooth exterior can be achieved. These tubes will allow greater laser energy and a higher  $FiO_2$  than that allowed in the protocol of Pashayan *et al.* to be employed. Their use should be considered mandatory in CO<sub>2</sub> laser endoscopic surgery.

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*In Reply:*—Dr. Sosis' disagreement with our study probably arises from a different interpretation of the literature cited in his letter. We do not believe the evidence supports his view that red rubber tubes wrapped in metallic tape or the use of metal tubes ensure "patient safety" more than the use of plain, unmarked, polyvinylchloride (PVC)

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tracheal tubes used with our helium protocol.<sup>1</sup> Patient safety during anesthesia for laser operations on the airway involves: 1) facilitating airway management in patients with known airway obstruction, which may be hampered by a bulky, stiff, metal or metal-wrapped red rubber tube; 2) insuring the patency and security of the airway, which is rel-