REFERENCES

1. Terry TL: Extreme prematurity and fibroblastic overgrowth of persistent vascular sheath behind each crystalline lens. I. Preliminary report. Am J Ophthalmol 35:301, 1942
2. Locke JC, Reese AB: Retrolental fibroplasia: The negative role of light, mydriatics, and ophthalmoscopic examination in its etiology. Arch Ophthalmol 48:44, 1952
3. Glass P, Avery G, Subramanian KN, Keys M: Effect of nursery illumination on the incidence of retinopathy of prematurity (ROP). Pediatr Res 18:138A, 1984

(Accepted for publication July 16, 1984.)

Anesthesiology
61:786, 1984

Iatrogenic Airway Foreign Body

To the Editor:—Aspiration of a foreign body is a common problem confronting pediatric anesthesiologists. We wish to report a case of iatrogenic airway foreign body.

A 10-year-old with "short bowel syndrome" presented for placement of a central line for parenteral nutrition. He was brought to the operating room without premedication. Through a previously placed iv, anesthesia was induced with ketamine, and continued with nitrous oxide, oxygen, and halothane by mask. Using a Laryngo-O-Jet® (International Medication Systems, Ltd., South El Monte, California), the vocal cords were sprayed with 4% lidocaine. The spray device was noted to be shortened markedly when it was withdrawn. Repeat laryngoscopy did not reveal the fragment in the pharynx. Bag and mask ventilation with 100% oxygen and halothane was resumed without difficulty. The surgeon performed a rigid bronchoscopy, retrieving a 7.5-cm length of plastic tubing from the right mainstem bronchus. The procedure was completed without incident. There were no long-term sequelae.

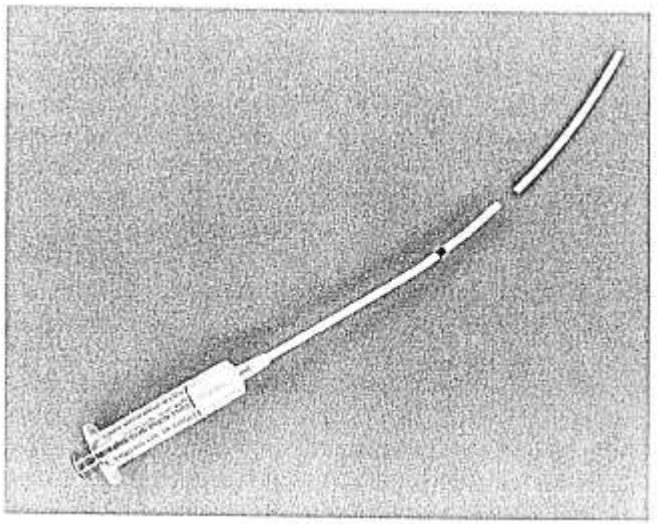

FIG. 1.

Subsequent examination of the spray device revealed that a break had occurred at one of the side holes (fig. 1). The rigid plastic tubing may have been cracked by an attempt to curve it to facilitate its passage through the vocal cords. In addition, several instances of damage in shipping have been reported to the manufacturers.

We recommend that anesthesiologists using these devices avoid attempts to reshape the tubing and that they examine the spray carefully both before and after use.

CECELIA HARD, M.D.
Clinical Fellow in Anaesthesia
Harvard Medical School
Fellow in Anesthesia
The Children's Hospital

CHARLES D. NARGOZIAN, M.D.
Instructor in Anaesthesia
Harvard Medical School
Assistant in Anesthesia
The Children's Hospital

300 Longwood Avenue
Boston, Massachusetts 02115

(Accepted for publication July 16, 1984.)

Anesthesiology
61:786–787, 1984

The Jury Is Still out in the Case of Isoflurane *versus* Halothane in Neurosurgical Patients

To the Editor:—Todd and Drummond[1] draw questionable conclusions from their observations on the effects of isoflurane and halothane on cerebral circulation and metabolism. The authors' main observations were: 1) Halothane and isoflurane in equipotent concentrations caused similar rises in the intracranial pressure (ICP). 2)

The increase in ICP with halothane was accompanied by a significant increase in cerebral blood flow (CBF), while the increase in ICP with isoflurane was not. 3) Isoflurane decreased cerebral metabolic rate of oxygen (CMR_{O_2}) to a greater extent than halothane. From these observations the authors conclude that isoflurane ". . . may be a more reasonable choice in neurosurgical settings."

We feel that the exact opposite conclusion may be drawn from these observations. That an increase in ICP is detrimental to the brain, particularly in neurosurgical patients, is universally accepted.[2] Assuming that all other parameters remain the same, an increase in ICP would decrease cerebral perfusion pressure, and this in turn would decrease the CBF and reduce the supply of oxygen and other nutrients to the brain. The authors' observation that halothane and isoflurane in equipotent concentrations caused similar increase in ICP suggests that both anesthetics are detrimental to the brain in a closed skull. However, halothane increased CBF while isoflurane did not, suggesting that no relationship existed between ICP and CBF in this study. The increase in CBF with halothane was not necessarily the cause for the increased ICP in this group. It was, perhaps, a salutary response that improved oxygen and nutrients supply to the compressed brain.

Whether the decrease in CMR_{O_2} caused by isoflurane, and to a lesser extent by halothane, is a sign of brain protection or brain starvation remains moot. It is not clear why the authors chose to interpret the effect of isoflurane on CMR_{O_2} as beneficial; it may be interpreted just as easily as detrimental. Hagerdal *et al.*,[3] using common metabolic criteria, showed that a 25% reduction in CMR_{O_2} was protective in cerebral hypoxia if it was caused by hypothermia and nonprotective if it was caused by pentobarbital. The fall in CMR_{O_2} with isoflurane possibly could be a result of poor distribution of blood in the brain or a toxic cellular effect. In order to determine whether the fall in CMR_{O_2} was beneficial or detrimental the cerebral energy state[4] should have been determined concomitantly,

Admittedly, our interpretation of this study needs just as much verification as that of the authors', however, it is as viable as theirs.

ISAAC AZAR, M.D.
Professor of Clinical Anesthesiology

SOMASUNDARAM THIAGARAJAH, M.D.
Assistant Professor of Clinical Anesthesiology

Department of Anesthesiology
Beth Israel Medical Center
Mount Sinai School of Medicine (CUNY)
New York, New York 10003

REFERENCES

1. Todd MM, Drummond JC: A comparison of the cerebrovascular and metabolic effects of halothane and isoflurane in the cat. ANESTHESIOLOGY 60:276–282, 1984
2. Cushing H: Some experimental and clinical observations concerning states of increased intracranial tension. Am J Med Sci 124:375–400, 1902
3. Hagerdal M, Welsh FA, Kegkhah MM, Perez E, Harp JR: Protective effects of combinations of hypothermia and barbiturates in cerebral hypoxia in the rat. ANESTHESIOLOGY 49:165–169, 1978
4. Nilsson L, Seisjo BK: Influence of anaesthetics on the balance between production and utilization of energy in the brain. J Neurochem 23:29–36, 1974

(Accepted for publication July 16, 1984).

Anesthesiology
61:787–788, 1984

In reply:—Drs. Azar and Thiagarajah are entirely correct in their basic premise: The jury is indeed still out in the matter of isoflurane *versus* halothane for neurosurgery. While we believe that isoflurane will "come to play a major role in future neuroanesthetic practice"—and, in fact, is already doing so—we share their general concern. This was expressed several times in our article, but perhaps our concentration on the physiologic differences between these drugs overshadowed this message. The simple fact that isoflurane given to normocarbic animals can increase intracranial pressure (ICP) (although the increases were small) indicates that ". . . it should be used with caution in situations where intracranial compliance is compromised." This is reinforced by the findings of Adams *et al.*, who noted that even low concentrations of isoflurane could increase ICP in normocarbic humans.[1] Whether such changes are "better or worse" than seen with equivalent halothane doses is unknown, as is the impact on clinical outcome.

We do have several minor disagreements with the writers' comments. In particular, we do not consider the equivalent ICP effects of isoflurane and halothane to be one of our "main observations" and, in fact, devoted a full paragraph in the "Discussion" presenting our reservations concerning this finding. It is important to understand that the ICP changes were small and occurred in normally compliant animals in the head-up position, and hence ". . . it is probable that substantial differences in CBV (cerebral blood volume) may not