CORRESPONDENCE

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In Reply.—Nakamura et al. are correct in pointing out that the
effect of volatile anesthetics on vascular smooth muscle tissue cyclic
5,5'-monophosphate (cGMP) levels was reported in their
work.1 Their findings, using the rat aorta, showed that cGMP levels
were increased in the presence of halothane. Our findings, which
complement their results, indicate that in endothelium-intact canine
cerebral arteries, halothane increases tissue cGMP levels, which may
contribute to the cerebral vasodilatory effects of halothane.2 These
results are different, however, from the recent report by Toda et al.3
They found that halothane lowers the basal as well as the acetylcholine-induced cGMP formation in the endothelium-intact rat aorta.

Because we have studied the effect of halothane on tissue cGMP
levels in isolated cerebral arteries preconstricted with 5-hydroxy-
tryptamine, it may not be possible to draw a comparison between
these two different studies. Therefore, further studies using similar
procedures are needed to resolve the observed discrepancies between
our observations and their observations. In addition, there might be a substantial regional and species-related heterogeneity in the
role of endothelium on volatile anesthetics-induced cGMP formation.

A New Method of Endotracheal Tube Fixation
for Pediatric Neurosurgical Patients

To the Editor.—Two recent letters describe the use of a transparent
dressing (Tegaderm®, 3M, St. Paul, MN) to facilitate securing an
endotracheal tube.1,2 We have combined Tegaderm® with silk suture
to create an exceptionally secure method of endotracheal tube fixation
in younger pediatric patients undergoing lengthy neurosurgical pro-
cedures performed in the prone position. This position, with the
patient’s head supported on the pediatric horseshoe headrest, and
with the head of the table turned away from the anesthesiologist,
requires a securely placed endotracheal tube. Use of a nasal endo-
tracheal tube decreases the likelihood of intraoral tube kinking and
decreases the problem of the tube abutting against the horseshoe
headrest; however, nasal bleeding secondary to the intubation, se-
cretions, or skin preparation solutions may moisten and loosen adhesive tape securing the tube, leaving the tube at risk for intraoperative dislodgement.

In view of these considerations, we have developed a technique
for nasal endotracheal tube stabilization that appears to offer improved
safety over other described methods. This technique combines the
use of a reinforced nasal endotracheal tube (NCC Division, Mallinck-
rodt, Argyle, NY), silk sutures, foam tape (Microfoam®, 3M, St. Paul,
MN), skin adhesive (Mastisol®, Ferndale Labs, Ferndale, MI), and
Tegaderm®. Nasal endotracheal intubation is performed, using a

References

1. Nakamura K, Hatano Y, Toda H, Nishiwada M, Baeck WY, Mori
K. Halothane-induced relaxation of vascular smooth muscle: A pos-
sible contribution of increased cyclic GMP formation. Jpn J Pharmacol
2. Eskinder H, Hillard CJ, Flynn N, Bosnjak ZJ, Kampine JP. Role
of guanylate cyclase-cGMP system in halothane-induced vasodilation
3. Toda H, Nakamura K, Hatano Y, Kakuymu M, Nishiwada M,
Mori K. Halothane and isoflurane inhibit endothelium-dependent re-

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![Fig. 1. Place silk sutures eccentrically through several rings of a reinforced nasal endotracheal tube.](image-url)
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reinforced endotracheal tube. Two 3-0 silk sutures are passed through several rings of the tube 180° apart; multiple knots are tied to secure these sutures (fig. 1). These sutures and knots are then wrapped in Microfoam® tape to prevent subsequent pressure necrosis. Mastisol® skin adhesive is applied to the cheeks; the wrapped sutures are then placed on the sticky skin. Finally, two small pieces of Tegaderm® are applied over the skin and foam-wrapped sutures (fig. 2).

The technique we describe avoids the need for adhesive tape around the endotracheal tube itself. This leaves the tube less susceptible to wetting by blood, secretions, or skin preparation solutions. We have used this technique successfully for many procedures over the last 5 y without complications.

Babette Horn, M.D.
Assistant Professor of Clinical Anesthesia and Pediatrics

George W. Stevenson, M.D.
Associate Professor of Clinical Anesthesia

Department of Anesthesiology
Children’s Memorial Hospital
Northwestern University Medical School
2300 Children’s Plaza
Chicago, Illinois 60614

References

2. Burchman C, Delros L: How to make tape stick to sandpaper. ANESTHESIOLOGY 69:147, 1988

(Accepted for publication December 9, 1992.)

Use of a Dental Mirror as an Aid to Tracheal Intubation in an Infant

To the Editor—A 2½-month-old full-term infant was scheduled for elective bilateral hernia repair under general anesthesia. Physical examination revealed a vigorous 3.9-kg child with a complete cleft palate and slightly receding chin.

Anesthesia was induced using nitrous oxide, oxygen, and halothane via mask. An intravenous catheter was inserted and 0.1 mg atropine followed by 10 mg succinylcholine was administered intravenously. Intubation was attempted using a #1 Miller laryngoscope blade multiple times without success. Only the tip of the epiglottis was visualized during laryngoscopy. Spontaneous ventilation with the patient breathing halothane and oxygen was reestablished. Hemoglobin oxygen saturation of 100% and end tidal carbon dioxide around 38 mmHg were maintained throughout the procedure. With the head in full extension, a #1 Macintosh laryngoscope blade was used to retract the tongue. A #3 short handle dental mirror (Stryker Instrument Company, Manchester, MT) was defogged and placed with the right hand in the oropharynx to visualize the larynx. The handle of the mirror was moved to the left side and held along with the laryngoscope by the left hand, keeping the image of the larynx in the mirror. The left thumb was used to hold the handle of the mirror, pressing against the oropharynx to keep it steady (fig. 1A). A 3-mm endotracheal tube with stylet appropriately curved, coinciding with the curve of the Macintosh laryngoscope blade, was positioned in front of the mirror.

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