an increased risk of intraoperative cerebral ischemia. In our opinion, the authors can conclude only that, in patients with impaired carbon dioxide reactivity, the risk of severe cerebral ischemia is not increased during carotid crossclamping.

Michael E. Mahla, M.D.
Associate Professor of Anesthesiology and Neurosurgery
Chief, Division of Neuroanesthesia
Assistant Chair for Education
Cheri A. Sulek, M.D.
Assistant Professor of Anesthesiology and Neurosurgery
Departments of Anesthesiology and Neurosurgery
University of Florida College of Medicine
P.O. Box 100254
Gainesville, Florida 32610-0254

References

In Reply—Although Mahla and Sulek suggest that the "ideal" monitor to detect cerebral ischemia during carotid endarterectomy has not been found, there are convincing data from human studies that somatosensory evoked potentials (SEPs) after median nerve stimulation are highly specific and sensitive to detect cerebral ischemia during carotid surgery. In our opinion, SEP monitoring may be superior to other electroencephalography (EEG) for reasons. First, SEP monitoring appears to be conservative as ischemic changes will occur in up to 40% intraoperatively, whereas new postoperative neurologic deficits even using a "no-shunt" regimen will not exceed 8–10% in experienced centers. The latter percentage is remarkably close to the findings of our study. SEP changes indicating ischemia (amplitude reduction >50%, central conduction time (CCT) prolongation >20%) will occur in 10–15%. Thus, it is not surprising that Kearsie et al found SEP much less sensitive than compared with high incidence of ischemic EEG changes (43%) in their study. Second, EEG monitoring methods may not be sensitive enough to detect ischemia (false negative) in patients suffering from preoperative neurologic symptoms. Whereas false positive SEP findings in carotid surgery have been reported in only one study. In contrast, EEG monitoring relies on the detection of multiple patterns that, in the absence of computer-aided analysis, are difficult to quantify and require an experienced neurophysiologist. SEP recordings, in contrast, allow the identification of ischemia using only few quantitative parameters (latency and/or CCT, amplitude).

However, in the absence of carefully controlled clinical studies demonstrating the superiority of one monitoring method, EEG remains undoubtedly an appropriate means to detect cerebral ischemia during carotid surgery. We agree with Mahla and Sulek.

Achim Thiel, M.D.
Abteilung für Anästhesiologie und Operative Intensivmedizin

References

Anesthesiology 83, No 4, Oct 1995
Intubation through the Laryngeal Mask Airway

To the Editor.—The laryngeal mask airway (LMA) has achieved widespread popularity as a device for airway maintenance during routine procedures performed under general anesthesia. Other uses for the LMA include its ability to allow blind or guided intubation of the trachea through its shaft with a high degree of success. Unfortunately, most standard endotracheal tubes (ETT) are too short to guarantee tracheal intubation in all cases, because, when fully inserted, they often do not protrude far enough beyond the distal grille bars of the LMA to position the TT cuff safely below the vocal cords. This problem is commoner in males than in females. We wish to report a solution to this conundrum that might be useful in situations when auffed tube must be used to secure the airway.

The size 3 and 4 LMA can accommodate a well lubricated uncuffed ETT up to 6.0 mm ID. Both sizes 3 and 4 LMA have the same shaft lengths (19 cm) and internal diameters (10 mm). A standard Mallinckrodt 6.0 mm oral/nasal ETT (St. Louis, MO) measures 28.5 cm from its tip to its proximal end. When fully inserted through a size 3 or 4 LMA in vitro, the upper part of its cuff lies 5.7 cm below the grille bars. Asai et al. reported that the distance from these grille bars to the vocal cords in vivo ranged from 2.5 to 4.7 cm in adult males and from 2.0 to 4.2 cm in adult females. This suggests that the cuff of an uncuffed ETT often would lie between the vocal cords when fully inserted through the LMA, especially if the head were extended, leading to an incomplete seal or possible laryngeal trauma. However, by employing a 5.0-mm Mallinckrodt Microlaryngeal Tube (MLT), with a length of 33.5 cm, successful tracheal intubation can be assured when using a size 3 or 4 LMA. This tube protrudes 13.2 cm beyond the LMA grille bars, allowing a distance of 8.2 cm from the bars to the upper border of the cuff. This should be adequate to allow placement of the MLT cuff completely below the vocal cords in all patients. Interestingly, the MLT packaging wrapper states that the tube length is “320 mm,” but our measurements of one batch consistently revealed the true length to be 33.5 cm. Use of the 5.0-mm MLT may be even more appropriate in conjunction with the newly introduced size 5 LMA, which is 1 cm longer than the size 3 and has an internal diameter of 11.5 mm. If a 6.0-mm Mallinckrodt oral/nasal ETT were passed through the size 5 LMA, an insufficient length would extend beyond the LMA grille bars to reliably position the ETT cuff distal to the vocal cords.

Other suggested solutions to the vexing problem of intubation through the LMA have included use of a Mallinckrodt Endotrol tube, use of a 5.0-mm Portex microlaryngeal tube (Hythe, Kent, UK), a shortened version of the LMA, the so-called ST-LMA (Inventon International SA, Henley-on-Thames, England), cutting off approximately 2 cm from the proximal shaft of the LMA and reinserting the connector, and deflating the LMA cuff after intubation, allowing about 0.7 cm further advancement of the ETT. All these maneuvers have their limitations. The Endotrol tube is the same length as a regular 6.0-mm oral/nasal ETT. The Portex 5.0-mm microlaryngoscope tube, although slightly longer at 30.5 cm, may not guarantee complete intratracheal placement of its cuff when passed through the LMA in some patients. The ST-LMA is 2 cm shorter than a conventional LMA but is not readily available in many institutions. Cutting 2 cm off the proximal end of the LMA shaft may not permit the tube to be successfully used subsequently on other patients. Resorting to the 5.0-mm MLT provides one further addition to the anesthesiologist’s armamentarium when confronted with a difficult airway. Although the resistance to gas flow through this long narrow tube is higher than when using a conventional 6.0-mm tube, it permits oxygenation in these life-threatening scenarios and reliably protects the airway from aspiration.

John H. Pennant, M.A., M.B., B.S., F.R.C.A.
Assistant Professor of Anesthesiology

Girish P. Joshi, M.B., B.S., F.F.A.R.C.S.I., M.D.
Assistant Professor of Anesthesiology
Department of Anesthesiology and Pain Management
The University of Texas Southwestern Medical Center at Dallas
5323 Harry Hines Boulevard
Dallas, Texas 75335-9068