jugular vein between the level of the digastric and the omohyoid.²

The anatomic features of lymphatic and venous drainage of the tongue, when combined with the position during a sitting craniotomy, i.e., extreme flexion of the head with the chin resting on the chest, plus the presence of an oral airway, make apparent the potential for venous and lymphatic obstruction of the tongue for a prolonged period, leading to postoperative macroglossia. Especially important is the correlation of inciting factors and events with the laryngeal anatomy of the infant or child; i.e., high larynx, small tracheal diameter, and apparent large tongue (secondary to the high larynx and insertion of the tongue). Thus, what would be a moderate compromise of the airway due to edema in the adult may become severe and even life-threatening in the child.

Possible measures which might prevent this complication include: (1) Use of a bite block instead of an oral airway in patients in the sitting position with flexion of the head. (2) When a head holder with a chin bar is used (rather than pin head holder), checking that the bar supports the mandible and does not compress soft tissues.

These two cases probably had the same etiology, which is unrelated to the use of the mandibular bar in the first case. The extreme flexion of the head against the chest, with both endotracheal tube and oral airway in place, compressed the base of the tongue between the airway, tube, and tracheal rings, causing venous obstruction over a prolonged period.

REFERENCES


A New Use for an Old Blade

DUKE B. WEEKS, M.D.*

More than 60 laryngoscope blades have been introduced since Dr. Kirsten reported his experience with the Autoskop. Each inventor has designed his blade to permit endotracheal intubation when anatomic or environmental conditions are unusual. The Polio blade (Fig. 1),† a modification of the Macintosh curved blade, is such a specially designed instrument. This blade, originally introduced by Dr. Foregger in 1954, was designed for use in patients enclosed in "iron-lung" respirators. The obtuse angle facilitated emergency endotracheal intubation in patients confined in these tank respirators because the handle did not impinge upon the neck plate during laryngoscopy. With the advent of positive-airway-pressure ventilators, this unique blade has been relegated to near-obscurity.

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I have found the Polio blade helpful when endotracheal intubation must be accomplished after the patient has been prepped and draped, the anesthesia screen becoming a factor limiting access to the airway. In this situation, endotracheal intubation may be difficult with conventional laryngoscopes that have handle-to-blade angles of 72 or 90 degrees. The 170-degree angle of the modified lock of the Polio blade avoids the mechanical disadvantage of a handle that encroaches upon the anesthesia screen enclosure (fig. 2).

REFERENCES


Extent and Duration of the Nitrous Oxide Second-gas Effect on Oxygen

LOUIS BOJAB, M.D.,* AND ROBERT K. STOELTING, M.D.†

Rackow et al., predicted that the reverse of diffusion anoxia (alveolar hyperoxygenation) would occur during anesthetic induction with nitrous oxide. Indeed, arterial oxygen partial pressures increased in two patients when nitrous oxide was administered despite unchanged inspired oxygen concentrations. The increased Pao2 resulted from large-volume nitrous oxide uptake into pulmonary capillary blood and represented the second-gas effect of nitrous oxide on oxygen. Since nitrous oxide uptake may remain greater than 100 ml/min even after 90 minutes, we speculated that increased Pao2 might persist for several minutes. This study reports the extent and duration of the nitrous oxide second-gas effect on oxygen during anesthesia and operation in man.

METHODS

Six adults without known pulmonary or cardiovascular abnormality were studied during elective operations for excision of intracranial tumors. All patients received thiamylal for induction, followed by succinylcholine to facilitate endotracheal intubation. Anesthesia was maintained with halothane, 1 per cent, in 30 per cent oxygen in nitrogen, using a nonrebreathing system (Pink valve). Subsequently the patients were paralyzed with dimethyltubocurarine and respirations were controlled with a volume ventilator. Inspired ventilatory volume was about 15 ml/kg and respiratory rate, 8 to 10 breaths/min. Inspired oxygen was maintained at 30 per cent as confirmed by constant monitoring with a Biomedical oxygen analyzer.

After about two hours of anesthesia and operation, serial arterial blood samples were drawn every 10 minutes from an indwelling radial-artery catheter. At this time the tumor was being excised and the painful stimulus was judged to be minimal and unchanging. When Pao2's did not vary more than 5 torr in three consecutive samples, 70 per cent nitrous oxide was rapidly substituted for nitrogen. Pao2 and Paco2 values were measured for the next 60 minutes.

RESULTS

The maximum increases in Pao2 averaged 14 per cent above control (P < 0.05) and occurred one minute after the start of nitrous oxide administration (fig. 1). This represented an absolute increase in Pao2 from 121 to 145 torr. Pao2's remained 9 per cent above