2 Comparing the mandibular (inferior) curves of these blades: the diameter of the curve of the #4 blade is longer and the "pocket" that accommodates the tongue is larger. This observation is probably a simplistic explanation why MIT or forward space encroachment is considerably less with the #4 blade.

The clinician may thus deduce:

- The #4 Macintosh blade should be the principal blade for intubation in normal and large-sized adults with teeth. It is far superior in difficult intubations and should be available on emergency trays, in emergency rooms and, most importantly, in the delivery suite.

Dr. Alexander Relle MD FRCPC
Department of Anaesthesia
Mount Sinai Hospital
Toronto

REPLY

The support of clinicians is welcome as the work was essentially theoretical. At present investigation of the view obtained at laryngoscopy is an inexact science because of the uncertainty about the number of variables that need to be taken into account. Anatomical variations between patients, differences in laryngoscopy technique and of course blade design all need to be considered. Only when all of these are appropriately analysed will a satisfactory clinical proof of our model be possible. The obvious starting position is to study rigid blades which must be the most predictable of the variables.

A simplistic way to think of the analysis described is to consider a starting position of knowing the expected distance IT. The blade is then imagined to be inserted to that depth with its tip against the posterior pharyngeal wall and the incisor surface at distance IT touching the upper incisors. As far as the analysis is concerned the efficiency of the blade depends firstly on how far forward the tip can rotate if contact with the incisors is maintained. This is essentially determined by the mandible and reflected in the angle MIT. Secondly, the blade shape may block the eyeline view to the target which is reflected in angle EIT. As both these angles are measured from the upper incisors, for any given situation the simple combination MIE, the sum of the two angles, is a measure of the effective width of the blade relative to how far the mandible allows it to rotate forward. The relevance of incisor contact and mandibular recession or otherwise are obviously critical for this model.

An alternative model, when the blade tip is imagined to be stationary in contact with an optimally positioned hyoid, describes forward blade rotation up off the incisors.[1] This provides an appropriate description for what Dr. Relle describes as "using other dimensions" under his first comment. This modelling is less interesting for the blades in question because it relates to situations where difficult intubation is progressively more unlikely. It does, however, show that, where space in front of the blade is not a problem, the straight blade rapidly reaches a state where it cannot be bettered simply because its shape provides no obstruction to eyeline view.

There are very good reasons why we chose not to make much of the apparent advantage of the Mac #3 over the Mac #4 blade. Firstly, the differences shown are relatively small. A combined (EIT plus MIT) angular difference of 1° is worth about 2 mm of posterior displacement of the blade tip when IT is 11.5 cm. Secondly, it is important to remember that the traditional rigid blade shapes are not necessarily constructed to any specified standard and differences between manufacturers and possibly even the same manufacturers over a period of time may vary. We referred to this problem particularly in the article. Of the blades we have had available to test formally, the Mac #4 has generally had a slight advantage over its Mac #3 equivalent.

Finally, we would like to add a comment on the Editorial[2] relating to our paper, where McIntyre refers to "encouraging anaesthetists to select the most suitable blade for their purpose, not merely a blade they can just manage successfully." Our eventual goal is to be able to suggest the appropriate blade for a particular patient with whatever anatomical problem preoperative assessment determines.

R.R.D. Marks MB ChB BSc
P. Charters MD MRCP FFARCS
Aintree Hospitals
Liverpool, England

REFERENCES

1 *Marks RRD, Hancock R, Charters P.* Laryngoscope blade position using a mathematical model. Br J Anaesth 1992; 68: 439–40.

2 *McIntyre JWR.* Tracheal intubation and laryngoscope design. Can J Anaesth 1992; 40: 193–6.

Spinal anaesthesia for Caesarean section in a patient with brain neoplasma

To the Editor:

A 19-year-old gravida I, para 0 came to hospital with nausea, vomiting, and swallowing disturbances at 31 wk gestation. She complained of frontal headaches, dysarthria and difficulty in walking. The patient showed symptoms of involvement of the cranial nerves V, VII, VIII, IX, X, and XII on her right. The tenth cranial nerve displayed signs of right-sided recurrent laryngeal nerve paresis and she repeatedly complained of regurgitation. First tomographic scannings and later histological results demonstrated a glioblastoma multiforme originating from the pontomedullary junction and extending to the cerebellum. The fourth ventricle was narrowed but not obstructed. At 34 wk, amniocentesis was performed to predict fetal lung maturity and bloody tinged amniotic fluid was found. At the same time the cardiotocogram displayed a decreasing fetal heart rate due to uteroplacental insufficiency. A partial placental abruption was suspected and an emergency Caesarean section was planned.

Spinal anaesthesia with a 24-ga pencil point needle was administered using 12.5 mg hyperbaric bupivacaine 0.5%. Intraoperative analgesia was excellent and surgery proceeded uneventfully. A 2100 g female infant was born with Apgar scores of seven, eight, and nine at one, five, and ten minutes. Following discharge from hospital the patient's headaches improved but symptoms of cranial nerve involvement persisted. Surgery with tumour excision was performed a few weeks later. At twelve months postpartum the patient is still alive but with progressive symptoms of deterioration.

The choice of anaesthetic management for Caesarean section in these patients is controversial and none of the options is without risk. General anaesthesia has been described[1] using an increased dose of thiopentone, hyperventilation, and bilateral recurrent laryngeal nerve block. However, there was a high risk of regurgitation and pulmonary aspiration in the present patient and therefore we refrained from general anaesthesia. There are a few reports of lumbar epidural and caudal anaesthesia for vaginal delivery.[2-4] However in 10–20% of patients, caudal anaesthesia failed to provide adequate analgesia[5] As we had to proceed rapidly, spinal anaesthesia which has a faster onset of action than epidural anaesthesia was considered more appropriate. Furthermore, there is the additional risk of dural puncture with large-pore epidural needles and subsequent brain stem herniation. An atraumatic small-bore, pencil point needle even under slightly raised intracranial pressure presumably causes only minimal CSF leakage, if at all.

Peter G. Atanassoff MD
Eli Alon MD
Branko M. Weiss MD
Department of Anaesthesiology
Urs Lauper MD
Department of Obstetrics
University Hospital of Zurich
100 Raemi-Str.
8091 Zurich, Switzerland

REFERENCES

1 *Cook EH.* Caesarean section in a patient with brain tumour: a clinical report. Mil Med 1989: 154: 330–1.
2 *Finfer SR.* Management of labour and delivery in patients with intracranial neoplasms. Br J Anaesth 1991: 67: 784–7.
3 *Goroszenuik T, Howard RS, Wright JT.* The management of labour using continuous lumbar epidural analgesia in a patient with a malignant cerebral tumour. Anaesthesia 1986: 41: 1128–9.
4 *Marx GF, Scheinberg L, Romney SL.* Anesthetic management of the parturient with intracranial tumor. Obstet Gyn 1964: 24: 122–6.
5 *Anderson S.* Management of epilepsy (Letter). Lancet 1990: 336: 1125–6.

Clonidine premedication for induced hypotension with total intravenous anaesthesia for middle ear microsurgery

To the Editor:

Clonidine premedication has been used for isoflurane-induced hypotension during middle ear microsurgery (MEMS).[1,2] We have recently used clonidine premedication with total intravenous anaesthesia (TIVA) to provide a relatively bloodless field and to avoid N_2O for MEMS.

Following IRB approval, 30 ASA I and II adult patients underwent MEMS using TIVA with propofol and fentanyl. Group I ($n = 15$) received only meperidine 1 $mg \cdot kg^{-1}$ and promethazine 0.25 $mg \cdot kg^{-1}$ as premedication *im* one hour before surgery. Group II ($n = 15$) received clonidine 4 $\mu g \cdot kg^{-1}$ *po* two hours before operation in addition to meperidine and promethazine. All patients received a bolus of 2 $mg \cdot kg^{-1}$ propofol and 1 $\mu g \cdot kg^{-1}$ fentanyl for induction of anaesthesia followed by atracurium 0.6 $mg \cdot kg^{-1}$ to facilitate tracheal intubation. Maintenance of anaesthesia was provided with a continuous infusion of propofol 10 $mg \cdot kg^{-1} \cdot hr^{-1}$ for the first 15 min, followed by propofol 6 $mg \cdot kg^{-1} \cdot hr^{-1}$ and fentanyl 1.5 $mg \cdot kg^{-1} \cdot hr^{-1}$ by syringe pump until 10–15 mins before the end of surgery when the infusion rate was reduced to one third. Relaxation was maintained with atracurium monitored by Datex relaxograph. Positive pressure ventilation was employed using O_2 in air (FiO_2 0.4). The infusion was stopped at the conclusion of surgery. Labetalol 0.1 $mg \cdot kg^{-1}$ was given whenever mean arterial pressure (MAP) exceeded 70 mmHg. Times to open eyes on command and to talk coherently were noted.

The mean intraoperative heart rate was lower in Group II than in Group I ($66.3 \cdot min^{-1}$ vs $71.6 \cdot min^{-1}$) $P < 0.05$. The average MAP tended to be lower ($P >$ NS) in Group II patients than in Group I (70.3 mmHg vs 75.3). The mean dose of labetalol needed to keep the MAP between 60–70 mmHg in Group I was 25.1 mg compared with only 4.2 mg in Group II ($P < 0.05$). The mean time to open eyes and talk coherently in Group I was 6.8 and 13.3 min compared with 11 and 20.5 min in Group II.

Therefore, we believe that addition of clonidine premedication with TIVA (propofol/fentanyl combination) for MEMS can provide stable hypotensive anaesthesia