mm or longer needles are used." They also stated that "with a 35-mm needle, piercing the optic nerve sheath is less likely than with a 38-mm needle, but a 31.5-mm needle is still safer." Obviously, common sense prevails as to the total length to be inserted for different sizes of orbits.

The presence of the superior ophthalmic vein and its two roots are quite constant in the supero-medial quadrant of the anterior orbit. The inferior ophthalmic vein is more variable on the orbital floor. Nowhere in the orbit is entirely free from arteries and veins. This is why haemorrhage can complicate retrobulbar and even peribulbar injections.

It is hard to break from tradition, even from a technique which often results in suboptimal akinesia, and has produced many reports of retrobulbar haemorrhage, globe perforation, brainstem anaesthesia, and extraocular muscle injury. Our modified technique is simple to administer, does not require additional facial nerve block, and produces good akinesia. It is proposed as an alternative technique and not as a replacement of the classical retrobulbar block. I have used it in over 600 patients, without any serious complications. However, as with the classical technique, no one can guarantee that these would not occur.

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Confirmation of internal jugular vein cannulation: the Finucane technique

To the Editor:

We wish to report a method of confirming internal jugular vein cannulation which was developed at Grady Memorial Hospital in 1986. This technique is currently being used at the University of Wisconsin and Emory University and both faculty and staff have used this technique in over 3,000 cases.

The internal jugular vein is the most frequent site for central venous cannulation by anaesthetists, and has a low incidence of complications. The most frequent complication is carotid artery puncture, which has an incidence of 2% in most series.^{1,2} This can, if not recognized, lead to loss of the airway from bleeding or neurological insult. Methods to avoid major complications must be employed. Commonly, internal jugular vein cannulation is confirmed prior to the insertion of large cannulas, i.e., 8.5 Fr introducers, by connecting the intravenous catheter to pressure tubing and electronic transducer and observing a central venous wave form.³ However, transducers are not always available. We describe an alternative method for confirmation of internal jugular vein cannulation.

FIGURE Sterile pressure tubing has been attached to an 18 gauge angiocath. The pressure tubing has been placed in a dependent position, allowing it to fill with venous blood.

After cannulation of the internal jugular vein with either an 18 or 20 gauge catheter, a 24" length of sterile tubing is connected directly to the catheter. The open end of the tubing is lowered, allowing it to refill freely with blood (Figure). The open end is then raised, allowing the blood to run freely into the vein. We commonly use oxygen during central vein cannulation and monitor the patient with pulse oximetry to enhance the contrast between the venous and arterial blood.⁴ The arterial venous colour difference can be a useful clinical guide but must be used in the context of clinical circumstances.

We contend that five observations will confirm intravenous placement: (1) non-pulsatile filling of the tubing; (2) a dark venous colour of the blood, particularly when compared with a simultaneous arterial sample and the patient is breathing oxygen; (3) an inability to fill the tubing completely when held vertically; (4) a smooth decrease in the height of the column of blood when the tubing is raised vertically – indicating that the catheter is in a low-pressure system and is neither kinked nor against a vessel wall; (5) variation of the column of blood with respiration or a valsava manoeuvre.

Although no method will completely prevent unintentional cannulation of the carotid artery, we feel that this technique is valuable when transducers are not available, or when working alone or involved in an emergency internal jugular cannulation.

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REFERENCES

- 1 Otto CW. Central venous pressure monitoring. In: Blitt CD (Ed.). *Monitoring and Anesthesia Critical Care Medicine*. New York: Churchill Livingstone, 1985; 121.
- 2 Shah K, Rao TLK, Laughlin S, El-Etr A. A review of pulmonary artery catheterization in 6245 patients. *Anesthesiology* 1983; 61: 271-5.
- 3 Jobs DR, Schwartz AJ, Greenhow DE, Stephenson LW, Ellison N. Safer jugular vein cannulation: recognition of arterial puncture and preferential use of the external jugular route. *Anesthesiology* 1988; 59: 353-5.
- 4 Neastein SM, Narang J, Bronheim D. Use of the color test for safer internal jugular vein cannulation (Letter). *Anesthesiology* 1992; 76: 1062.

Elective use of the laryngeal mask in patients with difficult airways

To the Editor:

We read with interest the letter from Drs. Brimacombe and Shorney¹ regarding the role of the laryngeal mask airway (LMA) in patients whose tracheas are considered to be difficult to intubate. They state that in this group of patients, the LMA is not unsuitable and many consider that the LMA has a role in elective difficult intubation both as an alternative form of airway management and as an aid to achieving intubation.¹ In contrast, Fisher *et al.*² disagree with the elective sole use of the LMA in anaesthetized patients with difficult airways. We consider that the LMA is relatively contra-indicated, but it may have a role in certain circumstances.

Although the LMA has been successfully used to enable ventilation of the lungs in patients in whom tracheal intubation has failed,³ it was not used as a substitute for an endotracheal tube, and in all patients tracheal intubation had originally be considered necessary. There are reports of the elective use of the LMA in anaesthetized patients in whom difficult intubation had been anticipated,⁴ but it should not be assumed that correct placement of the LMA can always be achieved in patients who have abnormal airways. In fact, there are several reports of failure of gas exchange through the LMA in this group of patients.⁵⁻⁷ We believe that anecdotal reports do not justify the elective use of the LMA in paralyzed patients known to be difficult to intubate.

Tracheal intubation is not always mandatory in patients with difficult airways, although there is a danger of the "can't intubate, can't ventilate" scenario if ventilation becomes compromised. A face-mask is sometimes used in patients with difficult airways, when the surgery does not require tracheal intubation, but general anaesthesia is required. Under these circumstances, the face-mask may be replaced by the LMA. Once the LMA is successfully placed, maintenance of airway patency may be easier with the LMA than with the face-mask. The LMA should be inserted while the patient is awake, because there is little danger even if placement of the LMA fails or gas exchange through the LMA becomes difficult. After proper positioning of the LMA is confirmed, preferably with a fibroscope, anaesthesia is induced. Insertion of the LMA after induction of anaesthesia should be avoided, because there is a possibility of failure of insertion or of laryngospasm. The patient should not be paralyzed. Even when adequate ventilation through the LMA has been obtained in awake or spontaneously breathing anaesthetized patients, once they are paralyzed, there is no guarantee that the LMA can be inserted again if it becomes dislodged, because muscle relaxation decreases pharyngeal integrity⁸ and produces anterior shift of the larynx.⁹ The facility for percutaneous transtracheal ventilation must be readily available in case of the "can't intubate, can't ventilate" scenario.

We feel that awake insertion of the LMA followed by induction of anaesthesia maintaining spontaneous respiration is acceptable in some circumstances in patients with difficult airways. However, it should be remembered that the LMA cannot provide a secure airway as effectively as an endotracheal tube and we should never regard it as a substitute for one.

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REFERENCES

- 1 Brimacombe J, Shorney N. The role of the LMA? (Letter). *Can J Anaesth* 1993; 40: 394.
- 2 Fisher JA, Ananthanarayan C, Edelist G. The role of the LMA? (Reply). *Can J Anaesth* 1993; 40: 394-5.
- 3 Allen JG, Flower EA. The Brain laryngeal mask. An alternative to difficult intubation. *Br Dent J* 1990; 168: 202-4.
- 4 Maltby JR, Loken RG, Watson NC. The laryngeal mask airway: clinical appraisal in 250 patients. *Can J Anaesth* 1990; 37: 509-13.