A METHOD OF FIXATION OF ENDO TRACHEAL TUBES

Sir,—For prolonged intubation in a children's hospital we prefer to use uncuffed plastic tubes, either Warne* neonatal tubes inserted orally, or nasal/oral bevel tubes introduced nasally. Fixation of these tubes has always been a problem, as adhesive tape irritates the skin and loosens when wet with secretions. With nasal tubes, there is always the danger of dislodgement of the tube connector, with loss of the tube into the pharynx. The Jackson-Rees† tube does overcome some of these difficulties, but we do not often use it because of the thick wall and the need to shorten the tube at the bevel end, which leaves a sharp edge.

A new method of fixation has been devised, which has been in use in our intensive therapy unit for a year, and has proved very satisfactory in the opinion of both medical and nursing staff.

The length of tube needed must be measured reasonably accurately before its insertion. This may be done by introducing the tube first, then cutting another at the right length and substituting this. The lettering on the Warne tubes forms a useful guide. Alternatively, one may use a formula (Matrila et al., 1971) or chart (Rees and Owen-Thomas, 1966) to judge the length required.

A leather punch (obtainable from craft shops) is used, and holes (B, fig. 1) punched in the anterior and posterior walls of the tube at the measured level. Further holes (A, fig. 1) are then punched about 3 cm proximally and at right angles to the first pair. The tube is trimmed, if necessary, beyond the second pair of holes, and scissors used to cut down the anterior and posterior walls of the tube as far as the first holes (fig. 1). A flange is thus formed, and the tube will split no further. A connector, usually of the Cardiff‡ type, is fitted into the tube (fig. 2).

Tapes are passed through the second pair of holes and attached to a cap made of tube-gauze of appropriate size.

The cap is stretched and fixed in place with a long piece of 1 in. non-stretch adhesive strapping. Safety pins are used to attach the tapes to the strapping behind and in front of the ears, as shown (fig. 3).

If the tube is the right length, this produces stable fixation, because as the tube tends to be pulled out, the cap tightens. There are no points of excessive pressure.

* Warne neonatal tube manufactured by Franklin Ltd.
† Jackson-Rees tube manufactured by Portex Ltd.
‡ Cardiff endotracheal tube connector manufactured by B.O.C.
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if the tapes are fixed correctly, and the face is left free. If the connector becomes dislodged, the tube remains, and a new connector can be easily fitted.

I would like to thank Dr B. J. Ricci, who originally suggested this method of fixation.

REFERENCES

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REFERENCES


THALAMONAL AND CEREBRAL CIRCULATION

Sir,—We read with much interest the first study by Drs Sari, Okuda and Takeshita (Brit. J. Anaesth. (1972) 44, 330) as it relates closely to our own work. As they state, Fitch and his colleagues (1969) reported that fentanyl and droperidol in combination cause a small reduction in intracranial pressure, suggesting that this might be due to a fall in c.b.f. and CMRO₂. This led us to study the effect of fentanyl and droperidol in combination on c.b.f. and CMRO₂ in anaesthetised (trimethyl, ethylene), ventilated dogs (Miller and Barker, 1969); c.b.f. was reduced significantly even when correction was made to the c.b.f. value for the fall in PaO₂, which in some cases followed drug administration. There was a small (not significant) fall in arterial pressure and CMRO₂ was not changed. Michenfelder and Theye (1971) also studied the effects of fentanyl and droperidol on c.b.f. and CMRO₂ in the dog. At normocapnia, c.b.f. was reduced by 40-50% and CMRO₂ by 23% and they concluded that droperidol is a cerebral vasoconstricting agent.

The disparity between these results and those of Dr Sari and his colleagues may relate to species differences, but this also raises the question of the validity of the use of Reivich’s data (obtained from monkeys) to correct human c.b.f. results for changes of PaO₂. Studies in progress in baboons and humans by the MRC Cerebral Circulation Group in Glasgow suggest that the change in c.b.f. produced by a 1 mm Hg change in PaO₂ around 40 mm Hg may be closer to 3 ml/100 g/min than to the 1 ml/100g/min found by Reivich (1964) and used by Sari and his colleagues. On this basis, their corrected c.b.f. after Thalamonal would then be 43.7 ml/100g/min, a reduction of over 9% from their control value of 48.3 ml/100g/min.

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REFERENCES


A VARIABLE POSITIVE END EXPIRATORY PRESSURE VALVE

Sir,—Positive end-expiratory pressure (PEEP) has become an accepted and useful treatment for patients with terminal airway collapse. (Ashbaugh, Petty, Bigelow and Harris, 1969). Unless one possesses a recently produced ventilator with built-in PEEP (Petty, Nett and Ashbaugh, 1971) the most common method has up to now been to use a water column to limit the pressure (McIntyre, Laws and Ramachandran, 1969). This necessitates clumsy apparatus and is accompanied by a loud bubbling which may distress the patient.

A simple valve (fig. 1), has been designed which can be attached to the expiratory port or after the spirometer on any ventilator that has a single expiratory exit.

It consists of a light metal disc enclosed in a polythene envelope resting on an orifice of 1 in diameter. The resistance to the valve opening is provided by an arm connected to a balance arrangement with a movable weight (fig. 2). The travel of this weight enables pressure of 0.20 cm of H₂O to be exerted on the flap. The blind

FIG. 1. Photograph of the variable positive and expiratory pressure valve.

FIG. 2. Schematic diagram of variable positive and expiratory pressure valve.