

42.7 hours.² Granted that not all of the drug is distributed to the brain, the cerebral concentration, nevertheless, suffices to depress neonatal neurobehavior significantly. In healthy infants born at term by elective cesarean section, thiopental induction (4 mg/kg) gave lower neurobehavioral scores than ketamine induction (1 mg/kg) on both the first and second days of life.³

The authors voiced concern about the potential side effects of ketamine and the volatile inhalation agents. Such side effects are dose-related. One "low" dose of ketamine produces analgesia and amnesia without increasing uterine activity⁴ or causing postanesthetic hallucinations.⁵ Halogenated agents inhaled in concentrations of less than 0.5 MAC potentiate N₂O anesthesia without decreasing uterine activity,⁶ and are exhaled rapidly by the newborn.⁷

Limitation of peripartum exposure to long-acting drugs is the wave of the future!

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REFERENCES

1. Mark LC, Poppers PJ: The dilemma of general anesthesia for cesarean section: Adequate fetal oxygenation vs. maternal awareness during operation. *ANESTHESIOLOGY* 56:405-406, 1982
2. Christensen JH, Andreassen F, Jansen JA: Pharmacokinetics of thiopental in caesarean section. *Acta Anaesthesiol Scand* 25:174-179, 1981
3. Hodgkinson R, Bhatt M, Kim SS, et al: Neonatal neurobehavioral tests following cesarean section under general and spinal anesthesia. *Am J Obstet Gynecol* 132:670-674, 1978
4. Marx GF, Hwang HS, Chandra P: Postpartum uterine pressures with different doses of ketamine. *ANESTHESIOLOGY* 50:163-166, 1979
5. Akamatsu TJ, Bonica JJ, Rehmet R, et al: Experiences with the use of ketamine for parturition: I. Primary anesthetic for vaginal delivery. *Anesth Analg (Cleve)* 53:284-287, 1974
6. Marx GF, Kim YI, Lin CC, et al: Postpartum uterine pressures under halothane and enflurane anesthesia. *Obstet Gynecol* 51:695-698, 1978
7. Marx GF, Eckstein KL, Halevy S: Placental transmission and maternal and neonatal elimination of fluroxene. *Anesth Analg (Cleve)* 52:654-660, 1973

(Accepted for publication June 19, 1982.)

Anesthesiology
57:548-549, 1982

A Simple Maneuver to Verify Proper Positioning of an Endotracheal Tube

To the Editor:—There are several methods available to determine proper positioning of an endotracheal tube: 1) placement of an endotracheal tube under direct vision 1 to 2 cm below the cords, 2) confirmation by auscultation of breath sounds that the tip of the tube is above the carina, 3) rapid inflation and deflation of the cuff with palpation in the suprasternal notch, 4) chest x-ray, 5) electromagnetic sensing technique, and 6) technique of endobronchial intubation with gradual withdrawal of the tube to 1 to 2 cm beyond the point at which breath sounds are bilaterally equal.

Method 1 is obviously an integral part of the procedure of endotracheal intubation under direct vision, and verification that the tip is above the carina is provided by method 2 and often by method 3. Method 4 is used only in indicated cases for obvious reasons. Method 5 has been described,¹ but is not commercially available. Method 6 may be useful when in doubt and for proper placement of an endotracheal tube in infants and children.²

All the above methods, however, have some limitations. Method 1, for example, cannot be used in blind nasal intubation; furthermore, possible downward dis-

location after proper placement of the tube may occur. Method 2 may be inaccurate and may not insure the proper distance of the tip of the tube from the carina. The usefulness of method 3 is doubtful in the case of obese patients and with low pressure, large-volume pre-stretched cuffs; in addition, deflation of the cuff even for a short time may not be wise in some instances. Methods 4 and 5 are either inconvenient, expensive, not readily available, or not available. Method 6 may not insure that a safe distance from the carina has been achieved and may precipitate bronchospasm.

It, therefore, appears beneficial to be able to utilize a combination of methods to verify proper positioning of the endotracheal tube. Along this line, we propose an additional simple maneuver using the pilot balloon of the cuff as a sensor. Constant pressure is applied to the pilot balloon of the inflated cuff by the index finger and thumb (about halfway compression) while the trachea is palpated downward from below the cricoid cartilage. When the region of the trachea with the inflated cuff is explored, a distinct increase in pressure is felt. We find this maneuver more sensitive than method 3 since pressure changes are sensed directly and not

through the skin and soft tissues. We believe that this maneuver is useful when method 3 fails, for example, in obese patients, and safer since deflation of the cuff is not required. Furthermore, this maneuver provides a simple safe way of tube position verification at any time during the endotracheal intubation.

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Anesthesiology
57:549, 1982

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REFERENCES

1. Cullen DJ, Newbower RS, Gerner M: A new method for positioning endotracheal tubes. *ANESTHESIOLOGY* 43:596-599, 1975
2. Wallace CH, Cooke JE: A new method for positioning endotracheal tubes (Letter to the Editor). *ANESTHESIOLOGY* 44:272, 1976

(Accepted for publication June 14, 1982.)

A Challenge to the Use of *d*-Tubocurarine Prior to Succinylcholine in Obstetrics

To the Editor:—May I present a challenge to your readers? I have noted over the years the repeated advocacy—especially in the North American literature—that an induction dose of suxamethonium be preceded by a small dose of intravenously administered *d*-tubocurarine. The rationale of this measure appears to be that the nondepolarizer prevents, in the obstetric patient, certain undesirable effects of suxamethonium: generalized fasciculations, with consequential increase in intra-abdominal pressure likely to enhance the prospect of passive regurgitation, and, subsequently, post-operative muscle pains.

I have reasonably well kept records of some 7,000 general anesthetics given for cesarean section in my service since 1968, and the recollection of close on 2,000 similar anesthetics personally administered before that date, and in none of these cases was the induction dose of 100 mg suxamethonium preceded by a nondepolarizer. Fasciculations, if evidenced at all, have almost always been of a very minor character, and never of an extent considered likely to pose the threat of passive regurgitation up the esophagus. Each of our patients is interviewed at least once subsequent to the day of operation, and the incidence of reported muscle pain is approximately 9%—in the great majority of these cases the reference is to mild discomfort in the shoulders or

around the lower chest; in fewer than one in a thousand does the mother describe feeling “bruised all over.”

I appreciate, as Katz *et al.*¹ showed many years ago, that North American patients, when treated in their own environment, respond differently to muscle relaxants than do British patients treated in the U. K., but I doubt that this contrast is pertinent to my current thesis. I believe that the prior administration of *d*-tubocurarine as described is a pharmacologic trespass possessing no merit, and invokes the hazard of unnecessary delay, plus the avoidable expense of an extra syringe and of the drug itself. Could any of your readers present a reasonable and compelling case for its continuance in obstetric anesthetic practice?

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REFERENCES

1. Katz RC, Norman J, Seed RF, Conrad LA: Comparison of the effects of suxamethonium and tubocurarine in patients in London and New York. *Br J Anaesth* 41:1041-1047, 1969

(Accepted for publication June 14, 1982.)

Anesthesiology
57:549-550, 1982

A Patient Transfer Method: Try It, You'll Be Glad You Did

To the Editor:—We recently have encountered a pleasingly simple and inexpensive variation of a technique for transferring patients from the operating table to a stretcher or bed. The technique follows the example of

roller/conveyor devices but uses, instead, the ubiquitous green (the color doesn't matter) garbage bag. The patient initially is rolled, using the draw sheet, 45-60 degrees away from the side to which transfer is to be