

ration pneumonia even when no anesthetics have been administered" is inaccurate when using this case as a reference.

We do agree that awake intubation should always be considered for patients who are at risk of aspiration. Awake intubation has its own complications and relative contraindications, and for several reasons rapid sequence induction continues to be used for the majority of emergency inductions. Cricoid pressure should be employed during the entire induction process in any patient who is at the slightest risk of aspiration of gastric contents. Appropriate aspiration prophylaxis should also be administered to patients in all but the most emergent situations.

This technique, and similar techniques such as that described by Dr. Tryba, have been used successfully in patients who have a contraindication to succinylcholine, yet still require a rapid sequence induction. Some practitioners may never be confronted with such a case, but others, such as ourselves, find it to be a common situation.

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REFERENCES

1. Cicala RS, Westbrook LL: An alternative method of paralysis for rapid sequence induction. *ANESTHESIOLOGY* 69:983-986, 1988
2. Baumgarten RK, Carter CE, Reynolds WJ, Brown JL, DeVera HV: Priming with nondepolarizing relaxants for rapid tracheal intubation: A double blind evaluation. *Can J Anaesth* 35:5-11, 1988
3. Nagatsuka M, Franks P, Keenan RL: A method of rapid sequence

- induction using high-dose narcotics with vecuronium or vecuronium and pancuronium in patients with coronary artery disease. *J Cardiothorac Anesth* 2:177-181, 1988
4. Helbo-Hansen S, Ravlo O, Trap-Anderson S: The influence of alfentanil on the intubating conditions after priming with vecuronium. *Acta Anaesthesiol Scand* 32:41-44, 1988
5. Tryba M, Zevonou F, Zenz M: Vecuronium zur Blitzintubation. *Anaesthesist* 35:509-513, 1986
6. Mirakhur RK, Ferres CJ, Clarke RSJ, Bali IM, Dundee JW: Clinical evaluation of ORG NC 45. *Br J Anaesth* 55:119-124, 1983
7. Kunjappan VE, Brown EM, Alexander GD: Rapid sequence inductions using vecuronium. *Anesth Analg* 65:503-506, 1986
8. Mehta MP, Choi WW, Gergis SD, Sokoll MD, Adolphson AJ: Facilitation of rapid endotracheal intubation with divided doses of nondepolarizing neuromuscular blocking drugs. *ANESTHESIOLOGY* 62:392-395, 1985
9. Agoston S, Salt P, Newton D, Bencini A, Boomsma P, Erdmann W: The neuromuscular blocking action of ORG NC 45, a new pancuronium derivative, in anaesthetized patients. *Br J Anaesth* 52:53S-59S, 1980
10. Chauvin M, Lebrault C, Dovaldestin P: The neuromuscular blocking effect of vecuronium on the human diaphragm. *Anesth Analg* 66:117-122, 1987
11. Norman J, Read D, duBoupay M: Hand and respiratory paralysis by ORG NC 45 in man. *Br J Anaesth* 52:956P, 1980
12. Engbaek J, Howard-Hansen P, Ording H, Viby-Mogensen J: Precurarization with vecuronium and pancuronium in awake, healthy volunteers: The influence on neuromuscular transmission and pulmonary function. *Acta Anaesthesiol Scand* 29:117-120, 1985
13. Sosis M, Stiner A, Larizani GE, Marr AT: An evaluation of priming with vecuronium. *Br J Anaesth* 59:1236-1239, 1987
14. Musich J, Walts LF: Pulmonary aspiration after a priming dose of vecuronium. *ANESTHESIOLOGY* 64:517-519, 1986

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R(obert) Mortimer Glover and The First Chloroform Anesthesia

To the Editor:—Chloroform was independently discovered in 1831 by S. Guthrie, E. Souberian, and J. von Liebig. Soon after its discovery in the U. S., it was prescribed as a stimulant, analgesic, sedative, and especially, antitussive and bronchodilator, but its anesthetic properties remained unknown for another 15 years.

J. P. Flourens, who reported his experiments in dogs in March, 1847,¹ is generally thought to have discovered the anesthetic properties of chloroform. J. Y. Simpson, after inhaling it during the memorable evening of November 4th, 1847, administered it in obstetrics on November 8th, 1847, and in surgery on November 12th, 1847, and immediately claimed credit for its discovery as an anesthetic. Simpson probably was unaware of Flourens' work and that chloroform or chloric ether, its alcoholic solution, had successfully been used for clinical anesthesia in London since at least February, 1847.²⁻⁴

In fact the anesthetic properties of chloroform were found, although not appreciated, several years before 1847. R(obert) Mortimer Glover (1816-1859), a professor of *Materia Medica* at the Newcastle-upon-Tyne Medical School, reported in one⁵ of two papers that won him the Harvey prize for 1842,³ that he had injected, respectively, 1.8 and 3.6 ml chloroform in the jugular vein of two large dogs and quickly

caused unconsciousness, loss of corneal reflex and of response to pinching and pricking, motor weakness, and respiratory and circulatory depression, a state from which both animals quickly recovered. Two rabbits which received 3.6 ml chloroform in the peritoneum or the stomach showed the same symptoms but died 20 min later.

Glover did not try chloroform in smaller doses nor in inhalations, although he realized that the drug traversed his animals' alveoli after smelling it on their breath. Glover also failed to see and exploit the clinical possibilities of the transient unconsciousness and analgesia he had produced in his two dogs. He thus was rather disingenuous when he claimed, after Simpson's discovery, that he had not recommended chloroform as an anesthetic because of its harmful pulmonary effects.⁶ He had been impressed, it is true, by the marked pulmonary congestion found in his autopsies and felt that chloroform was highly toxic to the lungs.

Glover's involvement with chloroform continued long after 1842. He assisted the surgeon Sir John Fife at the autopsy of: Iannah Greener, the first victim of the chloroform, who died in Newcastle on January 28th, 1848.⁷ Glover's prejudice about chloroform pulmonary toxicity may well have influenced Fife's report that "in my opinion the cause

of death was the congestion of the lungs, and that congestion I ascribe to the inhalation of chloroform." Glover also occasionally helped T. N. Meggison, Hannah Greener's anesthetist, administer chloroform in Newcastle.⁷

In 1849, Glover left Newcastle for London where he practiced as a "philosophical and practical chemist"⁸ at the Royal Free Hospital. He preceded two famous anesthetists at that hospital: B. W. Richardson, of bichloride of methylene fame, and E. F. Junker, the inventor of a vaporizer widely used in Europe for several decades.

Glover died under mysterious circumstances at the age of 43 in his Kensington home. In early April, 1859, he went into a coma after swallowing 2–3 ounces of chloroform and was found dead 24 hours later. His autopsy suggested chloroform as the cause of death. Glover had apparently swallowed the liquid in an experiment designed to induce anesthesia by the oral route. One of his obituaries praised Glover's "high reputation" and noted that "united with the playfulness and simplicity of an infant, he possessed powers of research, depth of thought, and originality of mind which fall to the lot of few labourers, even in the vast field of science."⁸

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Minimizing Dead Space, Air Embolism, and Needle-Stick Risk

To the Editor:—Needle injections via latex T-ports attached directly to the peripheral intravenous cannula have been recommended during pediatric anesthesia to reduce dead space, risk of air injection/em-

bolism, and fluid loads during drug administration.¹ These injections frequently occur under drapes, encumbered by surgeons surrounding a small patient, and carry a considerable risk of blood-contaminated

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REFERENCES

1. Flourens JP: Note touchant l'action de l'éther sur les centres nerveux. Acad Sci Paris CR 24:340–344, 1837
2. Bell J: Editor's comment. Pharm J (London) 6:357, 1846–7
3. Cogswell: History of chloroform and its use as an anaesthetic agent. Lancet 2:631, 1847
4. Thomas KB: The early use of chloroform. Anaesthesia 26:348–362, 1971
5. Glover RM: Physiological properties of the bromide and chloride of olefiant gas, of bromoform, chloroform, and iodoform. Edinburgh Med J 58:353–358, 1842
6. Glover RM: On the physiological properties of chloroform. London Med Gaz NS55:978–979, 1847
7. Meggison TN: Death produced by chloroform. Am J Med Sci NS 15:558–560, 1848
8. Obituary: Robert Mortimer Glover, M.D., Lancet 1:405, 1859

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FIG. 1. The method of aseptic assembly is demonstrated using the plastic catheter cover during the insertion process. The picture insert shows the catheter in the wide T-port hub.