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In reply:—I believe that the practice of pretreatment before succinylcholine with depolarizing or nondepolarizing agents should be reviewed. The clinical application of any pretreatment technique depends not only on its ability to prevent muscle fasciculations, but also on its ability to diminish the associated side effects, such as myalgia, increased intragastric pressure, serious increases in serum potassium, etc. Our report simply describes the phenomenon of self-taming as a technique that diminishes succinylcholine-induced fasciculations. Its possible protection against other side effects of succinylcholine needs further investigation. In contrast to taming with nondepolarizing drugs, self-taming does not delay the onset or diminish the block of a subsequent full dose of succinylcholine. Incomplete succinylcholine block may follow pretreatment with nondepolarizing muscle relaxants, thereby making endotracheal intubation more difficult and hazardous in the patient with a full stomach. None of our patients showed significant bradycardia following the full dose of succinylcholine injected 45–60 sec after the taming dose. This would be expected in view of the findings of Mathias and Evans-Prosser, who showed that a 5-minute interval between the first and second doses of succinylcholine is optimum for producing bradycardia.[1]

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REFERENCE

1. Mathias J, Evans-Prosser C: An investigation into the site of action of suxamethonium on cardiac rhythm. Proceedings of IVth World Congress of Anesthesiologists. Amsterdam, Excerpta Medica, 1970, pp 1153

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Survey of the Use of Flammable Anesthetics

To the Editor:—The continued use of flammable anesthetic agents is a controversial issue. The extent to which these agents are employed in anesthesiology training programs will have a significant effect on their future role in the practice of anesthesiology. This was recognized by the current members of the American Society of Anesthesiologists Committee on Flammable Hazards and Electrical Equipment. Accordingly, the committee attempted to determine the current status of flammable anesthetic agents by means of a questionnaire that was mailed to 202 directors of anesthesiology residency training programs. One hundred and seventeen questionnaires were returned.

TABLE 1. Year in Which Flammable Anesthetic Agents Were Discontinued by 81 Respondents

Year Discontinued	Number of Programs Discontinuing Use of Flammable Anesthetic Agents in that Year
1975	22
1974	14
1973	7
1972	13
1971	5
1970	4
1969	1
1967	1
1966	2
1965	3
1962	1
1960	2
Not stated	6

Eighty-one of the respondents had not used any flammable agents in 1976. Table 1 shows the years in which flammable anesthetics were discontinued by non-user respondents. The major reasons for discontinuing the use of flammable anesthetics were the risks of a fire or explosion; expense to maintain an explosion-proof environment; the widespread use of the electrosurgical unit; and the belief that the flammable agents have no pharmacologic advantage over nonflammable drugs currently available.

Of the 37 respondents who used flammable anesthetic agents in 1976, 29 used diethyl ether and 34 used cyclopropane. These programs averaged 13,443 anesthetics/institution, of which 395 anesthetics/institution were with flammable anesthetic agents. The range was 0.3 to 8 per cent of the anesthetics being flammable. Six of the 37 users have now discontinued the use of flammable agents. Their reasons for doing so are similar to those for the non-users.

It is evident from this survey that a declining

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number of anesthesiology training programs continue to use flammable anesthetics. Those that do cite teaching as their principal justification. That in 25 of these programs 94 or fewer flammable anesthetics/year were administered raises doubts about whether the exposure is adequate to develop proficiency in their use. Whatever the merits or demerits of flammable anesthetics, it is evident that their use will eventually terminate if the trainee anesthesiologist does not gain familiarity with them. Aside from teaching aspects, there was considerable scepticism, even by those who still use flammable agents, concerning their need.

The reasons for discontinuing the use of flammable agents included pharmacologic considerations, the electrical environment of anesthetizing locations, and expense. In planning new hospital construction or upgrading existing facilities, that nonflammable anesthetizing locations are less costly to build and maintain, and the patient as well as members of the operating room team are less at risk from explosion, fire and electrical shock, must be taken into account. Flammable anesthetizing locations are subject to special physical and procedural requirements beyond those mandated for nonflammable anesthetizing locations.[1-4] Electrical equipment, including wiring, fixtures, receptacles, and appliances, must be explosion-proof or located 5 feet above the floor and spark-proof.[1-3] This severely curtails the use of electromedical devices. Electrostatic precautions against the ignition of flammable agents are onerous. In this regard, conductive flooring must be provided and maintained; special fabrics for apparel, sheets, drapes, etc.; conductive footwear, breathing tubes, etc., are required, and all must be periodically tested for conductivity.[2,3] Finally, there are special requirements for storage of flammable agents, including ventilation, fireproofing, conductivity, and location.[2,3] When anesthetizing locations that meet the requirements for flammable anesthetic agents are subsequently designated areas where only nonflammable agents are to be used, it is no longer necessary to comply with these special requirements.[1-4]

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REFERENCES

1. Standard for the Use of Inhalation Anesthetics: NFPA 56A, 1973
2. Article 517G, National Electrical Code: NFPA 70, 1978
3. JCAH Accreditation Manual for Hospitals, 1976
4. JCAH Standards, Survey and Procedures Committee: Ruling on Conductive Floor Testing, February 24, 1977

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Prevention of Ventilator Hazards

To the Editor: —In their article, Drs. Sears and Bocar described a possible mechanism for obstruction of the breathing circuit.[1] Although the specific case they reported involved a Monaghan 300 Ventilator, the hazard also exists with other anesthesia ventilators. They recommended that the reservoir bag outlet be removed from the selector valve and that the selector valve handle be *left* in the horizontal position. Unfortunately, this remedy sets the stage for a different but also potentially dangerous human error. If the bag/ventilator selector is accidentally turned to the vertical position, the breathing circuit would be opened to atmosphere and the ventilator outlet obstructed. What is even more likely and more hazardous is that the selector valve handle can be partially deflected, creating a substantial leak in the breathing circuit that may be difficult to detect. Neither the sound nor the bellows movement of the ventilator would be altered appreciably, even though a fraction of the intended tidal volume would be ventilating the room instead of the patient's lungs.

One would expect that a singular error such as this would be recognized by the anesthetist and corrected before any irreversible sequelae occurred. However, in concert with other factors that may predispose to error or in conjunction with a second, simultaneously occurring error or failure, such a relatively simple oversight could lead to a catastrophic outcome.

To eliminate this hazard fully, the selector valve should be removed from the ventilator outlet. Of course, the convenience of switching between controlled and manual ventilation that is afforded by this valve would then be lost, but the same effect is created by just removing the reservoir bag outlet. Since there are not objective, quantitative data on the

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