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The Responsibility of the Specialty of Anesthesiology to the Profession of Dentistry

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The Practice of Anesthesia by Dentists and Oral Surgeons

Millions of general anesthetic administrations take place every year in the United States as an adjunct to dental treatment in private offices, and these pass almost unnoticed by physicians in the specialty of anesthesiology. In fact, there is not even an accurate tally of the number of these anesthetic administrations. It is suggested by those willing to venture a guess that the number is four to five million yearly.¹ It has been estimated that between 4 and 10 per cent of the more than 95,000 practicing dentists in this country administer general anesthesia in their offices.² About half of the group giving outpatient general anesthesia are specialists in oral surgery who have received a minimum of three months of training in operating room anesthesia.^{3,4} The other half have probably received less training.

The concerned specialist in anesthesia confronted with the above facts might ask: 1) What is the legal status of such practice? 2) What is the quality of practice in such situations? The legal question is easily answered. There are few restrictions. The state of Alaska has since 1968 required dental practitioners to obtain a special permit to administer general anesthesia.⁵ The state of Ohio now also requires a permit from the State Dental Board for a dentist to use general anesthesia in a private office.⁶ Other states assume this to be a normal part of dentistry.⁷ The question on quality of outpatient anesthesia practice in dentistry is made difficult to answer due to inadequate documentation. The published figures from this country and abroad are retrospective surveys that cover many millions of cases primarily in private oral surgery

offices.^{8,9} These figures imply great safety, ranging from one death in 200,000 to one in 500,000 administrations. It is not the object of this paper to analyze these results; however, we wish to point out two factors that bear on them. First, a large body of literature from both this country and Great Britain appears to question both methods and equipment of at least the nonspecialist dentist giving anesthesia, intravenous analgesia, or inhalational analgesia.¹⁰⁻²⁰ Second, using mortality statistics as a guide,²¹ one would expect 4,700 deaths per year in the United States in any group of 500,000 patients. This reduces to approximately one death in this group every two hours. If we consider a two-hour period starting with induction as the one of greatest risk for an anesthetic death, the implication is that having an anesthetic in the circumstances of the reported studies has no effect on mortality. We do not feel that any adjustment for age, infirmity, case selection, redefinition of what is a general anesthetic, or time period under observation can explain this unusual conclusion. It is to the credit of the specialty of oral surgery that oral surgeons are themselves concerned over this discrepancy and the problems of data collection that cause it. §

The Need for Anesthesia Training within Dentistry

The training that the average general practitioner of dentistry receives in anesthesiology comes, if at all, on the graduate level. Of the 57 accredited undergraduate dental schools,²² conservative estimates are that less than a third are giving more than minimal attention to the "pain control problem" according to the reports of Ad Hoc Committees I and II of the National Institute of Dental Research in 1971 and 1972. "Pain control" includes general anesthesia, intravenous analgesia, inhalational techniques, psycho-sedation, and related areas. In one survey, 48 of 52 dental schools responding still list the Oral Surgery Department as "responsible for teaching the subject of pain control."²³ There were only two schools with

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§ See Phillips OC, Frazier TM: American Society of Oral Surgeons Annual Meeting, September 1966.

departments of Anesthesiology, and only five in which there was a separate section or division of Anesthesiology within the Oral Surgery Department. Thirty-three schools still did not have a designated coordinator other than the head of Oral Surgery.

The dental profession recognizes the need for training at both graduate and undergraduate levels.^{4,24,25,26,27} The American Dental Association has taken an official position in favor of more training in its guidelines for teaching the comprehensive control of pain and anxiety in dentistry, and has set up criteria for implementing training in dental schools.

The recommended course includes:

1. Philosophy of pain control and patient management
2. Patient evaluation
3. Sedation: technique and administration
4. Local anesthesia
5. Analgesia
6. Emergency treatment
7. General anesthesia: survey of agents, techniques, complications

Existing Training Programs in Anesthesia for Dentists

For more than 20 years the American Dental Society of Anesthesiology has promoted education and disseminated information concerning anesthesia in dentistry. More recently, it has set up a fellowship program to recognize individuals who have at least one year of training in anesthesia and who are directly involved in anesthesia for dentistry. Since January 1975, an oral as well as a written examination has been required.²⁸ Presently these fellows number more than 100; the proportion of general practitioners of dentistry is unknown. The American Dental Society of Anesthesiology also publishes a bimonthly journal, with a circulation of more than 2,800, which abstracts the anesthesia literature and publishes original articles on dental anesthesia.

The Specialty Board of Oral Surgery considers anesthesia an important area for candidates and places heavy emphasis on anesthesia in its examinations and programs.^{3,4} The requirements are at least three months of anesthesia in the operating room under the supervision of an anesthesiologist and further training in the outpatient clinic. It is not at all unusual for an oral surgeon to have 6 to 12 months of training in general anesthesia. But in general dentistry, such training is almost nonexistent. What is missing is undergraduate training for all dental students and graduate training for dental practitioners other than oral surgeons.

Proposed Training Programs in Anesthesia for Dentists

The National Institute of Dental Research, National Institutes of Health, realized years ago that inadequate emphasis at an undergraduate level left a deficiency in this area for the average dental practitioner.^{29,30} What was needed was a group of individuals trained in dentistry and anesthesia who could then set up departments or divisions of anesthesia in dental schools. A plan was set up to create, via training grants, at least five centers that would matriculate two to three dentists a year for a four- to five-year Ph.D. program, emphasizing clinical work in anesthesia along with research and teaching. It was envisioned that this would be a self-propagating effort with these initial five centers acting as seeds to groom a cadre of teachers over the next decade and on into the future. Unfortunately, the phase-out of "old" training grants largely destroyed this program, but there is now some hope that the plans can be reborn, at least in part, under the National Research Act. Under the new act two dental research training grants with starting dates of July 1976 were awarded.

The long-term solution to the problem of the quality of anesthesia practice in dentistry must come through improved teaching in dental schools on an undergraduate and graduate level. Only anesthesiologists can provide the training needed to make anesthesiology a recognized area in dentistry. Therefore, the authors suggest that the organized specialty of anesthesiology should at least partially fill the gap by supplying dentists trained in clinical anesthesia who can become teachers in dental schools.

Up to now, acceptance of dentists into regular training programs in anesthesiology has been haphazard and on an individual basis. In an unpublished survey of 209 accredited and unaccredited training programs in anesthesiology, done by the American Dental Society of Anesthesiology, 48 said they accepted dentists for training. A further 67 said they might consider it. It is the opinion of the authors that it would benefit the profession of dentistry and the quality of outpatient dental anesthesia in this country in a positive manner if there were formally set aside a small number of anesthesia residencies for dental applicants who have good academic qualifications and show a desire for teaching and research on a dental school faculty.

Anesthesiology has about 160 approved programs with approximately 2,000 positions open in all three years. If there were set aside for future dental educators about 20 positions in each year, geographically distributed, there could be, within a decade, a large cadre of dental anesthesiologists to teach at the

undergraduate dental level. These positions would be for the specific purpose of training dentists to become teachers of dental anesthesia. They would not supplement the present training of oral surgeons or the postgraduate training of presently practicing dentists who wish to learn clinical anesthesia techniques for use in their dental offices.

Anesthesiology should make an effort as a specialty to acquaint the leading journals of dentistry and the dental schools of the opening of these positions to dental applicants. The anesthesiology program at the University of Pennsylvania has opened a total of three of about 50 positions (one in each year of training). The response of highly qualified, exceptionally motivated dental applicants has been quite impressive.

Problems Associated with Training in Dental Anesthesia and Their Solution

One might be concerned that the dental practitioner would leave these programs and practice hospital or private office anesthesia and not teach. A number of conditions can be created to prevent this, which would work in concert with already existing circumstances in the dental profession. The conditions that can be created are these:

1. Only applicants who have declared their interest in teaching as a career and have convinced program directors of their sincerity should be accepted.
2. A commitment should be provided by dental schools for future teaching positions after completion of training.
3. Candidates could be certified as teachers of dental anesthesia following adequate clinical training and a to-be-determined combination of the American Dental Society of Anesthesiology Boards, the American Board of Anesthesiology written examination, and two to five years on the faculty of a dental school teaching anesthesia.

The circumstances pre-existing in the dental profession that would tend to prevent the practice of medical anesthesia by these trainees are two: first, in dentistry the general practitioner predominates; more than 80 per cent of all practicing dentists are not specialists. It can be shown that those who go into specialty training are highly motivated and remain in the dental specialty for which they were trained. Second, there is no financial advantage for the general dentist to train two to three more years, as the average net income in most areas of the country for new practitioners in dentistry approaches that of the average young medical specialist.

It must be conceded that there is no way of guaranteeing that this new category of trainee will find a full-time job; in fact, frequently dental faculty mem-

bers do maintain private practices to supplement their incomes. However, recent trends favor the opening of anesthesia positions in dental schools, and the fact is that these trainees could set up much-demanded graduate programs for practicing dentists, who could return to the dental school for short periods of anesthesia training. This fact, plus the support of The Council on Dental Education, The American Society of Oral Surgeons, and The National Institute of Dental Research, should further guarantee growing acceptance of dental school faculties of dental anesthesiologists.

A program such as we have outlined would go far toward increasing the quality of a significant number of the anesthetic administrations in this country.

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Perinatal Physiology

MEPERIDINE METABOLITES Although meperidine appears to be the safest obstetric analgesic agent, it has been associated with infant respiratory depression in certain situations. It would appear that the incidence of fetal depression related to meperidine is dependent on the time of injection prior to delivery, the quantity of drug administered, and the rate of maternal metabolism of the analgesic. Previous work showed that meperidine is metabolized in the maternal system by one of three patterns. The present study demonstrates that the particular maternal serum pattern is characteristic for the individual, regardless of whether the patient is pregnant or not, and that the fetal depression, although usually slight, can be correlated with fetal pH data as well as Apgar

scores. In addition, this study supports indirectly the contention that metabolites of meperidine rather than the parent compound cause fetal depression. It would appear, therefore, that in certain obstetric cases with a higher probability for infant depression, other analgesic agents might be considered, especially when the serum pattern indicates meperidine is being metabolized rapidly in the maternal system. (*Morrison JC, and others: Metabolites of meperidine in the fetal and maternal serum, Am J Obstet Gynecol* 126:997-1002, 1976.)

ABSTRACTER'S COMMENT: The author's findings are most interesting, but to assign responsibility for prolonged neonatal depression to maternal doses of 50 mg meperidine stretches credulity to the limit.