

SURGEON-ANESTHETIST RELATIONS *

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To the surgeon, any subject dealing with anesthesia is of compelling interest. These two branches of the healing art, surgery and anesthesia, are so interdependent that what concerns the one is of no less import to the other. The open-minded surgeon acknowledges with a full measure of gratitude his indebtedness to all those workers who have brought anesthesia to its present high state of development. The physiologist, the anatomist, the pharmacologist and chemist have combined their efforts with those of the anesthetist and surgeon to give us, not only new anesthetic agents, but a broad and thorough conception of their respective applications and methods of administration. They have also enlisted the aid of the manufacturer in the perfection of apparatus designed to fulfill the technical requirements of administration with safety and economy. As a consequence, anesthesia has progressed from that stage wherein it was regarded as sufficient for the merest novice to pour a little ether into a sponge over the hapless patient's face, to a stage wherein it has become both a science and an art, requiring special training and a special aptitude. Anesthesiology has become an important specialty in itself.

Rovenstine has well pictured the development of anesthesia in four stages. First was the period of discovery, wherein ether, chloroform and nitrous oxide were introduced. These discoveries opened up vast opportunities in the realm of surgery, upon which surgeons immediately seized. It was but natural that in their absorbing concern with surgical progress, and especially with the development of surgical technics, they should have for a time regarded anesthesia merely as a means to this end.

In the second stage, which he has described as the prescientific stage, there was a beginning realization of the need for better anesthesia. New drugs and appliances were introduced, and commercial houses instituted training courses in the technic of administration. At the same time, teaching in the form of a few lectures, usually by a surgeon, was inaugurated in some of the medical schools. These lectures, however, were also confined principally to technical instruction; training in this respect was still considered sufficient to qualify one as an anesthetist.

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Beginning after the last war and continuing through the next two decades, anesthesiology passed through what Rovenstine calls the renaissance period. Surgeons began to invade parts of the body hitherto regarded as forbidden ground. Orthopedic surgery, plastic surgery, thoracic surgery and brain surgery came forward in rapid strides. In abdominal surgery, operations of the greatest magnitude were undertaken. All this, of course, awakened surgeons to the need of anesthetics which provided something more than relief of pain and relaxation of muscles. They began to appreciate the influence of anesthetics on postoperative morbidity and mortality. They began to seek drugs and means of administration which would not only enable patients to get well, but would enable them to get well more comfortably and more quickly. At last, they began to take an active interest in anesthesia itself and to lend their assistance in initiating research activities and otherwise promoting the developments which have led to the fourth and present stage, the scientific era.

We have only to review the wide array of anesthetic agents now at the command of the surgeon to appreciate the rapid progress of anesthesiology in this respect. We are no longer limited to the use of inhalation anesthesia for every case, but may choose as the occasion requires between spinal, endotracheal, intravenous or intramuscular, and various local or regional nerve block procedures, as well as from a variety of drugs. In abdominal surgery, wherein relaxation is essential, continuous spinal anesthesia has been a godsend, especially for prolonged operations. The drugs employed for intraspinal injection have been thoroughly tested as to their dosage, anesthetic effect and toxicity, and can now be administered with safety.

Endotracheal anesthesia, also, has been well tried and has proved superior in certain respects, particularly for surgery of the thoracic cavity and upper abdomen. By providing an unobstructed air passage, any impediment to free respiratory exchange is easily overcome. Obviously, this adds materially to the safety of operation and thus makes the method particularly suitable for poor risk patients. When used with cyclopropane and regional or splanchnic nerve block for such procedures as removal of intrathoracic goiter and high or total resection of the stomach, the endotracheal tube affords excellent relaxation and eliminates many technical difficulties.

Because of its ease of induction and the comfortable recovery of the patient, intravenous anesthesia has many uses, not only as an adjunct to inhalation in extensive operations, but in lesser procedures, wherein it is often sufficient when given alone. Induction is pleasant, respiration and heart action are not appreciably affected, recovery is prompt and the patient's postoperative discomfort is minimized.

Especially noteworthy in this connection is the current interest in curare. This drug has been found most effective in providing increased muscle relaxation in abdominal procedures performed under general

anesthesia. Although our experience with it has been limited, other observers have employed curare with gratifying results in practically every type of pelvic and upper abdominal operation.

Among the regional nerve block procedures, caudal anesthesia has become a favorite for low pelvic and rectal work. The success of this method, however, depends upon the accurate insertion of the needle, a feat which is not always simple because of the variations in the formation of the sacrum in different individuals. The advantages of caudal anesthesia lie in the fact that its level, depth and duration may be controlled, and following operation the patient generally enjoys complete freedom from any ill effects.

These and all the other new drugs and new methods which have been placed at the disposal of the surgeon have given him a new sense of security and have enabled him to perform operations which otherwise would have been out of the question. More than this, these new developments, founded as they are upon the basic sciences, have rightly been accompanied by a distinct improvement in the professional status of the anesthetist. As the science of anesthesia has become specialized, so also has there been a growing realization of the need of specialists in the practice of anesthesia. Our present conception of an anesthetist is far removed from that of thirty years ago. Today, we regard as the true anesthetist only that individual who has a standard medical schooling in addition to sufficient training in anesthesiology to enable him to give every type of anesthetic, to act in an advisory capacity as concerns the choice of the anesthetic and the preoperative and post-operative care of patients, and thus to share with the surgeon the responsibility for the successful outcome of the operation. As surgical practices increase, we shall have more and more need of special anesthetics; more and more will the surgeon rely upon the anesthetist; more and more will it become necessary for the anesthetist to have a scientific background. This being true, it behooves surgeons and anesthetists to commit themselves more actively than ever to their mutual interests in the further progress of anesthesia as a living, forceful science.

From the surgeon's viewpoint, and I believe from the anesthetist's as well, the most urgent of these interests is the consummation of plans designed to attract more medical men to the practice of anesthesiology. As matters now stand, we do not have enough physician anesthetists to go around, yet every year a larger number of persons are coming to operation. Statistics show that in 1942, 12,500,000 patients were admitted to the hospitals in this country, and one operation was performed every five and one-half seconds. In 1943, 15,300,000 patients were admitted to our hospitals. At this rate of increase in hospital patients, one can readily see that the need for physician-anesthetists will become more acute each year.

A number of hospitals have found an effective method of dealing

with the present situation by providing one or more chief anesthetists to give special anesthetics and to act as supervisors and consultants, with a staff of nurse-anesthetists to attend to technical duties. According to Rovenstine, as long ago as 1939, 90 per cent of the registered hospitals reporting to the American Medical Association stated that nearly 15 per cent of their anesthetists were physicians devoting their entire time to anesthesia, and that more than 60 per cent were doctors of medicine. On the other hand, in a paper presented before this organization in 1941, Dr. Harold Griffith reported that the American Medical Association directory listed only 500 physicians in this country who were specializing in anesthesiology, and only 234 of the 500 limited their practice entirely to anesthesia. Again, the 1942 directory of the American Medical Association listed 180,496 physicians and 6,292 hospitals in the United States. These figures show not only how relatively few physicians are specializing in anesthesia, but how relatively few hospitals have physician-anesthetists. Obviously, most of the hospitals without physician-anesthetists are small nonaccredited institutions, as Dr. Griffith pointed out, though many of the larger hospitals, also, do not have a single specialist in anesthesia on their staffs. In my own city, for example, we have approximately 50 nurse-anesthetists, but, so far as I know, not a single physician who makes a specialty of anesthesiology. Yet we have a medical center with a teaching hospital in addition to three large private hospitals.

The real problem underlying this situation is an economic one, as is well known. Physicians have been reluctant to take up anesthesiology as a specialty, feeling that the income would be inadequate. A number of hospitals, however, have worked out plans whereby their physician-anesthetists are provided with an income equal to that of other specialists of similar training and experience. Depending upon their size, the nature of their services and their location, some institutions are employing full-time anesthetists; others only part-time anesthetists. In some, the anesthetists are paid a straight salary; in others they work on a fee basis, and in others on a combination of salary and fees. In any event it is desirable that every hospital have a consulting anesthetist upon whom the surgeon can depend and who can, in turn, raise the standards of the nurse-anesthetist. No major hospital should have any difficulty in setting up such a department and devising some ethical means of making the position of physician-anesthetist financially attractive.

Surgeons are not at all in accord with the custom of some hospitals of utilizing the practice of anesthesia for profit. If there should be a surplus of revenue from this source, it should be used for the improvement of the anesthesia service to patients. Any hospital which fails to do so is certainly overlooking an important opportunity and duty.

Going deeper into this question, we find that other phases present themselves for our solution. Financial considerations are based

largely upon the acceptance of anesthesiology as a specialty by the public. The people as a whole have practically no conception of the role of the anesthetist in the success of operative procedures, nor of the importance of anesthesiology as a distinct branch of medical science. The patient rightly inquires into the qualifications of the surgeon who is to open his abdomen, but seldom gives a thought to the anesthetist. Not until the people are acquainted with the facts, and not until they acquire a high respect for anesthesiology itself will the economic barriers to its practice be removed. To instruct them along this line is a tremendous undertaking, but it can be accomplished by the conscientious and persistent cooperation of the remainder of the profession, and especially of surgeons, with the anesthetists.

Already, steps have been taken in many quarters to bring about these objectives. Some forward looking men, notably the members of this association, have wisely attacked the problem at its roots, i.e., the improvement of the standards of anesthesiology by regulating practice and raising educational requirements through organization. A most significant advance was made in the establishment of the American Board of Anesthesiology. The American College of Surgeons, the Council on Medical Education and Hospitals of the American Medical Association, the American Hospital Association and the Advisory Board for Medical Specialties have likewise taken an active interest in these projects. As a consequence, increasing numbers of medical schools are instituting courses in anesthesiology, both as a part of the regular curriculum and as a postgraduate subject. It is becoming widely apparent that every medical student should have a practical as well as a theoretical knowledge of anesthesia. Such knowledge will not only enable the student to administer anesthetics well and safely should the occasion demand, but will give him some insight into the requirements of the anesthetist and the advantages of professionally administered anesthesia—a viewpoint which needs to be encouraged and which will go far toward helping to enlighten the public. At present, about one-half the class A medical schools in this country have adequate teaching departments under qualified anesthetists, and in one-fifth of these the instructor is on a full-time basis.

Hospitals, also, are assisting in this program by improving their intern training in anesthesiology and conducting postgraduate courses for those who wish to specialize in this field. Likewise, some of the larger clinics are establishing fellowships comparable to those provided in other specialties. On the whole, the progress of this program within recent years has been most gratifying. In August 1936, the Bureau of Medical Economics of the American Medical Association reported that only eight hospitals in the United States were considered by the Council on Medical Education and Hospitals to be in a position to furnish acceptable residences in anesthesia, and six of these were under government control. In contrast, the 1942 edition of the Journal

of the American Medical Association listed forty-five hospitals and clinics which have approved residencies or fellowships—a noteworthy achievement in so short a time.

It is impossible within this brief space to do more than touch upon these immediate problems. It is obvious, however, that there is yet much to be done in the development of anesthesiology, not only through laboratory and clinical research, but through the provision of adequate training facilities in schools and hospitals, and the establishment of the specialty on a sound economic and professional basis. This accomplished, we shall no longer have a shortage of medical-anesthetists; the inducements offered will be ample to insure a full quota to meet every need. The remarkable strides of anesthesiology within recent years have brought it within sight of these goals. The way is now open and the green light is on. As anesthesiology presses forward in its endeavors, under your direction and control, we surgeons will stand by unflinchingly, bound by the strong bonds of fellowship in one ultimate common purpose, the betterment of medical and surgical practice and more abundant benefits to our patients.

For the information of anesthesiologists who are contemplating application for certification by the American Board of Anesthesiology, Inc., or who are training physicians for the specialty, the following questions have been employed for Part I (written) examination in the past in *Physics and Chemistry*:

1. Name and give the chemical formula for a representative anesthetic agent in each of the following groups of drugs: (a) Alcohols (b) Aldehydes (c) Ethers (d) Halogenated compounds (e) Ureides (f) Sulphonated compounds.
2. In preparing and caring for solutions containing procaine for local anesthesia, what precautions should be taken to insure potency and purity?
3. Describe the working principle of (a) The dry flow meter (Heilbrink) (b) The water flow meter (Foregger) (c) The intermittent flow machine (McKesson). Diagrams may be used.
4. What operating room equipment would lead to the formation of static sparks? What are the best methods for preventing static sparks in the operating room?
5. What is the chemical composition of "soda lime"? What chemical reactions take place when it comes in contact with exhaled air? What is the source of water formed in the breathing bag when the "to and fro" absorption method is being used?
6. What are common incompatibilities that must be guarded against in the operating room when handling (a) Procaine solutions (b) Sodium mytal solutions?