

ether may be administered by the drop method. This, we consider, in general, next in usefulness and in safety to local anesthesia. . . . Chloroform also may be used. It is not as safe as ether but many physicians are familiar with its use, and if it is used only as an analgesic it is for the most part satisfactory. We would not recommend ethyl chloride; however, if it is the only anesthetic agent available for general anesthesia, it should be administered very sparingly and, if possible, by the drop method rather than by spraying it on the mask. Gas anesthesia is available only in offices and hospitals, as a rule. . . . We previously have commented on the misuse of gas machines. Fire and explosion hazards with anesthetic gases must be guarded against as a mixture of nitrous oxide, oxygen and ether is very inflammable and explosive, as are mixtures containing ethylene or cyclopropane. Rectal anesthesia is not satisfactory for general use. It may, however, be used to produce analgesia or as a substitute for heavy preliminary medication. . . . Recently the use of curare (Intocostrin) has been advocated. . . . For the most part, this drug has been used in connection with cyclopropane anesthesia in an effort to keep the dose of cyclopropane small and make it unnecessary to use more than a trace of ether. Reports are appearing from time to time as more experience is gained with this drug and its use in combination with other anesthetic agents. Its use for this purpose is a new procedure. We are not prepared yet to advise its use until more experience has been gained; then, in all probability, it will be necessary that someone be present to carry on artificial respiration when the drug is used. So, in general practice, it is not yet clear how valuable curare will be. . . . In general practice one does not have as great a choice of anes-

thetic agents and methods as in hospital practice but still there are enough agents and methods that may be used so that the general practitioner can be much more prepared today to relieve pain than he ever was before." 5 references.

J. C. M. C.

PENDER, J. W.: *Logical Methods for Anesthesia*. S. Clin. North America (Philadelphia Number) 1460-1471 (Dec.) 1944.

"Probably the greatest problem in abdominal surgery is adequate exposure of the operative site. Even with extreme relaxation of the muscles of the abdominal wall the attachments of the internal organs make their manipulation through the incision difficult. This one factor makes the use of some potent muscle-relaxing method almost imperative and excludes for the average surgeon the use of less potent but perhaps more pleasant agents and methods. . . . The following are suggested methods of anesthesia for the average case for abdominal surgery: Lower Abdomen . . . Spinal anesthesia Upper Abdomen . . . (1) General anesthesia with a potent agent. (2) Spinal anesthesia supplemented with an analgesic dose of a not too unpleasant agent. . . . Surgery on the extremities has been found, both in civilian and military practice, to be very satisfactorily done under intravenous anesthesia. . . . Orthopedic procedures on the vertebrae usually necessitate having the patient face down on the operating table. This is a most unfavorable position for adequate respiration since the muscles of respiration have to raise almost the entire weight of the body during each inspiration. With the head turned sharply to the side an adequate airway is often difficult to maintain in this position. For these two reasons it is always best to have an intratracheal airway in place be

fore turning the patient under general anesthesia into the prone position. Since the agents used for intravenous anesthesia are powerful respiratory depressants it is safer not to add such an additional embarrassment of position to an already depressed respiratory system. . . . The following are suggested methods of anesthesia for the average case for orthopedic surgery: Extremities. . . (1) Short operations—intravenous anesthesia. (2) Long operations—local or spinal anesthesia followed by intravenous anesthesia. Vertebrae. . . (1) Intratracheal general anesthesia. (2) Spinal anesthesia. . . . Surgery on or about the brain involves danger to the most vital parts of the body. The anesthetist is not concerned so much in maintaining a state of anesthesia as he is in being prepared beforehand to meet the frequent emergencies that endanger life during craniotomies. Many brain operations are most advantageously done with the patient in the upright or semi-upright position. Anesthesia which causes a generalized vasodilatation makes this a dangerous position due to the pooling of blood in the most dependent parts with resulting shock and anoxia of the higher centers. . . . Before any procedure is begun during which a circulatory collapse is likely to occur, a large bore needle, preferably a 15 or 13 gauge, should be inserted in a superficial vein. The lumen of the needle may be kept patent either by the insertion of a stylet or by a slow drip of intravenous fluid such as saline or 5 per cent glucose. . . .

"The other most dangerous complication that may occur during brain surgery is a cessation of respiration. . . . All patients undergoing a craniotomy under general anesthesia should have an intratracheal airway put in place before the operation is begun. The use of such an intratracheal air-

way will make necessary the selection of some anesthetic agent more potent in abolishing the pharyngeal and laryngeal reflexes than the agents usually administered by the intravenous or rectal route. The advantages of having a patent and adequate airway at all times greatly outweigh any supposed advantages of intravenous or rectal methods of producing anesthesia, certainly as far as the safety of the patient is concerned. Intravenous anesthesia is the method of choice for encephalography. . . . Local anesthesia is the safest method for the extremely poor risk patient especially if he is in a coma or semicoma. . . . Many neurosurgeons prefer to use electrocoagulation for hemostasis, which adds to the danger of anesthetic explosions. Ether and air is definitely less explosive than ether and oxygen, or an inflammable gas such as ethylene or cyclopropane and oxygen. . . . Surgery of the peripheral nerves requires only a light stage of anesthesia and, as in orthopedic surgery of the extremities, is well adapted to intravenous anesthesia. Surgery of the deeper nerves such as splanchnic and sympathetic nerves is similar to kidney surgery. . . . The blood pressure during section of the sympathetic nerves, especially if done for hypertension, is apt to be quite labile and this makes spinal anesthesia more of a risk than general anesthesia. Since the pleura may frequently be opened during either thoracic or lumbar sympathectomy, the precaution of having an intratracheal tube in place for the administration of positive pressure anesthesia is justified. . . . The production of anesthesia for operation on the chest wall and thoracic contents is perhaps the most technically difficult of all the duties of the anesthetist. The avenue for the introduction of the inhalation anesthetic agents is also the part that is disabled by the pathologic condition

and by the operation. The patient is forced to lie on the best functioning lung so that the diseased lung or side may be attacked by the operator. Positive pressure must be maintained in the trachea through a tube so that paradoxical respiration may be prevented. An adequate expansion of the lungs must be maintained while the pleura is open to bring the oxygen in the anesthetic mixture in contact with a large enough area of alveoli lining to permit absorption of the oxygen into the blood.

"Only a light stage of anesthesia is necessary, and it is advantageous to have the patient able to expel the bronchial secretions as soon after the completion of the operation as possible. Intravenous anesthesia, especially when combined with local, is suitable for chest surgery; but by this method a central respiratory depressing drug is combined with a disabled peripheral mechanism. . . . Spinal anesthesia . . . paralyzes part of the muscles of respiration in patients who are already having difficulty in breathing. The blood pressure is also more difficult to maintain at adequate levels during hemorrhage under spinal anesthesia because of the dilatation of the blood vessels in the widely anesthetized area. Massive sudden hemorrhages which are not readily controlled may occur during intrathoracic operations. The anesthetist should therefore have one or more 15-gauge needles already in a vein or veins and have an ample supply of blood and plasma with which to maintain the circulating blood volume. If bronchoscopy is not available, the air passage may be kept free of pulmonary secretions both during and after the operation by the introduction of a flexible rubber suction catheter through the intratracheal tube. . . . Most diagnostic procedures on the genito-urinary tract are of short duration and do not

require a deep degree of anesthesia; for these reasons they can be performed under intravenous anesthesia with satisfaction to both the patient and surgeon. Operations on the lower end of the tract, such as transurethral prostatectomy, can also be done very well with intravenous anesthesia. . . . A spinal anesthetic produced with 70 to 90 mg. of procaine dissolved in 10 cc. of spinal fluid and injected in the interspace between the fourth and fifth lumbar vertebrae will give analgesia of the prostatic area for forty to forty-five minutes without much fall in blood pressure. A combined sacral and caudal nerve block will also give excellent anesthesia of this area without serious cardiovascular changes for a period of one to two hours. . . .

"Operations on the upper urinary tract are more formidable procedures and usually require more muscle-relaxing anesthesia. Spinal anesthesia produces a satisfactory field for the surgeon; but unless the level of sensory anesthesia extends up to between the sixth and the fourth thoracic nerves the average patient will feel quite a bit of dull discomfort from a pull on the kidney. The combination of the kidney position and a high spinal anesthetic makes a sudden fall in blood pressure not uncommon. This decline in blood pressure is usually easily controlled by the administration of up to 25 mg. of ephedrine sulfate intravenously. . . . The type and extent of anesthesia necessary for operations on the anus and rectum are very similar to that for the lower urinary tract. Caudal nerve blocks are gaining in popularity as a larger number of anesthesiologists trained in the use of this somewhat technically difficult procedure become available. The advantages of this local block over a low spinal anesthetic are that the immediate changes in blood pressure and the possibility of a post-spinal headache are avoided.

Intravenous anesthesia in a safe depth does not produce the desired anal muscle relaxation. Inhalation anesthesia must be produced with strong concentrations of potent agents to secure the operative conditions in this area comparable to those produced by the local agents. Such deep stages of general anesthesia are frequently followed by an unpleasant recovery. Infiltration of the operative site is hazardous due to the inevitable bacterial contamination of this area. . . . Without a doubt the safest form of anesthesia for . . . [areas about the face] is local infiltration of the operative site, or a nerve block if practical. . . . Under any type of general anesthesia the great worry and responsibility of the anesthetist is to be able to maintain an adequately patent airway. . . . It is therefore necessary during operations under general anesthesia on the nose and mouth, and preferable for all long operations about the head, for an intratracheal tube to be inserted."

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WYLIE, W. L.: *To What Extent Should Anesthesia be Used in Operative Dentistry?* J. Dent. Education 9: 120-124 (Dec.) 1944.

"Inauguration of selective service in 1940 gave wide publicity to a condition by no means unknown to the dental profession and to other organizations concerned with public health—the widespread prevalence of dental caries along with the comparatively narrow spread of service intended to prevent or correct the malady. Investigations previously made by the United States Public Health Service had shown that approximately twenty-two per cent of the people of our country receive regular dental care. Of the remainder it has been estimated that fifty-eight per cent can afford to pay for part or all of such service and that twenty per cent can afford to pay

nothing. Of that large percentage able to pay for part or all of their work but receiving none it is said that the force lacking is a motivating or educational one. . . .

"Were the educational or motivation view entirely sound the results of selective service examinations should have lent conviction to the argument. With the universal use of radios there are few homes of the land which for years have not received the daily admonition to 'clean your teeth as your dentist does and see your dentist twice a year.' Local dental organizations with the aid of the Public Relations Bureau of the American Dental Association have long been engaged in spreading the gospel of dental care. In addition there have been the earnest and more or less effective efforts put forth through the public and parochial schools and through child health organizations. Yet with all this educational impetus, the trouble marches on. . . .

"The contention, which some social workers advance, that the problem is one almost wholly chargeable to indigence is disproved by the fact that the people concerned in some way manage to satisfy those wants that run strongly in the direction of luxuries. . . . Valid as both reasons cited may be with limitations, there is one factor not sufficiently stressed that contributes perhaps more than either to the low percentage of dental care received by our people. The fear of pain in the dental office is traditional. . . . Part of our educational effort might profitably be directed toward the banishment of that fear. . . .

"I see no good reason why the use of an anesthetic in cavity preparation should not become a matter of routine procedure in the clinic rather than the exception to the rule as has been the case heretofore. . . . The general adoption of anesthetics for use in operative