Voice and touch: Florence Henderson on the skills of an ether specialist

In this issue of the AANA Journal, "Imagining in Time" continues an occasional series that reprints historical articles by early and pioneer nurse anesthetists. The purpose is to keep the past alive and stimulate research interest. A brief commentary will accompany each article and whenever, possible, a bibliography will be included.

Florence Henderson, CRNA (1874-1956), like her mentor Alice Magaw, CRNA (1860-1928), promoted excellence in anesthesia practices through professional society presentations and publications. Featured is Henderson's second article titled "Ether Anesthesia," which was published in a 1914 issue of The Saint Paul Medical Journal.

Key words: Anesthesia techniques, Florence Henderson, ether anesthesia, pioneer nurse anesthetists, suggestive technique in anesthesia.

Florence Henderson, CRNA (1874-1956), served as anesthetist for Dr. Charles H. Mayo, a surgeon at St. Mary's Hospital, Rochester, Minn, who with his brother, William, founded the Mayo Clinic. Born in Illinois and raised in Seward, Neb, Henderson graduated from Bishop Clarkson Hospital Training School for Nurses in Omaha, Neb, in 1900. After graduation, she became superintendent of nurses, taught in the school of nursing, and learned to administer ether and chloroform anesthetics. Hired by Dr. Charles H. Mayo in 1904, Henderson became an ether specialist under the watchful care of Alice Magaw, CRNA (1860-1928), her mentor and coworker who had worked for the Mayo brothers since 1893. Henderson replaced the departing physician anesthetist, Dr. Isabella C. Herb. Magaw's and Henderson's refinement of open drop ether administration and the subsequent dissemination of their knowledge through their teaching at Rochester and the papers they presented demonstrate the contribution of early nurse specialists to modern anesthesia development. Their contributions are well-documented in the histories of nurse anesthesia.

Henderson's account of her ether technique reflected Magaw's previous writings. Henderson emphasized the necessary skills of close observation, the importance of frequency of practice, and the use of suggestion to gain the confidence of the patient. She found that a smooth ether induction, minimizing the excitement phase, relied on psychological prowess as it did on technical expertise.

Importance of feminine qualities

Although no longer true today, in the early 1900s, the gender-specific roles of female nurses and male surgeons were unquestioned. Surgeons of the time recognized the importance of feminine qualities in the administration of anesthetics and came to rely upon the dependability, focus, and patience of trained nurses as their anesthetists. The vigilance required to maintain the airway and closely observe the stages of anesthesia was paramount, for early anesthetists had no monitoring technology upon which to rely compared to the complexity of current anesthesia monitoring devices.

Henderson's first recorded description of her ether technique at a professional society meeting occurred in 1909 (Figure and Table). She and
Agatha Hodgins, CRNA (1877-1945), a nitrous oxide specialist who would later found the National Association of Nurse Anesthetists (now the American Association of Nurse Anesthetists), discussed the merits of ether and nitrous oxide anesthesia at the Twelfth Annual Nurses' Associated Alumnae Convention. In 1913, Henderson had the opportunity to read her paper, "Ether Anesthesia," before the Southern Minnesota Medical Association where she was 1 of 16 speakers and the only nurse.

Defended use of ether

In "Ether Anesthesia," Henderson defended her use of ether and proved its qualities above emerging anesthetics, such as nitrous oxide, of which she candidly shared her opinion. Henderson considered the use of ether alone or combined with local anesthesia to be the safest method within her practice and yielded the most satisfactory results for the surgeon. Her teamwork with Dr. Charles H. Mayo over 10 years required a very dependable anesthetic for his predominant specialty of thyroid and goiter operations. A dependable anesthetic by a skilled anesthetist unquestionably contributed to the advancement of modern surgical techniques.

In commenting about the trends of anesthetic agents other than ether, Henderson expressed skepticism about their use. This may have invited questions of progress in anesthesia, including "who is the efficient anesthetist," in the discussion following her paper. It is interesting to note that now, as in 1913, similar discussions continue. Henderson's knowledge and skills, as well as her association with a famous surgeon, gave her the credibility as a nurse not only to read her paper before a medical association meeting, but also to have it published in The Saint Paul Medical Journal.

Henderson's career as an ether specialist at the Mayo Clinic flourished for 14 years. During her time at Mayo, she administered anesthetics and taught others her techniques. Henderson moved to California in 1917 and gave anesthetics for a group of surgeons in the Los Angeles area, retiring from anesthesia practice in the 1920s. After retirement, she remained active in the California State Nurses Association as well as the American Red Cross and lived in Los Angeles until her death in 1956.1

REFERENCES

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Ether Anesthesia

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Ether has been used almost exclusively in the Mayo Clinic for many years, and in spite of the fact that in many other places it is employed less frequently than formerly, the surgeons here have not become convinced that it is not the anesthetic to be preferred. Formerly it was thought necessary to use chloroform in certain cases, but the indications for its use have disappeared and for the past five years it has not been employed.

It may be noted that in articles in which comparisons are made between nitrous oxide and ether conclusions are drawn from results obtained by the expert with the former anesthetic and those of the inexperienced anesthetist with ether.

The fact that ether is so safe has led to its abuse. The trained anesthetist is not demanded, the administration often being in the hands of the least experienced physician on the staff who, while his results are not satisfactory, is allowed to give the anesthetic because the patients survive. For the administration of nitrous oxide, however, a physician with experience is selected. If he would devote the same amount of time to learning how to use ether that he does to learning how to use nitrous oxide, there would not be the difficulties from its use, which are so often described.

In an editorial in the London Lancet for February 1, 1913, the statement was made that: “In this country (England) where the possibilities of nitrous oxide and oxygen were originally investigated by Sir Frederick Hewitt many years ago, the general sentiment is that the method has serious limitations, especially imperfect relaxation, difficult and complicated technic, and expense.”

If nitrous oxide were given as carelessly as ether very often is, there would be so many fatalities that its use would be prohibited.

In selecting an anesthetic we must consider (1) its safety, (2) its anesthetic properties, (3) the after results upon the patient and (4) the convenience of the surgeon.

Statistics show that ether as an anesthetic is superior to all others in safety and range of application. If given properly, very few patients find it disagreeable, and the after results compare favorably with those of other anesthetics. The surgeon can work with more ease and rapidity because relaxation can be secured. He is not handicapped in making thorough examinations by troublesome rigidity. In some cases the surgeon is to be blamed for insisting upon a too profound anesthesia, since to secure it the narcosis must be carried to a dangerous point. If, in very serious cases, he would exercise the same care in manipulation that is observed when nitrous oxide is used, and be content with as light an anesthesia, he would probably find that his patients would recover as rapidly and without the shock and unpleasant after effects which are quoted as contra-indications to the use of ether.

[Administering ether]

In giving ether the difficulties encountered by many anesthetists are more often caused by doing too much rather than too little. If the patient is carefully watched, and not disturbed while doing well, the anesthetist will seldom meet with alarming conditions. Gaining the confidence of the patient aids materially in securing a rapid and comfortable anesthesia. Patients who can be interested in something foreign to the work in hand, will usually “go under” the anesthetic more rapidly. After gaining the confidence of the patient, surgical anesthesia ordinarily may be produced by the drop-method with ether in from three to five minutes. This being accomplished, if the air passages are kept free, if the jaw is kept forward and up, if sufficient air is admitted with the ether to keep the patient's color good, if the ether is continued by slow and regular drops, and if the patient is watched constantly, all is done that is necessary in the ordinary case. The management of the jaw has much to do with the success or failure of the anesthetic. If the jaw is kept forward and up, so that the tongue cannot drop back there will be no necessity for the use of the mouth-gag or tongue-forceps. The infrequency with which difficulties are encountered when the above rules are observed is remarkable. To avoid trouble is much easier than to overcome it when once encountered. With these precautions there will be less vomiting and the patient need not be so deeply anesthetized to prevent vomiting. In some cases an oral air passage is maintained as the best means of securing free breathing.

It is desirable that ether be given in a well ventilated, quiet room where there is nothing to distract the patient's attention from the anesthetist. Quietness suggests sleep. In the Mayo Clinic the
anesthetic is always administered to the patient in the operating room. Any prejudice which the patient may have against being anesthetized in the operating room is easily overcome when he realizes that it is for his benefit. Moreover the surgeon is at hand, and, while the patient may not have confidence in the anesthetist, he has all confidence in the surgeon. The anesthetic can be given while the field of operation is being prepared, thus saving time and shortening the length of the narcosis. When the anesthetic is given in an outside room, someone usually has to wait, and more often it is the patient than the surgeon. The degree of anesthesia must be deep or the patient will vomit while being moved from one room to another. Some observers contend that giving the anesthetic in the operating room wastes too much time. We find that the usual time between the final sutures in one operation and the making of the incision in the following operation is but ten minutes—five of which is consumed in applying the dressings, removing the patient from the room and putting the next patient upon the table. The remainder of the time is spent in the preparation of the patient, who is being anesthetized while this is in progress. The surgeons believe that the sacrifice of this amount of time is well worthwhile when the benefit derived by the patient is considered.

The patients are placed upon the table in the position in which they are to lie during the operation, and the anesthetic is started at the same time as is the preparation. The head is made comfortable, and the mouth examined to see that it contains no artificial teeth, foreign bodies, etc. The hands are fastened at the sides to prevent the arms from falling to the side of the table and thereby causing pressure on the musculospinal nerve. The lower limbs are wrapped in a blanket and a brace slipped over them, just below the knees. The patient's eyes are covered with a pad of wet cotton, and, if his position is such that the cotton does not remain in place readily, a piece of gutta percha tissue is used in addition under the cotton.

A modified Esmarch inhaler, which is covered with two layers of stockinet, is used. It is sterilized and a fresh cover applied after each case. For convenience in handling, ether is dropped from a four-ounce can or bottle, which has a cork with notches on opposite sides, through one of which a small wick of cotton is passed into the can. With the mask held about an inch from the face the ether is dropped upon it slowly at first, and the patient is asked to breathe naturally through the nose. Then the mask is gradually lowered, and the rapidity of the dropping increased, care being taken not to give the ether fast enough to cause a sensation of smothering or suffocation. As the ether begins to affect the patient, as evidenced by the face becoming flushed, a width of gauze about a yard long, which is folded to four thicknesses is wrapped partly around the mask, and finally completely around it with the exception of a place for air. The ether is then dropped more rapidly. As soon as the jaw relaxes the head is turned to one side, because the patient usually breathes more easily with the head in this position. If ether is given too rapidly the patient manifests excitement and the mask should then be removed and more air allowed. An occasional breath of air without ether hastens the narcosis, and does away with any feeling of suffocation. A properly administered anesthetic should have no stage of excitement, if the patient is given only the amount of ether he can take comfortably.

The discomfort experienced by the patient while "going under" may be avoided by the anesthetist, and a smooth, uniform narcosis maintained, which will keep the patient asleep and relaxed throughout the operation.

[Assure the patient]

Surgical anesthesia is recognized by the deep, regular breathing and by relaxation of the muscles. It is not often that it is necessary for the surgeon to inquire, "Is the patient ready?"

The patient should never be crossed but always made to feel that he is having his own way in taking the anesthetic. The patient is assisted materially if the anesthetist explains the progress of the narcosis and prepares him for the stages as they appear. Suggestion plays an important part in the induction of anesthesia, and the fact that the administrator is talking to the patient assures him that the attention of the anesthetist is upon him. If a patient fears anything, usually it is that the operation will begin before he is asleep. The assurance of the anesthetist, when the patient is in the subconscious state, that he is all right and that nothing will be done until he is unconscious aids markedly. The mind is very susceptible to suggestion in this state, and the suggestion that everything is as it should be is usually accepted. It is true that patients must be treated differently according to the temperament of each individual, but the majority of them will respond to encouragement and the reassurance that they are doing well. The frightened, ignorant patient, who is apprehensive that something might be done of which he is unaware, is harder to deal with than the intelligent reasonable one. The robust, florid patient, who is not ill at the time of the operation, is much more likely to be frightened than the very sick patient, who has suffered greatly, and is anxious to obtain relief.
[Type and depth of anesthesia]

The depth of anesthesia depends upon the kind of operation and its stage. The patient should never be kept more deeply under the anesthetic than is consistent with the work of the surgeon. Head and neck operations can usually be carried along with a light degree only. Patients with peritonitis require more anesthetic than those with chronic or subacute abdominal lesions. Abdominal operations, especially those in the pelvis and upper abdomen, require deep anesthesia to produce relaxation, which will enable the surgeon to do satisfactory work. Gastric and intestinal cases may be conducted under light anesthesia after the examinations have been made, and the work upon the viscera begun. There is no pain connected with such manipulation but when the peritoneum is to be closed, the patient must have more ether. As soon as the peritoneum is closed in most cases, the anesthetic can be withdrawn, and the patient is usually awake by the time the surgeon is ready to dissect the gland from the skin has been infiltrated. In this way patients of ether until the deep vessels are ligated. While the muscles are being separated, a little ether may be given that by the time the operation is completed and the dressings applied. Experience in the Mayo Clinic does not show that shock is produced by light ether anesthesia, as is stated by many writers.

[Use the smallest possible amount]

There can be no rule as to how much ether to administer in any given case, but each patient should have the smallest amount practicable. The dose should be medicinal and not toxic. It should be given with regard to its physiological action as should any other drug. For operations, the duration of which averages about forty minutes, patients usually require between three and four ounces of ether to produce anesthesia and to carry them through the operation.

Post-operative vomiting is present in a small percentage of cases, but it is seldom persistent like that following chloroform. When ether is given in toxic doses, and the blood becomes saturated with it, the stomach is called upon to aid elimination, and nausea and vomiting are the natural consequences. Transient vomiting is not always a disadvantage, since it clears not only the stomach, but also the lungs. Single emesis which frequently takes place just before the return of consciousness, is oftener than not an advantage.

Preliminary medication is used only in selected cases and not as a routine. Patients with simple goiters are given 1/6 grain morphine and 1/150 grain atropine one-half hour before operation. The atropine prevents the formation of mucus which comes from manipulation of the trachea. In gastric and rectal operations the patients are given 1/6 grain morphin before operation. Patients with pulmonary complications receive 1/6 grain morphin and 1/150 grain atropine.

Pulmonary complications, which can be attributed to the anesthetic, are rare. The few pneumonias which are seen usually develop from several days to a week after operation, and occur mostly in upper abdominal cases. On account of the location of the incision near the diaphragm these patients do not take deep inspirations after operation. They thus fill only a part of their lungs. This fact makes it possible for septic pneumonias to develop from embolic infarctions.

[Practice builds skills]

To become skilled in the administration of ether, the anesthetist must devote all her time to it, and only after much experience can she expect to do creditable work, and secure satisfactory results. The mental attitude and feelings of the anesthetist are reflected upon the patient. If the administrator is nervous or loses confidence in her ability to se-

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cure a rapid narcosis, it invariably affects the patient. The anesthetist should pay enough attention to the different stages of the operation to know when to increase the anesthetic, and when to decrease it or to withdraw it entirely. The surgeon has a right to expect the anesthetist to attend to this part of the work, and to feel that he need not divide his attention between the narcosis and the operation. It should seldom be necessary for him to inquire as to the condition of the patient, and, with ether properly administered, the occasions when alarming symptoms arise are very rare. The anesthetist should not, however, become interested in the details of the operation.

Before the discovery of anesthetics an operation was a formidable procedure, and as far as narcotics could be used to relieve pain, they were employed freely preliminary to the operation. Then came the discovery of chloroform and ether, the former recognized as a very dangerous drug, always to be handled with great care and its administration intrusted to a competent man. The safety of ether was its own undoing. It did not kill, and so its administration was intrusted to the most incompetent person. Then came nitrous oxide, an inefficient surgical anesthetic at best, and finally local anesthesia, which next to ether, has the widest field of usefulness.

Today we are going through a curious phase in the use of anesthetics, namely, a return to narcotics, inefficient nitrous oxide, and local anesthesia, a combination which has the bad qualities of all three, and in which the local anesthesia does most of the work.

There is no doubt that local anesthesia can be used in an increasingly large number of cases. Ether given by the drop method by a skilled anesthetist and local anesthesia certainly fulfill the requirements more satisfactorily than any other anesthetic or combination of anesthetics known at the present time.

Discussion

DR. A.E. SOHMER
Mankato, Minnesota

The point that I wish to emphasize is that giving an anesthetic is not only a science, but an art.

Anesthesia should be specialized as much as possible. You can give a dose of castor oil and have no trouble because you get the confidence of the patient; some can never give it, and it is the same with an anesthetic. The confidence of the patient is important.

Do not only give the drug, but talk to the patient, talk him to sleep. Ether should be used like any other drug. You would not give an over-dose of morphine; give it at the proper time and not too much.

The complications are vomiting and nephritis. The preparation of the patient has a good deal to do with this. Do not rush the patient from the ambulance to the operating table unless it is necessary, and then do not give too much ether.

Always examine the kidneys. If they are good and the patient is given ether properly, he will not get nephritis; if not good, use a local anesthetic, if at all possible.

Crile tells us that, in operation on the extremities, if we use local anesthetic we can prevent shock; by blocking the nerves first, you will not get shock so much.

Our experience has been that in operating under anesthesia, ether given by the open method, given carefully and by an experienced person is undoubtedly the safest anesthetic we have at present.

MISS ELEANOR J. HAMILTON*
Mankato, Minnesota, December 3, 1913

I feel greatly honored to be asked to appear on this program before this distinguished gathering, but I realize that we are all searching for truth, and today we may find something that we believe to be a working basis, and tomorrow find it to be merely a mirage, such has been the case in regard to anesthetics.

I would like to call your attention to two phases that make a slight difference in administration of anesthetics to patients under various circumstances. In our hospital I give anesthetics for something like thirty-five different surgeons, and without going further into detail it will be obvious that sometimes I anesthetize the surgeon rather than the patient. That is to say, I have to give more consideration to the surgeon than to the patient. I must estimate whether he is slow or fast, whether he will be gentle or not—after almost seven years I am fairly well acquainted with the method of each one.

A second point as to choice: in our hospital we use at the present time Novocain, nitrous oxide, ether, ethyl chloride, and I almost confess to palpitation of the heart when I say we also use a little chloroform. However, when the halcyon days of nerve blocking arrive anyone of these drugs will serve as an adjunct.

I may mention another point: the question has arisen, who is to be the efficient anesthetist?

*Miss Hamilton's professional status was not indicated on the original publication. She presented her comments a day after the Henderson paper was read.
The work is now being done fairly well by nurses, doctors' wives, etc. It has now become a very scientific branch of surgery and there is much discussion whether nurses should be allowed to administer these drugs. I believe nurses will continue to do so—but it will not become the new field for nurses that nurses themselves may suppose. One of the most humiliating statements was made in the East, namely, that if anesthesia were turned over to nurses, that would be the end of progress and scientific research along that line. This is a little overdrawn as I am sure we will still have our apostles of anesthesia to whom we may look for guidance, and I would like to mention just one who has been a particularly helpful scientist, Dr. Jandell Henderson.

I find in my work, that when patients come to the operating room, while they may differ in many respects, in one, they are all equal: from the age of two weeks to the age of ninety years, they are just frightened children. I am sure that at this trying time no one can take the place of a woman, and a sympathetic nurse is especially fitted, for by her gentleness she may so allay their fears that heartbeats are reduced, the patient becomes calm and hopeful and what might have developed into a vicious cycle has been prevented.
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