

sketch of one or two other cases. An interesting one is a boy 6 years old, who had scarlet fever, followed in two weeks by an acute suppurative inflammation of both middle ears. Two months later, when I first saw him, a mastoid abscess had developed, necessitating Wilde's incision. Exploration with the probe revealed a sinus and softened, roughened bone. I was unable to obtain his parents' consent to an operation until three months later, when I operated at the Chicago Medical College. In the meantime I had succeeded in curing the suppurative process of the middle ears and had kept the sinus cleansed with solutions containing boracic acid, carbolic acid, mercuric bichloride, iodoform, the hydrogen peroxide, etc. Anæmia and malnutrition demanded tonics and alteratives, whereupon he grew fat and plethoric. At the operation it was found that a large part of the external layer of the process was denuded of periosteum, the bone was black and movable, and the cells were filled with very dark, unhealthy-looking granulations and pus. After removing all the diseased tissue the wound was dressed antiseptically, and in eighteen days had completely healed and the patient was well. Some weeks later, while the boy was at play with his companions, he received a blow over the cicatrix, which was followed by an acute inflammation and suppuration. A small spicula of healthy-looking bone, which the blow might have detached, protruded from the wound and was picked out. The wound then healed and opened several times, and when I last saw the patient there was a pin-hole opening and an oozing of a drop of sero-purulent discharge in the course of the twenty-four hours. This patient has made a complete recovery.

The only other case in which the results were not completely curative and satisfactory, was the one already mentioned as a bad case of scrofula. It was a woman in whom all the lymphatic glands were enlarged; she was emaciated, anæmic, without appetite or strength, and required the most invigorating and supportive treatment both before and after the operation. I should not have felt justified in operating were it not for the fact that the patient would likely have died of exhaustion, pyæmia or cerebral abscess, if the extensive necrosed tissue were not removed and the suppuration stopped. She had been operated on five months previously, but the wound had never closed or ceased to suppurate. When she left the hospital the wound had not entirely closed, and there was a slight discharge, but no dead bone. She was permitted to go to the country on condition that she should return for treatment three times a week until cured. I never heard from her again.

These two are the only cases in which the cure might not be said to have been complete before they passed from under my observation, and during the past year I have had seven patients under my care in which the operation was imperative. Two of these cases were operated on by my colleague at the Illinois Charitable Eye and Ear Infirmary, Dr. F. C. Schaefer.

The arguments in favor of the operation may be summarized as follows: Three-fourths of the cases were completely cured. The remainder were bene-

fited. None were worse for the operation. Nature's method of opening abscesses and casting off dead bone is slow and uncertain. The presence of confined pus threatens necrosis, and the presence of necrosis and pus threatens meningitis, cerebral abscess, pyæmia and death.

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## THE CHOICE OF GENERAL ANÆSTHETICS IN SURGERY AND OBSTETRICS.

*Abstract of a Paper read before the Medical Society of Virginia, October 19, 1887.*

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Beginning with a denial of the common statement that the use of any anæsthetic lessens the success of operative surgery, Dr. McGuire mentioned that chloroform is the popular anæsthetic used in France (except in Lyons), Germany (except in Vienna), and in Italy. In Great Britain, mixtures of ether and chloroform are principally used. In China, chloroform is chiefly used. In the United States, ether is the popular agent throughout the Northern and Northwestern States, while chloroform is the generally adopted anæsthetic of the Southern and Southwestern States. Thus it will be seen that throughout the civilized world, chloroform is much more generally used than ether. Combining the obstetrical cases in which anæsthetics are used with the surgical, it may be safely estimated that chloroform is used twenty times as often as ether as the anæsthetic—the two agents to which he restricted his paper. He predicted that when a full analysis of all the facts is finally made, in certain cases it will be determined that ether should be given, and chloroform in certain other cases—thus establishing the special value of both. In general terms, in the feeble or anæmic, or in those prostrated by shock or loss of blood, he prefers ether; but when there is cardiac, renal or pulmonary trouble, chloroform is preferable. Up to the present time between 400 and 500 deaths from chloroform have been reported, and about 100 deaths from ether; but he was unable to say what the ratio of deaths by either agent is to the total number of administrations. Sphygmographic tracings during chloroform anæsthesia show depression of the circulation; this is only occasional, and then not so marked when ether is given. Hence cardiac paralysis is more likely to follow the use of chloroform. But experience proves that when chloroform is withdrawn, and consciousness returns, the patient is safe. But this is not the case after ether is withdrawn. Even acute nephritis or pneumonia occurs sometimes as the result of the use of ether. In short, in diseases of the kidneys or lungs ether is more dangerous. But both may kill—especially chloroform, by using a too concentrated vapor during the period of muscular excitement, by paralysis of the respiratory nervous centres.

In selecting an anæsthetic, Dr. McGuire is somewhat governed by the character of the assistant who is to administer it. In inexperienced hands, ether is the safer. To give chloroform requires one who

knows, and will attend to his business alone. One accustomed to give ether is not usually the one to select to give chloroform. To ask a patient to take long, deep or rapid inhalations of chloroform vapor is dangerous. The greatest danger from this agent is in the early stage of its administration, when by a too concentrated vapor or its too rapid use, the heart centres may be surprised and overwhelmed. When using chloroform, it is safer to let the patient's head be turned to one side, so as not to let the concentrated vapor—being four times heavier than air—exclude the atmospheric air. Begin with a small quantity, allow a plenty of fresh air and gradually accustom the patient to the vapor. Never give chloroform in a hurry.

The giving of alcohol as a heart stimulant just before giving chloroform is open to serious objections. In the first place, who knows what the stimulant dose is in individual cases? In the next place, alcohol increases the duration and stage of excitement, and makes nausea, etc., more likely to occur. We all agree that those addicted to the free use of liquor are bad subjects for anesthetics.

The speaker mentioned a recent publication by an eminent New York surgeon, advocating the giving of a very small dose of chloroform in concentrated vapor, on the ground that if alarming symptoms set in, this amount could be speedily pumped out of the lungs by artificial respiration. This is dangerous doctrine to teach. In the only fatal case by chloroform coming under his observation, the heart stopped *suddenly*. The heart did not previously flutter, grow weak nor intermit, but abruptly ceased. It was like the syncope of concussion of the brain; the contractile power of the heart was annihilated. We may remove by artificial respiration in such a case all of the vapor; but we cannot in this way remove the impression made on the nerve centres which stopped that heart's action.

Although frequently taught, we are apt to forget that we should never operate during partial anesthesia. Many deaths from chloroform are due to not heeding this advice that comes of experience. Fatal syncope may come on from the consciousness that the painful operation is yet to follow; or if intellectual consciousness is just lost, there seems to be left, so to speak, a consciousness in the nerve centres of the heart and lungs, and the impression of pain on them is fatal. Ether is safe when an operation is to be performed under partial unconsciousness. In operations in which blood or other fluids may escape into the windpipe, chloroform is the safer. Dr. McGuire does not think he ever saw the irritability of the larynx or trachea entirely lost in chloroform anesthesia, but he has seen it in ether anesthesia. Possibly the cold vapor of the other may in a measure account for this loss of reflex excitability in the throat.

In organic heart diseases, he has never had occasion to regret the choice of chloroform; but ether is preferable in a nervously weak heart, as also in cases of weakness from fatty degeneration, or loss of blood, or great anemia from other causes, etc. In such cases any anesthetic is hazardous, but ether is safer.

Of all the elements of danger from chloroform, fear on the part of the patient, he believes to be the most important and the most frequent. The heart becomes nervously weak. If a calm, confident manner on the part of the administrator does not allay this fear, give hypodermically a quarter of a grain of morphia sulphate, with a one-hundredth of a grain of atropia sulphate, and wait fifteen minutes or so for the physiological results before giving the anesthetic. Emotional excitement greatly increases the chances of paralysis of the nerve centres presiding over the circulation. Morphia obtunds this sensibility and also acts as a cardiac stimulant, and atropia is probably a more powerful stimulant. That emotional excitement is an important element of danger he believes all administrators will admit.

Children take chloroform well and safely. They are not afraid of being killed by it. Nussbaum has seen 40,000 administrations of chloroform in military life without an accident. Dr. McGuire has seen, as Medical Director of Stonewall Jackson's Confederate Army Corps, 28,000 chloroform administrations without causing a death. Neither the age, sex, health, etc., of the soldiers could account for this. The wounded soldiers dread the hazard of chloroform very little. It is also significant that chloroform has been given to hundreds of thousands of women in labor, with but one fatal case, so far as he has learned; and in this instance it is by no means certain that death was due to the anesthetic. Even when surgical operations have been required in obstetrical cases, no death has followed the use of chloroform. The recumbent position does not explain all this exemption, nor do the pains of labor, for we have pain from the surgeon's knife, etc. The element of success in all such cases, Dr. McGuire believes, to be the want of dread of chloroform.

Dr. McGuire deprecates the partisan debates which have occurred on this subject of the choice of anesthetics. In the last text-book on surgery issued this year, is the following: "In general there is no comparison between these agents; ether is so much safer than chloroform that the latter is fast disappearing in practice. The estimated death-rate after ether is 1 in 20,000; in chloroform, 1 in 3000." Such statements are the outcome of prejudiced brains, and are absolutely unwarranted by any facts or figures known to the profession.

#### COTTON GRAFTING.

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Absorbent cotton is far preferable to sponge for grafting purposes, as it is always ready and at hand, requiring no preparation for its use; while the preparation of the sponge is a tedious process, and it must be kept in air-tight vessels immersed in an antiseptic solution. The following case will illustrate the *modus operandi*:

Eliza Roy, female, 18 years old, was treated by me from October 18 to November 12, 1886, for cerebro-spinal meningitis. She made a good recovery, with the exception of an indolent ulcer three