CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a section in ANESTHESIOLOGY in which will appear invited and unsolicited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

AN ENDO-OESOPHAGEAL STETHOSCOPE

Auscultation of chest sounds may readily be carried out during anaesthesia by means of an easily constructed stethoscope lying in the oesophagus at the level of the base of the heart. An ordinary stethoscope can be converted in a few minutes by removing the "head" and attaching a large rubber urethral catheter possessing a single hole near its tip to the stethoscope tubing by a short metal tube. The hole is covered by a sleeve of ¼ inch cigarette drain approximately 1 inch in length. This fits quite snugly any catheter larger than number 22 French, and its fixation with rubber cement has been found unnecessary.

Following induction and intubation the lubricated catheter is gently inserted into the oesophagus. By gentle rotation and an adjustment of catheter depth the point of maximal intensity of heart sounds, murmurs or breath sounds may be determined. The stethoscope is then securely fixed in position by means of adhesive strapping to the cheek.

This technique has been found preferable to strapping a stethoscope to the chest wall as the pickup can be placed directly on the heart without intrusion into the surgical field and, also, it cannot become dislodged by the positioning of the patient.

The instrument not only provides a continuous check on cardiac rate and rhythm, but also gives an indication of decreased cardiac activity when muffling of the sounds occurs. Changes in cardiac murmurs are easily heard as they occur during cardiac operations, and during pulmonary surgical procedures the accumulation of even tiny amounts of secretion in the tracheobronchial tree can readily be detected.

On occasion the apparatus has been connected to the phonocardiograph for the recording of tracings for both research and teaching purposes. During the past year this apparatus has proven of great value in over one hundred intrathoracic operations.

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MAINTENANCE OF STERILE ANESTHESIA EQUIPMENT

A technique is presented for maintaining sterile anesthesia equipment—endotracheal tubes, laryngoscopic blades, suction and oxygen catheters, tracheotomy tubes, pharyngeal and oral airways and small adapters.

These small pieces of equipment often are not properly cared for and they are usually not sterile. In most anesthesia departments airways and catheters are cleaned and emersed in alcohol for a period of time, then placed in a gas machine drawer or anesthetist's bag and handled many times before use. Whenever a sterile technique is employed there is usually a bulky outer encasement of cloth and padding, making difficult the identification of the enclosed article. It is necessary to have in readiness artificial airways of vary-

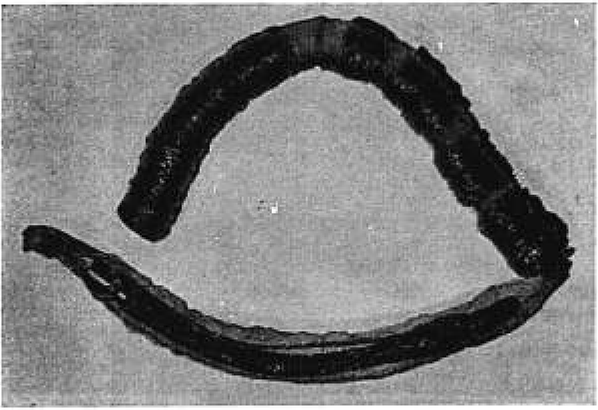

FIG. 2.

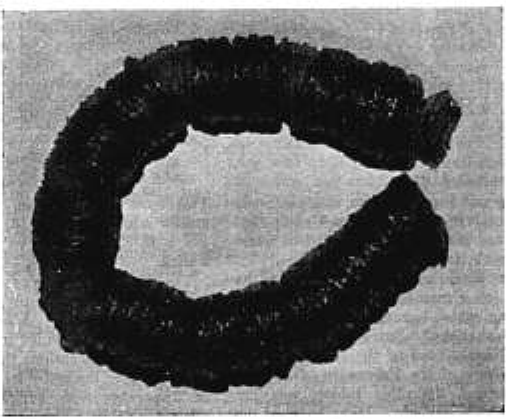

FIG. 1.

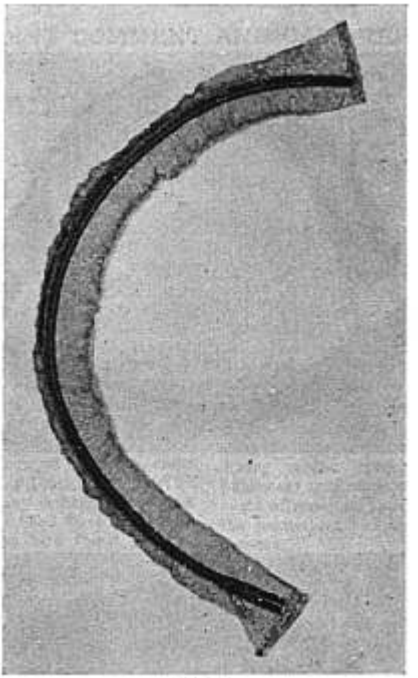

FIG. 3.

ing sizes and lengths. Also, it is obviously of great advantage to have such equipment visible and readily palpable without interfering with its cleanliness.

Sterile conditions can be maintained by the use of a transparent cellophane type of tubing, which is supplied in compressed cylindrical sticks.* Extensive work by Dr. M. V. Novak, head of the Department of Bacteriology of the University of Illinois, demonstrated that this tubing was impermeable to bacteria. Many surgical departments throughout the country are using it in the sterilization of catheters.

* Manufactured by Edward Weck & Company, Brooklyn, New York.

Two sizes are available, 35/34 inch diameter which contains 16 feet to a stick, and a 36/32 inch diameter with 40 feet to a stick.

The tubing is easy to use. The necessary length of tubing is simply pulled out and cut off (figs. 1 and 2). After the equipment is cleaned, it is threaded into the attached end of the uncut casing; the casing is then stretched over the entire length of the piece of apparatus with additional length to allow for folding over at each end. Metal paper clips or staples are used to close both ends (fig. 3). It is then ready for chemical or steam sterilization, usually for fifteen minutes at 250 degrees and 15

pounds of pressure. After sterilization, the equipment may be kept in its transparent envelope for an indefinite period of time; bacteriological studies at the end of nine months demonstrated that the content was still sterile. There is no need to fear contamination as long as the cellophane tubing is mechanically intact since, even when wet, it is impermeable to all forms of bacterial life.

In our hands this method was entirely satisfactory over a period of many months. With the use of this sterilizing tubing the problem of care of rubber, plastic and metal equipment is solved.

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PROLONGED SPINAL ANESTHESIA

(SEVEN, ELEVEN AND FOURTEEN DAYS)

Spinal anesthesia for surgical procedures has not been prolonged for more than several hours for the obvious reason that the human organism could not withstand the combination of surgical trauma and "anesthesia shock" beyond a limited period of time. By "anesthesia shock" is meant the altered physiology induced by anesthesia which, if combined with "surgical shock," within a few hours leads inevitably to an irreversible condition that is conducive to death.

For therapeutic purposes, when spinal anesthesia is not combined with surgery, it may be prolonged far beyond the ordinary lengths and the patient will manifest few, if any, evidences of such altered physiology. Hence, it becomes apparent that under well regulated spinal anesthesia, the homeostatic mechanism of the body is able to adjust if no further serious alterations, such as those produced by surgical trauma, are added.

We have found continuous spinal anesthesia and later continuous epidural anesthesia of great aid in treating patients with vascular and pain problems involving the body below the level of the tenth thoracic dermatome. Continuous blockade by spinal (or epidural) anesthesia affords a really effective method of subduing pain and improving the vascular supply to the pelvis, genitalia and lower extremities.

In 3 of our longest cases of continuous spinal anesthesia there have not been any alarming symptoms referable to it for as long as fourteen days and none afterward, and the conditions for which it was instituted were relieved in all cases. There was no evidence of hypotension and hence no need for vasopressor drugs.

We decided to try the method because of the previous experience of Smith and Rees (1), in 1948, who successfully combated peripheral embolism and occlusion by this means.

TECHNIQUE

The Tuohy catheter (2), a modification of Lemmon's (3) method, was used. The catheter was inserted through a needle in the interspace between the second and third lumbar vertebrae and advanced 5 cm. Gauze dressings and adhesive strapping held the catheter in place. The anesthetic solution, which was made up as needed, was contained in a 10 cc. syringe. Injections were made through the catheter every four hours, day and night. Anesthesia was lightened occasionally so that the patient could void and evacuate the bowels.

Nupercaine (a-butyloxycinchoninic acid diethyl, ethylene diamide) was considered best for this procedure because of its prolonged action and relative nontoxicity. It was not necessary to change the solution at any time during the procedure. The onset of anesthesia was prompt and it lasted approximately four hours after the injection of 2 cc. of the solution which contained 4 mg. of nupercaine, 1 to 200, and 100 mg. of procaine hydrochloride. Ephedrine 30 mg., was added to prolong the action of the anesthetic agents and glucose was added to make the solution