

been made to open the jaws immediately in case of respiratory difficulty or vomiting. A very satisfactory anesthesia may be obtained by a deep block of the second and third divisions of the fifth nerve with 2 per cent procain hydrochloride. In many cases it is possible to wire the teeth with no anesthesia other than a preliminary hypodermic of morphine or scopolamine but the operator should always be gentle in his manipulations."

J. C. M. C.

PINNELL, E. E.: *Use of Intravenous Evipal in Minor Gynecological Operations*. Ohio State M. J. 37: 449-450 (May) 1941.

"Since 1938 intravenous evipal has been used when possible on the gynecological service as a routine anesthetic for minor operations. . . . This paper has to do with factors bearing on relaxation of the patient, especially the effect of pre-anesthetic medication, and the incidence of certain reactions occurring during and after its use. . . . It was found that 41 cases or 33 per cent showed fair to poor relaxation, requiring supplementary anesthesia in 30 cases or 25 per cent. . . . Most of the patients over 40 years of age were well relaxed. The majority of patients requiring supplementary anesthesia weighed over 60 kg. Most cases with operations lasting more than thirty minutes required supplementary anesthesia. Only 27 per cent of the total patients were colored. . . . Thirty patients or 25 per cent of the total number were apprehensive, 17 of these were poorly relaxed, with 12 requiring supplementary anesthesia. Apprehension is apparently a big factor in poor relaxation and occurs more often in the colored race. . . .

"At the time of administration generalized muscular twitchings were noted occasionally. Vomiting occurred only once. There was one case of hiccupping of two minutes' duration oc-

curing five minutes after the injection and the patient became moderately cyanotic but responded quickly to carbon dioxide and oxygen inhalations. Post-operatively, moderately severe headaches were occasionally noted, also nausea and vomiting after the evening meal. It was thought a liquid rather than a soft diet would remedy the nausea but the results were approximately the same. . . . Pre-medication of morphine sulphate gr. $\frac{1}{6}$ and atropine sulphate gr. $\frac{1}{150}$ was found to have no definite effect on the relaxation, the change in respiratory rate, or the time required to produce loss of consciousness in the patient. There were several non-serious side-reactions noted but no deaths in over 1800 cases. It was generally agreed by patients to be a pleasant type of anesthesia." 4

References.

J. C. M. C.

PUGSLEY, H. E., AND RICHARDSON, G. D.: *Anesthesia in the Patient with Pulmonary Tuberculosis*. Canad. M. A. J. 44: 473-476 (May) 1941.

"Patients with active pulmonary tuberculosis usually tolerate anesthesia and operation very well. However, a small percentage develop a post-operative spread of the tuberculous disease in their lungs. This extension of the pulmonary lesion is the principal cause of post-operative deaths and it is the purpose of the present paper to indicate the causes of and measures which will aid in the prevention of this serious complication. . . . We believe that surgical shock results in a lowered resistance to the tuberculous infection and is one of the primary causes of a spread in the lung. Therefore, every effort should be made to avoid the development of shock by careful pre-operative preparation, multiple stage operations where feasible, routine intravenous saline during major surgery, and blood transfusion if signs of shock appear. . . .

"Local anesthesia is selected for most minor operations, such as the insertion of an intercostal catheter or intrapleural pneumolysis. For such minor procedures as the opening of an ischio-rectal abscess we have found pentothal sodium given intravenously very satisfactory. This agent causes no pulmonary irritation or stress, the patient emerges from the anesthetic quickly, and is rarely nauseated afterwards. For major operations below the level of the diaphragm spinal anesthesia is usually selected. For short operations we use procain and for those of longer duration, nupercain. These agents provide satisfactory analgesia, respirations are quiet, and the cough reflex is not abolished. For major thoracic operations, such as thoracoplasty and extrapleural pneumolysis, we prefer cyclopropane anesthesia. . . .

"Patients with pulmonary tuberculosis in the acute exudative phase should, if possible, have a long period of bed rest until the lesion is in a more chronic fibrotic phase before being subjected to a major operation. It is known that a post-operative spread of the tuberculous process in the lung occurs much more frequently in the former than in the latter stage. Patients should be encouraged to 'empty the lungs' of all available secretions by coughing and postural drainage during the few hours preceding operation. Those with profuse expectoration should not be operated on early in the morning before they have had ample time to clear their lungs of secretions. Liberal quantities of fluids and glucose should be given during the twenty-four hours preceding operation. . . . A sedative such as pentobarbital sodium is prescribed on the night preceding operation. One hour before operation, pantopon, gr. $\frac{1}{3}$ with hyoscine, gr. $\frac{1}{150}$ is given by hypodermic, followed in fifteen minutes by pentobarbital sodium, gr. $1\frac{1}{2}$ to a man of average size; women receive slightly smaller doses.

The patient usually arrives in the operating theatre either asleep or free from apprehension. . . .

"Troublesome reflexes such as breath-holding or laryngospasm are prone to develop when the periosteum is being stripped off the rib or the parietal pleura from the chest wall in a patient too lightly anesthetized. This breath-holding or stridor causes anoxemia, rapid pulse rate, increased venous pressure, and may contribute to the development of shock. To avoid these reflexes cyclopropane anesthesia is induced at least ten minutes before the surgeon begins to operate and is deepened to about the second plane of the third stage. . . . Paradoxical respiration commonly occurs and may become quite marked during the operation of extrapleural pneumolysis and less so during a thoracoplasty. Occasionally an accidental pneumothorax will develop during the former operation; rarely, during the latter. Both complications are aggravated by a partial obstruction of the airway and, therefore, the endotracheal catheter technique is recommended as a routine for extrapleural pneumolysis. . . . Rhythmic pressure on the breathing bag may be necessary to relieve anoxemia as a result of paradoxical respiration in a patient with limited respiratory reserve. Obstruction of the airway by pulmonary hemorrhage or excessive secretions is a rare complication. Nevertheless, facilities for tracheal aspiration through a catheter or bronchoscopic aspiration should be immediately available. . . .

"During the few days immediately following a thoracoplasty in which too many rib segments have been removed paradoxical respiratory movements of the weakened chest wall may lead to increasing exhaustion and a terminal tuberculous pneumonia. By limiting each stage of the operation to the removal of about three ribs this complication is rarely seen. . . . When atelecta-

sis develops . . . bronchoscopic aspiration of a mucous plug should be attempted." 4 References.

J. C. M. C.

KRAUS, HANS: *The Use of Surface Anesthesia in the Treatment of Painful Motion*. J. A. M. A. **116**: 2582-2583 (June 7) 1941.

"This paper describes a method of treatment for impaired function when pain is the factor responsible for the loss of motion or power. The treatment is the application of a surface anesthetic (ethyl chloride spray) combined with active motion. . . . At first only sprains were treated; later, acute muscular spasms due to conditions such as lumbago and acute bursitis of the shoulder as well as muscular spasm accompanying various chronic conditions, such as sciatica, low back pain and pain recurring after old injuries. The use of active motion is an essential part of the treatment. . . . The painful region must be determined through active motion. The direction in which the motion is impaired is first determined. Then ethyl chloride is sprayed on this area of skin. The patient then starts careful active motion of the part involved, in the direction in which the motion has been painful and limited. As the patient carefully increases the movement, new painful areas—which up to this point have been hidden through blocked motion—will develop. Those areas again have to be sprayed and active motion continued. These treatments last from ten to thirty minutes and should be performed carefully and well within the limits of pain. Immediately after the treatment, camphor liniment should be applied to the skin, to avoid frostbite. . . .

"While a single treatment will be sufficient in cases of minor involvement, patients with more severe involvement will have to be treated several times: the first week, daily—

later, every other day. An effective treatment, however, should not call for the anesthetic after the second week, whereas active motion will have to continue until normal muscular power is restored. Immobilization after treatment is contrary to the basic principle and should, therefore, never be combined with it. . . . Normal anatomy must be present if this treatment is to be used effectively. . . . I have no explanation to offer as to how this deep effect of surface anesthesia works. It seems to be a fact, but the underlying physiologic explanation presents an interesting field for exploration. It must be definitely understood that in no case will the ethyl chloride alone, without active motion, achieve good results." 5 References.

J. C. M. C.

LEMMON, W. T., AND PASCHAL, G. W., JR.: *Continuous Spinal Anesthesia with Observations on the First 500 Cases*. Pennsylvania M. J. **44**: 975-981 (May) 1941.

"We gave the first continuous spinal anesthesia to a patient on Apr. 10, 1939. Since that date we have administered more than 500 spinal anesthetics by this method. . . . In continuous spinal anesthesia we employ a short-acting agent, procaine hydrochloride (novocain), which is injected in fractional doses as needed during operation. The patient is placed on a specially designed mattress, and a very flexible, German silver, lumbar puncture needle remains in place in the subarachnoid space. This needle is connected into a syringe by means of a 30-inch piece of rubber tubing which is provided with Luer-lok connections at either end. . . .

"Three grains of nembutal is given the evening before operation, thus insuring the patient a good night's sleep. Three hours before operation, 3 grains of nembutal is administered by mouth.