

"[At] postmortem examination . . . a large, depressed, fresh, dark red infarct was found in the inferior half of the upper lobe of the left lung. . . . The source of the embolus was then sought. . . . The region of the coccygeal needle puncture was opened. The sinus tract deviated slightly to the left of the midline at the upper opening. Within the spinal canal in the lower sacral segment was a soft blood clot approximately 2 by 1 cm. This was removed. Underneath was a thrombosed vessel in the venous plexus overlying the posterior wall of the spinal canal. . . . It is impossible to ascertain whether the embolus appeared before or during the time ether was being given. . . . Nevertheless it seems unlikely that an infarct of the size found could have been produced previously without demonstrable clinical symptoms. Also the character of the onset of the fatal outcome suggests that it happened during anesthesia. With this assumption a more clear cut explanation exists to account for sudden death. An already limited oxygen supply supplied by the pulmonary arterial branch was suddenly lowered below survival level by the exclusion of the aerating surface which became occluded. Since a blood ether level is not available, the hypothesis will remain contested. In any event, the opinion remains with those present that death was not due to overdosage of ether. At the same time the idea is held that the infarct alone was not large enough to kill. Thus, more than one factor led to the fatality.

"The prime purpose of this communication is to stress the point that traumatization of the venous plexus within the sacral canal with subsequent thrombosis and formation of an embolus is potentially possible in cases where continuous caudal anesthesia is used. Failure to obtain blood during the early stage of the procedure described

does not always prove that injury has not been done and/or will not follow." 14 references.

J. C. M. C.

HUNTER, A. R.: *The Rectal Administration of Pentothal Sodium*. Brit. J. Anaesth. 18: 126-127 (Jan.) 1943.

"Some eighteen months ago the author published in this journal an article describing the effects of the short acting barbiturates administered rectally. From the investigations then carried out it was concluded that Pentothal Sodium was too erratic in its action to be successfully employed as a rectal basal narcotic. . . . Lest the conclusions previously enunciated had been vitiated by the use of stale solutions it was thought desirable to repeat this part of the experiment with doses made up immediately before use. Each patient received 15 mgm. of Pentothal per pound of body weight. . . . The subjects of this experiment were adults, mostly females, who required tonsillectomy. In addition to the Pentothal each patient received 1/60th of a grain of atropine by hypodermic injection half an hour before operation; no preliminary opiate was administered. The results were satisfactory though not perhaps quite so good as those with the sulphur free barbiturates. . . . In general the rectal administration of Pentothal Sodium in dosage of 15 mgm. per pound of body weight is a safe and satisfactory method of obtaining fairly deep basal narcosis." 2 references.

J. C. M. C.

BETCHER, A. M.: *Pentothal Sodium: A Survey of its Field of Usefulness in a Military Hospital*. War Med. 4: 425-432 (Oct.) 1943.

"Barbiturate anesthesia has never been employed in military surgery previous to the present war. . . . The train-

ing program of a military hospital includes instruction of the enlisted men of the medical corps in anesthesia. This survey reviews the practicability of pentothal sodium as a safe anesthetic agent for administration by this group of personnel. . . . This study consists of observations made on many operations performed on patients under pentothal sodium anesthesia during an eleven month period beginning November 1941. . . . The shortest interval and smallest amount used were 0.28 Gm. in one minute for a closed reduction of a dislocated shoulder. The largest amount of pentothal sodium used in a short duration procedure was 1.7 Gm. in ten minutes. . . . In the short procedures the average amount of pentothal sodium used was 0.545 Gm., the average time being thirteen and two-tenths minutes. In the long procedures utilizing the intravenous drip method, the average amount used was 1.27 Gm. in an average time interval of sixty-five minutes. So far as dosage was concerned, weight appeared to play no role. . . . One of the most striking features observed was the apparent hypersensitivity of the skin whenever incised. This resulted in the lightening of the plane of anesthesia, as evidenced by movements of the patient and sometimes by phonation. . . . In the orthopedic operations, for example in the Nicola operation, movement on the part of the patient occurred only during incision and closure of the skin. . . . Procedures involving the mucous membranes of the nose and throat revealed no hypersensitivity. . . . Complete blood counts were taken preoperatively and on the third postoperative day for patients anesthetized by inhalation agents and by pentothal sodium during therapy with a sulfonamide compound. Thirty-four patients operated on under pentothal sodium who had previously received sulfathiazole were compared with a

similar number of patients receiving inhalation anesthesia. . . . It can be seen readily that pentothal sodium exerts no effect on the complete blood count during the course of sulfathiazole therapy. Side reactions and complications . . . [included] 3 patients complaining of headache. . . . Nausea and vomiting when they occurred appeared several hours postoperatively. . . . Cyanosis and shallow respirations were due purely to overdosage. . . . One patient with laryngospasm received 0.00065 Gm. of scopolamine hydrobromide one and one-half hours preoperatively. All of the other patients received atropine sulfate. The development of urinary retention in a patient may have been due to the type of operation, which was a circumcision. . . .

"The prevailing opinion is that inhalation, spinal, local (procaine hydrochloride) and intravenous anesthetic agents are best suited for wartime surgery. However, a great number of anesthesiologists favor and predict the rise in popularity of pentothal sodium. . . . The procedures which compose the greater portion of the present series were in the field of minor surgery, including fractures. . . . Usually the patient awakened as if from a refreshing sleep and then shortly afterward drifted off again. This decreased the amount of postoperative sedation necessary. However, it is to be noted that more vigilant nursing care is indicated with such a condition. Whenever the intermittent method of administering pentothal sodium was not used, lightening of the plane of anesthesia necessitated a greater number and increased strength of individual doses. Administration of small amounts at frequent intervals resulted in even anesthesia and in a smaller total dose necessary. . . . Pentothal sodium offers many advantages in major orthopedic procedures as compared with other agents

that may be available in transient military establishments. . . . Intravenous anesthesia has been proved to be a safe anesthetic technic, but . . . I believe that it is safe only in skilled hands. . . . Pentothal sodium proved itself sufficient when reenforced by drip infusion of isotonic solution of sodium chloride and inhalation of oxygen in major orthopedic procedures. The administration of pentothal sodium is safe in experienced hands only, and ether is the preferred anesthetic for administration by men of the training corps." 26 references.

J. C. M. C.

ETSTEN, BENJAMIN: *Anesthesia for Thoracic Surgery*. New York State J. Med. 43: 1980-1984 (Oct. 15) 1943.

"Patients who required thoracic surgery present varying degrees of pulmonary dysfunction. . . . Respiratory function tests are of value because they serve as guides in determining the degree of impairment of ventilation due to partial obstruction of the airway, reduced capacity of movement of the lungs, and the reduced distensibility of the lungs. . . . The problems attendant on chest surgery vary with the degree of respiratory reserve, the pulmonary pathology, the patency of the tracheo-bronchial tree, and the extent of the surgical procedure. . . . Postural drainage is performed in the morning. . . . Preanesthetic medication should be administered only after an efficient evacuation of the secretions. . . . The maintenance of the correct position of the patient on the operating table should not interfere with respiratory activity. . . . The legs are flexed to obviate any tension on the abdominal wall in order not to hinder diaphragmatic excursions. The anterior brace is placed at the level of the xiphoid and the posterior one opposite the sacrum. The

braces are placed so that the abdomen or chest will not be constricted between two points. Straps are placed over the hips and knees to keep the patient in place. This method of positioning the patient allows unrestricted activity of the healthy lung. . . . The lowering of the head aids the venous return to the heart and improves cerebral circulation. . . . The head-down position more than 20 degrees inhibits pulmonary exchange. A compensatory increase in respiratory rate takes place with a resultant tiring of the chest musculature. This position is supposed to be important from the standpoint of drainage of secretions by gravity. . . .

"Lipiodol studies were made to determine the degree of head-down position necessary for secretions from the uppermost bronchus to gravitate directly into the trachea without spilling over to the dependent lung. It was found that at least a 35-degree head-down position was necessary to avoid contamination of the opposite lung. This position does not protect the apices from secretions in cases of bronchiectasis where the disease is at the bases of the lungs. Therefore, it seems that either a 35-degree Trendelenburg or the head-up position may be effective during a lobectomy for bronchiectasis and also for drainage of empyema with a bronchopleural fistula. The flat position is all that is necessary when there is a minimum of secretion. The moderate head-down position can be reserved for cases which incur diminished circulatory blood volume. The Trendelenburg should be steep for gravity drainage of material from the pulmonary tree. . . . Waters' carbon dioxide absorption to-and-fro method has definite advantages for anesthesia in thoracic surgery. . . . Endotracheal intubation is considered essential during open chest surgery for the provision of a patent airway, the avoidance of laryn-