the caudal canal and strikes the anterior wall.

"Five c.c. of 1.5 per cent metycaine solution are injected to serve as a test for undue reaction, and to render the remaining portion of the procedure painless. The needle is removed and a 15 gauge 3-inch needle is introduced, bevel-up, into the canal. As soon as the sacrococcygeal ligament is penetrated (this is readily discerned with the rigid needle), the hub is depressed and the needle advanced for a distance of 5 to 6 centimeters. It is important to avoid scraping the anterior wall of the canal, where many blood vessels may be encountered.

"The bevel of the needle is now directed downward and the stilet removed. If neither blood nor spinal fluid can be aspirated, an additional 5 c.c. of metycaine is injected, and if the 15 gauge needle is in proper position, it will flow in easily.

"An autoclaved No. 4 ureteral catheter with wire guide is now made ready for insertion. The wire guide remains in the catheter, but before insertion it is withdrawn for a distance of 2 cm. from the catheter tip. This retains the advantage of the guide, while providing a soft, flexible tip which is not likely to penetrate the dura or blood vessels.

"The catheter is passed through the needle until its tip is 3 to 4 cm. beyond the needle point. The needle is withdrawn over the catheter and the depth of insertion adjusted. The catheter may be advanced or withdrawn at this juncture as long as the guide has not been removed. The average patient requires a depth of 12 cm., while 10 cm. will suffice for a thin person. Obese patients must have the catheter inserted 15 cm. to insure its remaining in the canal. Distances are from the catheter's exit at the skin and are easily determined with a calibrated catheter.

"The wire guide is now withdrawn and the catheter strapped firmly in place with adhesive tape. A 22 gauge ¾-inch short-bevel needle is inserted into the distal tip of the catheter and aspiration attempted with a syringe. If neither blood nor spinal fluid appears the needle is connected by means of a Luer-Lok fitting to a rubber tube leading to the metycaine bottle. A two-way automatic valve and a 10 c.c. syringe complete the closed system.

"Fifteen c.c. of metycaine are injected through the catheter, making a total initial dosage of 25 cubic centimeters. This often suffices to relieve all uterine pain and produce skin anesthesia up to the umbilicus. If not, 10 to 15 c.c. more may be injected. Subsequent injections of 20 c.c. are given whenever the patient feels her pain returning. The skin level of anesthesia is best maintained at, or slightly below, the umbilicus."

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KNIGHT, R. T.: *Intravenous Anesthesia.* Minnesota Med. **27**: 906–909 (Nov.) 1944.

"The intravenous administration of drugs in conduct of anesthesia has led to great advances toward perfection. . . . For the uneasiness, fear, restlessness and minor discomforts of the patient under local or spinal anesthesia, especially if it seems unnecessary or undesirable that he be asleep, the outstanding remedy is intravenous morphine. The dose is given very slowly until relief is obtained or until respiration becomes too slow. . . . During the induction of anesthesia with an intravenous barbiturate, if the required dose seems to be waxing unusually large it should be intermitted by intravenous morphine, grain one-sixth to one-fourth. . . . Sodium pentothal is at present the outstanding intravenous anesthetic. . . . The outstanding

occasions for the use of pentothal are still the relatively short procedures which are not greatly stimulating and for which relaxation is not required. . . . Because of the pleasantness of induction and awakening and the relative absence of anesthetic-produced shock as compared with ether, there has been a great tendency in some groups to use pentothal for abdominal surgery. . . . If the surgeon decides upon pentothal anesthesia and still calls for relaxation like that of ether or spinal anesthesia, the anesthetist is driven into the administration of overdosage, the patient then sleeps many hours, is much depressed, there is a high incidence of pulmonary atelectasis and other complications. This is exploiting the use of a good drug for an unsuitable purpose and can do only harm. . . .

"In speaking of intravenous drugs in anesthesiology today one must not neglect to mention curare. . . . Curare is not an anesthetic. It only produces relaxation. It is a very helpful adjuvant. . . . Curare is effective in relieving persistent laryngospasm which is one of the anesthetist's great antagonists. If other forms of respiratory obstruction can be ruled out but laryngospasm exists, curare may be used. . . . If the surgeon's difficulty in exposure is due to rigid lower ribs or deep narrow pelvis, but the muscles are loose, then curare will not help. If the difficulty is that of too active breathing or a bouncing abdomen because of partial obstruction or carbon dioxide accumulation, then of course the trouble must be corrected by adjusting the inhalation technique, not by blindly adding curare. In any case, however, with other difficulties controlled as best they may be and anesthesia maintained in a light surgical plane, curare will provide the needed relaxation." 9 references.

J. C. M. C.

VERKHOVSKAYA, E. V.: *Intravenous Alcohol Anesthesia.* Am. Rev. Soviet Med. 2: 260–261 (Feb.) 1945.

"The toxic dose of alcohol is 7.7 cc. per kilogram of body weight. The dose producing analgesia and sleep varies from 1.5 to 3.0 cc. Thus the difference between the toxic and therapeutic dose is 4.7 to 5.2 cc. The margin of safety is considerably less for ether and chloroform. The difference between the toxic and therapeutic blood concentrations is 1.5 mg. percent for chloroform and about 4 mg. per cent for ether. . . .

"The technic of administration is comparatively simple. The preparatory steps are the same as those used for ordinary inhalation narcosis. Two cubic centimeters of a 1 percent solution of morphine is given to the fasting patient one-half hour before the operation. Intravenous administration of one part of 95 percent alcohol with two parts of 5 percent glucose solution is started on the operating table. The average dose for complete narcosis is 2.0–2.5 cc. per kilogram of body weight. Thus a person weighing 60 kg. requires 120 cc. of alcohol and 240 cc. of 5 per cent glucose solution.

"The mixture is prepared on the day of operation. The glucose solution is sterilized and the required amount of alcohol is added just before use. The standard apparatus for blood transfusion is utilized for the infusion, which is given slowly for 15–20 minutes. When sleep sets in, the rubber tube is clamped to stop the infusion. The clamp is released if signs of awakening appear before the operation is finished, and the drip is resumed. When we are certain that deep anesthesia has set in, the vein is flushed with 30–40 cc. of physiologic salt solution to prevent possible thrombophlebitis.