Hypnosis as used in this manner is simply an adjuvant to chemoanesthesia. It may eliminate preanesthetic medication or at least reduce the dosage so that there is no additional untoward effect on respiration. Every physician realizes what powerful effects suggestion can produce.

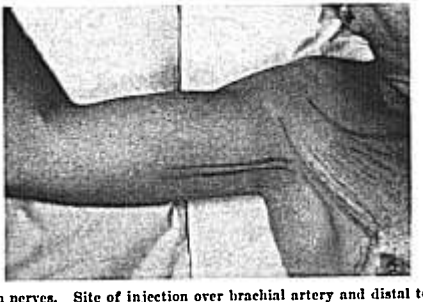
This hypnotic relationship between the young patient and the anesthesiologist is a state of exaggerated suggestibility produced by persuasion and fixation. The burden is upon the operator to produce this transference. His successful approach to a child is based on a fundamental love of children and a cultivated tolerance of their fear reactions. He must be sincere, his sympathy profound, his suggestions spontaneous, and his voice, calm and persuasive.

The use of hypno-induction techniques in pediatric anesthesia has reduced the strain the child suffers ordinarily in the operating room. It is not the specific technique that is important. There is no mystery about the induction of a light or medium hypnotic trance and no special skill is required. Rather, its very simplicity may lead to misuse. If the child has confidence in the anesthesiologist and the latter, in turn, has confidence in his ability to hypnotize or relax the patient, the rest will follow. In the preoperative evaluation one must begin by studying the child's individual personality and background. The more flexible the possibilities, the greater the chances for success of the hypnotic technique employed. From this will emerge a reduction in the amount of anesthesia, decreased postoperative morbidity, less need for analgesics, shorter convalescence, and the elimination of psychic trauma.

[This material is from a paper read before the annual meeting of the American Society of Anesthesiologists, Los Angeles, California, October 16, 1957.]

REGIONAL BLOCK OF THE GREAT NERVES OF THE UPPER ARM

Dr. Preston J. Burnham of Salt Lake City, Utah, observed complete denervation of the arm in an 11-year old boy from a laceration at the apex of the axilla and was impressed with the potential efficacy of a block at this level. At the time of the surgical repair he was also impressed with the compactness of the four nerves and the ease of identifying their location in relation to the brachial artery and the insertion of the pectoralis major tendon through the uninjured skin. In a small series of 10 patients, he has had complete anesthesia in all instances for surgery of the hand.

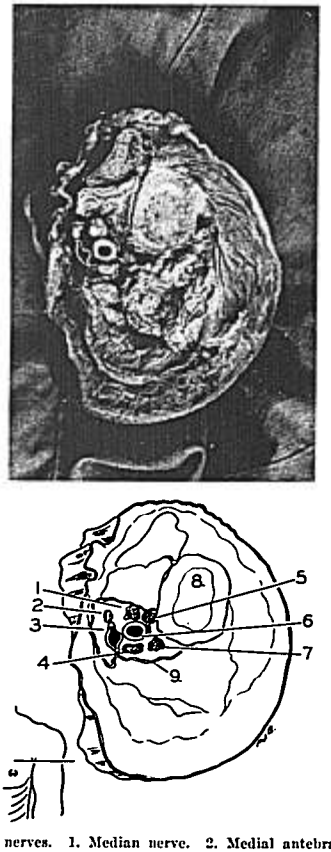


Block of upper arm nerves. Site of injection over brachial artery and distal to insertion of the pectoralis major tendon both of which are drawn on the skin.

The first illustration shows the anatomical site of injection. Note that the brachial artery lies just deep to the center of this fascia enclosed space. The musculocutaneous, median, radial and ulnar nerves lie freely about the artery in a supporting mass of fat,

as illustrated in the cross section. Superficial to the artery course one or more large veins and the medial antebrachial cutaneous nerve. The latter sensory nerve and the brachial vein are constant. The smaller veins and arteries are not constant.

The diameter of this neurovascular space in the average adult measures 2½ to 3 cm. Six to 8 cc. suffices to adequately saturate the space. For the first 4 cases, we used a 2 per cent procaine solution with epinephrine added in a strength of 1:200,000. For the last 6 cases we have used a similar solution of 2 per cent lidocaine with 1:200,000 epinephrine.



Block of upper arm nerves. 1. Median nerve. 2. Medial antebrachial cutaneous nerve. 3. Brachial vein. 4. Ulnar nerve. 5. Musculocutaneous nerve. 6. Brachial artery. 7. Radial nerve. 8. Humerus. 9. Fascia.

The upper two-thirds of the upper arm, the axilla, and the entire shoulder are surgically prepared, and the area draped. The upper arm is placed at a 90 degree angle to the long axis of the body and the elbow flexed to about 50 degrees, as illustrated. The humerus is rotated externally by placing the patient's hand supine on the table on a level with his head. This procedure places the neuro-vascular bundle uppermost and thins out the subcutaneous fat tissue overlying it. We usually stand at the cephalad side of the bent arm while an assistant reassuringly holds the hand of the patient.

A 20-cc. syringe with a 5/8 inch long no. 25 needle is filled with the local anesthetic solution and held while the brachial artery is sought at the level of the lower edge of the broad tendinous insertion of the pectoralis major muscle. The needle is then gently pressed into the skin over the artery where an imperceptible amount of solution is deposited.

ADVANTAGES OF THE UPPER ARM NERVE BLOCK

	Advantages of Upper Arm Nerve Block	Disadvantages of Supraclavicular Brachial Plexus Block
Landmarks	Constant and easily found	Difficult to locate
Anatomical position of nerves	Within small fascial compartment	Scattered and variable
Pneumothorax	No possibility	Ever present threat
Potential toxicity	About 0.33 Gm. anesthetic injected	About 0.90 Gm. anesthetic injected
Pain inflicted during injection	None	Severe due to larger needle, multiple uncertain jabbings, and the accepted necessity for eliciting paresthesias
Paresthesias during injection	Paresthesias avoided	Paresthesias, a dominant requirement
Phrenic nerve block	No possibility	Ever present threat
Subarachnoid injection	No possibility	Ever present threat

The needle is then pushed through the skin into the subcutaneous fat where a few minims of solution are deposited. Now needle and syringe are pulled slightly to one side without withdrawing the needle from the skin, as the index finger of the free hand is pressed firmly down on the brachial artery. The needle is aimed to just miss the artery as it is pushed through the brachial fascia and into the fat below. There is a distinct feeling of a "click" as the needle penetrates the fascia. As the needle is pressed onward, aspiration is attempted frequently to be sure that the operator will know if a vessel is entered. If blood returns, the point of the needle is withdrawn only to the brachial fascia and angled further away from the artery. On two occasions Dr. Burnham simply pressed on until aspiration revealed that the point of the needle was beyond the vein. He has aspirated blood in two patients only.

Whereas paresthesias are deliberately sought in the supraclavicular brachial plexus block, they are avoided in the block of these upper arm nerves. The patient is told to complain of any pain in the hand. If such is reported, the position of the needle is immediately changed.

When it is estimated that the point of the needle has just passed the depth of the artery, 3 to 4 cc. of solution are injected. The difference of 1 cc. of solution is predicated upon the operator's estimate of the size of the patient.

The needle is then withdrawn through the brachial fascia but not out of the skin and is pushed to the other side of the artery. The palpating finger is again pressed down on the artery to be sure of its location, and 3 to 4 cc. of solution are similarly placed on this side of the artery. The skin is so mobile that the needle need not be removed but rather

is left in the skin. Needle and skin are then moved as the palpating finger is removed and reapplied.

To facilitate tolerance of a tourniquet, a "ring" type of block is required. The no. 25 needle is then withdrawn and replaced by a three inch long no. 22 needle. This is inserted through the same spot in the skin to traverse the subcutaneous fat tissue where roughly 1 cc. of solution is deposited per insertion of the needle or to every 3 inches of circumference of the arm. This latter procedure effectively arrests the passage of stimuli through the superficial sensory nerves of the upper arm.

SIMPLE AND ACCURATE FLUOTHANE VAPORIZER

Drs. L. W. Fabian, G. W. Newton, and C. R. Stephen of Durham, North Carolina, perfected an instrument designed specifically for vaporization of Fluothane. It satisfies the requirements of providing accurate and finely controlled vapor concentrations over the range of safe clinical application. The basic design of this vaporizer incorporates a number of other features which appear desirable, including (1) simplicity of construction, (2) ease of adaptability to all types of anesthetic machines currently used in the United States, (3) sturdiness and compactness, and (4) economy.

The F–N–S Fluothane vaporizer, as illustrated, consists of a vaporizer head and a light-resistant glass container of 8-ounce capacity. The operating mechanism within the vaporizer head is also illustrated. The fundamental mechanism is that of a rack and pinion whose linear excursion is motivated by a rotary dial. The sliding rack contains a

The F-N-S Fluothane vaporizer.

rectangular window into which three vanes (baffles) are fitted according to precise measurements. The placement of the vanes and the degree of curvature of each have been determined on the basis of numerous preliminary trial calibrations performed to assure quantitative shunting of the vehicular gases through the vaporizer bottle. As a result of controlling the amount of gas shunted over the surface of the liquid Fluothane per unit of time, it is possible to control also the amount of vapor swept away by the gas. Rotation of the control dial causes the rack to slide in the opposite direction, thereby producing contact of the rectangular window and the vanes with the permanent orifices of the vaporizer head. Forty discrete divisions are provided in the dial mechanism to allow fine control in increments of vapor concentration. The range of vapor concentrations at gas flows of 4 liters per minute is from 0.0 to 4.4 per cent.