A METHOD OF ANAESTHESIA FOR TONSILLECTOMY

BY

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Operation for excision of tonsils and adenoids is one of the commonest surgical procedures both in this country and on the continent of America. In this country alone 1,500 children are operated on each week (Report of the Chief Medical Officer of the Ministry of Education).

The predominant age group of patients is between 4 and 10 years. The operation is, however, commonly performed in adolescents and adults. Anaesthesia for these operations has become almost standardized. Local analgesia, a common practice on the continent of Europe, has found little favour here. Whereas endotracheal intubation is regarded as the *sine qua non* in older children and adults, opinions are divided regarding its advisability in younger children.

The methods described in this paper are presented not for their originality but for the ease and minimal disturbance to patient, surgeon, and anaesthetist.

Present Series

Material.—Up to date over 1,400 patients have been operated on, mainly at the South-western Hospital. Of these, 137 (9.8%) were over 10 years of age, 6 (0.4%) were adults, and 10 (0.7%) were adolescents aged between 15 and 18, who, because of their build and weight—about 8 st. (50.8 kg.)—were anaesthetized by the same method as the adults.

No mortality or morbidity occurred that could conceivably be connected with the method of anaesthesia employed.

Premedication plays a great part in the success of the method, and therefore accuracy in its application is insisted upon. Children between 4 and 9 years (assuming their weight to be broadly within normal limits) receive, one hour before operation, $1\frac{1}{2}$ gr. (0.1 g.) of quinalbarbitone ("seconal") and 10–15 mg. of pethidine, with $1/150$ gr. (0.43 mg.) of atropine by injection. Those between the age of 10 and 18 years are given 3 gr. (0.2 g.) of quinalbarbitone and 15–25 mg. of pethidine, with $1/200$ gr. (0.32 mg.) of atropine. Adults receive 3 gr. (0.2 g.) of quinalbarbitone, 25–50 mg. of pethidine, and $1/150$ gr. (0.43 mg.) of atropine. Pethidine for children is thus given at approximately 3–3.5 mg. per stone (0.47–0.55 mg. per kg.) of body weight. The well-established analgesic and antispasmodic action of pethidine when combined with the hypnotic effect of quinalbarbitone makes the induction of anaesthesia by means of the sequence of inhalational agents (nitrous oxide with oxygen–trilene–ether) rapid and smooth.

With the above premedication patients arrive in the theatre fast asleep, and pass, with judicious induction, from sleep, without waking up, into anaesthesia within a matter of two minutes. Those who arrive in the theatre conscious but drowsy are not apprehensive and readily co-operate in "blowing up the red balloon."

Induction is achieved by allowing nitrous oxide to flow at the rate of 10 litres a minute without the mask touching the face. Sense of smell is lost in two or three breaths, and a trickle of "trilene" is added. The mask is then lowered to the face and nitrous oxide is adjusted to 6 litres, and oxygen, 2 litres, is added, the child remaining pink throughout. The expiratory valve is closed and the bag emptied two or three times to eliminate some of the lung nitrogen. Three breaths later an oral airway is introduced at the slightest suggestion of obstructed airway, and is surprisingly well tolerated; a trace of ether is then added to the mixture. The expiratory valve is now slightly opened and the bag is very gently compressed, assisting respiration. The patient is now wheeled into the theatre, and whilst he is being placed on the table (with head-down tilt of about 5 degrees) and the towels are being draped in the thyroid position the ether is allowed to flow more freely; at no time need the gases bubble through the ether.

It will be found that the lower jaw is sufficiently relaxed for the Davis gag to be placed in position. The harness is not used, the gag being supported manually.

Experience has taught us that the above technique provides adequate anaesthesia for tonsillectomy and adenoidectomy in children up to the age of 10.

In children of 10 years and over greater concentration of agent or agents employed and/or intubation would be necessary to achieve the same purpose. Instead of resorting to either of the above means, we find it advantageous to cut off the access of traumatic stimuli, leaving the plane of general anaesthesia light. Therefore in older children the method is combined with infiltration of the vicinity of the tonsil with 1% lignocaine hydrochloride without adrenaline. This is done by the surgeon as described below.

Infiltration amounts to selective blocking of two nerves, the lesser palatine and the glosso-pharyngeal. When the gag is in place the right tonsil is grasped by a pair of Luc's forceps held in the left hand, and the needle is inserted to a depth of 0.5 cm., 1 cm. behind the last lower molar tooth, keeping outside the fold formed by the anterior border of the palato-glossus muscle. After trial aspiration, 2 ml. of 1% lignocaine hydrochloride is injected. This injection blocks the fibres entering the tonsillar plexus via the lesser palatine branch of the maxillary division of the trigeminal nerve. A second injection of 2.5 ml. of 1% lignocaine hydrochloride is made into the lateral border of the tongue adjacent to the lower pole of the tonsil into the loose-

pericapsular areolar tissue overlying the pharyngeal constrictor muscle. This injection blocks the tonsillar branch of the glosso-pharyngeal nerve. The second tonsil is then similarly injected. To allow time for the injection to take effect adenoidectomy is performed first. With practice the blocking can be performed in about one minute if a long needle—4½ in. (11.5 cm.)—is employed attached to a 10-ml. syringe.

For adults, and for adolescents of about 8 st. (50.8 kg.), pethidine is given as in the case of children, or as an alternative intravenously after induction is effected by thiopentone (about 0.5 g. 5%). If need be, fractional doses of thiopentone are added until the block takes effect. The Davis gag is inserted and nitrous oxide and oxygen (6 litres and 2 litres respectively), with a trace of trilene, are allowed to flow through the gag. No ether is used. Blocking infiltration is then performed by the surgeon. No laryngeal spasm has occurred during the injection.

Discussion

The combination of quinalbarbitone with pethidine was used by Poe and Karp (1948) as a basal narcotic for children. In this series smaller doses have been used. Induction with nitrous oxide, oxygen, and trilene makes the introduction of ether rapid and easy. Surprisingly little ether is required to allow the Davis gag to be inserted and the tonsils dissected.

Consciousness after the operation is regained within a period varying from a few minutes to a quarter of an hour. After a brief period of restlessness on awakening and a single act of vomiting, children relapse into sleep.

The feature of this method is that intubation for tonsillectomy becomes completely redundant, regardless of the age of the patient. However expertly performed, intubation is regarded by some as an additional hazard. Dingley (1943) points out the contraindications against intubation from the rhinological point of view. These are connected with the possible infliction of trauma to the structures encountered and/or spread of infection.

In addition, with the method employed the cough reflex is never absent during the operation. This is demonstrated by allowing blood to overflow into the larynx. To prevent this happening the table is tilted slightly downwards, thus obviating the necessity for throat packing, with subsequent soreness of the throat. Blood is mopped up by gauze swabs. Capillary oozing is scanty.

When infiltration is used the tonsils are moved by the fluid towards the midline and are easier to dissect because of the presence of the fluid in the capsule plane.

It has been stated that the chief objection to the use of local analgesia for tonsillectomy is the increased risk of sepsis. On the other hand, Morey (1943) performed more than 2,300 tonsillectomies under local analgesia alone, injecting into each side as much as 25 ml. of fluid without untoward results. It will be noted that the injection described here is paratonsillar and not intratonsillar; no adrenaline is used and the amount of fluid injected is small (a total of 4-5 ml. on each side). In this series of 137 cases healing of the tonsillar bed was unaffected, and the general recovery was not delayed.

Summary

A method of anaesthesia for tonsillectomy based on over 1,400 cases is described.

In young children premedication consists of quinalbarbitone and pethidine, producing a state of basal narcosis or adequate sedation. Inhalational agents (nitrous oxide and oxygen, trilene, ether) provide adequate anaesthesia in smaller concentration than otherwise.

In children of 10 and over and in adults the method is combined with the blocking of the lesser palatine and the glosso-pharyngeal nerves.

Advantages of the method are discussed.

Intubation for tonsillectomy is dispensed with in patients of all ages.

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AORTIC OCCLUSION IN INFANCY

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Occlusion of the aorta is rightly regarded as a rare but highly fatal condition. Most recorded cases have occurred in adults suffering from auricular fibrillation, from bacterial endocarditis, or from a mural thrombus following myocardial infarction or associated with atheromatous changes. Gross (1945) has cited 37 cases of severe arterial occlusion in infancy, the most common arterial location being in the lower limb. Rothstein (1935) quotes two cases of saddle embolus in 10-day-old infants, following on umbilical sepsis.

The present case of saddle occlusion at the aortic bifurcation in an 11-months-old child appeared to show enough uncommon features to warrant recording.

Case Report

An 11-months-old male infant was admitted to hospital on December 21, 1951. Although premature at birth, he had developed and thrived consistently until his present illness. Six days before admission the child developed features of upper respiratory infection. He was seen by a doctor, who prescribed a cough mixture. His condition improved, but on the fifth day of illness he became very restless and irritable. He refused his feeds, and at this stage sulphadiazine was prescribed. At 10.30 a.m. the next morning the child's father noted that the right foot and ankle were white and cold.

On admission that afternoon at 3 p.m. he was an extremely ill child with an ashen-grey cyanosed appearance. His temperature was 102.4° F. (39.1° C.), pulse 140, and respirations 50. Examination of the chest disclosed no cardiac abnormality, but diffusely scattered rales were present in both lung fields, most prominently at the right base. The right lower limb was cold, limp, and deathly pale, with mottled areas of marbling extending from the toes to the middle of the thigh. The dorsalis pedis, posterior tibial, popliteal, and femoral arteries were impalpable on the right side. The right knee- and ankle-jerks were absent. The left limb was normal, all pulses being palpable, and all reflexes were present. A small area of ecchymosis, 2 cm. in diameter, was noted on the surface of the right elbow.