ANAESTHESIA FOR TONSILLECTOMY

BY

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Recent correspondence in the *British Medical Journal* indicates the differences of opinion as to the best anaesthetic for the removal of tonsils, and prompts this consideration of the problem.

The Ideal Anaesthetic

The requirements of the ideal anaesthetic may be considered from the point of view of the child, his parents, and his doctor, from that of the surgeon, and from that of the nursing staff. The desiderata may be summarized thus:

- (a) The child should come to the anaesthetic room in a sleepy condition, and be so amnesic as not to recollect the theatre or operation.
- (b) The anaesthesia should be complete for a short time only, and be so safe as not to cause undue concern to the surgeon or nursing staff following the operation.
- (c) Owing to the large number of cases to be dealt with at a time ease of administration is essential.

Considering these points in detail there can be no question that children discuss with each other their experiences, and those who have been through the operation delight often in lurid description of the happenings. I have many times been told this by children, and have seen scared little patients covering their mouths up, having in their minds frightful tales of what was going to happen. It is common experience, too, that following tonsillectomy children may change in character to quite a serious extent, becoming nervous, irritable, and waking up at night screaming. I have personally seen a number of such cases; in some these symptoms last a week or two, in others as long as nine months. Nocturnal sedatives have had to be administered for quite long periods. This, surely, is the greatest argument for premedication, with its welcome amnesia, and at the same time the greatest condemnation of such a brutal and unscientific procedure as removing tonsils without anaesthesia. The psychic trauma must make a lasting impression in many cases.

From the standpoint of the surgeon it is desirable that the child shall be quiet, and that the palate and tongue are still, to enable him to carry out perfect inspection followed by easy and exact removal. A few minutes—less than five—suffices for this. Complete relaxation means that the lower pole of the tonsil can be properly removed. The adenoids can be adequately dealt with, and those frequent small hanging tags picked out with appropriate forceps. It is desirable that the cough reflex be regained while the child is still on the table.

Unless unreasonable demands are to be made on the nursing staff, especially where on one day many cases are operated on, the anaesthetic and the drug used for premedication must be fairly easy to administer, and the recovery period not too long or demand too much very close supervision.

Premedication

The drug used for preliminary amnesia should be easily given and fairly rapid in action, so that the timing of the cases in a list may find each child at the optimum of drowsiness. The "hang over" should not be too long or the respiratory depression too great. The quick return of reflexes has already been mentioned.

I have been at some trouble to elaborate a technique which best fulfils these desiderata, and at the same time

allows twelve or more cases to be operated on in two to three hours, with additional exploration of sinuses and dissections in suitable cases. My experience is based on over 4,000 administrations at the Bristol Royal Hospital for Sick Children with children of all ages. In this series there has been no fatal case or a death within twelve hours of operation. Intravenous introduction has not been practised on these children. The drugs used have been paraldehyde, sodium amytal, nembutal, avertin, omnopon, bromides, and chloral.

Paraldehyde.—This has been found to be very safe in the dose of 1 drachm per stone of body weight given in 1 in 4 normal saline. The usual dilution 1 in 10, generally accepted for complete solution, has been found to render the volume too great for retention by most children. The child comes to the anaesthetic room drowsy, but with reflexes present, and can be roused. A little ether on an open mask is then given to complete the anaesthesia: less than an ounce is necessary. The cough reflex rapidly returns, but the child continues to be quiet, and sleeps for some hours after operation. The rectum is not washed out as a general rule. No bad result has been seen from a large number of cases. The smell objectionable to others is unnoticed by the patient. The pulse rate during induction sometimes rises a little, and very occasionally slight excitation has been seen. None of these factors can be considered a real objection. Spoken to afterwards none of these children remembered leaving their beds.

Sodium Amytal.—While I can claim no vast experience of this drug, it appears to me to be too variable in its effect to compare with paraldehyde. It has been administered by mouth and by rectum in doses of 1, 2, and 3 grains, according to age. The effect has been that a uniform and rather large rise in pulse rate takes place, and for tonsillectomy the cough reflex in some cases has been abolished for too long a time. The "hang-over" is overlong in certain cases.

Nembutal.—Administered by mouth this has been found to be too variable for general use. Some cases react well, and in others no effect has been found, given the same age and the same dose.

Omnopon, Chloral, and Bromides.—These do not give constant results, and in safe doses do not produce the drowsiness aimed at.

Avertin.—This is very comparable with paraldehyde, giving good amnesia, but the dosage demands much more care, as do the patients. A very much closer watch on the state of respiration has to be kept by the anaesthetist and the nursing staff. It is apt to produce in children anaesthesia rather than the pre-anaesthetic state aimed at, but with proper care and experience is safe, but not so safe as paraldehyde. Its preparation takes considerably longer than paraldehyde, and the solution must be carefully tested before being run into the rectum.

General Anaesthetics

Ethyl chloride, without premedication, on an open mask or dropped on to a Denis Browne inhaler, is rapid, certain, and safe. It gives complete relaxation for a few minutes, and allows a rapid recovery in doses up to 5 c.cm. It is very suitable to use for those cases operated on as out-patients. The drawbacks are the short anaesthesia and the struggling child after the operation.

Ether, used alone or on open mask, or, better, in a Denis Browne inhaler, is very safe, and recovery is rapid. Induction with the inhaler is rapid. It is, of course, unpleasant to the child, and fills a ward with its odour. I frequently use a little ethyl chloride, followed at once by ether, and this has proved a rapid and most satisfactory anaesthetic. It is not too unpleasant for the child, and recovery of reflexes is quick. Complete anaesthesia for

five or six minutes is easily obtained using very small amounts of anaesthetic. No complications have been seen.

Nitrous Oxide and Oxygen.—I have seldom used gas owing to the shortness of the anaesthesia and the fact that the "thyroid position" is used. Induction with a Model G McKesson machine is very easy and pleasant for the child, while a little ether can be superadded. It is, however, not as rapid and certain as other methods described.

Summary

1. Complete short anaesthesia is desirable for tonsillectomy.
2. Premedication with paraldehyde or other drug is desirable, safe, and satisfactory in every way.
3. The method of choice is premedication with paraldehyde followed by open ether; second to this is ethyl chloride and ether given with a special inhaler.

Clinical Memoranda

Treatment of Severe Lingual Leucoplakia

While it is generally held that leucoplakia is not invariably syphilitic, nevertheless, when it is seen, one invariably thinks of that disease. Most people will agree with Stokes that on finding leucoplakia one should look back towards syphilis and forward towards malignancy.

Leucoplakia of the tongue appears to be most frequently found in male syphilitics over the age of 30 who are heavy smokers and who are not very particular as to oral hygiene. It has been generally accepted that syphilitic leucoplakia is of the nature of scar tissue—the scar of a mucous patch, or one resulting from an area of irritation sited upon an immediately subjacent gummatous infiltration. The problem which confronts the physician is that antisyphilitic treatment, however intense and prolonged, appears to have no influence whatever upon the well-developed condition, and that a disquieting proportion of such cases eventually become malignant. Attempts at amelioration by the local application of chemical agents are seldom successful unless they are of a cauterizing character, and here the danger is that they may actually predispose to malignancy. It has therefore been one's endeavour, in addition to treating the syphilis, to deal with the lesion prophylactically so far as carcinoma is concerned, by destroying it with radium. Unfortunately, it has proved extremely difficult to have prophylactic irradiation carried out.

The persistence of leucoplakia in the syphilitic in spite of arsphenamine and bismuth therapy is apt to discourage the patient, with the result that he may cease his treatment; and, as he is suffering from uncured syphilis, the proneness to malignancy increases as the years pass. The following case seems of interest, if only from the point of view that recovery took place with no real attempt having been made to influence the local condition.

The patient is a man who was 32 years of age when he first attended at Salford Municipal Clinic on June 25th, 1932, suffering from leucoplakia of the tongue. He gave no history of syphilis, and there were no other evidences of that disease to be made out on clinical examination. The second aortic sound had, however, a slightly tambour quality. The cerebrospinal fluid was not examined. The Wassermann, Kahn, and micro-Meinicke tests were all strongly positive (double plus).

In appearance the tongue was practically an exact replica of Plate I of Sir Jonathan Hutchinson's *Syphilis* (second edition, 1909). The white patches were stated to have appeared in 1929, and since then they had spread and covered the tongue as with a thick layer of white paint. There was pain on eating and on taking hot fluids. At night, sleep was seriously interfered with on account of tingling of the organ. The tongue felt stiff and had lost a great deal of its elasticity,

causing some interference with articulation. The patient was a very heavy smoker, and obviously paid no attention whatever to oral hygiene.

Antisyphilitic treatment was begun on August 1st, 1932, and is still in progress.

During the first fifty-two weeks the agents used according to the alternating method were stabilarsan and stabismol. The former was given twice weekly, and during the first year 15.75 grams were administered. The total amount of metallic bismuth given in the same period was 2.58 grams. This made no difference, either clinically or serologically.

During the second period of fifty-two weeks the arsphenamines consisted of stabilarsan and novostab, the total given being 12.9 grams. The amount of metallic bismuth in the form of stabismol and iodo-bismuthate of quinine came to 1.73 grams. Again there was not the slightest improvement.

In the next twenty-nine weeks there were given 6.6 grams of stabilarsan and 1.2 grams of bismuth metal in the form of stabismol. The clinical condition remained unaltered, but the Wassermann was now only "single plus." This was on February 25th, 1935.

While this man was attending I had on several occasions demonstrated him to members of my post-graduate classes, emphasizing the intractability of the condition and the danger of future malignancy.

On March 19th, 1935, treatment was recommenced. The patient was given two intravenous injections per week of 3 c.cm. of collosol mercury sulphide. At the same time, "milton" as a mouth-wash was prescribed. (This preparation contains sodium hypochlorite 1.01 per cent., with sodium chloride 16.8 per cent., and small quantities of chlorate, sulphate, and carbonate, and also calcium chloride.)

By April 30th the leucoplakia had practically disappeared, except for a whitish flake or two at the edge and tip of the tongue. The dorsum of that organ now presents a smooth, shiny appearance, the papillae having vanished. Pain and tingling have gone. Hot fluids can be freely taken, and the organ has regained its elasticity almost completely.

What may be the explanation for this remarkable, unexpected, and undesigned result I do not know. I publish the case in the hope that other workers may try the same method. I shall be interested to know with what effect.

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Complete Return of Sight in an Amblyopic Eye

The following is an interesting case, which has recently come under my observation, of the complete return of sight in an amblyopic eye over the course of ten years.

The patient, a married woman, had suffered all her life from a slight divergent right squint. The sight in that eye was less than 6/60, and there was concentric contraction of the fields of vision. The left eye was normal, with an astigmatic refraction error of minus 0.75; but at the age of 35 the vision failed, owing to optic atrophy. During visits covering a period of ten years to the late Mr. B. Cridland it was found that the sight in the amblyopic eye was gradually returning. In May, 1924, five months after her first visit, the absolute visual acuity of the right eye was 6/36. A year later it had improved to 6/24, and she could read Jaeger 12. In June, 1926, the sight was 6/12, and she could read J2. Five years later the vision was 6/9 partly, and she could read the words of Ji; in 1933 the vision was 6/9 partly, and she could just read J1. Her first visit to me was in March, 1935, when she complained that her eyes ached after reading and that she had temporal pain. Her absolute vision was then 6/6, and she could read J1, but the reading was laboured. She now uses an "easy read" for her smaller print.

This case affords an interesting illustration of the importance of persisting, even over long periods, in the occlusion of amblyopic eyes, particularly at an earlier age, when there is much more possibility of the return of sight.

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