

the elephantoid mass was amputated, the testis was sutured lightly to the face of the stump and the flap brought over it and secured in place by silver sutures. There was but little arterial hæmorrhage considering the size of the tumour and only a few small arteries required ligature. There was considerable venous bleeding with oozing of lymph from the blubbery elephantoid tissue.

The subsequent history of the case while in hospital is that of the slow healing of the wound and the gradual recovery of the patient from the prostrate condition into which he was thrown by the septicæmia preceding and the loss of blood accompanying the second operation. The healing of a wound made through elephantoid tissue is particularly slow, first intention even under strict asepsis being very rare and even granulations are weak and of slow growth. The scrotal remains gradually contracted in size. The patient slowly recovered strength and was discharged on August 28th, 41 days after amputation of the scrotum, having been in hospital 70 days. McLeod gives from six weeks to two months as the period for healing after amputation without flaps. I am aware that McLeod, the leading authority on the operative treatment of elephantiasis scroti, condemns the flap operation. A few weeks ago I had an opportunity of seeing one of my patients on whom I had performed scrotal amputation by flaps cut from affected tissue 16 months previously. The scrotum which before operation weighed about 60 lb. had now contracted to the size of the closed fist, there was no sign of recurrence, the patient's sexual power was restored, and he was on his way to Kumasi as a Government carrier with a load of 60 lb. on his head.

Gold Coast.

## THE PREVENTION OF SICKNESS AFTER ANÆSTHETICS.

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A PATIENT'S dread of operation is often due more to his fear of anæsthetics than to that of the operation itself. And his dread of the anæsthetic is not because of its danger, for he is aware that, correctly chosen and skilfully given, it is practically safe, but because of the sickness which he anticipates as an inevitable consequence. Now, after-sickness from anæsthetics is less common than is usually supposed and by careful attention to several details it can be made less common still. Ether is usually particularly dreaded because of the sickness expected afterwards. Yet the truth is that if the operation takes not much more than 20 minutes the vast majority of patients are not sick at all if the ether is preceded by gas and is given with careful regard to using the smallest possible quantity consistent with good anæsthesia. Moreover, one important point is often overlooked—viz., that the sickness often precedes the return of consciousness. In such a case the patient, of course, experiences no unpleasantness from the sickness and if questioned next day replies that he was not sick at all after the anæsthetic. Attempts to prevent or counteract after-sickness by the use of drugs have hitherto not been encouraging. The drugs that have been chiefly tried—morphia, cocaine, atropine, and chloral—have either not prevented vomiting or have given rise to such alarming symptoms that it is obviously better to run the risk of vomiting than of its remedy. At present it must be admitted that we have no direct antagonist to ether and chloroform in this respect. But the vomiting sometimes caused by these anæsthetics, though it is probably in the main an effect of their action on the brain, is not entirely so, and it is with regard to these other matters also concerned in the causation of the vomiting that we can do a good deal towards its prevention. That much can be done to this end is obvious from the fact that after-sickness is both more frequent and more formidable when the anæsthetic is not administered by someone who has frequent experience in the matter. The reason for this is simple. One of the chief points concerned is the amount of anæsthetic that is used. Now with an inexperienced administrator this is usually too little or too much. If too little the operator has an anxious and

uncomfortable time during operation; if too much the patient suffers severely afterwards. There is nothing in the administration of anæsthetics that requires experience more than to know whether to press or to diminish the anæsthetic. To know this the administrator must be able to realise the degree of anæsthesia that has been reached. And it is impossible to do this without constant opportunities for observing patients under an anæsthetic. Consequently, misled by some apparent indication of "coming round," the inexperienced administrator pushes the anæsthetic to a needless extent and the patient is proportionately sick afterwards. On the other hand, fears are aroused that the patient is too deeply under, the anæsthetic is withheld too long, and the operation is interrupted by an attack of coughing or vomiting.

Before considering the matter in detail let us see what is the proportion of patients who are actually sick and whether from observing their behaviour during and after anæsthesia we get any hint towards the prevention of after-sickness. For this purpose I have notes of a consecutive series of 572 cases. These I have either personally observed throughout or have had accurate accounts of their behaviour after the anæsthetic from observation carefully made by the nurse in charge. The cases include both hospital and private patients, the great majority of the former being operated on at St. George's Hospital and a few at the Grosvenor Hospital for Women and Children. They may for the present purpose be divided into three groups. There are (1) those patients who do not vomit at all; (2) those who vomit only before return of consciousness—these if questioned say they are not sick after their anæsthetic; and (3) those who vomit after consciousness has returned, or both before and after. Patients differ greatly as to the length of time that elapses before consciousness returns. As a rule, of course, the longer the administration—i.e., the more of the anæsthetic absorbed—the longer is the interval before wakefulness returns. But whereas some patients will sleep for hours after a short administration others will begin to come round within five minutes of the end of an administration lasting over an hour. Generally speaking, if the whole administration has not lasted much more than half an hour patients begin to come round or to vomit within five minutes. And this is what we should aim at. When a patient is safely back in bed the sooner he begins to come round the better. If he remains comatose for a long time it generally means that he has had an unnecessary amount of anæsthetic and will probably be sick in proportion. Those of class (1) have voluntary movements of the head from side to side, then more or less sensible and articulate speech, and gradually become more awake, or else lie back and sleep again, waking up sensible an hour or so later. In patients of the second class consciousness generally begins to return very shortly after the vomiting; there are sometimes two or three bouts of vomiting before the patient is conscious. In patients of class (3) the number of times that vomiting is repeated varies greatly. Some will have four or five attacks during the 12 or even 24 hours that follow the operation. After an operation at 2 P.M. it not unfrequently happens that a patient who has come round and feels comfortable enough wakes up in the middle of the night and vomits, this being very likely his one and only attack. Such an attack may certainly be expected if unsuitable food is given, even eight or nine hours after return of consciousness.

*The proportion of patients free from after-sickness.*—Of the 572 patients there was no after-sickness in 143, exactly a quarter of the whole number. In the remaining 429 after-sickness preceded the return of consciousness and may therefore be disregarded from the patient's point of view in 50 cases. So far therefore as the patient's comfort is concerned very nearly one third of all the cases (193) may be regarded as free from after-sickness.

*The nature of the patient.*—Can we say beforehand whether or not a particular patient will be sick after taking an anæsthetic? I think we cannot, although when we give him the anæsthetic we can generally tell before the end of the operation how he will behave afterwards in this respect. It is at present within certain limits impossible to say why of two patients who undergo the same operation under the same anæsthetic administered by the same hand one will be sick and the other not. It depends on what, for want of more precise knowledge, we call idiosyncrasy. Just as one man has "a head for wine" while another is easily intoxicated,

in the same way and for equally obscure reasons one patient will be sick after anæsthetics and another not. But the man with a weak head succumbs more easily under certain circumstances and similarly we can to a certain extent influence circumstances in favour of the patient prone to sickness. It is sometimes held that excitable nervous people are more likely than others to be sick after anæsthetics. They are more likely to be restless, noisy, even delirious, during the early stage of returning consciousness and are more likely to suffer from headache at this time, but not, I think, more likely to be sick. Persons who are accustomed to the habitual use of alcohol in large quantity are less often sick than others, although they require larger quantities of the anæsthetic; and I believe liberal use of tobacco to act in the same way; but with this exception we can tell but little beforehand from a patient's temperament or habits what will be his behaviour as regards after-sickness. When we give him an anæsthetic we get two important guides in the matter. These are (1) the extent to which the anæsthetic excites in him the secretion of mucus, and (2) the length of time that he is under the anæsthetic, or, what is much the same thing, the amount of anæsthetic used in his case.

*The secretion of mucus.*—Ether, and to a slighter extent chloroform, excites secretion of mucus from the pharynx and air passages and of saliva. The extent to which this takes place varies greatly in different individuals and it is not generally possible to foretell it before the administration. As a rule, tuberculous patients suffer more in this respect than others, but with this exception we have not much indication beforehand. Patients who during an operation secrete much mucus are much more liable than the others to be sick afterwards. The reason for this is that although with the head on the side, as it should be, much of the mucus escapes at the side of the mouth and is wiped away, yet more trickles down the back of the pharynx and is swallowed into the stomach. Now, if the vomit of the patients who suffer from after-sickness is examined it is found to consist in most instances almost entirely of mucus. There is generally some gastric juice as well and also bile, but these are in infinitely small quantity compared with the mucus, and bile is often entirely absent. Since, then, those patients who secrete much mucus are particularly sick afterwards and this mucus forms the chief part of the vomit it is rational to suppose that the presence of the mucus is an exciting cause of the vomiting. For in other forms of vomiting in which the main cause is some action on the brain—sea-sickness, for instance—the condition of the stomach plays an important auxiliary part. So, too, with anæsthetics, and we recognise the importance of the condition of the stomach by carefully regulating the food allowed to patients prior to operation. Extending this principle we should take note of the contents of the stomach at the end of operation and in those cases where much mucus is secreted and swallowed get rid of this before the patient becomes conscious. The most convenient way of doing this is to pass a large-bored, soft rubber tube, with a good opening near the end, into the stomach. No extra time is required, the tube being passed as soon as the administration has ceased and the dressings are being applied. From half a pint to a pint of tepid water is poured slowly down the tube through a funnel, and before the patient is to be taken back to bed the funnel is lowered and the water emptied, bringing with it much mucus. I have adopted this plan on several occasions when it appeared advantageous. The result was very satisfactory. Either there was no after-sickness at all, or if this was present it began early and was not repeated with increasing consciousness. Certainly there was always less after-sickness than would have been expected from the patient under ordinary circumstances. For the stomach should, of course, only be washed out in this way in those very cases in which we expect most sickness—in those patients, that is, who secrete much mucus during operation. Care must be taken that as far as possible all the water poured into the stomach is allowed to run out again. A certain amount, depending upon the length of time that it is left in the stomach, appears to be absorbed. By emptying the stomach in this way at the close of operation we are simply imitating the behaviour of those patients who have one copious vomit before the return of consciousness and “come round” comfortably after. If a patient cannot escape without vomiting altogether, as is usually the case when there is

much mucus, this is certainly the best course he can pursue. The fact of an excessive secretion of mucus is one of the chief arguments advanced against the routine use of ether. Proper employment of the stomach-tube will render it an argument of little moment and will give us one more reason to regard ether as an excellent general anæsthetic for use in the great majority of cases.

*The length of operation.*—After the idiosyncrasy of the patient the most important factor in determining his behaviour as regards after-sickness is the length of time he is under the anæsthetic. It is the length of time that is important rather than the amount of ether or chloroform used, for several ounces will be used with one man where another would be kept under with the same number of drachms. But at the end of the time the effect produced, the condition which the brain has reached, is presumably the same in each if an equal degree of anæsthesia has been maintained in each for the same time. Now, of the 143 cases in which there was no after-sickness 61 were cases in which the whole administration from beginning to end lasted not more than 20 minutes. This is a proportion of nearly one half. But the proportion of these short operations to the whole number was only one-ninth, showing a great advantage with regard to after-sickness on the side of the short operations. Nowadays, when in most cases there is nothing to be saved as regards shock or hæmorrhage from rapidity of operation as there was before anæsthetics were used, there is still this advantage amongst others to the surgeon who takes as little time as possible consistent with good operating—viz., that his patient runs a better chance of escaping after-sickness. One or two cases may be given here illustrative of the length of time for which patients may be kept under anæsthetics without any after-sickness.

CASE 1.—This was the case of a man who was not of a type usually regarded as favourable for anæsthetics. He was a drayman, aged 39 years, fat and bearded. Mr. Sheild was to operate for the cure of a large complete inguinal hernia. The administration was begun with gas and ether, particularly little gas being used. He went under quietly and ether was continued for 40 minutes. Chloroform was then substituted during the remaining 15 minutes of the operation, which included extensive prolongation of the usual incision and removal of a large mass of omentum. The first signs of returning consciousness appeared 40 minutes after the administration had ceased—rather an unusually long interval. There were irregular movements of the head from side to side and incoherent talking. Consciousness gradually became complete and there was no vomiting or retching. He complained a little of nausea.

CASE 2.—Another instance is that of a man from whom Mr. Allingham removed half of the lower jaw after a preliminary tracheotomy and ligature of the external carotid artery. Gas and ether were given first, ether being continued for a few minutes only, and then chloroform. The whole administration lasted an hour and a half. There was no after-sickness or retching and but little nausea.

In both these cases it will be noticed that chloroform was used for part of the time and we may now consider the question of after-sickness with regard to its dependence upon the particular anæsthetic employed. This will be limited to a consideration of ether and chloroform, for in the vast majority of cases I believe ether, preceded usually by gas, to be the best anæsthetic and where there are reasons for not using this chloroform to be the alternative. From the point of view of after-sickness the A.C.E. mixture may be regarded as chloroform. After gas alone sickness is so rare as not to require consideration and gas with air or oxygen for major operations is the best anæsthetic under such special circumstances only that it may here be disregarded. It is often supposed that after-sickness is more to be dreaded from ether than from chloroform. It is true that a larger proportion of persons are sick after ether than after chloroform, but the most severe cases of sickness are seen after the latter, and as a rule the sickness that follows chloroform lasts longer and is more often accompanied by great prostration than that which follows the use of ether. It does not very often happen that one has the opportunity of anæsthetising the same patient with different agents on several occasions, but when this has happened in my experience the result has not pointed to an advantage in either chloroform or ether as regards absolute freedom from sickness. Patients sick after chloroform were also sick after ether and those free from sickness after ether were equally so after chloroform. In both the cases given above chloroform was given after gas

and ether. This is often an excellent succession of anæsthetics for the avoidance of after-sickness as well as for other reasons. Speaking generally, it is best in long operations to substitute chloroform for ether after three-quarters of an hour. There are, nevertheless, plenty of instances in which patients have been under ether for an hour or more without after-sickness. The longest case in my own experience was two hours, the operation being the removal of a widely adherent cystic ovarian tumour. Children, for whom ether is often the best anæsthetic, are particularly favourably disposed to it as regards after-sickness. The following is a case in point.

CASE 3.—The patient was a boy, aged two years. The operation was for radical cure of inguinal hernia. Ether was given from a cone, the whole administration lasting one hour. The patient was in a condition of apparently ordinary sleep for two hours after the end of operation. On awaking the child cried and after some minutes slept again. There was no sickness at all.

As regards the kind of ether to be used I have been able to detect no difference in the extent of, or susceptibility to, after-sickness whether the ether purus B.P. or "methylated ether" (specific gravity 720) was employed, and several patients were anæsthetised on one occasion with the former and on another with the latter with perfectly similar results. The figures showing the number of patients who suffered from after-sickness with gas and ether, gas and ether and chloroform, and chloroform alone respectively are as follows. Of 572 patients treated, 501 had gas and ether, 21 had gas and ether and chloroform, and 50 had chloroform. Of 143 patients who were not sick afterwards 112 had gas and ether, 10 had gas and ether and chloroform, and 21 had chloroform. With regard to the chloroform cases it must be mentioned that a large proportion of them were cases of operations on the eye in which the whole administration was usually only 15 minutes or less. The cases in which chloroform was used after gas and ether were, on the other hand, almost in every instance cases of long operation; the large proportion of patients free from after-sickness is the more remarkable.

The nature of the operation does not seem to affect the question of after-sickness very materially except in two particulars. One of these has already been referred to—viz., the length of time occupied in the performance of the operation; the second concerns the entrance of foreign matter to the stomach and is therefore allied to the swallowing of mucus which has been described as a prominent cause of after-sickness. In those operations, such as that for removal of post-nasal growths or of portions of the tongue or jaw, where some blood is almost inevitably swallowed from the pharynx there is usually after-sickness. This comes on soon after withdrawal of the anæsthetic and the vomit consists mainly, if not entirely, of blood. In the case of adenoids the administration has usually been of so short a duration and the amount of blood swallowed so little that the vomiting is of little consequence. In the other cases it might be worth while, if there was no contrary reason, to wash out the stomach in the same way as for the removal of mucus. Operations upon abdominal organs are not particularly liable to be followed by after-sickness unless there is extensive manipulation of the stomach. After the operation for perforated gastric ulcer, if the ulcer is easily brought to view I have on several occasions seen no after-sickness at all.

The extent to which a patient has to be moved about while under an anæsthetic affects his liability to after-sickness. Care should be taken in this respect that there is as little jerking or bending of the trunk as possible when he is being lifted back to bed; and sudden raising and lowering of the head is also to be avoided. The best position in which to place him when in bed is on the right side with the head and shoulders very little raised. This allows mucus and saliva, or blood if present, to escape. It is also an easier position for him if he has to vomit and is probably better so far as the lungs are concerned than if he is placed flat on the back. It is better not to air the room directly after operation if the patient remains there, but to let him come round in an atmosphere similar to that which he has breathed throughout. After three hours fresh air may be gradually admitted.

Patients vary greatly as to the interval after which they desire and can safely take food. Some can eat with relish and digest effectually a good dinner in the evening when they were operated on in the morning. It is generally best

to allow nothing except sips of hot water or of tea or coffee for at least eight hours. Milk, which is not infrequently the first food taken, is particularly apt to set up vomiting. Brandy and soda-water or iced champagne are often most useful if there is much tendency to vomit after return of consciousness and some people find relief in sniffing at strong sal volatile. In the case of children it is easy to overdo the preliminary starvation. An infant who has been kept without food too long before operation may afterwards fall into a condition of alarming collapse. This is quickly remedied by a small supply of stimulating nourishment. Infants should, as a rule, be fed not more than four hours before operation. With adults and older children the interval after the last food should be at least eight hours. There are, of course, cases in which for special reasons these rules must be disregarded. When for any reason a speedy return of consciousness is aimed at nothing helps more than to open the mouth fairly wide with a gag and make sure that breathing is vigorously carried out.

In all the cases referred to above when gas and ether was the anæsthetic used it was given from a Clover's inhaler. In most cases the gas was admitted from a large bag fitted with Dr. Hewitt's valve; in some from a small bag without this. In addition to other advantages there is less chance of after-sickness from gas and ether than from ether alone, probably because of the smaller quantity of ether used in the same time when the former method is employed. Chloroform was given from a Junker's inhaler with simple flannel mask, a drop bottle being sometimes used as well. The A.C.E. mixture when used was given from a cone.

In conclusion, it may be said that some of the chief points to be attended to in the avoidance of after-sickness are (1) use as little of the anæsthetic as possible consistent with perfect anæsthesia; (2) wash out the stomach at the close of operation when much mucus has been swallowed; (3) in long operations substitute chloroform for ether after three-quarters of an hour; (4) move the patient about as little as possible during and after operation; (5) place him on his right side in bed with the head only slightly raised; (6) give nothing but hot, thin liquids in small quantity for at least eight hours after; and (7) do not alter the temperature of the room for some hours. With proper attention to these points one-third of the patients operated on will be free from after-sickness, and for short operations the proportion will be much higher still. In fact, after all administrations up to 20 minutes, or not much longer, sickness will be found to be the exception.

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## STRYCHNINE POISONING AND ITS DETECTION IN EXHUMED BODIES.

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THE following extract is taken from Taylor's "Principles and Practice of Medical Jurisprudence" (p. 465, edition 1894, edited by Stevenson): "The editor extracted one-sixteenth of a grain from two pounds of the exhumed viscera of a woman (Matilda Clover) more than *six months* after burial, although the deceased had survived the administration of the poison for six hours. There is, so far as he is aware, no other recorded case of the detection of strychnine in this country after exhumation, though two cases are recorded on the continent of its detection after exhumation of human remains."

The subjoined case has occurred in my own practice and will prove of interest in connexion with the above statement. On April 19th, 1898, I was hurriedly called at 6 A.M. by a messenger to attend to a man, a Jew, who was said to be dying. Dressing in haste I went to the house as quickly as possible. On my way I met the messenger, who had preceded me back, and was informed by him that the patient was dead. On arrival I found in one of the bedrooms, lying on a stretcher, the body of a stout man quite dead. He was lying on his back, clad only in a jersey and covered by a blanket. The forearms and arms were resting across the chest. The face and ears were livid and the eyes were partially open. The body was warm and there was no rigidity anywhere except in the masseter muscles, the jaws