THE CURE FOR POSTOPERATIVE VOMITING

BY

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SUMMARY

The routine use of drugs to prevent postoperative vomiting is hard to justify. This is not to say, however, that the possibility of vomiting should be given no thought until the patient is actually sick. Postoperative vomiting can be minimized, or prevented entirely, by intelligent ward care. Prevention and cure go hand in hand in the general management of the patient. When vomiting persists the day after operation, a full examination of the patient should be made to exclude a serious cause such as intestinal obstruction, acute dilatation of the stomach, acute gastric ulceration, uraemia, raised intracranial tension, or digitalis intoxication. Cerebral ischaemia is a common cause of nausea, and should always be suspected. Serious vomiting due to the anaesthetic agent is nowadays uncommon, but vomiting due to morphine and other analgesics is common.

A general plan for the postoperative management of patients is outlined. If vomiting is troublesome, the phenothiazine drugs are nearly always effective; preferences vary, but perphenazine may be recommended. The new non-phenothiazine drug trimethoxybenzamide (Tigan) shows promise.

In all good medicine it is hard to know where prevention ends and cure begins. Both must rest on a knowledge of the causation and natural history of disease. Prophylaxis merges with therapy in the general management of the patient's disease, and this disease itself, with the advance of medicine, becomes a smaller and smaller deviation from the normal. In the end, patients become people and management the conduct of life.

The "cure" of postoperative vomiting, therefore, cannot be discussed without reference to some of its possible causes; this implies the realization that not all postoperative vomiting is due to the anaesthetic agent. Nor can "cures" be assessed unless the self-limiting nature of the condition is appreciated. Finally, although prevention is discussed elsewhere, some of its aspects must be included in any scheme of management.

Despite our knowledge of predisposition, it is impossible to foretell who will contract a specific disease. With smallpox prophylaxis, for example, millions of children are vaccinated who would not in any case have the disease. When the disease is fatal and its prevention is without risk such measures are justifiable, if not always acceptable. When the disease is trivial, and most often easy to treat, it becomes harder to believe that "prevention is better than cure". Of postoperative vomiting

Adriani, Summers and Anthony (1961) wrote, "had we adopted the custom of prophylactically administering an anti-emetic to all patients in whom vomiting might be anticipated, 4,600 patients who did not need a drug would have received it instead of 140 who did need it". They found that drug therapy was needed in only 3 per cent of patients, and that phenothiazines were then nearly always effective. Likewise, Keats (1960) noted that "80-90 per cent of patients given a pre-operative anti-emetic will have been treated unnecessarily".

If routine prevention with drugs be unprofitable, when should "treatment" begin? The commonness and unimportance of "emergence vomiting" at the end of anaesthesia have often been noted. Boyle and Hewer (1923), for example, said, "The vomiting which occurs before the patient regains consciousness demands no treatment, and is actually beneficial in that it gets rid of anaesthetic-laden saliva and mucus". Rink (1948) described methods of treatment to be used "If it is obvious that the patient is going to vomit more than once or twice". But when does it become obvious that the patient is going to vomit more than once or twice? Which patient, in fact, demands intensive treatment? I believe many anaesthetists rarely treat a patient for post-
operative vomiting except in private practice. Vomiting is a physiological mechanism which may act either as a warning sign or as a therapeutic measure. Postoperative vomiting is most often a purposeless response to an abnormal stimulus—psychological, physical or pharmacological. However, the onset or persistence of vomiting may denote a serious postoperative complication which must not be masked by the giving of powerful anti-emetic drugs or sedatives.

HISTORICAL
Most early accounts assumed that vomiting was due to the anaesthetic agent (Buxton, 1900; Hewitt, 1901). Buxton (1900) even made different recommendations according to whether ether or chloroform had been used. This was the era of hot water, ice, hot strong coffee, sodium bicarbonate in hot water, champagne, cerium oxalate, vinegar inhalation, gastric lavage, and application of ice bags to the epigastrium. A surprising number of these recommendations are still to be found in recent papers (Davies, 1941; Lattey, 1950; Ashworth, 1952), and indeed, “the relative mildness of much postoperative sickness suggests that some of the old-fashioned remedies may still have their place” (Wylie and Churchill-Davidson, 1960). It is interesting that the efficacy of cerium oxalate was critically reviewed by Gordh and Rydin in 1946.

A considerable step forward was made by Flagg in 1916 when he pointed out that “there are at least three kinds of vomiting”: due to ether, to reflex disturbance and to morphine. These he differentiated thus: “The vomiting which is due to ether usually begins before consciousness has fully returned, and lasts for hours, even days. This form of vomiting is usually accompanied by nausea. . . . Vomiting caused by reflexed pain is quite common, especially when ovarian work has been done. . . . The patient does not complain of the odour of ether. . . . Vomiting which occurs as the result of the administration of morphine is usually unaccompanied by nausea. . . . it is the least annoying to the patient.” Flagg recalled a case in which the patient, in the midst of an attack of “morphine” vomiting, remarked that “She did not mind this, it was nothing like the vomiting she had experienced after ether.”

During the succeeding years there were few contributions to the treatment of postoperative vomiting until the phenothiazine drugs were introduced after the last war. In recent years, there have been many reports on these drugs; at the same time, postoperative vomiting due to anaesthetic agents has become much less common as a result of the widespread use of light anaesthesia with muscle relaxants.

INVESTIGATION
A complete study of the patient often provides many clues to the cause of the vomiting and, far more important, it acts as a safeguard in the occasional case where vomiting denotes serious disease.

The patient’s age and sex should be noted. Previous anaesthetics and experiences with other drugs are important, as is a history of motion sickness. Indigestion and a history of peptic ulceration should not be overlooked; the patient may be on steroid therapy which will exacerbate these conditions. If digitalis has been given, further doses administered during anaesthesia or afterwards may cause toxic vomiting.

The patient should be asked about pain, particularly visceral or pelvic; this is a common cause of nausea. In particular, pain arising in the ovary or testis is characteristically sickening in character. In gynaecological operations vomiting is said to be commoner when the vagina is packed. Aural surgery involving the vestibule commonly causes vomiting associated with dizziness.

When vomiting is due to ether the patient usually complains of the taste and smell of the drug. Headache is common when nausea follows trichloroethylene anaesthesia.

The onset of vomiting may be related to the use of postoperative drugs, and may also result from morphine premedication. Altogether, this is probably the commonest form of postoperative vomiting at the present time. The patient should be asked about nausea and appetite; many patients with “morphine” vomiting are not nauseated enough to avoid food, but find that they “can’t keep anything down.” Cerebral ischaemia should always be suspected; a story of dizziness or faintness, and vomiting related to posture, is significant.

The importance of visitors, and their contributions to the patient’s food locker, should not be forgotten: a search here will surprisingly often
The cause of vomiting. I knew a robust man who, feeling rather peckish on his return to the ward after a gastrectomy, ate two mince pies which “just happened to be in his locker” with great enjoyment and despite his Ryle’s tube!

Nervousness is a very common cause of vomiting, not only in the postoperative period. In children, particularly, extreme apprehension may be “bravely” hidden; the clinical picture here is usually of sporadic episodes of vomiting associated with persistent pallor. Bellville, Bross and Howland (1959) cited another type of patient with the attitude “I know that I had ether; I must be sick”.

The abdomen must be examined, particularly when intestinal obstruction or acute dilatation of the stomach may be present. If it is thought to be advisable, a surgical colleague should be consulted before treatment is begun. The nature of the vomitus should be noted; otherwise, vomiting of blood will occasionally be overlooked. Unsuspected bleeding may occur into the stomach after gastric or oesophageal surgery, nose and throat operations, or accident surgery in cases with a fractured base of skull. Acute gastric bleeding may occur postoperatively, especially in patients who are on steroid therapy.

Raised intracranial tension, and uraemia or other electrolyte disturbances must always be borne in mind.

### General Treatment

Vomiting due to the anaesthetic agent is fairly easy to recognize and most often subsides under the influence of intelligent general management. When vomiting is due to morphine or another analgesic drug, treatment with a phenothiazine is often necessary; relief of pain must continue to be provided, and there is little to be gained by changing from morphine to papaveretum or pethidine. In many cases vomiting does not so much follow the drug, as the hypotension resulting from too large a dose given too soon after the patient’s return to the ward.

Unnecessary changes in position are always likely to provoke nausea in the patient with vestibular disturbance or with a history of motion sickness. Rapid trolley rides and over-enthusiastic bed-making should be avoided. The patient should get as much fresh air as is reasonable, and should not be over-heated. When vomiting has occurred, clear fluids should be administered for some hours. When the patient can tolerate orange juice, or a cup of tea, without further vomiting a light solid diet can be given.

### Treatment with Drugs

Hyoscine is the oldest specific remedy for vomiting. Although useful on occasion, it has the disadvantage of producing undesirable side effects such as drowsiness and dryness of the mouth.

The phenothiazine drugs have been used extensively. Reports have appeared concerning promethazine chlorotheophyllinate (Avomine) (Ashworth, 1952), cyclizine (Marazine) (Moore et al., 1956; Tillman, Wise and Crawford, 1956; Bonica et al., 1958; Bellville, Bross and Howland, 1959), chlorpromazine (Albert and Coakley, 1954; Dripps et al., 1955; Knapp and Beecher, 1956; Burtles and Peckett, 1957), promethazine (Phenergan) (Burtles and Peckett, 1957), dimenhydrinate (Dramamine) (Campbell, 1949; Rubin and Metz-Rubin, 1951; Hume and Wilner, 1952; Moore et al., 1952, 1955; Wolfe, 1952; Knapp and Beecher, 1956), diphenhydramine hydrochloride (Benadryl) (Warrington et al., 1953), prochlorperazine maleate (Stemetil; Compazine) (Boyd, 1957; Howat, 1960), and several others.

There is little reason to doubt that these drugs...
can be effective, but in practice some have more disadvantages than others. With chlorpromazine there is too much hypotension, and promethazine usually causes prolonged drowsiness. Dimenhydrinate (Kulasavage and McCawley, 1951) and promethazine chloroethylphenilate (Wylie and Churchill-Davidson, 1960) are effective in vomiting due to the motion sickness type, as after vestibular disturbance, but relatively ineffective in protecting against stimuli arising in the stomach.

Favourable reports have appeared on the use of perphenazine (Fentazin) (Scurr and Robbie, 1958; Wang, 1958; Phillips et al., 1960). Prolonged drowsiness and a Parkinsonian-type reaction may result from large doses, but the drug is sufficiently effective to make these doses unnecessary in general use. More recently, thiethylperazine di-hydrogen maleate has been introduced; this phenothiazine (Torecan) is claimed to be a highly effective anti-emetic by virtue of an action on both the vomiting centre and the chemoreceptor trigger zone.

Another recently introduced drug is trimethoxybenzamide (Tigan) which is claimed to have a specific effect on the chemoreceptor trigger zone. This drug is not a phenothiazine, and it was hoped that it might be free from troublesome side effects. Large doses (400 mg) may be given with safety, and such doses are necessary for the effective control of postoperative vomiting (Blatchford, 1961; Simonsen and Vandewater, 1962).

MANAGEMENT OF THE PATIENT
To sum up, it may be useful to describe how the everyday postoperative management of patients is conducted in at least one hospital in this country, with a view to the prevention and treatment of vomiting. This can best be done in the form of some simple recommendations.

Patients returning from the operating theatre should be given nothing but water by mouth for the first four hours. At this stage even orange juice is likely to be vomited. Later the patient may be offered a cup of tea or a glass of orange juice, with the warning that he might vomit; a patient offered a cup of tea or a glass of orange juice, who is nervous about vomiting will often refuse this drink and remain on water for a few hours longer. If the patient accept the drink and does not vomit, he may gradually proceed towards a normal diet. If he vomits it is better that he should return to water for the remaining part of the day of operation, but if he insists on having further food or drink he can, of course, be given this as long as he understands that it may make him sick. Patients who have had minor operations, varicose vein stripping, herniotomy and similar procedures, can usually eat supper on the day of operation if they wish. For the night, sedative drugs are given as required.

It is unusual for the patient still to be vomiting the following morning. If he is, more active measures should be taken. A full examination should be made to exclude surgical or medical complications and 5 mg of perphenazine should be given intramuscularly. The patient should remain on fluids, and the perphenazine should be repeated twice during the day, if necessary. This is a mere recommendation; no doubt other drugs are equally effective. One ward sister recommends that in the case of a patient continuing to vomit the morning after a simple operation such as appendicectomy, 25 mg of Avomine by mouth, mixed with magnesium trisilicate, is almost invariably effective.

In children, postoperative vomiting is very rarely troublesome unless there is a serious surgical cause. It may occasionally be necessary to keep the child on fluids for the day of operation and the following day, but phenothiazines are not often needed.

Vestibular disturbance does cause troublesome vomiting and this can be well controlled by dimenhydrinate, 25 mg intramuscularly, repeated if necessary.

REFERENCES
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APOLLOGY

The Editors profoundly regret the mis-spelling of Sir Ivan Magill's name in the article which appeared on page 43 of the January issue and offer their apologies to Sir Ivan.