

**THE PREPARATION OF THE PATIENT BEFORE THE
OPERATION.**

BY

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WHEN a gynecological operation has been decided upon, the preparation of the patient for the operation comes next under consideration. The surgeon should here exercise the privilege conceded to him and place the patient entirely under his control for several days or even a week previous to the operation, providing the case is not one requiring immediate attention. It is to the advantage of both the patient and the surgeon to place her in the best frame of mind before operation and promote a normal functional activity of all the organs of her body. Her mode of life should be so regulated that it be in keeping with health and vigor. Sufficient bodily exercise should be allowed to keep up a proper muscular tone, but the exercise should not be carried to the point of fatigue.

FOOD.

The question of food is an important one, but it is unwise to curtail her food or to place her on a strict diet. The patient should be allowed to select the food best suited for her taste and digestion. A judicious oversight of her daily menu is, however, advisable. Proper amounts of carbohydrates, proteids, and fats to make up a sufficient amount of calories should be given, and to accomplish this it is not necessary to resort to scientific measurements, or to some complicated system for the determination of the caloric values of foods. A few slices of bread with plenty of butter, a pound of meat in one form or another, several glasses of milk and a few eggs, a certain amount of fruit and fluids, will make up a sufficient amount for the daily calories necessary. The consumption of a large amount of food at one sitting is to be discouraged. A sufficient quantity, however, should be taken at each meal to satisfy the wants and appease hunger, but the meals should not be carried to a point of satiety. The feeling of hunger is a good indication for taking nourishment and should be heeded by the patient. Patients with very poor appetites and those who have even an aversion for food should be encouraged to take some concentrated, nutritious food at regular intervals and it will be surprising the quantity of food which may be consumed and assimilated that way. Careful feeding of patients, even for a few days previous to operation, is very beneficial and certainly reacts favorably on the power of resistance of the patient.

SKIN.

The patient should see to it that her skin is in good condition, so as to get the full benefit of the eliminating function of this organ. Skin cleanliness is of first consideration and this is to be accomplished by daily bathing immediately before retiring. The bath should consist of hot water and soap and the patient should not remain in the bath-tub longer than is necessary to get a good thorough washing. After the patient has washed herself thoroughly and her skin has become thoroughly warm, she should be dried quickly and at once put to bed, where she is to remain until the rising-time in the morning.

SLEEP.

The regulation of her sleep is of importance. Retiring to bed at a seasonable hour, promotes a restful sleep and a not too early

rising encourages longer hours for rest in bed. Hypnotics are to be discouraged as much as possible, but in many cases a resort to medication has to be made; under such conditions the selection of the hypnotic is of considerable importance. In many cases a mild bromide administration will be sufficient to bring about a restful sleep; in other cases the more powerful hypnotics will have to be resorted to. It has been my experience that restful sleep can be brought about in many cases by the administration of a teaspoonful of 5 per cent. solution of chloral hydrate. This drug is particularly efficacious in cases with high arterial tension, in fact, patients with high arterial tension should receive small doses of chloral hydrate two or three times a day. This will materially help to induce sleep during the night. Under certain conditions, however, sleep will only be induced by the administration of a hypodermic of morphine. This will be the case where patients suffer with pain as a result of the pathologic process which calls for the operation. To induce sleep in the type of cases mentioned before is of particular importance as nothing contributes to shock so much as the presence of pain. By bringing about relief of pain shock will be lessened and the power of resistance of the patient will be preserved.

MODE OF LIFE.

All excitement should be discouraged and a normal equilibrium of the nervous system is to be sought for. Fear of operation should be overcome as much as possible and in many patients this fear of operation can be overcome by explaining to them just what is to be accomplished by the operation. An intelligent woman will balance her nervous system far better if she has a proper conception of the nature of the ordeal she is to undergo.

GASTROINTESTINAL TRACT.

In cases with elective operation, where immediate action is not imperative the preparation of the gastrointestinal tract before operation is of great importance and consists more in the regulation of the diet than in the administration of medicines for obtaining bowel movements. The administration of cathartics or even purgatives is necessary in many cases and should be used when required, but not all operative cases necessarily require purgatives. It is an error to bring about free catharsis in a patient because

she is in need of an operation. All cathartics, as well as purgatives have certain effects on the general body system, and the selection of the kind of cathartic for each individual case should be governed by circumstances. A patient with a foul breath, coated tongue, frontal headache, mental and physical depression, sallow complexion, epigastric pain, certainly is in need of a cathartic irrespective of the need of an operation. In the presence of these symptoms it would be unwise to operate without giving attention to the gastrointestinal tract. The rectum and sigmoid should be unloaded by an enema, after which the administration of a cathartic suitable for the particular case is in order. The unloading of the rectum and sigmoid is as a rule a very simple procedure, but it is not so with the colon. Enemata and colon irrigations very frequently fail to bring about a desired result and we must resort to saline purgatives of which I prefer magnesium sulphate. I am in the habit of prescribing this remedy in a concise and definite manner. Only under exceptional circumstances do I administer this saline in large doses. I order my patients to dissolve a tablespoonful of Epsom salts in about 4 ounces of cold water and to take two teaspoonfuls of this solution every three hours until soft bowel movements are obtained. There should be little or no griping with this form of catharsis and if it does occur, the quantity of the saline so taken should be reduced.

Calomel is used only under exceptional circumstances. In cases with malarial infection, for instance, calomel acts exceptionally well. The drug is also used as a cathartic when lues is present. From all other cases calomel is purposely withheld. While calomel is undoubtedly one of the most important and useful drugs in the Pharmacopeia, it has no proper sphere as a cathartic in the preparation of a patient for operation. There are a few physiologic effects of calomel that are known, but there are perhaps a great many other effects of this drug that are not known. The physiological effects that are known are of a nature in no way beneficial to a patient about to undergo an operation. *Materia medica* teaches that calomel is a tonic, alterative and purgative; that in small doses its effects are that of a tonic in the blood, but often produces an impoverishment of this fluid of the body. From the blood it enters the tissues where it remains for a considerable time, exerting an alterative influence on the cells. It stimulates most of the glands of the body to the production of pathologic secretion especially the salivary and

pancreatic glands. It has a tendency to accumulate in the liver and by its irritating effect it increases the flow of bile.

None of these effects are desired when calomel is administered as a purgative before operation. Calomel is very positive in its purgative action and this is doubtless the reason for its popularity. Both the small as well as the large intestine can be evacuated by other means as effectually as with the aid of calomel. Neither must the possibility of poisoning by its use be forgotten. It is in the experience of every one who administers calomel as a routine measure that he will meet with cases of stomatitis, mild and transient perhaps, but still undoubted cases of mildmercurial poisoning, shown by the foul breath and spongy gums.

For the past two years no calomel has been administered to my operative cases. Patients requiring laxatives receive cascara, licorice powder, A. B. & S. pills. If a cathartic is called for, they receive magnesium citrate or magnesium sulphate in small doses. Compound cathartic pills are very seldom used, and the same is true of castor oil. The majority of my patients go to the ether room with absolutely no cathartics. The rectum and sigmoid are emptied by enemata in all cases before operation. For a morning operation the enema is given late the previous evening and for an afternoon operation the enema is given in the morning.

Since adopting the method of little or no cathartic before operation, I have been convinced more and more that the teaching of the routine administration of cathartics and purgatives before operation is an error. Patients who have not been purged before operation will experience a smoother postoperative convalescence than those who have been subjected to purgatives or cathartics. It must, of course, be considered that the postoperative convalescence of a patient, after all, depends on many factors, and therefore this matter is of difficult diagnosis. The postoperative convalescence will depend on the nature and extent of the operative procedure, on the condition of shock of the patient, on the length of time on the anesthesia, of the power of resistance of the patient, on the various states on sepsis, etc., and, therefore, it is most difficult to compare the postoperative convalescence of patients. However, taking all things into consideration, and taking up the cases in classes, it will be found that the postoperative convalescence of the patients that have not been purged will be more comfortable, smoother, the reaction from the operation more prompt, the distress less prolonged than in the

class of patients subjected to free catharsis. The smooth post-operative convalescence of patients not subjected to purgatives is a striking matter and so is, also, the ease with which a bowel movement can be obtained after operation. A small enema of either plain soap suds, or one consisting of glycerine and water, a mild laxative, or a small dose of saline will in almost all cases bring about a bowel evacuation. The bloatings, the bowel distentions, the torments from gas retention, the inability to expel flatus, are all conspicuously absent and if present are so in a mild degree. When a patient has been freely purged she is more apt to suffer with gas formation and retention and it is more difficult to obtain a bowel movement from her. The gastrointestinal storms so to say, which the purgatives administered before operation bring about, can be brought to quiescence with difficulty, and while this storm rages in the abdomen the patient is mighty uncomfortable. Why raise a storm at all? Fifteen years ago when a laparotomy was performed the surgeon's anxiety about the case ceased only after he had obtained a bowel movement, and for a few days after the operation all his efforts were directed toward getting an evacuation of the bowels. When a patient has not been purged it is easy to obtain a bowel movement. If the patient is not distended with gas, has no cramps, passes flatus readily, little or no attention is paid to the bowels. It is not unusual for a patient to go four or even five days after operation without a bowel evacuation. If the patient is uncomfortable and the indications for the necessity of a bowel movement are present an enema or mild laxative is ordered earlier, but with patients who have flat abdomens and no symptoms, particularly if they pass flatus, the evacuation of the bowels is delayed for days.

NASOPHARYNX.

Inspection of the nasopharynx is necessary in all patients who will be subjected to anesthesia. The inspection is for the determination of the presence of abrasions, ulcer or suppurating foci, as well as for the condition of the teeth and tongue. A coated tongue may be indicative of many pathologic conditions as well as a state of disturbed digestion and certainly an attempt should be made to correct it if possible. The tongue should have a thorough cleansing as the coating on it swarms with microorganisms, many of them doubtless of the pathogenic variety. It is of importance to have as clean a tongue as possible before the anesthesia is

taken. A foul-smelling tooth socket or cavity harbors germ life in great quantities, sufficient, indeed, for the infection not alone of the gastrointestinal, but the respiratory tract, also. These foul-tooth cavities should be disinfected with peroxide and some antiseptic mouth-wash; abrasions, ulcers and suppurating foci should be touched up with mild solution of silver nitrate or tincture of iodine and kept as clean as possible with mild antiseptics. Strong antiseptics are to be avoided, as they are apt to injure the delicate epithelium of the nasopharynx and do more harm than good. The patient should be instructed to keep her teeth and mouth clean. Denuded surfaces in the nose cavity should be kept clean. During anesthesia a large amount of mucus is secreted and with an infected nasopharynx great quantities of pathogenic germs are swallowed with the saliva and mucus; infected particles may be inhaled into the respiratory organs and so the foundation is laid for suppurating foci in the gastrointestinal, as well as in the respiratory tract. Immediately before the administration of the anesthetic the patient should be made to gargle her throat with an antiseptic mouth wash and the nurse should see to it that this is done as thoroughly as possible.

HEART AND LUNGS.

Knowledge of the condition of the heart and lungs is of great importance to the surgeon. He should become familiar with all adventitious sounds in the heart as it will materially aid him in deciding on the nature of the operation to be performed. Systolic and diastolic murmurs about the heart have no significance as far as a surgical operation is concerned, providing there is present a complete compensation of the muscular action of the heart; in fact any murmur about the heart loses its significance as far as the surgeon is concerned when no symptoms are present indicative of a loss of compensation. In the presence of symptoms referable to the cardiovascular system, such as dyspnea, rapid pulse, irregular action of the heart, the surgeon faces a problem and due attention should be paid to these symptoms, but even under these conditions operative interference can be safely carried through, providing the operation is of a nature that will not tax the patient's resources too much. Under many conditions of disturbed compensation the surgeon may introduce effective treatment before operation and thereby succeed in restoring disturbed circulation sufficiently to undertake the necessary operative procedure.

A knowledge of the condition of the respiratory tract is of great importance. A careful examination of the chest, both anteriorly and posteriorly, will lead to the detection of abnormal pulmonary sounds, if pathologic states of the respiratory tract are present. The presence of any cough is of great importance to the surgeon, not alone in deciding, on the kind of an anesthetic to be used, but also whether this cough is of a nature that can be allayed by medicinal means or not. A cough that cannot be allayed by appropriate means is of such serious significance that it may be an absolute barrier to operation. There is nothing more distressing for a surgeon than to find a patient developing a cough immediately after an operation when an abdominal incision has been made. Coughing and vomiting are the most frequent causes of the reopening of an abdominal incision. Sometimes the cough is due to a nasopharyngeal irritation, or a chronic inflammation of the tonsils. Under all such conditions attempts should be made to correct cough before subjecting the patient to a gynecological operation where the abdomen has to be opened.

BLOOD PRESSURE.

Attention may here be called to the value of the findings of the blood pressure of the patient. A high arterial tension has always a significance and when present in a patient about to undergo an operation should receive attention. It has been found that the average normal blood pressure of an adult male is from 105 to 120 M.M., while that of a woman is from 90 to 110 M.M. Under certain physical conditions a pressure of a 130 M.M. will be normal. A tension, however, of 140 M.M. may be considered as abnormal. Under ordinary conditions a hypertension is accounted for by the habit of life of the individual. There is no doubt that over eating and insufficient bodily exercise is a prolific cause of arterial hypertension. Proper regulation of the diet and a judicious amount of bodily exercise will reduce the hypertension to a normal blood pressure in a great many cases. Should the tension not become lower by this means it will behoove the surgeon to be on the alert and, if possible, discover the cause of the increase blood pressure. While the subject of arterial hypertension is not well understood those who have given the matter attention claim that a high blood pressure is associated with arteriocapillary fibrosis. Nephritis, cirrhosis of the liver, autointoxication and general fibrosis, have, as a rule, an associated condition of hypertension.

KIDNEY.

The presence or absence of organic disease of the kidney is of importance. The urine should be collected under absolute cleanliness and subjected to a chemical and microscopic examination. If the chemical examination discloses the presence of albumin, then a very thorough and exhaustive urinary examination should be had at hand to know exactly the qualitative condition of the kidney excretion. The knowledge of the quantity of urine excreted daily is not of as much importance as the qualitative condition of the urine. If deficient urinary excretion is present attempt should be made to correct it if possible by appropriate means. It is a favorable sign if the quantity of urine excreted can be increased by the ingestion of water. If the urine contains casts and cellular elements in considerable quantity the surgeon should plan to bring the expected operation to an end as speedily as possible as a prolonged anesthesia reacts unfavorably on the pathologic state of the renal parenchyma. A short anesthesia should be particularly planned for by the surgeon, if the urine shows albumin and casts and microorganisms. We have learned to fear postoperative nephritis and if the urine shows pus cells, bacteria, casts and albumin, the shorter the anesthesia the less likelihood of the complication of postoperative nephritis. Deficient renal activity is not a contraindication to operation, but to undertake too prolonged an operation in its presence is inadvisable.

It has been the teaching and, perhaps this still holds good, that as an anesthetic chloroform is preferable to ether in cases with deficient renal function. This has not been borne out by our experience. Disturbed renal function has followed the administration of chloroform as often as that of ether, after prolonged operation. It is to be hoped that the more recent method of anesthesia with gas and oxygen will give better results in this class of cases and the indications are that much may be expected from this method of anesthesia.

If the renal function responds to dietetic, hygienic and medicinal measures instituted for the relief of deficient renal excretion during the period of preparation for operation, which will be shown by an increased quantity of urine excreted, by a rise of urine content, by a decrease of albumen, casts, etc., then the surgeon need fear no complication from this source, as the treatment instituted can be carried on after the operation. But

if only slight or no response occurs in the kidney function from the treatment, the surgeon must be on the alert to meet the complication that may arise from this source after the operation is performed. Organic disease of the heart, lungs, and kidneys are of the greatest importance to the surgeon and due attention must be paid to these lesions in the preparation of his patient for operation.

THE NATURAL RESISTANCE OF THE PATIENT.

Pardon me for touching on this subject, of which so little is known and so much left to the imagination. There is no doubt that the natural resistance of the patient is a distinct entity. The difficulty is how to estimate this force? Where does this force begin and where does it end? It has been suggested that one way to estimate this mysterious force in the patient is to enquire into the longevity of the various members of the family. If the patient belongs to a family of which a large number lived to a ripe old age, the inference is that the patient at hand has inherited a good "natural resistance." If a large number of the members of the family have died young the reverse would be the inference. In taking the history of the patient much may be learned of this natural resistance by inquiring about former illnesses of the patient or accidents which she may have passed through. What was the nature of the illness? Was it severe, was it prolonged? How did the body forces respond to the illness? If an accident, did recovery follow promptly or not? Did it take long before the natural forces returned or not? In this way much can be learned about the recuperative powers of the patient. Do slight bruises or cuts heal promptly? Is the nervous equilibrium easily disturbed? Does slight fatigue or exposure react unfavorably on her? Has she stygmata of degeneration? Has she an arched palate, long hair, long bones loosely jointed, adiposity, extreme leanness, astigmatism, irregular and supernumerary teeth, unhealthy skin, flat chest and undersized mammae, etc.? All these points taken in conjunction will assist the surgeon in formulating in his own mind the probability of the degree of the natural resistance of the particular patient under consideration.

BLOOD EXAMINATION.

Under certain conditions the examination of the blood before operation by a competent hematologist will result in

valuable information, and establish many points in diagnosis. The facial appearance of a patient with fair skin and of delicate structures may simulate a condition of anemia, while a brown integument may hide a true anemia; a blood examination will settle all doubt. The presence or absence of leukocytosis lends additional data for a differential diagnosis. A systematic study of the blood picture will also reveal disease of the blood which may have escaped diagnosis. Much has been written on leukocytosis and its value in diagnosis, and while an increased leukocytosis is a good indication of the presence of inflammatory focus or pus collection, a normal leukocyte count does not necessarily exclude the presence of the two conditions mentioned before. An increase in leukocyte count has sometimes a negative and sometimes a positive value in diagnosis, and if a competent man is at hand to undertake these examinations it may lead to valuable information. Hematologists have given us the knowledge of phagocytosis, leukocytosis and the opsonic index and it is the clinician's duty to supply the material for the studies of the body fluids and the important rôle the blood plays in guarding health and in curing disease, when infection has invaded the tissues.

THE PREPARATION OF THE FIELD OF OPERATION.

The field of operation is prepared in a very simple way. After a general body cleansing which is accomplished by a bath and clean underwear, the field of operation, whether in the lower or upper part of the abdomen, is shaved and the parts washed off with soap and water. This is followed by a cleansing of the parts with alcohol and a wet dressing of bichloride of mercury 1 to 10,000 is applied. This dressing is kept in place by a snug binder and remains in position until two hours before the time of operation. Two hours before operation the parts are again cleansed with alcohol and a fresh wet dressing of bichloride is applied, this No. 2 dressing remains on the field of operation until the patient gets on the operating-table and by this time the skin and dressing, as a rule, are quite dry. With the patient anesthetized and on the operating-table the No. 2 dressing is removed and the skin cleansed with alcohol, followed by ether, after which the parts are painted with tincture of iodine full strength. Only one generous coat of iodine is given.

The preparation of the vulva consists in a shave and soap and water wash. The vagina is then douched with bichloride of mercury 1 to 5,000, after which the vulva is covered with a wet

bichloride dressing 1 to 5,000 and kept in place by a "T"-binder. When the patient is anesthetized and on the operating-table the vulva and vagina are washed with soap and water using plenty of sterile water for cleansing, followed by a thorough douche and wash of a 1 to 5,000 bichloride of mercury. The patient is then catheterized and she is ready for the operation.

NERVOUS SYSTEM.

Every patient has some fear of operation and suffers mentally more or less as a result of an unbalance in the equilibrium of the nervous system; this is particularly so during the hours immediately preceding the time set for the operation. The surgeon should take into consideration this mental suffering and unbalanced state of the nerve equilibrium. It is my belief that this mental anguish is a factor of some importance and to diminish it is not alone a refinement in the art of surgery, but reacts favorably on the patient, it lends a degree of comfort and creates a peaceful state of mind. A patient going to the anesthesia-room with a peaceful state of mind is better able to withstand the shock of an operation than one whose mind is greatly perturbed by a mental anguish, an anguish which is so great in the minds of some sensitively organized women as to amount to a horrible torture. The question may be asked "Can this mental anguish and disturbed nerve balance be obviated or lessened?" I believe we can mitigate this disturbed mental state by the administration of a hypodermic of hyoscine and morphine, two important cerebral sedatives. The preliminary administration of hyoscine and morphine hypodermically before anesthesia has been practised at the Woman's Hospital on the service of my chief Dr. P. F. Chambers since March 18, 1909. The method strongly recommends itself and has many valuable features in its favor. The full dose consists of 1/100 of a grain of hyoscine and 1/4 of a grain of morphine. A patient who has received a hypo of hyoscine and morphine one and one-half hours before she is taken to the anesthesia-room usually finds herself in a state of semi stupor. She is half conscious and is usually in a slight doze; her nerve tension is gone; she is calm; she is half asleep and has given up the fear of taking the anesthetic; she does not fret and worry, but is calm and composed. This is a pleasant feature in the administration of hyocine and morphine. She comes to the the anesthetic-room with a full pulse; flushed face and a peaceful state of mind. Hyoscine is distinctively a cerebrospinal seda-

tive. Her rate of respiration is, as a rule, depressed and may have dropped down to fourteen or fifteen per minute, or even lower. As a result of this slowness of respiration the anesthetic is taken rather slowly, and if the anesthetist is not accustomed to this mode of preparation, he will have some difficulty in knowing just at what stage of anesthesia his patient is in at the beginning of the administration of the anesthetic; a little observation and practice will soon teach him the necessary points and he will have no difficulty in knowing exactly the depth of the narcosis of his patient. I am anxious to make mention of this slowing of respiration in connection with hyoscine and morphine as it is considered an unfavorable feature in the administration of the drug. While it is apparently an unfavorable feature it is a difficulty that can be easily surmounted and the unfavorable part exists more in the imagination of an unwilling anesthetist. An observant anesthetist should have no difficulty in narcotizing his patient and bringing about complete relaxation.

The dryness of the throat, lips and mouth caused by the hyoscine I consider beneficial to the patient. The excessive secretion of mucous of the nasopharynx during anesthesia, with which the patient almost drowns herself is conspicuously absent in all anesthetics preceded by the administration of hyoscine. The allay of excessive mucous secretions during anesthesia I believe an important matter and deserves the careful consideration of the surgeon. The excessive mucous secretion of the fauces during anesthesia is doubtless the cause of a great deal of post-operative vomiting. Large quantities of mucous are swallowed by the patient which must react unfavorably on the gastrointestinal tract. There is no doubt in my mind that cases with acute gastritis occasionally seen after anesthesia are caused and augmented by excessive mucous secretion swallowed during the operation. Not alone does the gastrointestinal tract become filled with mucus excreted, but the respiratory tract also suffers from the excessive mucous secretion. Bronchial irritation, dyspnea, pain in chest, mucous râles are not infrequently to be observed after operation and doubtless excessive mucous secretion during anesthesia is a causative factor. "Ether pneumonia" is less frequently encountered now because the ether is administered with more circumspection, the administration of all anesthetics being now in more expert hands. Formerly when the patient was, so to say, "soaked in ether" the chemical irritation of the ether on the respiratory mucous membrane brought

on an inflammatory reaction. Not alone is hyoscine of value in preventing excessive mucous secretion during anesthesia, but, combined as it is, with morphine, it becomes a powerful sedative and there-by diminishes the quantity of ether necessary for maintaining a state of narcosis. Taking all things into consideration such as duration of operation, age and size of the patient, alcoholism, nervous and phlegmatic temperament, a smaller quantity of anesthetic is used when the narcosis is preceded by hyoscine and morphine, which in some cases amounts to a considerable quantity.

Attention is here, also, called to the postoperative recovery of patients who have had their narcosis preceded by the administration of hyoscine and morphine. It is our experience that the postoperative recovery of the patient the first three days after operation, is much smoother, less distressing and attended with less suffering. We have often observed that the patient sleeps quietly for a few hours after leaving the operating table, that they are less boisterous, less troublesome, and when they awaken they do not know about having been operated upon, the entire period of time during which the operation was done being a blank to the patient's mind. In a few instances the patients were convinced of their operation only when the incision was shown them.

In fact cholecystostomies can be performed under hyoscine and morphine anesthesia alone, without the use of other anesthetics. This, however, is only the case with those patients who have not become addicted to the use of narcotics during their long continued illnesses. In elderly patients with chololithiasis, the gall bladder can be incised and drained under the influence of hyoscine and morphine and, if necessary, an infiltration local anesthesia can be added along the line of incision. The patients hands should be held down as they have a tendency to carry the fingers into the operative field. Many of these old patients talk and murmur, but subsequently they do not remember anything about the operation.

POSTOPERATIVE VOMITING.

It is of interest to note the postoperative vomiting of patients, who have had hyoscine and morphine before anesthesia. One hundred and thirty-five cases were studied in reference to this point. These 135 cases were the first patients to receive the hyoscine and morphine before operation.

50 had no vomiting or nausea.
 23 vomited once.
 24 vomited twice.
 14 vomited three times.
 24 vomited more than three times.

135

In some of the cases where vomiting occurred more than four or five times; gastric lavage was called for in a large number of the cases. A few patients complained of nausea before the anesthetic was taken, but these cases vomitted very little after the operation. Nausea before operation following the administration of hyoscine was particularly the case with a patient who had eight anesthetics for plastic operation for extensive destruction of the bladder following pubeotomy. This patient, though nauseated before, complained of little nausea after the operation and as a rule she vomitted only once or twice. Thirty-eight per cent. with no vomiting is a favorable feature as far as post anesthetic vomiting is concerned. Not alone is there a marked reduction in the vomiting, but nausea is also lessened. The nausea and retching is more distressing to the patient than vomiting. If a patient vomits once or even twice after the anesthetic the degree of discomfort is not as great as if she retches and is greatly nauseated.

METHOD OF ADMINISTRATION.

The field of operation having been prepared and the final dressing applied, the patient is put to bed and dressed with the underwear and shirt to be worn during the operation. With the patient lying down one and one-half hours before operation she receives a hypodermic of 1/100 grains of hyoscine hydrobromide and 1/4 grain of morphine hydrobromide. The room is darkened and cleared of all relatives and visitors. Nothing further is done that may disturb the patient, but she is kept very quiet, so as to encourage a condition of drowsiness. In about an hour the patient falls into a light sleep; the pulse becomes full and slowed and the face flushed. When the time arrives for the administration of the anesthetic she is placed on a stretcher and rolled into the ether-room. The anesthesia is begun with gas followed by ether. The patients are calm; they do not struggle; have no fear of taking the anesthetic and many of

them do not even know afterward when the anesthesia was begun. The anesthetist should closely watch the patient as in many of them respiratory disturbance may occur if the anesthetic is crowded too much. However with a little practice and close observation, the anesthetist should have no trouble in bringing about complete relaxation of the patient.

I may briefly summarize the beneficial effects of the administration of hyoscine and morphine preliminary to anesthesia as follows:

First.—The fear of operation and anesthesia is abolished to a very marked degree. Instead of worry and fretfulness there is induced a state of calmness and mental peace. The patient is drowsy and somnolent when she goes to the ether-room. She avoids the necessary mental shock that occurs when the patient passes from consciousness to a condition of narcotized oblivion. This is a very important point for the surgeon to consider. It seems to me to be a refinement in the art of anesthesia to bridge the conscious mind to the state of narcosis, not with a suddenness of transition, such as occurs with inhalation anesthesia, but to interpose a species of sleep and mental calmness before the final narcotization. Were the preliminary administration of hyoscine and morphine to accomplish nothing more than this it would deserve the attention of the surgeon. Many patients awake from the anesthesia and have no recollection of having been to the ether-room.

Second.—The course of anesthesia is made less excitable. The muscular excitement; the twitching; the violent contortions of the patient are absent, and when present are mild in degree.

Third.—Excessive mucus secretion is absent; salivation is diminished; the fauces are dry; the pulmonary tract not being, so to say, drowned with mucous secretion, there is less likelihood of pulmonary complication. This is a second important feature in the administration of hyoscine and is most beneficial to the patient.

Fourth.—The amount of anesthetic used is materially lessened. The lessened amount of ether or chloroform used is of itself an advantage.

Fifth.—Nausea and vomiting is greatly reduced; 38 per cent. have no vomiting or nausea.

Sixth.—After the operation the patient sleeps on quietly for some hours and awakes with little recollection of the ordeal

through which she has passed. She avoids the acute and smarting pain incidental to the incision.

HYOSCINE.

Hyoscine was first discovered by Ladenburg who obtained the drug from the mother liquors in the manufacture of hyoscyamine. Some years later E. Schmidt discovered a substance in many solanaceous plants and named it Scopolamin. It was also found that hyoscine and scopolamin were identical. The physiological effects of hyoscine and scopolamin, even with the pure drugs, were so variable that it led to the belief that scopolamin and hyoscine were not identical. This is, however, disproved, and there is no doubt now that these two drugs are identical in every way. There is an optically active and inactive form of this drug; many fatal results were later reported with scopolamin, but this was on account of a misunderstanding of its pharmacologic action. Large doses act like atropin, but small therapeutic doses act differently. With small doses the vagus is stimulated and not depressed, which slows the pulse rate and vagus paralysis occurs only from large doses. Small doses abolish cerebral excitement. Small doses stimulate the vasomotor centers with a rise of blood pressure and some change in the pulse rate. Large doses cause a fall of blood pressure. A dose of 1/100 grains of hyoscine is a small dose, when one considers that Schneiderlin administered as much as 2.5 milligrams (1/25 gr.). In the 250 cases administered at the Woman's Hospital on the Service of my chief, Dr. Chambers, no ill effects of any kind have been noticed. The favorable features of the administration of the drug were very apparent. The calmness with which the patients come to the ether-room, the mental peace they exhibit in the trying moments of a patient's experience, is very striking and must react favorably on the mental mechanism of the patient. I believe the preliminary administration of hyoscine and morphine in small therapeutic doses before anesthesia is a safe and beneficial procedure and I can highly recommend it. The method adds greatly to the comfort of the patients in relieving them of nervous apprehension, of excessive mucous secretion and diminishing the postoperative vomiting to a considerable extent.

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