COMFORT AFTER LAPAROTOMY.*

(Being some points in the pre- and post-operative treatment of cases of abdominal section.)

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Careful attention to a number of important details, before, during and after an abdominal operation, has been found to produce greater comfort for the patient, diminution of pain, especially gas-pains and irregular peristalsis, and a more rapid and satisfactory recovery. If the patient is comfortable so will be the relatives, the doctor and the surgeon. Comfort depends upon care during each stage of treatment.

I. THE PRE-OPERATIVE PERIOD.

The first stage is the pre-operative care of the patient. What can be done before opening the abdomen, to ensure that the post-operative period be easy and free from discomfort?

Alimentary preparation.

It has often been remarked that those patients do best after laparotomy who, owing to the urgency of their condition, are operated upon without any alimentary preparation. A comparison between their after history and that of the ordinary, non-acute case in which aperients or enemata have been given, leads me to believe that those cases which have the least disturbance of their alimentary functions, have the least pain and discomfort after laparotomy. My first contention is, therefore, that for the ordinary case, no abnormal methods of producing bowel action should be employed. In other words—*no enema and no aperient should be given before a laparotomy.*

My reasons for this contention are as follows:

- (a) Clinical experience.
- (b) A sudden disturbance of the fauna and flora of the intestine will often produce abdominal distension and discomfort and a feeling of malaise, even in a healthy person who is not undergoing a laparotomy, and several days may elapse before regular absorption from the bowel is again established.
- (c) Disturbance of the acetylcholine content in the wall of the bowel. The general tonus of the bowel depends upon a normal amount of acetylcholine being present in its walls for the transmission of nerve impulses. Purgation leads to a burning-up of some of the acetylcholine, with a subsequent tendency to distension and paresis of the bowel, and the avoidance of such destruction of acetylcholine would appear to be the main underlying physiological principle in favour of the avoidance of purgatives.

If, however, a patient already has the habit of taking a daily aperient, I believe that this should be continued during the pre-operative period.

Quite different is the type of case where excision of a portion of the large intestine is to be performed. Before any operation upon the colon, it is essential that the bowel be prepared and made as clean as possible. The length of time

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taken will depend upon the degree of obstruction and toxæmia and the methods employed to relieve them. Ten or twelve days are commonly needed to prepare a case of carcinoma of the left colon or rectum for radical removal, and longer if acute obstruction is present.

There are three ways of gauging the degree of toxæmia which has occurred as a result of chronic obstruction and the time when this has been dispersed.

- (i) Inspection of the tongue.
- (ii) Palpation of the abdomen.
- (iii) Chemical analysis of the blood.

(i) **The Tongue.** In a colon or rectal case a dirty furred tongue indicates bowel stasis and toxæmia and insufficient preparation. A clean tongue is seldom seen with a "dirty" colon.

(ii) **Palpation of the Abdomen.** Large masses of fæcal material are often palpable in the abdomen in chronic intestinal obstruction. These have been known to make a carcinoma appear inoperable. No surgeon should be expected to express an opinion as to the operability of a growth and no radical operation should be undertaken until the large bowel has been thoroughly cleansed.

(iii) **Chemical Analysis of the Blood.** In acute intestinal obstruction, estimation of the CO_2 content, or CO_2 combining power of the blood, will often show a marked degree of alkalosis, which must be rectified before operation is undertaken.

In chronic intestinal obstruction the patient frequently has a blood urea reading of 80-90 mgrms. per cent. when first admitted for treatment. Provided that other renal tests are satisfactory this increase in blood urea is due to intestinal absorption, and it is found that after careful treatment the blood urea drops to within normal limits.

Treatment.

Every treatment involving the removal of part of the large intestine should be carried out in two stages. The first stage, which should take about a fortnight, will consist of either:

- a. Ten to twelve days of high colon wash-outs together with saline aperients for the first few days, followed by two days' rest immediately preceding the operation.

or,

- b. The establishment of an enterostomy by operation, and, through this artificial route, the full cleansing of the colon.

The second stage is, of course, the radical operation.

If the surgeon takes trouble to train his nursing staff in the thorough use of high colonic lavage (using a large tube, Y-shaped connection and several gallons of fluid—once or, preferably, twice a day) he will find the patient's tongue becoming clean and the general health improving and he will realise that, in the past, he has performed many unnecessary operations for the preliminary establishment of an enterostomy.

I have recently seen a female patient with a carcinoma in the middle of the pelvic colon, in whom the barium, at the X-ray examination, could not be made to pass through the obstruction, and who had an enormous mass extending up from the left side of the pelvis and disappearing beneath the left costal margin. She appeared also, to have considerable enlargement of the liver. After ten days of high colon wash-outs and salines by mouth, not only did the whole of the left colon become normal, but the suspected enlargement of the liver was proved to be a loaded transverse colon, and, at the time of the partial colectomy, her colon was empty and no abnormality beyond the growth was found. In spite of the fact that the pathologist could not force fixing fluid through the carcinomatous area of the specimen after operation, this patient's bowel had been thoroughly cleansed per rectum without an enterostomy.

An important factor, from the point of view of the comfort of the patient after laparotomy, is that no treatment to the intestine should take place during the forty-eight hours before operation. Whatever form of intestinal cleansing has been used, enemata, aperients or methods which tend to disturb the fauna or produce dehydration, it should be stopped forty-eight hours before operation.

Psychological Preparation.

The patient's own doctor starts the psychological preparation by the way in which he introduces the patient to the surgeon. If the patient comes already inspired with confidence, he is more likely to do well, than one whose doctor has not instilled confidence into him. It is, of course, also the surgeon's duty carefully to study the patient's psychology.

The modern use of adequate premedication and the cubicular induction of anaesthesia by intravenous or rectal injection are rapidly reducing the fear of operations and also diminish psychic shock. My routine practice is to give the patient a subcutaneous injection of omnopon and scopolamine one hour before the operation.

I use the continental scopolamine which contains the *laevo*-rotary alkaloid of hyoscine. Hyoscine contains four alkaloids:—

- (i) the *dextro*-rotary, which has a stimulating effect;
- (ii) the *laevo*-rotary, which has a sedative action;
- (iii) two isomeric alkaloids, which are uncertain in their effect. The Hoffmann-La Roche preparation contains *laevo*-rotary scopolamine which has a sedative effect. This is the variety which I use.

For an ordinary adult the dose is one-third of a grain of omnopon with one-hundred-and-fiftieth of a grain of scopolamine. The patient is left to sleep in a quiet darkened room, or, if in a ward, with a pad of cotton-wool over each eye, and a light bandage round the head. He is asleep, or sleepy, at the end of an hour, and before he is moved from his bed, the anaesthetist gives an intravenous anaesthetic, using either evipan or pentothal. The latter gives a somewhat smoother and more profound anaesthesia, but both are efficacious. Another method of inducing cubicular anaesthesia is by means of avertin given per rectum which, obviously, is a poor method when dealing with operations on the large intestine. For abdominal work I have found it to be much inferior to an intravenous anaesthetic. I have found that both bleeding and the incidence of post-operative distension are increased, and it is now only used for non-colonic cases which are known to be intolerant of omnopon and scopolamine.

II. THE OPERATIVE PERIOD.

Intravenous anaesthesia may be continued when the patient arrives in the operating theatre or may be substituted by an inhalation anaesthetic. There is no doubt that the ideal inhalation anaesthetic avoids both ether and chloroform. It has been said that either of these causes a sensitization of the tissues to histamine which is liberated by any trauma and the poisonous effect of which is magnified many times if either ether or chloroform be used. One effect is a lessening of the acetylcholine content of the bowel with an impairment of peristalsis and therefore the tendency to suffer from gas-pains and distension is increased. For this and many other reasons I avoid the use of ether and chloroform, and use nitrous oxide and oxygen, given by the McKesson apparatus. By this means it is possible to carry out any simple abdominal operation and obtain sufficient relaxation.

A diminution of surgical shock may be further accomplished by the prevention, as far as possible, of pain impulses reaching the central nervous system. To this end a regional, or spinal anaesthetic may be used. Percaine is the least toxic and most potent form of local or spinal anaesthetic. Cases in which there is likely to be only a mild degree of shock, and in whom a little more relaxation is required than can be accomplished with gas and oxygen, are best treated with local infiltration of the abdominal wall, using from 100 to 200 c.c. of 1 in 1,000 percaine with adrenalin. Where the degree of shock is likely to be larger, and where complete relaxation is required, I use an intrathecal injection of 1-1,500 percaine.

The technique of spinal anaesthesia has improved enormously in recent years since the introduction of Etherington-Wilson's method. After the patient has received his cubicular intravenous anaesthesia he is brought to the theatre, placed on the operating table and held in the upright sitting position by two nurses, and the intrathecal injection of percaine is given with the patient in this position. The average quantity used is 12 c.c., and if he is kept upright for forty seconds, counting from the time of the beginning of the injection, anaesthesia occurs up to about the umbilicus. If the position be maintained for a further fifteen or twenty seconds, anaesthesia is obtained up to the xiphisternum. He is then laid flat, and placed in a slight Trendelenburg position. The whole of this procedure is, of course, carried out while the patient is unconscious and, subsequently, gas and oxygen may be given, if required. Dr. Jarman has done several hundred cases by this technique for me, and, lately, we have been using 1 c.c. of ephedrine subcutaneously as well, as this appears to prevent more than a minimum fall in blood pressure. The Etherington-Wilson technique of percaine spinal anaesthesia is not followed by headache; it diminishes surgical shock, gives a very thorough relaxation of the abdominal wall, is accompanied by the lowest drop in blood pressure of any type of spinal anaesthetic in our experience, and it gives the minimum of post-operative discomfort or distension. Our patients never know that they have had a spinal anaesthetic.

Operative Technique. Fortunately, little need be said about the actual operative technique, as the need for gentle handling of the viscera, and the avoidance of evisceration, are well known. Mention has already been made of the liberation of histamine by damage to muscles, and it is, therefore, my practice to retract the rectus muscle, for almost all abdominal explorations, rather than to cut through it or the oblique muscles. A gentle mopping out of pus and pathological contents without "scrubbing" the peritoneum is known to be important, and also the avoidance of exposure of the intestine, which prevents excessive loss of carbon dioxide from the peritoneal cavity. I do not propose to enlarge upon

these points as all surgeons are familiar with them. The advantages of "suture-buttons" for the retention of deep silkworm-gut sutures are not so well known. If the majority of deep sutures is retained by suture-buttons the œdema which occurs in tissue encircled by an ordinary suture is avoided and post-operative pain in the wound is lessened.

III. THE POST-OPERATIVE PERIOD.

Points upon which I wish to dwell with reference to the post-operative period are as follow:—

- (a) Rest to the abdomen and its contents.
- (b) General comfort of the patient.
- (c) Sleep and pain.
- (d) Fluids, chlorides, and nourishment.
- (e) The care of the mouth.
- (f) The care of the bowel.
- (g) Movement of the patient.
- (h) Vomiting.
- (i) Retention of urine.

(a) Rest to the Abdomen.

After an abdominal laparotomy the intestines tend to remain in a state of complete immobility for about twenty-four hours. This cessation of peristaltic action was emphasized by the late Tyrrell Grey, who referred to it as the stage of "active ileus," and both he and George Waugh always taught that everything possible should be done to encourage this period, and to maintain rest for the alimentary canal as thoroughly as possible. The oral administration of fluids or nourishment defeats this natural defence mechanism because the act of swallowing causes intestinal peristalsis. The patient should, therefore, be advised not to swallow anything whatever for at least the first twenty-four hours. In order that he may receive the maximum benefit from this method of treatment (Oschner's), with the minimum of discomfort, this withholding of fluids by mouth should be explained to him before the operation, giving the reasons why it will lead to greater comfort. Not only will gas-pains and distension be diminished, but vomiting will be almost unknown. If swallowing takes place, irregular peristalsis will occur, abdominal discomfort will be much greater and the vomiting of larger quantities than was drunk is likely to happen, with increase of thirst and pain. If it is desired to keep the patient from swallowing for a longer period still, as is always advisable in cases of entero-anastomosis or in the presence of general peritonitis, this can easily be done, provided that the reason is explained to the patient and adequate fluids and nourishment are administered by other routes, either rectally or intravenously.

A further aid for abdominal discomfort is the application of heat, either in the form of an electric pad or a radiant heat cradle.

(b) The general Comfort of the Patient.

Maximum comfort in bed is obtained if the patient is sitting almost upright—an exaggeration of the Fowler position. Beds are now made so that by turning a handle the patient can be slowly moved into an extremely comfortable position. Whether he has had a spinal anæsthetic or not this raising must be done slowly

and gradually, either by the automatic bed or by pillows placed beneath the back and shoulders and a knee-bolster under the knees. It is common to see a patient placed in what the nurse considers to be Fowler's position, but on careful examination, the body and shoulders are found to be flat, and the head and neck propped up so that he can hardly breathe.

(c) Sleep and Pain.

Careful premedication and the use of pentothal produce a quiet sleep for several hours as a general rule after a laparotomy. If percaine has been used for local infiltration, or as spinal anæsthesia, the patient will be free of all pain for six to eight hours, and will frequently wake at the end of that time and ask when the operation is going to take place! As soon as restlessness or pain makes its appearance a subcutaneous injection should be used of an opium derivative which has the least paralysing effect on the intestine. The most satisfactory from this point of view is heroin—one-twelfth of a grain is sufficient to give several further hours of mental and bodily ease. As an alternative one-sixth of a grain of omnopon, is as efficacious, but is rather more commonly followed by vomiting, and has a little more deleterious effect upon the intestines. Morphine is definitely the most harmful as it produces more paresis of the bowel and as soon as its effect begins to pass off it is followed by increased gas-pains. Patients who have had more than one laparotomy, and who have had morphine on one occasion, and heroin on another, maintain that they prefer heroin because it is not followed by so much abdominal distension.

After the first few hours further opiates are seldom necessary, because less paretic and more soothing medicaments may be given per rectum or into the colon, if the rectum has been removed. The so-called "rectal cocktail," which is given slowly into the bowel through a tube and funnel, and is found to produce several hours of good sleep, is made up as follows:—

Pot. brom.	...	...	...	60 grains
Aspirin	...	...	...	20 grains
Chloral hydrate	...	...	...	20 grains
Paraldehyde	...	...	...	2 drachms
Glucose	...	...	...	$\frac{1}{2}$ ounce
Normal saline ad	...	...	...	5 ounces

This cocktail is seldom needed until ten or twelve hours after the operation, and it usually ensures a good first night's sleep, with or without a further injection of heroin or omnopon. It may be repeated on two or three successive nights, but once the patient has started to take by mouth, any of the well-known hypnotics may be given. Personally, I use allonal or medinal, and avoid the opium derivatives as much as possible. If pain is present, ten grains of aspirin with half a teaspoonful each of bicarbonate of soda and sal volatile, mixed together in a little peppermint water, often act like a charm; or one or two tablets of veganin may be taken.

(d) Fluids, Chlorides and Nourishment.

Although it is true that the maximum of comfort is obtained by withholding all fluids by the mouth for at least twenty-four hours, yet the patient must be supplied with ample water, sodium chloride and glucose, in order to subserve the normal bodily functions and to allay thirst. For the average case, a sufficiency may be given per rectum, provided it is given at a regular, continuous rate,

through a small catheter, passed well up into the colon. 10 per cent. glucose in normal saline, can be absorbed at the rate of four or five pints in twenty-four hours. This is, approximately, one pint every five hours. No cumbersome apparatus for warming it is necessary, and a simple dripper with a screw-clip adjustment works perfectly well. One pint every five hours is at an approximate speed of twenty to thirty drips per minute, depending on the size of the drip. The nurse must be instructed to check up on the flask from which the solution is flowing so that the patient gets from 100—120 c.c. per hour. This should be started directly the patient has returned to bed. If, for example, the operation is done in the morning, the patient will sleep for several hours, and saline and glucose will be given per rectum all the time until the evening, when the patient will be awake and beginning to feel a little discomfort. The glucose and saline is then stopped, and the special sedative "cocktail" given, five ounces in a few minutes. It is then advisable to wait for several hours before beginning the glucose-saline injection once more. This must be discontinued if he begins to return it or to pass flatus or feces. It may then, if necessary, be started again a few hours later.

For a more serious case, administration should take place intravenously, for example, where peritonitis is present. The more serious the operation the greater is the need for and response to a blood transfusion and/or glucose-saline infusion. The former may be given rapidly after excessive loss of blood or if shock is present but more slowly (100 c.c. per hour) when there are not these urgent indications. It should be followed by intravenous glucose-saline infusion or the latter may be used alone for a less serious case. This is best accomplished by means of the Baxter vacoliter. This most convenient apparatus has been used by me in several hundred cases. It never produces fever, or thrombosis; it is supplied with a dripper and needle already sterilized, and is nearly half as cheap as any English preparation of which I am aware. With the intravenous route, as with the rectal route, there is no need for the solution to be warmed; it can be given to an adult with absolute safety at ordinary room temperature. The vacoliter for ordinary use contains 1,000 c.c. of 5 per cent. dextrose in normal saline, and three of these should be used in twenty-four hours. It should be given, therefore, at the same rate as the rectal solution, namely between twenty and thirty drips per minute, the nurse again checking up that the patient receives about 100 to 120 c.c. each hour. The more serious the case the more dramatic is the effect of this method of treatment.

A young doctor, who was first seen many hours after a duodenal ulcer had perforated, and who had severe general peritonitis, was treated by this method for four and a half days, with complete comfort, no reaction, and a normal, unaided bowel action, before he began to take by mouth.

More recently a surgeon's sister, who had multiple diverticula of the colon which had perforated into her abdominal cavity five days before I saw her, and who had a most extreme degree of peritonitis, and paralytic ileus, was treated by the Baxter vacoliter for five days, with complete comfort, no reaction, and an uninterrupted recovery.

The whole object of these methods of treatment is to give the patient as much abdominal, general and mental rest as possible. If the patient is of the highly-strung type, who insists upon drinking, and the surgeon insists upon withholding fluid by mouth, then mental rest is destroyed, and more harm than good is done. The patient must, therefore, in order to have mental comfort, be allowed to drink, sometimes long before the first twenty-four hours have elapsed, and a certain

degree of abdominal comfort must be foregone, in order that the mental comfort may be the greater. I find that the withholding of fluids for the first day is appreciated by the patient, if the reasons have been explained to him beforehand, but it becomes irksome if this has not been done. The ideal case does not drink at all until the passage of flatus or fæces has taken place.

When the patient starts to drink, he does best if he has, for the first twenty-four hours, non-residue forming fluids: tea, water, glucose-water, orange juice, grape-fruit juice, chicken broth, which are given in the following doses: two ounces every half hour for the first eight hours; then five ounces every hour for the next sixteen hours, when the patient is awake. Assuming that, in this twenty-four hour period, six hourly drinks are missed, a little over four pints of fluid are taken, with sufficient carbohydrates to supply the patient's needs. The following day the quantity of fluid can be increased, and the frequency with which it is given diminished, in such a way that the patient gets four or five pints in the twenty-four hours, and in this period residue-forming fluids can be added; for example, citrated milk, peptonised milk, Benger's food and Ovaltine. In operations upon the bile passages, it is better to avoid any fats for a still further forty-eight to seventy-two hours, but for any other type of case the patient may be put on a light diet, seventy-two hours after his operation and increased to a full diet in a further two or three days.

(e) Care of the Mouth.

No matter how much fluid is given, whether by mouth, by rectum, or intravenously, the patient will complain of thirst for the first 12-18 hours. This is because scopolamine has an effect equal to that of atropine in drying up the secretions. As atropine has a deleterious effect upon the intestine, its use is avoided. The effect of the scopolamine in producing a sensation of dryness in the mouth and throat, disappears after twelve or eighteen hours, and, thereafter, does not recur. Throughout the whole of this period, and until the patient starts to take by mouth, frequent mouth-washes are essential. He should have by his side, within easy reach, several different fluids, which he can use for washing out his mouth at frequent intervals. Amongst the most pleasant are: cold tea, sanitas and water, glycothymoline, 1 in 4,000 carbolic acid, T.C.P. and fruit juices of various sorts. The chewing of gum and pineapple is of great help. These measures not only allay the sensation of thirst and dryness, but prevent the complication of parotitis.

(f) The Care of the Bowel.

It is usually about twelve hours after the patient begins to drink that he experiences sensations of peristalsis. Gas frequently gets down to, but not through the anal sphincters, and he feels he is not able to let it escape. As soon as that happens a flatus tube should be passed, and the other end should be laid under water, so that the patient and the nurse can hear the sound of the bubbles coming away. When this no longer gives relief, I have injected into the bowel half a pint of warm olive oil, and left in situ for from half to one hour. This is followed by a turpentine enema, made up of turpentine, one ounce, and water to twelve ounces. This usually gives a satisfactory action of the bowels and any discomfort passes away. The following morning, and usually for several subsequent mornings, the patient has a black treacle enema, which, in my experience, gives the smoothest, easiest, and most satisfactory result, and may be used as long as necessary, without upsetting the patient. It is made up as follows: Fowler's original black West

Indian treacle, milk and water in equal parts, of each three and a half ounces. The black treacle, of course, contains molasses, and its effect upon the large intestine is due to the choline which it contains. As far as possible I avoid all aperients, while the patient is in the convalescent stage, except in those patients who are accustomed to their regular use.

For a severe case of established paralytic ileus, normal or hypertonic saline, with glucose, must be given intravenously, as already detailed. If neither of the two enemata already described produces a bowel action, the patient should have an ox-gall enema (ox-gall one ounce, with four ounces of water), and intramuscular injections of acetylcholine. The initial dose is 0.2 gram, and is followed by 0.1 gram every hour for six hours, or less if the bowels begin to move. The effect of these methods may be further augmented, if necessary, by the injection of anti-gas gangrene serum, using not less than 80 c.c., and by the injection of prostigmin.

When insufficient acetylcholine is present in the wall of the bowel, an injection of pituitrin will destroy the already depleted amount, and often leave the patient worse than he was before. I therefore avoid its use as far as possible in this type of case.

(g) Movement of the Patient.

Those of us who have sat still in a motor car for even one hour concentrating upon driving, know the discomfort which comes from lack of movement, a cramped position, and tense muscles, and how welcome is the opportunity to "stretch one's legs." Every patient who is lying in bed must be taught to "stretch himself" at regular intervals, and in a regular manner. There are three different movements which should be taught by the nurse as soon as reasonably possible, but without disturbance of rest or sleep:

(1) **Deep Breathing Exercises.** These should start about twelve or eighteen hours after operation. Either doctor, or surgeon, or nurse, should stand at the foot of the bed, and by their own example show the patient how to draw deep breaths, drawing up the abdomen, then the thorax, and finally filling the nasal passages. I encourage the patient to do this every time the clock strikes the hour (when he is awake), starting with two minutes at a time, and soon increasing to five. The more serious the case, and the older the patient, the more necessary is this exercise. The incidence of chest complications and of thrombosis is reduced almost to vanishing point, and the circulation and general condition are much improved. Contrary to expectations, abdominal pain and discomfort are diminished.

(2) **Passive and Active Muscular Exercises.** Muscular exercises should begin at the latest, twenty-four hours after laparotomy. Every possible muscle movement should be carried out with as thorough a contraction and relaxation as possible, but without necessarily moving any part of the body. The nurse should encourage the patient to do these exercises every time the clock strikes the half-hour, again, working up rapidly to five minutes. The patient is delighted to be getting exercise, does his "ten-mile walk a day in bed without moving" with relish, and feels better and sleeps better for it. Old or feeble patients may be massaged instead.

(3) **On Getting out of Bed.** After many years' experience, Professor Clairmont of Zurich found that if a patient is got out of bed thirty-six to forty-eight hours after a laparotomy, the incidence of cardio-vascular and pulmonary complications

is much diminished, post-operative distension and bowel difficulties are more readily overcome, and the incidence of incisional hernia decreased. Miss Claremont F.R.C.S., described his methods in the "Lancet" in 1922, and I have had many opportunities of seeing his work and that of his colleague Professor Dr. O Winterstein, in Zurich, and of proving, myself, for over fifteen years, the truth of their contentions. It is my practice, therefore, to have the patient up in a chair, long enough for his bed to be made, about thirty-six or forty-eight hours after his operation, provided no tube has been left in the abdomen. If the latter has been the case, then he gets up for the first time the day after the last tube is removed. On the following day, he not only sits in a chair, but walks round the bed, and sits up for a little longer; the day following he may walk down the corridor, and on the fourth or fifth day may walk in the grounds. Patients treated in this way avoid flabby muscles, thrombosed veins, and chest complications, more than those who are "so important" that they cannot be "rushed." The matter is not only of importance to each individual and his own personal economy, but also to the economics of a busy hospital, and a bigger turn-over occurs. Resulting hernia is quite unknown, and the patients are much fitter in a much shorter time.

(h) Vomiting.

Vomiting after a laparotomy is extremely rare with the type of anæsthesia which I have described. Time does not permit more than a brief mention of the subject of acute dilatation of the stomach. I believe that the only practical definition of this condition is "any patient who vomits twenty-four hours and one minute after a laparotomy has acute dilatation of the stomach." He should, therefore, have the stomach washed out immediately, until it is quite clean, and the case should again be reviewed, to make sure that he is getting sufficient water, sodium chloride and carbohydrate.

(i) Spasmodic Retention of Urine.

The recent introduction of esmodil has added greatly to the comfort of patients who get a spasmodic retention of urine. The subcutaneous injection of one c.c of esmodil usually has an effect as dramatic as that of the rod of Moses when it struck the rock.

CONCLUSION.

I would emphasize that the main points in obtaining comfort after a laparotomy are:—

1. No aperient and no enema for forty-eight hours before operation.
2. Careful cubicular anæsthesia.
3. Nothing whatever by mouth until the bowel begins to move.
4. Ample water, sodium chloride and glucose.
5. Mental and bodily rest and sleep.
6. Early movements and quickly out of bed.