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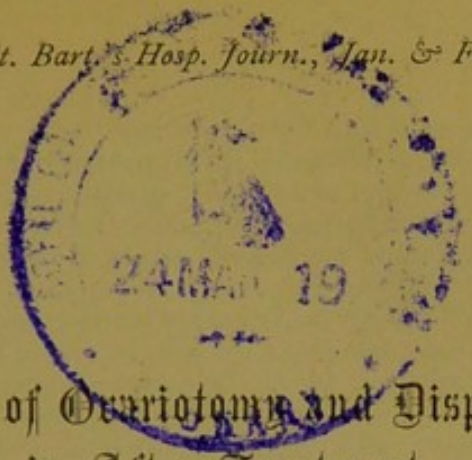

The Details of Ovariotomy and Disputed Points in After-Treatment.

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OVARIOTOMY need no longer be discussed as was the custom between 1858 and 1878. Sir Spencer Wells, who had a larger share than any other surgeon in establishing it as a legitimate operation, gained his point by great attention to matters of detail. In this respect Wells's method remains the right method—the basis, in fact, of modern abdominal surgery, of which ovariotomy is the type. The merits and demerits of each step in an operation, each instrument, each material for ligature, suture, and so forth, are to be discussed and reported, so that the evil—as in the case of the clamp—may be made clear as well as the good. On the other hand, we may dispense with all arguments, now superfluous, as to the justifiability of ovariotomy. When such arguments were needed, Wells and others wrote and acted in a manner which was right and necessary then, but not to be imitated by us who live and work, thanks to these authorities, under altered and improved conditions.

This evening I will briefly review ovariotomy as now practised. Of course, a complete sketch of the operation would require a short course of lectures; but I have selected without difficulty much that is suited for the consideration of the members of a society.

Diagnosis and after-treatment are inseparably bound up with our subject, especially after-treatment, the more so when we find how success is attained by the most opposite ways of managing the patient after she has left the operating table.

After all, diagnosis is only important, at present, in respect to exploration, which is, indeed, a diagnostic agent. An ordinary ovarian cyst, not too closely connected with the uterus, is very easy to detect; but complications may baffle the most experienced clinical observer. Thus menorrhagia in a woman aged about forty, with irregular semi-solid tumours of both ovaries, with short pedicles, may naturally lead the surgeon to suspect uterine myoma, especially if the uterine cavity be enlarged. Indeed, I have seen ovarian disease

of this kind co-existent with fibroid disease of the uterus. An early exploratory incision is justifiable in almost any case of abdominal tumour, excepting for very self-evident uterine myomata which grow slowly and give no trouble, and for equally evident cases of malignant disease already extending beyond the limits of the primary growth.

Tapping should be discarded, except in cases of acute lung disease where the bulk of fluid seriously increases the dyspnœa, whilst the patient cannot at the time bear an operation. There are manifest objections to paracentesis. I recently made an exploratory incision in a patient whose abdomen was tensely distended with ascitic fluid. The uterus was fixed, and there were masses in Douglas's pouch. I was naturally inclined to believe that there were free papillomatous growths in the pelvis. But as the ascitic fluid escaped, a large cyst appeared, firmly bound down by adhesions. It rose from the pelvis and pushed up the pelvic peritoneum on the right side. On tapping it clear fluid escaped, but it was irremovably fixed by papillomatous growths to the pelvic viscera. Had I tapped instead of exploring, I might have wounded some gut adherent to the front of the cyst; and as the escape of fluid would have exposed the outline of the cyst, I should have been obliged to explore. In fact, tapping usually means two operations instead of one. It is just in the most doubtful cases that tapping is most dangerous. I have known the intestine to be wounded by a very good surgeon, and the puncture of a cystic uterine myoma mistaken for an ovarian cyst, has led sometimes to dangerous hæmorrhage, and sometimes to fatal results from damage to uterine sinuses.

Infancy and age are in themselves no bar to operation. Menstruation is sure to be taken into account by the operator. He will not go out of his way to operate during menstruation, for, amongst other objections, it is not possible to clean the patient thoroughly at the period. The dangers of operating when the catamenia are present have, however, been greatly exaggerated. "Psychical disturbance" is dreaded; but I find that the postponing of an operation because a period has set in prematurely often causes unusually severe disturbance, physical as well as mental. A "show" brought on prematurely, usually by the passage of the sound, is probably an indication of purely local changes confined to the endometrium. It must be remembered that hysterectomies undertaken during profuse show, sometimes truly catamenial, do not so far seem to fare worse than those performed when there is no such show. In ovariotomy no bleeding mucous cavity is opened. I admit that premature show, after ovariotomy, is often preceded by a rise of temperature. But I know from experience that there is usually no rise when ovariotomy has to be done during the true period.

The presence of other diseases makes ovariotomy complex rather than complicated. Phthisis when not very active is improved by the removal of the cyst, but irregular rises of temperature must be expected during convalescence. Acute bronchitis is a dangerous condition, and one of the few where paracentesis is allowable, at least when there is clear evidence that a large unilocular cyst fills the abdomen. The ovariotomy should be done as soon after recovery as possible. Chronic bronchitis is of necessity more or less serious. Certainly the tumour must be removed, for it aggravates the visceral

disease; but some of such cases are likely to be lost. I refer to cases with chronic pulmonary disease and ovarian tumour complicated by bad adhesions or suppuration. Care must be taken to strap the lower ribs after a tumour has been removed from a patient with bronchitis. The same precaution is advisable whenever very big tumours or unusually large collections of fluid are removed—above all in old subjects. Albuminuria with visceral disease is serious, but when a large cyst or tumour exists, yet the patient feels quite well, and has a good appetite, the presence of a small amount of albumen in urine of a fair specific gravity, freely secreted, means, I know, that the urinary tract suffers through the presence of the tumour. After its removal the albuminuria disappears. I have had three such cases last October. I cannot dwell on the long question of the relation of this purely mechanical albuminuria to the albuminuria of pregnancy. The latter ceases after the tumour, that is the fœtus and placenta, has come away. But eclampsia in cases of ovarian tumour is unknown. There is no ovarian nephritis like the nephritis of pregnancy. I showed, however, in your Hospital *Reports* for 1878, how often the kidneys are unsound in ovarian disease.

Coming to treatment immediately before the operation, I may say that any rational manner of clearing the bowels is suitable for the patient. There are two irrational practices. One is the administration of purgatives within twenty-four hours before ovariotomy. Distressing tenesmus or troublesome and dangerous flatulence may ensue after the operation. Another is carelessness about scybala till within a day or two of the operation. This may allow large masses to remain after the passage of a fair collection of hardened fæces when the final enema has been given.

Free scrubbing of the abdomen and careful disinfection of the umbilicus are always needed, and the pubes should be shaved on the night before the operation, if possible. A vaginal injection is then given, and vulvar hair washed with weak sublimate lotion.

Now we come to the operation itself. Full details would fill a small book, whilst as you are all more or less acquainted with general surgery, much would be superfluous in such a publication. I will dwell upon as much as we can reasonably consider.

Too many sponges and instruments are of course objectionable, and as Mr. Lockwood tells you, they increase the chances of sepsis. On the other hand, too few involve inconvenience. I have several times seen much trouble when only ten forceps and sponges were at hand. I use eighteen of each, and find that number quite convenient.

Antiseptic precautions on the principles of Lister are, taken as a whole, advisable. I must once more refer to the limits of a paper, and I will content myself with saying that I still use carbolic acid, taking care, however, to squeeze all sponges before introducing them into the abdominal cavity. The operator should take off at least his coat, waistcoat, tie and collar, and wear a well-washed mackintosh apron. The waterproof sheet for the abdomen is not absolutely needed, and there is some danger that the adhesive material may be septic.

Let the surgeon when he takes up the scalpel remember general principles. There is no mystery about the abdominal wound as a wound, no glamour about silkworm gut, no magic in drainage. The abdominal wound must be sufficiently long. Avoid the Continental

practice of beginning with a four- or five-inch incision to remove even a self-evident thin-walled cyst. On the other hand, do not try feats of dexterity and "record beating," such as getting out a large cyst through a two-inch wound; never hesitate to enlarge the wound if necessary. Fear of stultification, the idea that it "looks so bad" to enlarge the wound, is a vicious principle. In July I removed a pair of colloids which completely filled the abdomen, through a three-inch incision. One cyst had burst already; the other, I admit, ruptured during extraction, but I knew that I should have to flush the peritoneum. The washing out proved just as easy as if the wound had been six inches long, indeed there was less trouble from prolapsing gut. I could see all the contents of the abdomen clearly, up to the under side of the liver. This is usually the case when the distended parietes collapse after the delivery of a large tumour. On the other hand, a relatively long wound is always needed when there is little or no distension of the abdomen, as resistance is great, so that it is hard to use the hand freely, and at the same time thick, healthy recti are easily bruised. Fixed tumours and swellings that suggest suppuration, especially pyosalpinx, require a long incision from the first. The surgeon, in determining the length of the wound, need not trouble about the hernia question. That must be taken into account when the wound is closed.

Hæmorrhage from the wound is to be stopped with pressure-forceps, which can be removed a few minutes afterwards. In taking off a forceps from a large vessel, torsion is advisable. Ligature involves not only waste of time but also needless handling of the tissues. The forceps should not be left on during the further part of the operation, as their bows and handles are in the way and get fouled.

The abdomen being opened, the surgeon can ascertain the nature of the tumour. The most urgent question at this stage is what to do if an apparently irremovable malignant tumour be detected. An abdominal incision in a doubtful case is perfectly justifiable; tapping for diagnosis is dangerous and seldom throws any light on the case. Do not suppose that an incision is quite harmless when sarcoma or diffused papilloma is discovered. Such cases bear operation badly, but the worst is known, the worst being the death, soon after operation, of a patient bound to die soon. Fortunately we can never be sure of malignancy until the symptoms are more than pronounced. On April 17th, 1892, I operated, with qualms of conscience, on a young woman, aged 22. The abdomen measured over 47 inches in circumference, its tissues were œdematous, and the veins engorged. The fluid was evidently free; the uterus was fixed. The legs were much swollen; the patient was greatly emaciated. I made an incision, forty-five pints of dark brown fluid escaped, and papillomatous disease of the appendages was discovered. I succeeded in removing both. The patient is now alive. When a cyst is opened and found irremovable and full of malignant matter, it is best to let the cyst wall fall in, hæmorrhage being checked by pressure. Fixing the malignant cyst to the lower angle of the wound and draining will usually be followed by fungous protrusion, infection of the abdominal wound, and terrible discomfort. I have seen several grim samples of the effects of this practice. On the other hand, it is not safe to suture the cyst wall

over the aperture made to explore its contents, as malignant tissue will not heal, but is very likely to slough.

Let us turn from this gloomy subject and suppose that a removable cyst or tumour is discovered. Tapping and the separation of adhesions are now well understood. The rapid breaking-down of septa in a multilocular cyst only requires a little "nerve." The hand outside the abdomen must co-operate with the hand inside the cyst; the assistant should merely steady the cyst with a forceps placed on each side of the rent. But if the wall be repeatedly torn, or if the operator gets his hands through the back of the tumour into the peritoneal cavity and sees intestine prolapsing into the cyst, the state of things is in no way desperate, and with a little coolness the tumour may usually be made to slide out. The operator should immediately clamp the pedicle with a big pressure-forceps close to the tumour, as there is hæmorrhage to check. One reason why Sir Spencer Wells had such relatively good results thirty years since is that he would boldly tear to rags the upper part of a big, soft, vascular, multilocular tumour, and deliver the lower part with rapidity, so that he got at the vessels quickly. Tumours allowed to grow big were common in those days. Until such a tumour is got out, the surgeon cannot secure the vessels.

Enucleation can only be understood after considerable experience in assistance at abdominal operations. A more teachable subject is the ligature of the pedicle. In all average, as well as in all broad pedicles, the outer border, including the ovarian vessels, should be tied separately. No. 3 silk (China twist) is best, unless the vessels be very big. This practice, introduced by Thornton twenty years ago, has probably saved dozens of lives at least. Penrose, of New York, goes further, and advocates separate ligature of the inner border also, that is to say, the tube and adjacent tissue are tied; the middle of the pedicle is left to take care of itself. No doubt, the first danger is slipping of the outer border, and the second danger is slipping of the inner border. I should shrink, however, from leaving the middle part unligatured, even when a normal ovary is removed for the relief of fibroid uterine disease.

Double transfixion of broad pedicles is not trustworthy. I have found that the first and second loops may loosen each other, or one may get cut through when the third is being tightened. Again, splitting of the pedicle is not rare; and three loops confuse the operator. I now adopt Penrose's practice of securing both borders when the pedicle is very broad, but in addition I transfix the middle of the pedicle, at one point only, with stouter silk (No. 4), and find the single transfixion sufficient. The ends of the silk must be made to lie accurately in the grooves already formed by the ligatures at the two borders. After enucleation of a burrowing cyst, the pedicle often shrinks to very small proportions. In other cases no true or anatomical pedicle exists, and all that can be done is to secure all bleeding vessels and to check oozing by pressure—a task not necessarily difficult.

Sloughing of the pedicle is almost unknown, though some operators leave it very long on the distal side of the ligature. I fully discussed this question in the Hospital *Reports* for 1877-8, and in the *Obstetrical Transactions* for 1893. As I observed in 1874, the pedicle "is literally nursed by the warm peritoneum that surrounds

it, and it lies in the human body, a marvellous heat-producing apparatus that keeps it in a regular temperature of about 100° F., which is more than any wool, poultice, or ingenious but complicated artificial instrument could do." In the abdominal wound the sutures are not in the same condition as the ligature round a pedicle. The sutures ought *not* to be tight, else they will cut or strangulate the tissues which anteriorly are on the surface of the body. The pedicle ligature *should* be tight, to make the distal or proximal tissues bulge as much as possible, so as to meet. They lie deep in the body, and lymph soon unites them.

China-twist silk is the safest material for ligature. No. 4 is the best size for a broad or medium pedicle; No. 3 for the outer border. Thin silk makes the best groove, but is apt to snap when being tied—a troublesome accident, as it involves more handling of the pedicle. Thick silk is objectionable for small pedicles, as are met with in cases when a small ovary, fellow to an ovarian tumour, is removed on suspicion; and is especially objectionable when the tissues of the pedicle are inflamed. Thick silk interferes with the bulging process, so the distal and proximal tissues do not lie well in contact. In one case where a silk ligature was discharged nine weeks after operation, the operator informed me that he "used too much silk, and silk of too great thickness — No. 5 braided—and used two ligatures."

The manner of applying the ligature being settled, what knot is best? I object to teaching the use of the Staffordshire knot; it savours too much of a feat; it can be done easily, no doubt, with a little exercise of dexterity, but it involves the passing of the loop over the tumour or over the stump of the pedicle, which under many circumstances is clumsy or even objectionable. The Thornton ligature is excellent; a loop of silk is passed through the pedicle and then cut. Then there are two pieces of silk. They are twisted once round each other on one side; then the ends of the one silk are tied round the inner or tube side of the pedicle. The ends of the other are tied in the groove made on the outer border by the separate ligature on the ovarian vessels. Nevertheless, there are some disadvantages in this ligature. It is more difficult in practice than it appears to be in theory. In pulling the second knot tight the first loop may be loosened if it has been faultily tied, or cut if firmly tied. Sometimes, too, the pedicle gets split. I always employ the knot introduced by Dr. Bantock, which I have seen in use several hundred times, and have found much the easiest kind to apply safely. The loop passed through the pedicle is not cut. One end of the silk is passed round the inner side of the pedicle and then through the loop. The two ends are drawn well parallel to each other firmly till the inner half of the pedicle is well tightened against the loop in the middle of the pedicle. During this manœuvre care must be taken not to pull outwards, else the loop or the silk passing through it will be cut or badly frayed. Lastly, the two ends are tied firmly against the outer border in the groove, if there be one of the ligature round the ovarian vessels. This knot should never be tied against the anterior or posterior aspect of the pedicle. In securing a pedicle on the left side the ends are best tied on the inner side of the pedicle after the manœuvres described above.

No doubt if the pedicle be very broad it is advisable to sew the

edges over the raw surface. The importance of this precaution has, however, been much exaggerated, for as I know from having made in years past numerous post-mortems of patients who died after ovariotomy, a cap of clot forms on almost every pedicle—small or large, thick or thin, raw or sewn over. Hence the danger of adhesion to intestines after the first few days becomes theoretically equal in all cases. Intestinal obstruction after ovariotomy is unfortunately not rare, but is seldom due to adhesion to the *raw* surface of the pedicle. Sir Spencer Wells's classical case, which most unfortunately led him to distrust the ligature and to persist in the use of the clamp for several years, was not an example of adhesion of bowel to the *raw* surface of the pedicle. The bowel encircled the pedicle, adhering to its *sides*, and the free surface was suppurating. At the operation the pedicle was found to be only one third of an inch thick, and it was considerably pulled about; indeed, the clamp and cautery were used unsuccessfully, and the operator transfixed and ligatured the mangled pedicle afterwards.

We must now do what must never be done in practice, we must hurry on to the end of the operation. Free oozing from purely parietal adhesions and from the pelvis may often be checked by simple pressure of sponges. A large flat sponge is placed in the peritoneum, immediately behind the parietes, and one or two round sponges are packed in Douglas's pouch. Should the oozing be free, more than one sponge is advisable, as the aim is to ensure firm pressure for several minutes. The sutures being applied the sponges are withdrawn, and if there be fair evidence that the oozing has stopped, no flushing or drainage will be needed. Remember that from the first the sponges must be *pressed*, not *wiped*, against the peritoneum and viscera. *Wiping causes fresh oozing*, as I know from observation in the days of strict "toilet of the peritoneum," as the sponging process was termed. Spencer Wells was misunderstood. That authority would mop up ordinary ovarian fluid thoroughly and close the wound with impunity, and we may do the same. But if the effused material be the least suspicious in any way, or if the oozing be very wide in area, and the patient appear already the worse, flushing is advisable. Hot water checks hæmorrhage; it displaces clots, pieces of papilloma, and other solid as well as fluid matter. It is a great counteracter of shock, and assuredly acts like transfusion, some of the injected water being undoubtedly absorbed by the vessels. Whatever apparatus be used, make sure that the water runs in a full gentle stream. The aim is to flush out foreign bodies and fluid, so that a trickling stream is insufficient; besides, the water gets cold if poured in too slowly. Flushing is particularly needed when colloid matter has escaped into the peritoneum. Colloid cannot be well removed by sponges. Drainage of Douglas's pouch when colloid lies in it is dangerous, for that material cannot mount up the tube, but germs can get down to it. Now colloid is a first-class cultivating medium. So flush it out by all means, and put not your trust in drainage-tubes.

Yet the tube has its use. When the sponges left in the pelvis during the introduction of the sutures have clearly failed to stop oozing, and when products of inflammation remain in the pelvis, the tube should be introduced. It is true that there are certain qualifications to this statement; I have closed the abdomen, for instance, with

impunity, after removing two large suppurating tubes, the stumps being touched with iodine. When a pedicle is unhealthy, either from inflammation, or infection with new growth, the tube may certainly irritate it, and hence we often hear of the casting up of a ligature through a drainage-tube hole. Drainage depends much on the merits of individual cases. To leave an untied suture in the parietes when the tube is inserted, and to tie it when the tube is removed, is a bad practice. The track is apt to suppurate, and the chance of healing by first intention has long passed when the ligature is tied.

We are now back again to the abdominal wound, and must think a little about sutures. Altogether, silkworm gut is the best material, at least for the deep sutures. It was first used nearly twenty years ago by Dr. Bantock, at the Samaritan Hospital. I see that you approve of it here. Mr. Cripps has adopted it, and Mr. Lockwood finds that "it is quite unirritating, and owing to its physical properties has no capillarity." He states that "one or two boilings seem to have no effect on it," but I find that it is quite needless to boil the gut. It must always be soaked in cold water or antiseptic solution for at least twenty minutes before use, and it is good to keep it in lotion.

Catgut is necessary for deep, sunken sutures, continuous or interrupted. I use it when uniting the aponeurosis and muscle.

We must not allow hernia to develop, if we can avoid it. We cannot always avoid it, for this complication is the patient's fault in not a few cases. They often put aside belts far too soon. *Do not be under the erroneous impression that the hernia always develops at the lower extremity of the wound.* I have seen several bad herniæ high up an ovariotomy cicatrix. Do not blame the material for suture; thus silkworm gut never gives trouble if not pulled too tight. Also beware of the value of new methods. At the Geneva Congress last September there was a long discussion on the closure of the abdomen. Every speaker reported the best results after the adoption of his *last* method; but Savory long ago noted the fallacy which underlies arguments of this kind. It is in the old operator, rather than in the new method, that the improvement usually lies. As regards the material for suture, we can see the truth at once. Silk may do well, silkworm gut may do well, and wire may do well. But the divergent practices of deep sutures, including all layers or sunken sutures of the deeper layers of the abdominal walls, come under the same argument. Beginners often handle the tissues too much and not too tenderly, so that sunken sutures in layers may involve great mauling about of muscle, aponeurosis, fat, and skin. If deep sutures only be used, they may be pulled too tightly. After some experience the operator handles tissues more gently; then he must discount the value of the method he rejects or adopts.

A single set of sutures passed through all the layers, including the rectus itself as well as its sheath, answers well in a wound of average depth. Several German precisians, after examining for years after operation many patients submitted to this method, make out no larger percentage of herniæ than occur after opposite practices, nor can we feel sure how far any patient with a hernia may have neglected precautions. When retraction of the sheath of the rectus is marked, and in plump and fat subjects, it is always right to unite its edges with a continuous catgut suture, including the muscle on each side.

On the other hand, this sunken catgut suture is advisable when the walls are very thin and damaged by long distension, as firm union of the atrophied structures is needed before the muscles regain their strength.

I consider that separate union of the peritoneum is unnecessary in ovariotomy (it is otherwise in supra-vaginal hysterectomy). The deep suture passing through all layers will secure the peritoneum perfectly if the needle be passed within a quarter of an inch of the cut edge of the serous membrane. This causes eversion and perfect apposition of the *inner* surfaces of the sutured peritoneum. *Within a few hours union begins quite unhindered by vomiting.* Remember, however, that the edges of peritoneum are everted. Do not, then, pass the needle too far from the border. This error was once common; I have seen the cut edges side by side lying level with the skin after the tying of the sutures. Thus the everted serous surfaces effectually prevent union of all the anterior layers; and when the sutures are removed there is a hernial pouch ready made.

The sutures must be pulled just tightly enough to bring the edges of the wound together, allowing for œdema. The conditions are quite different to what is seen in the pedicle, where the ligature *must* be pulled tightly. But you are all good general surgeons here, and so understand well enough about tying sutures. The knot should be tied somewhat to the side of the line of incision. A few superficial sutures including the fat are needed in fat subjects.

The wound being closed, all harm is shut out—though, maybe, some harm may be shut in. The dangers of the drainage-tube must be met by proper management of the drainage-tube; but when a wound is closed completely, and there is no tube, there is practically no danger of entry of infection. The days are gone when some surgeons turned spray on the dressings and skin when taking a look at the wound a week (or sometimes more) after the operation. Immediate dusting with iodoform is excellent. I apply alembroth gauze to the wound, as oozing and perspiration damp the dressing, and thus set free a disinfecting agent. Plain absorbent gauze may get foul if soaked, and stick to the wound, and then a drop of pus may often be found at the point of adhesion.

Pads are a question of dressing which you all understand. When the patient is very thin, or the abdomen very concave, it is best to strap over the pads. In a fat subject, or when the abdomen is convex, the straps must be applied first. I am a great believer in strapping, having seen bad results where it is not used. I also prefer a short, many-tailed binder to a bandage in one piece, or to a binder with very long tails. Short tails may be easily adjusted with safety-pins, according to local necessities or the patient's comfort; this I know from very long experience in after-treatment. Remember that the most superficial tails should come uppermost when there is no drainage-tube, as that arrangement insures the firmest pressure. When there is a tube in the lower part of the wound, the most superficial tails must come lowest, so that they can be undone during management of the tube without disturbing the rest of the binder.

We now come to that very complicated subject, after-treatment. I know of one excellent operator who always gives opium, and finds that the patients do best in every respect with that drug.

Another, who can claim equally good results, is of opinion that opium is a curse to humanity, and never uses it in any form. Several successful operators insist on saline purgatives within three or four days after the operation, and use salines earlier as a panacea for all complications. Others find the patient does well if the bowels be left alone for a week. The diet question is even more complicated.

Now, it is not wonderful that so many varieties of treatment prove satisfactory. There is always more or less shock, but even weak patients may survive severe shock. Feeding by the mouth is usually not tolerated during shock, but it is sometimes borne, and injudicious early feeding may cause salutary though unintended vomiting. A patient may never vomit from the first yet do very badly otherwise, and it may be through faulty dieting, or it may not. In fact, recovery is the rule, and it is not always easy to distinguish recovery due to right treatment from recovery in spite of bad treatment. The ways of therapeutics are far more obscure than the paths of surgery!

There is no royal road to treatment. We must not frivolously say, as has been said, that it does not matter what the patient takes at first. We must be ready for special circumstances demanding modification of our line of treatment.

Yet no surgeon can dispense with a certain amount of routine—the sum of the experience of others, controlled by his own. What are known as "points of after-treatment" are specially suited for discussion.

Thus, as to position, it is altogether best that the patient should lie on her back. Bedsore is the chief danger of the supine position, but good nursing is a sufficient preventative against that complication. The position is said to hinder the escape of flatus and to allow of its accumulation in the stomach and transverse colon; but this assertion is questionable physiology, and the wearing of the rectal tube will counteract distension of the large intestine. It is best to keep the patient quiet for a few days, and she can be more easily kept comfortable on her back than on *one* side; turning from side to side can never be allowed. The dangers of turning, of course, have been exaggerated, and sometimes it favours the escape of flatus.

As long as there is nausea, vomiting is to be promoted during the first twenty-four hours, especially when due to chloroform or flatulent distension of the stomach. The escape of air from a distended stomach always promotes the passage of flatus. Inhalation of a little vinegar on a piece of lint relieves the nausea of chloroform. Bicarbonate of soda in warm water is, in my experience, the best emetic.

Vomiting, when it sets in after the first two or three days, is always serious. The symptoms of sepsis and obstruction are well known to you. An attack of simple indigestion with vomiting is not always easy to distinguish from graver conditions, the pulse and temperature often rising in sickly dyspeptics. In these late vomiting cases it is good to take to enemata, and hot alkaline solutions are needed to empty the stomach unless obstruction be the most evident feature, then the upper part of the alimentary tract is best left alone.

Feeding is a question of the highest interest. Ordinary beef-tea enemata answer best in children, in all feeble patients, in all cases

over 40, and in all where the operation has been prolonged and severe. After simple operations robust young women do not require enemata, unless there are signs of restlessness. I believe more than ever in beef-tea enemata; the application of the rectal tube before their administration encourages the downward passage of flatus, and the nourishment, without any disturbance of the stomach and small intestine, is particularly suited to the patient's condition.

I find that most cases get on very well without drugs, but I have seen so many do well with routine treatment by tincture of opium, sometimes m. xx in beef-tea enemata every six hours, that I cannot share in the prejudices of some surgeons against that drug. Great care must be taken to watch the patient when opium or morphine is given, especially as to excretion of urine and the retention of flatus; in the latter case belladonna should be added to the opiate. In a case of great nervous restlessness I gave 20 grains of trional and the patient slept within an hour afterwards; but in other cases I have found it absolutely inert.

When sickness has passed away, about two ounces of barley-water may be given every two hours, though it is best not to begin feeding by the mouth until flatus has passed, particularly in bad cases. Milk is not nearly so unsuitable as many authorities believe. A drachm of Liquor Calcis Saccharatus (not the simple Liquor Calcis) should be added to every pint of milk. Weak tea without milk or sugar may sometimes be taken as a drug when the patient's skin is dry, but always with caution, as it promotes flatulence.

No solid should be given till the bowels have acted. Beef tea sometimes causes the urine to become concentrated; in such cases farinaceous food is advisable, with mutton broth if the patient be weak.

You are in a good position here to understand the signification of temperature in relation to the pulse. Abdominal surgery has carried with it in the course of its development a spirit of emulation which has led to great things, but has involved several evils, especially a love of record-breaking. Just as some operators boast that they can remove any tumour through a two or three-inch incision, others say that they have "no temperatures." I dwell on this kind of remark, because it covers a yet more pernicious idea not confined to specialists. This idea is, "Sepsis is a disease which has the peculiarity of killing other surgeons' cases; when *I* lose a case it is from purely accidental causes entirely unconnected with septic infection." Closely associated with this notion is the theory that high temperature and rapid pulse mean sepsis.

Now, in sepsis, the temperature keeps at a high range, not phenomenally high, in company with a rapid pulse. When we further observe flatulent distension, retching, and restlessness, the diagnosis of septicæmia becomes as certain as diagnosis possibly can be. Towards the fatal termination the hands and feet become relatively cool, the cheeks deeply flushed, the respiration very shallow, the pulse so rapid as to be counted with difficulty, and the temperature stationary, if it does not fall a little. You all know this clinical fact, but too much stress has been laid on rising and falling of temperature, to the neglect of the pulse, in the after-treatment of abdominal section.

Assuredly no operator likes to see the temperature rise, and a rise must always put him in mind of septicæmia. But the mere height of the temperature means little. The above clinical sketch of septicæmia is a mere commonplace to you. Unfortunately, specialists may confuse two conditions, such as—

9 a.m.: Temp. 103·8°; pulse 120,
1 p.m.: Temp. 104°; pulse 144,
9 p.m.: Temp. 102·8°; pulse over 156, very irregular;
and 9 a.m.: Temp. 103°; pulse 132,
1 p.m.: Temp. 103·4°; pulse 132,
9 p.m.: Temp. 104°; pulse 132, regular.

The first case implies a desperate condition. The second, if flatus passes well and there be no vomiting, is much less serious, and I have seen it on the third or fourth day after a severe operation, when metrorrhagia set in. In a fatal case of ovariotomy in a diabetic patient under my own care, the temperature rose steadily with the pulse till death. Flatus passed well, and even food was taken till within one hour of death. This was undoubtedly an instance of pure sepsis; some drops of fœtid dermoid material had, I believe, escaped into the peritoneum. The passage of flatus was especially significant; there was no obstruction. Nevertheless, in undoubted septicæmia the temperature, as a rule, tends to rise less rapidly than the pulse.

The causes other than septic of high temperature specially deserve consideration. Flatulence is decidedly one cause, and of that symptom more will be said. The appearance of uterine "show" is closely associated with rise of temperature. I have often seen this phenomenon. The extreme bacteriolaters would say that the rise was due to sepsis; I do not deny that this theory may contain a germ of truth. Others speak of neurosis; I do not contradict them. Retained blood and relics of endometrium may involve slight septic absorption, especially from changes close behind a ligature involving a uterine cornu. Again, women decidedly suffer from nervous disturbance in association with menstruation, and the temperature rises under such conditions. Sudamina, in rheumatic subjects especially, cause a considerable rise.

Why do too early visits of friends so often cause rise of temperature? The antiseptic party would say that the patient rises to salute a friend, or twists round to talk to a friend,—adhesions are disturbed, and a "focus" set loose. Yes, but restless patients after severe ovariotomies may struggle night after night, and sit bolt upright directly the nurse's back is turned, yet rise of temperature does not necessarily occur. Food may be smuggled in; but I have known of rises of temperature when the patient was closely watched by the nurse during the friend's visit, nor are these visitors so insubordinate as some may suppose. On the other hand, abuses may occur in respect to forbidden diet inside the hospital, and it is not a rise of temperature that necessarily betrays this evil.

High temperature in the second or third week, without general symptoms, may be due to inflammation of a suture-track, or to parametritis of the stump of the pedicle. These complications are not rare when the operator is inexperienced or somewhat heavy-handed. In parametritis the severity of the local symptoms, with high temperature, and yet little general disturbance, may be compared

with the absence of all local symptoms, coincident with high pulse and temperature and marked constitutional trouble so often seen in septicæmia.

In simple and well-managed cases, late high temperatures nearly always signify retention of scybala. When they come away a fall is almost invariable; but in weak subjects some exhaustion follows the evacuation, hence the pulse may rise, the temperature falling, and in very debilitated subjects even a further rise of temperature is observed. But in a few hours the clinical symptoms become favorable.

By phenomenal temperature most writers mean 105°, 6°, 7° or 8° without evidence of sepsis, obstruction, &c., and with ultimate recovery. As a rule, they can be explained. In one case, where the temperature nearly reached 106° on the fifth day, the patient informed us that she was subject to ague. In another, where I operated, the temperature rose to 104° during the third week, but the patient was phthisical. Both cases recovered after appropriate treatment. I cannot dwell on a case of hysterectomy (with the serre-nœud) where the temperature rose to 107° in the second week, and fell in a few hours after wet-packing. Nor can I pause long on a case of operation for ectopic gestation, where I was alarmed by a rise on the eighteenth day to 106°, after two rigors. There was practically no constitutional disturbance; quinine was given, and two days later the temperature was subnormal. I am not sure that ague might not account for this case; influenza is less probable, as the patient felt neither pain nor prostration, which are never absent in that disease, and are very severe when high fever is present. Altogether, I suspect there was some menstrual disturbance.

Now the catamenia may certainly trouble the patient after ovariotomy, and I have said that menstrual blood in the uterus, weak after a recent ovariotomy, might become septic. I have also said that neurosis is possible and probable, when I was dwelling on symptoms immediately after operation. At all events, a rise is often seen when the period is due a week or two after ovariotomy.

I fear that we cannot discuss at length the co-relation of peritonitis with sepsis or disturbances inside the gastro-intestinal tract. Not many years ago it was necessary to apologise for differing from the authors of text-books as to the clinical symptoms of peritonitis. Now I must almost make excuses for stating that I have once observed the sensational or ultra-acute type eighteen years ago, where the patient died of perforation of the small intestine ten days after ovariotomy. In another case of perforation, nine days after removal of a tubal sac, Blanc observed intense abdominal pain, distension, and acute dyspnœa. You know only too well the common subacute peritonitis of reality, which is "typhoid rather than sthenic," as we used to say. It is caused, we are told, by sepsis, or is absolutely correlated to and coincident with sepsis, or is caused by obstruction which first sets up peritonitis and then sepsis, or first produces sepsis and then engenders peritonitis. Leaving these deep pathological problems to Dr. Kanthack and other distinguished scientists, we must remember that more or less distinctly marked peritonitis with dull pain and rise of temperature certainly occurs after severe ovariotomies. The septic form is as dangerous as in pre-Listerian and aseptic days. Opening up the wound and irrigating usually kills the patient before the near period when she would have other-

wise died in relative peace; the few reported recoveries of which I have heard seem to mean removal of obstruction caused by adhesions.

With great relief I come to a very practical subject—flatulence. Free passage of flatus from the rectum almost invariably signifies that the patient is not in any danger from any complication. Obstruction is not necessarily the cause of sepsis, as I have seen it absent in the case of diabetes already mentioned. But it makes septic, uræmic, and inflammatory symptoms worse, and when air can be made to pass these symptoms nearly always fall in severity or disappear altogether. Tympanitic distension during the third week or later, with no other unfavorable symptoms, is usually due to accumulation of scybala.

Having reviewed the more troublesome complications at some length, I may speak now of their treatment. The ice-cap is always advisable when the temperature keeps at 103° or rises higher; even hopeless septic cases are more comfortable when thus treated. Flatus passes easier when the cooling process brings comfort. In the neuroses—if they be neuroses—in association with metrorrhagia, the ice-cap is beneficial. Of all treatment, however, I say once more that ensuring the passage of flatus is the most imperative. It leads on to a special question—the opening of the bowels. Firstly, nutrient enemata must be continued when flatus fails to pass, as food by the mouth aggravates the symptom, and so does starvation, whilst the enema promotes the passage of flatus and keeps the patient from exhaustion. When these means fail, an injection of over a pint of gruel with 2 drachms of oil of turpentine should be slowly and carefully injected. If scybala come away, so much the better. Twenty minims of Tinc. Belladonnæ may be given in beef-tea enemata every six or eight hours if the flatulence continues.

We prefer this method, at the Samaritan Hospital, to Lawson Tait's saline purgative practice, which we admit is of some value. Coming to the question of opening the bowels, I always find that the simple enema, a few hours after an injection of 4 ounces of oil, is the best agent, and it need not be given till the evening of the sixth day. When, however, the tongue is foul, and distinct evidence of irritation of the gastro-intestinal mucous membrane exists, I find that it is better to give a compound colocynth pill, or 2½ grains of the compound extract every six hours, till the bowels act. The patient will then be better able to eat. I find that colocynth pills and extract answer better in this respect than castor-oil (which patients dislike), liquorice powder, or saline purgatives.

The dressing of the wound at the end of the operation has been described. As a rule it may be left alone for a week. Do not sacrifice, however, the patient's comfort to that evil principle, "Let *me* boast that *I* never touch *my* dressings for a week." Sweat rashes in some patients give great discomfort, relieved by change of dressings, even on the third or fourth day. A few sutures should be removed on the ninth day; indeed, if there be any that are clearly cutting, they may be taken away on the eighth, as they hinder healing. It is not good, however, to remove all the sutures till the tenth day, or even later, as the cicatrix is very liable to stretch when only a week old.

I much prefer to continue the application of strapping for some time after the removal of the sutures, and firm bandaging is needed.

For never forget that the danger of hernia is not from without but from within. Flatulent distension is a steady, sure, and direct agent in stretching the cicatrix, so it must be met by direct support, and strapping affords such support most effectually.

I will say no more, indeed I have probably said too much, more than can be duly considered on this occasion. You can now understand why I have been obliged to leave out several important questions. I have selected such as I deem best suited for discussion. In many matters relating to clinical subjects, temperature, peritonitis, &c., as well as in operative details, it is I that look to you for instruction this evening.

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