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SOME PRACTICAL POINTS IN THE TECHNIQUE OF ABDOMINAL AND PELVIC SURGERY.

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He is, indeed, a wise man who makes no mistakes of diagnosis in this or any other branch of surgery ; with an increasing experience, we find our diagnosis is, at best, often approximate, or, very often, wide of the mark. It occurs to me, that the matter of diagnosis has been given undue prominence, and too much stress laid upon endeavors to be absolutely accurate. A very good general rule to follow, when uncertainties exist, is to make a section and find out with exactitude.

The abdominal incision: Many surgeons believe empirically that to deviate a line from the linea alba is nothing short of a calamity and much valuable time is lost getting through the parietes, ; this is a mistake. A vertical incision including some of the muscular structure of one or the other recti is rather an advantage, the union being more secure in the median section.

Those who have achieved most in abdominal surgery agree almost to a unit, that when life is endangered, or health is impaired from obscure disease of the abdomen or pelvis, that we are justified in making a section and dealing with the conditions in a rational manner ; other less radical measures failing or contra-indicated. It is all very well to make the diagnosis beforehand and after section verify it ; but, after all, relief to our patient is the prime object. What difference does it make if we diagnose ectopic pregnancy and find a pus tube? The condition is appropriately met and the patient relieved.

The masses are rapidly becoming educated to the point when objections to exploratory laparotomies are far from being the rule. The reason for this is, we can appeal to the intelligence of our patients with such a statement as "the exploratory incision can do little or no harm, and there is a great prospect of giving you permanent relief." Such a statement can, however, only be made by the operator whose axiom is "cleanliness in all things." Success can only be attained by the practitioner or surgeon who follows out the great principle, not necessarily of absolute Listerism, but absolute cleanliness. This can be obtained practically in every instance with due care.

Again, operators of experience spend considerable time ligating the small vessels, before opening the peritoneum. This is a useless loss of time, only one vessel in a hundred requiring a ligature. Seize all bleeding points with catch forceps and leave them on for a time, when pressure will utterly silence them.

Pick up the peritoneal layer and transversalis with tissue-forceps, one on each side of the line of the incision, with scissors, make an opening large enough to admit two fingers or the hand if necessary, then make your examination. If the case is operable, seize the peritoneum on each side, draw it well up into the incision and it will prevent any oozing into the cavity. I use to catch up the peritoneum T-forceps, which are quite heavy and by their weight act as retractors and take care of themselves.

The patient may be well prepared in the following manner: After thorough cleansing of the parts, a poultice of strong potash soap is spread over the field of operation and left for a few hours or over night if possible. Shortly before operating, the excess of soap is removed, the parts thoroughly washed with warm bichloride or carbolic acid solution, and a little ether or turpentine sponged over the surface; the last is not absolutely requisite, for the strong alkali in the soap has saponified all greasy and fatty particles in the skin.

The application of a strong solution of liquor potassæ will be found in many respects superior to the soap; a bottle of which I constantly carry in my emergency case, and from which extemporaneous solutions to cleanse the parts can be made as required.

The great advantage of the solution mentioned is, that when time is an object, more perfect cleansing can be obtained with less effort than by any other means with which I am acquainted. I have cleaned the field of major operations in few minutes with this solution, in emergency, when the parts were filthy beyond description, and secured union by first intention throughout. Surrounding the field of operation, I place sheets of unbleached muslin. These are one yard and a half in length, one yard wide, and are prepared by boiling in a three per cent. carbolic acid solution and dried by ironing while damp. Each extremity is wrapped in one of these sheets, and others are arranged above and below the line of proposed incision. One or more of these sheets are wrung out in some antiseptic solution and placed over the dry sheets at the time of operating, thus lessening the danger of chilling the patient. It is advisable to boil the instruments for fifteen or twenty minutes in a solution of carbonate of soda, one drachm to the quart, while the patient is being prepared for the operation. I find that the granite ironware drip-pans serve a most excellent purpose in which to sterilize the instruments and always carry them with me. A thoroughly practical operating case can be devised by taking two such pans, packing instruments and dressing in one and using the other for cover, a shawl strap holding all in compact form. A convenient way to carry laparotomy instruments, is in roll cases made of white ducking. Ideal cleanliness being always maintained; as the roll with its contents, may be sterilized at short notice by simply placing it in an oven—a good plan to follow out after cleansing the instruments, the dry heat insuring perfect drying of the same.

As to ligatures and sutures: Well-prepared catgut is the ideal ligature, but, unfortunately, some difficulty is met with in its preparation. The objections to its use are outweighed by its many advantages, and the European surgeon who waged such an active, aggressive warfare against its use, because of some cases of infection following its employment, will soon, I believe, be driven back into his trenches. True it was, from the great force of his arguments, catgut was abandoned by many of us, but the signs of to-day point to its even more general use. Catgut as a rule gives rise to but limited suppuration, in the vast majority of instances the army of leucocytes by their digestive action do away with the focus of irritation. This, however, is not so with silk; for it requires sixty to eighty days for its absorption, under the most favorable circumstances. Under less favorable circumstances it may never be satisfactorily disposed of. I have found a ligature used in tying off a hernial sac, over a year after the operation, unchanged in the tissue. Catgut prepared by boiling in alcohol or by the following method, has served me with satisfaction: The raw catgut is carefully washed with strong alkali soap, or in a solution of liquor potassæ (1-40), thoroughly rinsed in clear water, placed in sulphuric ether for from one to four days, and lastly in mixtures of oil juniper berries, one part or one ounce; alcohol, six ounces, or alcohol sublimate solution—1-1,000—six ounces; glycerine, three drachms. Another method, equally as good as the above mentioned, is to place the raw catgut in sulphuric ether for three to six days, rinse in alcohol, and finally place in solution composed of alcohol, one ounce; with juniper two ounces. If desired, after removing the catgut from the ether, it may be placed in a sublimate alcohol solution, 1-1,000, before transferring to the final solution. My experience teaches me that too strong solutions of corrosive sublimate weaken the gut materially, also making it more brittle. After the gut is prepared, I cut it into sections, twenty-four to twenty-eight inches long, winding it over two fingers into compact twisted rolls. Each strand is then sufficiently long for sutures or may be subdivided into ligatures. These are then placed in small glass-stoppered bottles, partially filled with the sublimate or juniper solution sufficient to cover the gut. Catgut when carefully prepared, is for the one reason previously given, a safe ligature for ordinary abdomina work, but not for ligature *en masse* (pedicles, etc.). When catgut is used for ligaturing, the danger of slipping of knots must be remembered. For ordinary vessels, tying off adhesions of the omenta or organized lymph-bands, it is safe to use; but only if the *square knot* is used. The granny knot is, in my estimation, a relic which should be shelved. A well-tied surgeon's knot or the square knot, with an extra knot added, may be depended on.

Adhesions: In operations where extensive adhesions of the gut to tumors of uterus or ovary exist, an effort should always be made to separate them. At times we meet with adhesions that seem insurmountable, but with patience and a little care, they generally fade into simplicity itself. If by accident the gut should be torn in our efforts to separate the existing adhesions, a continuous suture may be used to close it; or if the damage necessitates resection, one of the several methods of rapid resection by the use of plates or rings, may generally be adopted. In these days one should be master of the technique of modern intestinal procedures, if he expects to deal with the previously mentioned conditions, intelligently and properly. The surgeon who would resect by circular suturing and spend an hour, or even two or three, in performing the enterorrhaphy simply shows sublime ignorance of the progress in this field of surgery. A few experiments upon animals with segmented rubber rings, or the various plates, will be of great benefit to the surgeon and demonstrate the great rapidity with which resections may be performed. When we open the abdomen we never know what complications will have to be met with, and a thorough knowledge of the intestinal anastomotic operations will come to our assistance at times, and bring us out of very unfortunate positions successfully. Recently, in extensive adhesions of the bowels to a dermoid cyst with quite thick walls, I found I could not separate the adhesions by the ordinary procedures, and it occurred to me to split a layer from the tumor-walls and thus free the gut; this was done, and on completing the dissection I had an eliptical layer of the tumor-wall two and a half inches long, inseparably adherent to the wall of the intestine. Most likely by this procedure I saved a resection.

Drainage after laparotomy is one of the most important subjects for consideration. The more I see of abdominal and pelvic surgery, am I convinced that the tube should be used in the vast majority of cases, even if only allowed to remain in for a few hours. Many a case has been lost by neglecting the tube; and yet it is such a simple matter to attend to. Every two or three hours at least, when the discharge from the tube is unhealthy, some one should be instructed to pump it out. I use for this purpose a two-ounce syringe (glass or rubber) with piece of rubber drainage tubing attached; the latter is pushed to the very bottom of the drainage-tube, in the abdominal or pelvic cavity, and the contents, which may have collected in the vicinity, aspirated. When through with this procedure, a strip of gauze or sterilized wicking should be pushed to the bottom of the drainage-tube, one end hanging out of external opening of the tube, which may be lightly plugged with cotton, a handful of loose gauze being laid over all. To wash out the tube in position nothing could be better than the normal salt solution (46 grains to the pint). In cases where the drainage shows nothing pathological it is best not to interfere with the tube, the capillary drain of wicking or gauze in the tube will do the work perfectly, and no pumping is necessary. The flushing of the abdomen with hot water as a finishing step in the toilette is invaluable. It not only stimulates the patient, checks oozing, but it floats out clots and debris, and aids the proper adjustment of the intestines into their natural position. The greater part of the water is removed by pressure when the parietal sutures are about to be tied, or before the wound is completely closed. The remaining fluid, the lymphatics are perfectly competent to attend to; persistent efforts at sponging until the very last drop of fluid is removed is unnecessary, in fact, bad surgery, and is a waste of valuable time. I believe time plays such an important role in abdominal operations that we should endeavor to complete our work as rapidly as possible. Many of the evil results in surgery are directly due to unnecessary prolonged attention to some unimportant detail in the operation. I have seen patients under the anæsthetic for two or three hours, and they usually died very promptly, with few exceptions. Rapidity in operating is one of the secrets of Tait's successes, and the same is true of every surgeon whose records are good. The conditions of ventral hernia following laparotomies are at times unavoidable, but the danger of its occurrence may be materially lessened by carefully adjusting the parietal layers. If the closure is brought about by interrupted sutures, care should be taken to include the margins of the skin and peritoneal layers and as much of the muscle and intermediate structures as possible. This is readily accomplished by entering a curved needle one-fourth of an inch from the margin of the skin, passing the needle well out into and including a considerable part of muscle and bringing the point through near the margin of peritoneum. This manœuvre prevents inversion of the skin and eversion of the peritoneum. If the omentum is long, fixation of it to the line of incision by a suture or two, as recommended by Shimwell, of Philadelphia, adds to the security. In the majority of cases this condition will be found to be present, whether the omentum is attached or not by suturing, and I believe, with Shimwell, that it would be well in every case, when feasible, to fix the omentum to the line of incision.