

Lectures.

THE OPERATION OF OVARIOTOMY.

A LECTURE DELIVERED BEFORE THE FOURTH CLASS STUDENTS IN THE HARVARD MEDICAL SCHOOL.

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IN publishing the following lecture to students it may be proper for me to say that I have opened the abdomen for various purposes two hundred and three times. I have done the operation of ovariectomy one hundred and fifty-nine times. My first five cases of ovariectomy were performed without any antiseptic precautions whatever and all died. In the next one hundred cases I used antiseptic agencies, including spray. Of these thirteen died and eighty-seven recovered. Since then I have operated for ovariectomy fifty-four times with four deaths. My last thirty cases have all recovered. I ought, in this connection, to say that I have never declined to operate but once, the patient in that case having been already tapped to the amount of 2270 pounds in five years. I have operated upon all the other cases that have come to me, and although my late continued success is doubtless owing to good fortune, I feel that I can now perhaps do the operation better than I could at first.

THE OPERATION OF OVARIOTOMY.

Preparation of the Patient. Usually little preparation is required. For forty-eight hours before the operation I restrict the diet to flour gruel made by boiling equal parts of milk and water together for about an hour, gradually adding the flour until the gruel is made smooth and free from lumps. I order half an ounce of castor-oil about twenty hours before the operation, and an enema just before etherization. The object of these measures being to empty the bowels completely so that they will not interfere with the operation by their distention, nor by being plugged prevent the passage of flatus afterwards. If the patient has not taken a hot bath for some weeks, and if her strength will permit, I order one the day before operating.

The Anæsthetic. Ether is the best. It does not cause much vomiting if nothing is taken into the stomach for five or six hours before its inhalation.

Menstruation. I prefer not to operate while the menses are present, and seldom do so. The best time is about two days after the catamenia have ceased.

Exceptional Procedures. Sometimes it is necessary to tap the patient a week or two before ovariectomy to enable her to breathe more easily, to take more food, to lie down, to secrete more urine, or to lessen her weight and size that she may bear transportation. I have done it in exceptional cases for all these reasons. I drew by tapping sixty pounds of ovarian fluid from a woman in a tenement house out of town, brought her to the city in an ambulance,¹ and removed an ovarian tumor weighing fifty pounds. We could hardly have transported this woman with a tumor weighing one hundred and ten pounds. Again I have in six instances operated while a hæmorrhagic flow was going on from the uterus, because the catamenia had come on

so irregularly that after waiting and postponing the operation it seemed that no calculation could be made. All these patients recovered.

Instruments required. A scalpel, a probe-pointed bistoury, a director, dissecting forceps, Nélaton's cyst forceps (at least six pairs), two Dawson's clamps, strong compressing forceps, with short and long blades for holding bleeding points, or bands of adhesions, of these about a dozen pairs, a large trocar with rubber tube attached for emptying the cyst, retractors, needles, a needle holder, carbolized silk and catgut, a steel sound, a catheter, Dieffenbach's hæmostatic forceps, Paquelin's thermo-cautery, and an aspirator (all the metallic instruments except the knives should be nickel-plated), three dozen towels, about forty clean soft sponges of various sizes, which have been soaking for several weeks in a five per cent. solution of carbolic acid. I have three barrels filled with solutions of carbolic acid, and these barrels are kept full of sponges. Each barrel is used alternately. Some of my sponges have been soaking for ten years. I formerly used sponges but once, but now I use them over and over after they have been cleaned; hot water bottles to put about the patient; several large clean tin pails, brandy, an enema syringe, plenty of hot water to wash the sponges if the operation should be bloody or protracted, several clean rubber aprons for myself and my assistants, that I may not soil my clothes, nor be thinking about it, a strap to buckle over the patient's knees and under the table, and wristlets to confine her hands.

Spray. I always use the spray and need a steam atomizer. I do not believe that the spray is absolutely essential, but I have had very good success with it, and have never known that it has done any harm.

There are other instruments that I carry with me, but those mentioned above I consider *necessary*, because although you will often need only a scalpel, a director, a pair of dissecting forceps, sponges, ligatures and sutures, yet you may need *all* your other instruments when you least expect to. *Never economize* when preparing for ovariectomy. Besides these things you will need the dressings for the wound, carbolized gauze and cotton-wadding, to fill up the void made by the removal of the tumor. You will also need a broad strip of sticking-plaster and a flannel binder to put around the patient over the dressings. I always wash my hands and forearms thoroughly with a nail-brush in carbolized water before beginning an operation and require my assistants to do the same.

Operating Table. A narrow operating table is necessary in order that your patient may be easily within reach from either side, eighteen or twenty inches being about the right width. In a private house I usually put two or more small tables or stands together, or lay a narrow ironing board from one table to another.

Etherization. The patient is not etherized in the operating room unless her respiration is very labored, in which case you may wish to shorten the period of etherization as much as possible. The dress having been tucked up, and the lower extremities covered with a blanket, the patient should be securely fastened to the table. For this purpose a broad strap is buckled around the table over the patient's knees, and her wrists are secured in soft padded leather wristlets connected by straps beneath the table. The abdomen is then uncovered and the carbolic acid spray (three per cent.) turned on. The abdomen is next wiped with a clean carbolized sponge, and two minute incisions, or marks,

¹ Loaned by Dr. Whittemore, Superintendent of the Massachusetts General Hospital.

are made about two and a half inches apart between the umbilicus and pubes in the linea alba, as a guide after the rubber sheet is in place. The spray is then shut off, and the skin of the abdomen dried with a clean towel. A rubber sheet about a yard and a quarter square, having a hole eight by four inches in the centre, through which the operation is performed, and the edges of which hole have been spread with adhesive plaster, is then applied to the abdomen, this sheet covering the patient to the neck and below the knees.

Positions and Duties of the Seven Assistants. I like to have seven, but I can get along with a less number. No. 1 etherizes. No. 2 stands opposite me on the patient's left hand, and helps to put compressing forceps on the bleeding points before the peritoneal cavity is opened. He then compresses the abdominal parietes, and after the cyst is removed ties vessels or keeps the intestines within the abdominal cavity if they tend to escape. No. 3 arranges and gives me the instruments. No. 4 stands on my right hand, sponges the wound, and catches any cyst-fluid that might run back into the abdomen. No. 5 stands on my left hand and draws up the peritonæum at the upper part of the wound, so that I may tap the cyst as high up towards the sternum as the incision will allow. He also gets the Paquelin's cautery ready when I am about to divide the pedicle. No. 6 supplies No. 4 with sponges, and me with towels, which he has kept clean and warm. In keeping the sponges ready for me he has much the most active duty among the assistants in a long and difficult operation. Finally, assistant No. 7 oversees the spray, and keeps a tally upon paper of the number of sponges placed in the abdomen and taken out. This duty is a responsible one. This plan is simpler than counting the sponges beforehand, as it sometimes happens that a sponge is torn in two, and as the important point is not to sew up a sponge within the abdomen I think it safer to count those that go in and come out rather than all the sponges before and after the operation scattered about the room.

Perfect silence should be kept by all the assistants and spectators.

The steps of the operation are these: (1.) Make the incision down to the rectus muscle. (2.) Stop all bleeding in the abdominal walls. (3.) Open the abdomen and explore for adhesions. (4.) Tap the cyst as high as possible. (5.) Detach the adhesions. (6.) Draw out the cyst and clamp the pedicle with Dawson's clamp, burn it off with the cautery, tie it, and remove the clamp. (7.) Examine the other ovary, and remove it if necessary. (8.) Thoroughly sponge out the abdominal cavity. (9.) Close the wound. (10.) Apply the dressings, and put the patient in bed.

(1.) The incision should be made in the median line rather nearer the pubes than the umbilicus, and at first less than three inches long, to be extended upwards if necessary, but always to the left, because the umbilical vein runs upwards to the liver on the right. This incision generally suffices, and one beyond five inches is rarely necessary. (2.) All bleeding must be stopped before the peritonæum is opened. I use compressing forceps, and prefer the little instruments called Dieffenbach's forceps. To each one I tie a piece of small fishing line about twenty inches long, and put a little weight of lead at the other end. When I see a bleeding point I pick it up with the little forceps and throw the weight and line over the patient's side. I attach

this line in order that none of the forceps may fall into the abdomen if I knock them off. It is much easier to work through an opening surrounded by these little instruments than through one bristling with forceps, each one of which is five or six inches long. (3.) Explore with your hand or with a nickel-plated steel sound for adhesions, unless the cyst obviously slides down and up with the breathing of the patient. If the tumor is surrounded by ascitic fluid a certain amount runs out, and is conveyed by the rubber sheet into a pail on the floor. If there are adhesions to the walls you may separate them more or less before disturbing the cyst, although you must be careful not to rupture it. But adhesions to the omentum and intestines are better left till you have emptied the cyst by tapping. (4.) Tap the cyst with the large trocar, and be sure that the end of the rubber tube is in the tub under the table, or else the fluid will run over the floor. As the fluid escapes the cyst becomes flaccid, and can be drawn out. After some of the fluid has escaped I draw up the wall of the cyst on the trocar, and fasten it by the lateral toothed clamps, which hold it tightly. The canula thus fastened becomes an excellent handle, and with it the cyst is drawn out. If in tapping I happen to strike a small cavity and do not lessen the size of the tumor much, I seize the cyst wall with two or more of Nélaton's cyst forceps and hold it outside the wound while I withdraw the trocar and pass my hand into the tumor to break down the septa, if they are not too vascular and solid. If I think it unsafe to break down the interior of the cyst on account of probable hæmorrhage within the cyst, I withdraw my hand, wipe it carefully on a carbolized towel, and enlarge the incision. I now lift the tumor out of the abdomen, and secure the pedicle in Dawson's clamp. If there are serious and extensive adhesions to deal with, I sometimes secure and divide the pedicle. Then I have the tumor more movable, as it has been freed from its attachments to the uterus and broad ligament. I also know that no hæmorrhage can be going on within the cyst. All this time the assistant opposite me and the one on my right hand are carefully preventing any cyst fluid from running back into the abdomen. (5.) Separate the adhesions. While the tumor is being withdrawn, adhesions to the parietes, to the omentum, or intestines will show themselves. If they do not seem vascular they can be separated by the fingers. If vascular they may be divided by the cautery, or tied with catgut or silk in two places, and divided between the ligatures.

If a portion of the cyst wall is very adherent to the bowel it is best to cut out the adherent part and leave it. I then peel off its inner secreting surface if I can without doing violence. Great delicacy must be used in handling adhesions to the bowels or liver. I now examine the separated omentum for bleeding points, or leave it till the cyst has been removed and then do so. It is best examined by spreading it out on a warm carbolized towel. If bleeding vessels are found they must be tied, and the ligatures cut short. (6.) I clamp the pedicle with Dawson's clamp, because this squeezes the pedicle tighter than I can do it with a ligature, and then pass a small needle, threaded with a loop on which hangs a long silk ligature, through the pedicle close to the sulcus made by the compressing clamp, then I divide the loop and remove it. Next, after surrounding the pedicle and protecting the intestines by a warm carbolized towel, I burn through the pedicle with

Paquelin's cautery. I pass my ligature before dividing the pedicle, lest the latter should happen to slip out of the clamp and escape me while I am burning it off. After the pedicle is divided the tumor (which has been supported by an assistant that it may not drag on nor tear the pedicle) is removed, and the pedicle, still held in the clamp, is tied with Tait's knot, which I have described to you, and which you will find figured in his book. I now remove the clamp, and if there is no bleeding I cut the ligature close to the stump and let it drop back into the pelvis. I used to leave the ends of the ligature long until I was ready to close the abdomen, and then pull the stump up and cut them off, but one may possibly forget all about the ligatures, and leave several feet of silk unnecessarily within the abdomen, or the search for them may be tedious, as they may wind themselves around the folds of intestine and mesentery, and tear them when being withdrawn. The use of Dawson's clamp and the cautery are not absolutely necessary, but I feel safer when I use them. (7.) Examine the other ovary, and remove it if it contains cysts of the size of a filbert or is otherwise diseased. (8.) Thoroughly sponge out the abdominal cavity with sponges prepared as I have told you. I am particular in mopping up the spaces between the uterus and rectum and the uterus and bladder. I use soft sponges about two and a half inches in diameter, held in Nélaton's cyst forceps. When my sponges come out dry and clean I leave one in its holder behind the uterus, and do not remove it till I have passed all my stitches through the abdominal parietes, then if it comes out wet I resume my sponging before closing the incision. (9.) I put a soft, flat sponge over the bowels beneath the wound, and proceed to put in my sutures. These include the peritonæum and all the different layers of the parietes, and are best passed by having a needle at each end of the suture, and passing each from within outward with a needle holder. As the sutures are passed the opposite assistant ties the ends loosely together, and the assistant on the right hand wipes off any blood that may ooze from the needle holes externally, while the flat sponge within catches any that may run down from the holes made by the needles in the peritonæum. I now remove the little compressing forceps or "snappers," as I call them, and generally find no bleeding going on. I withdraw my sponge from Douglas's space, take out the flat sponge, and tie the sutures. Then I put in any superficial sutures that seem necessary. I use carbolyzed silk of various sizes, but for the deep sutures through the abdominal walls I use small needles and as large silk as will pass through the eyes. (10.) Apply the dressings, and put the patient in bed. I put on dry carbolyzed gauze and enough new and clean cotton-wadding to fill up the hole left by the removal of the tumor. Next I pass a broad piece of adhesive plaster tightly round the abdomen over the dressings; this should be wide enough to extend from just above the trochanters to the sternum. Over this I pin a soft flannel swathe. The patient is then carried to her bed on the operating board, and gently slid off the board into the bed. If there has been any shock hot water bottles are placed around the patient, care being exercised that they shall not burn her.

Treatment after Ovariectomy. The patient should be left alone with her nurse, and should be allowed to sleep as long as she will. Sometimes there is vomiting,

and sometimes not, but nothing need be done for it. As a general rule the temperature is not much affected; it rarely rises above 100° F. during the whole convalescence. An opiate is generally required during the first twelve hours after the operation, and sometimes never again. I generally give one sixth grain of morphia or its equivalent in solution by means of Bigelow's opiate enema syringe, which holds a drachm of fluid, and was figured in the BOSTON MEDICAL AND SURGICAL JOURNAL, vol. xcvi. (1877), p. 360. The cardinal principle in taking care of a patient after ovariectomy is to give all opiates and stimulants *by the rectum* until flatus passes the bowels or until all symptoms of nausea or vomiting have been absent for many hours.

Original Articles.

CASES OF RUPTURE OF THE LIVER.¹

BY F. W. DRAPER, M. D.

THE following notes are offered in illustration of the gravest form of injury to which the liver is subject, as the result of external violence:—

I. The patient in this case was a boy, Robert S., four years old, amiable in disposition, and sound in health. He lived with his mother and step-father, the latter being the janitor of an apartment hotel, in the basement of which the family of three occupied rooms.

The incidents of the boy's last hours of life can be presented best in their chronological order. Between three and four o'clock in the afternoon of a day early in November he was playing with two of his mates of his own age. The three lads had found, in a vacant lot, a low tank or pan, made of quarter-inch boiler-iron, an appliance which masons had used for drying sand. It measured five feet in length, two feet in width, and its sides were eight inches high at the highest. In one end of it was a collection of cobble-stones and brick-bats, occupying less than half the space. The iron had become warped by use, and this, with some irregularities in the surface of the ground on which it rested, made it possible for the boys to tilt or rock the pan a little, as they would a boat. In the course of their play the children fell from their improvised boat, striking on the soft ground. Robert in his turn fell out; one of his mates said that he seemed to be hurt a little and that he cried, but that he presently resumed his play and seemed none the worse for his slight mishap.

At a quarter past four he was seen "playing horse" with one of his fellows, running about in the square in front of his home as if he were entirely well.

At five o'clock a lady saw him playing "hop-skip" with her little boy, and both the children were as active as usual.

He was next seen crossing the square going towards his home, a distance of about two hundred feet from the spot where he was playing last. A young girl of his acquaintance spoke to him here, and he replied, to use her own words, "in a sort of way as if he was sick;" although he was not crying, nor did he tell her, in answer to her question, that anything had happened to him. This little girl, evidently truthful and having no motive to be otherwise, was the only one of all who saw him who noticed anything unusual about him.

¹ Read before the Boston Society for Medical Improvement, March 24, 1884.