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INTRALIGAMENTOUS AND RETROPERITONEAL TUMORS OF THE UTERUS AND ITS ADNEXA.

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Presented by the author

[Reprinted from the 1894 Transactions of the American Gynecological Society.]

INTRALIGAMENTOUS AND RETROPERITONEAL TUMORS OF THE UTERUS AND ITS ADNEXA.

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With two Illustrations.

A few years ago paroöphoritic cysts embedded between the layers of the broad ligament deep into the pelvic cellular tissue, and intraligamentous and retroperitoneal myomata of the uterus or its muscular processes, were not amenable to surgical treatment, and when such conditions were encountered in a celiotomy the abdomen was closed without attempting to remove the tumor.

Fortunately we now know more about the pathology of these tumors, and have learned how they may be removed with less mortality than was usual twenty years ago in ovariotomy.

Paroöphoritic cysts and subperitoneal myomata have nothing in common in their etiology, but, as the technique of the operation for their successful removal is in many particulars identical, I will include both kinds of tumors in what I will say to-day.

Alban Doran, J. Bland Sutton, and other authorities have recently written so much about the pathology of these tumors that it will not be necessary for me to consider that part of the subject further than to make intelligent what I will say about the operative treatment.

With few exceptions, cysts that unfold the layers of the broad

ligament and burrow deep into the pelvic and retroperitoneal connective tissue, often developing nearly continuity in relation to other structures, probably arise from the remnants of the mesonephros in the paroöphoron. They are both unilocular and multilocular, and at some stage of their existence are papillomatous. In rare instances cysts that arise in the tubules of the parovarium, in the broad ligament between the parovarium and the uterus, in the mesosalpinx between the parovarium and the Fallopian tube, or in the oöphoron, unfold the layers of the broad ligament and become embedded, but seldom firmly attached to adjacent tissues. These cysts, except the oöphoritic cyst, arise from the Wolffian tubules or duct, and stray remnants of the mesonephros may extend into the ovarian parenchyma. Oöphoritic cysts originate from Graafian follicles undergoing retrograde processes of development, are nearly always multilocular, and have glandular intracystic growths, with which papillomata may sometimes be associated. Cysts that arise from the remnants of the mesonephros do not have intracystic glandular growths, but at some stage of their existence warts develop, partially or completely lining the internal surface of the cyst; and sometimes, having filled the cyst cavity beyond its capacity, they penetrate its walls and present on the external surface, forming adhesions to adjacent parts. Cysts of any relic of the mesonephros, except in the fibrous tissue of the paroöphoron, are nearly always unilocular, and when they develop to any considerable size generally become pedunculated; and if they do not, they are so feebly connected to the investing membrane that they may be easily enucleated without encountering dangerous complications.

As paroöphoritic cysts increase in size the peritoneum of the broad ligament and the muscle fibres between its layers increase

in thickness, and often become very vascular. This vascularity is especially marked when the cyst has separated the peritoneum from its posterior attachment and opened the mesorectum, the mesocolon, or the mesentery of the small intestine. In these cases I have seen the greater part of the surface of the investing membrane covered with veins larger than a goose quill—a condition similar to that seen in intraligamentous and retroperitoneal myomata. These cysts are often bilateral, which greatly increases the difficulties and dangers in their removal; and in such cases there may exist an almost indissoluble connection with the uterus, which may necessitate its removal with the cysts, if the operation can be successfully completed at all. When the tumors are small they lie in the folds of the broad ligament, and as they increase in size they unfold its layers, finally passing beneath Douglas' sac into the prevertebral space. The peritoneum may be separated anteriorly, so that the tumor may lie in front of it, attached to the bladder and to the fascia and muscles of the anterior abdominal walls, the separation sometimes being so extensive that it may be possible to reach the cyst and enucleate it through a median incision between the pubes and umbilicus without wounding the peritoneum. But the peritoneal separation is usually from the posterior pelvic and abdominal walls; the tumor, having passed beneath Douglas' sac, unfolds the mesorectum, mesocolon, or the mesentery of the small intestine; or, passing under the appendix, the cecum, or the ascending colon, lies between them and the abdominal walls. In these cases the muscularis and connective tissue of the bowel are in immediate relation with the cyst wall, and the union may be so intimate as to be nearly a continuity of tissue that can hardly be separated without destroying the integrity of the bowel. The same intimate and firm connection

may exist between the cyst wall and the ureters, deep pelvic vessels, the uterus, and the bladder.

As intraligamentous and subperitoneal myomata of the uterus and its muscular processes sustain relations to the peritoneum and the pelvic and abdominal viscera and structures nearly identical with the relations sustained by paroöphoritic cysts, a further description is not necessary. It must, however, be remembered that the union between a myoma and the capsule is less firm, and that enucleation is easier and less dangerous to the intestines, bladder, ureters, and deep-seated vessels. With either a cystic or solid tumor the organs may be so distorted and displaced as to make it difficult to correctly and practically appreciate their ralations to the tumor. Several times the ureter has been found under the capsule in front of the tumor, and has been cut or torn in efforts at enucleation. This abnormal position is more frequently observed in myomatus tumors. The venous sinuses coursing over the surface of the investing membrane of the retroperitoneal myomata are larger and more abundant than in paroöphoritic cysts.

In one patient upon whom I operated the myoma had unfolded the layers of the broad ligament on the left side, the left lateral half of Douglas' sac, and the mesorectum and mesocolon. In another case the myoma appeared to have enlarged the uterus nearly symmetrically, unfolding both ligaments, and was held firmly in the pelvic cavity. In another case the tumor had its origin posteriorly in the cervix and lower part of the body, had lifted the peritoneum from Douglas' sac and separated the mesorectum and mesocolon. Two of these tumors I will show you, together with a typical intraligamentous cyst, removed from the left side, that contained sixteen pints of liquid and had separated

the peritoneum from Douglas' sac and unfolded the mesorectum and mesocolon. Five years ago I opened the abdomen, and, when extensive adhesions were separated, found an intraligamentous cyst on the right side the size of a large orange, which was so deeply seated and so intimately attached to the uterus and bladder that I did not attempt its removal, feeling that the feeble condition of my patient did not justify it. The tumor has decreased one-half its size, but the uterus is still nearly immovably fixed. She frequently has much pelvic pain, and menstruation is excessive. In another case, operated on two years ago, the tumor contained twelve pints of liquid, was on the left side, had lifted the peritoneum from Douglas' sac, separated the folds of the mesorectum and mesocolon, and extended up under the peritoneum to the left kidney. Anteriorly the tumor had burst through its capsule and extended upward and to the right side two inches above the umbilicus. The sac was so fragile and tore so easily that enucleation was impossible; and, after removing the projecting part, the cyst wall and capsule were sutured to the abdominal incision. She recovered from the operation, but has a sinus that continues to discharge pus.

Intraligamentous and retroperitoneal myomata are relatively as infrequent as are paroöphoritic cysts. They arise in the cervix uteri and lower part of the body, or possibly from the muscular processes of the uterus—round ligament, ovarian ligament, ovary, or muscle fibres in the broad ligament.

I can find recorded but one case of myoma of the Fallopian tube, but, as the tube is composed of unstriped muscle fibres, there is no reason why myomata should not develop in its walls. Myomata of the round ligament, ovarian ligament, and of the ovary rarely become embedded in the connective tissue under the

peritoneum; and while myomata that develop from the muscle cells of the broad ligament may do so, I suggest that probably most of these tumors primarily have their origin in the uterus, and finally become broad-ligament myomata by being extruded or forced from its walls. Uterine myomata are soft or hard, but, as there is a preponderance of fibrous and connective tissue in the cervix and lower part of the body, intraligamentous and retroperitoneal soft myomata are infrequent. They may be cavernous or telangiectatic, and so vascular that the danger from hemorrhage in an operation for their removal is much greater than in operations for the removal of hard myomata which are practically non-vascular. The vascular currents, however, in a soft myoma are sluggish and hemorrhage is therefore more easily controlled. In soft myomata, and especially in hard myomata, the blood vessels from which we may expect the most dangerous hemorrhage are mainly confined to the capsule and the connective tissue uniting the capsule to the tumor. While developed myomata are usually encapsulated and practically live outside the uterus—parasitic, as it were—red, soft myomata, being seldom completely encapsulated, sustain more intimate relations with the uterine muscle fibres. We sometimes encounter so-called fibro-cystic subperitoneal uterine tumors the result of partial or complete mucoid degeneration of myomata.

No one should attempt the removal of intraligamentous or retroperitoneal embedded cystic or solid tumors who is not practically familiar with the normal relations of every pelvic and abdominal viscus and structure and the relations that these tumors may sustain to surrounding tissues; otherwise he is at sea without a compass, and the immediate and subsequent results of his work will be bad. As hemorrhage is the most dangerous complication,

he must know that these tumors and the uterus are mainly supplied with blood by the two spermatic and the two uterine arteries, and that if these vessels are ligated this danger is greatly lessened, as is also the danger of injury to the intestines, bladder, ureter, or deep-seated vessels that might result in the hurry of excitement caused by inability to control bleeding. When these tumors have formed extensive adhesions to the omentum, etc., they may receive blood from that source also. The dangers of the operation which we may anticipate are:

1. Hemorrhage from separated adhesions, from the capsule of the tumor, from the denuded surface of a myoma, from injury to the spermatic and uterine arteries, the iliac arteries and veins, and inferior vena cava.

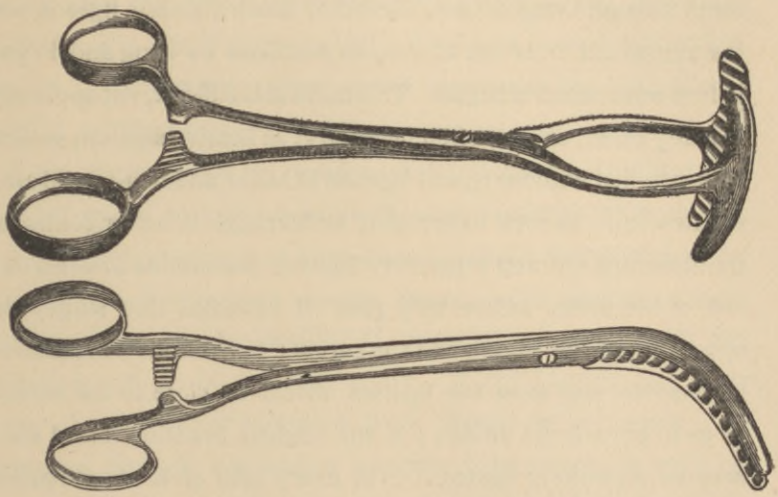
2. Wounding the ureters, the bladder, and the intestines. The causes of death are hemorrhage, shock and sepsis.

While the general principles that govern us in controlling hemorrhage, avoiding injuries to adjacent structures, and preventing sepsis, are common to all operations for the removal of these tumors, in a surgical sense they are, in a degree, atypical, and no single or special method of treatment will be applicable in every particular to all cases. The results of the operation depend mainly upon controlling hemorrhage and successful enucleation, and this applies equally to cystic and solid tumors, as the technique is practically identical. To prevent injury to a ureter that may be in front of the tumor it is best to incise the capsule, and to introduce ligatures, *parallel* to the abdominal wound. In opening the capsule avoid large vessels, and, if possible, make the incision so as to give two flaps of nearly equal size that may be evenly approximated, and, if preferred, united with a continuous suture. A cyst should be tapped before enucleation is begun;

this causes the calibre of the vessels in the capsule to contract. Hemorrhage will be greatly lessened by careful enucleation close to the cyst wall or the substance of a myoma, thus pushing the vessels in the capsule and in the connective tissue away from the tumor without wounding them. If the spermatic arteries have previously been ligated near the uterus and near the pelvic walls, the enucleation may sometimes be completed without wounding a vessel large enough to cause troublesome hemorrhage. In fact, it may be possible in some cases, by enucleating close to the tumor and the uterus, to do total hysterectomy without ligating the uterine arteries, they being pushed aside and left in the pelvis uninjured. Enucleation is best done with the fingers or blunt instruments, and not with the knife or scissors. We should not lose our bearings, and should work as rapidly as possible consistent with conservative and successful surgery. If it can be avoided the capsule should not be torn. Apposition of the raw surfaces or drainage may be better accomplished by keeping the sac entire. If an assistant will, with vulsella or other forceps, lift the cyst sac or myoma firmly out of the pelvis or abdomen, enucleation will be facilitated and hemorrhage lessened. Great care must be observed in separating the tumor from the bladder and the intestines, and especially is this necessary in paroöphoritic cysts, otherwise these organs may be wounded or the coats so injured that sloughing may result. When the enucleation has reached the prevertebral space in the pelvic connective tissue careful dissection must be made—always hugging the tumor to avoid the ureters or deep-seated vessels—and, if possible, bring the field of enucleation into view.

Hemorrhage should be controlled by forceps, separate ligation, and ligation *en masse*, and a continuous suture may be used.

Where it can be used gum tubing may encircle the tumor and control hemorrhage, but it is not applicable in many cases. The rope ecraseur of Tait may also be applied, but it has no real advantages over the gum tubing and may injure the capsule. Hemorrhage from the substance of a soft, cavernous myoma may be controlled by firm gauze pressure or by ligation *en masse*, the ligature being introduced deep under the bleeding vessel with a long curved needle. Forceps should be so shaped as to be readily



applied to any part of the separated capsule, and the surface of the blades should be comparatively smooth and the edges so rounded as not to cause hemorrhage by cutting through the thin fragile walls of the vessels. Here are forceps, two of which I have recently devised, which will serve this purpose. Adhesions to the omentum or other abdominal or pelvic structures should be separated, if possible, before the capsule is incised, and they should be divided between forceps or ligatures. When enucleation is completed a paroöphoritic cyst may have no pedicle, or a pedicle so small that it may be easily ligated; the same may also

be true of myomata of the broad ligament; but intraligamentous and retroperitoneal myomata can not usually be removed unless we do a hysterectomy. In these cases, and in paroöphoritic cysts where hysterectomy is necessary, total extirpation is preferable, for we can not get sero-serous union over the uterine stump, and unless this can be done the cervix ought to be removed. If a myoma is small and confined mainly to one side of the pelvis, the uterine artery of the opposite side may be ligated, the vagina entered through Douglas' sac, the other uterine artery ligated, and the vagina cut from the uterus, as practiced by Krug and Pryor, before enucleation is begun. This method is difficult, not applicable to many cases, and not often necessary, as hemorrhage can usually be controlled without it, and ligation is easier and more rapid after enucleation. In total extirpation hemorrhage is better controlled by dissecting out and separately ligating the uterine arteries outside of the ureter before they give off branches that supply the upper part of the vagina and the cervix; but this may not always be possible, and then the ligation should be close to the cervix, so as to protect the ureters; if the vaginal branches bleed they may be separately ligated. If in every case of total extirpation strict prophylactic antiseptic measures are observed, the results, as shown in August Martin's last series of twenty-six cases, will be much better. As suspicious germs, and sometimes streptococci, are found in myomatous uteri, thorough cleansing, curetting, and antiseptic irrigation should always be observed in preparing for total extirpation, and the uterine cavity should be tamponed tightly with iodoform or bichloride gauze, or the cervical canal closed by sutures, as practiced by Martin.

In paroöphoritic cysts it is not always possible to enucleate the entire sac, and in such cases the capsule and the cyst wall should

be sutured to the abdominal wound and drained. Prolonged suppuration, and finally death, may follow this treatment, but I know of nothing better, and it is preferable to suturing the capsule and draining through the vagina. In these operations the patient should be in the Trendelenburg position, so that the different structures and their relations may be seen as we proceed. There is no fixed opinion or uniform practice in the treatment of the sac cavity. It is drained through the vagina; through the abdominal walls, with and without suturing the capsule to the abdominal wound; or it is not drained at all. Drainage in total extirpation should be through the vagina; but if hemostasis has been nearly perfect and the operation aseptic it is not necessary, and then the vaginal vault should be closed with interrupted catgut sutures. If, after enucleation of a tumor without performing hysterectomy, there are no indications of immediate or subsequent hemorrhage, drainage is not indicated. Martin, Hegar, and Sanger do not now use it unless they are positive of excessive secretions from the denuded surface of the sac cavity. If the capsule has been torn, all irregular or lacerated parts should be cut away. In drainage through the vagina a rubber tube or gauze may be used, and in suprapubic drainage a glass tube or Mikulicz gauze drain may be used. As it is a recognized principle in abdominal surgery that sutures or ligatures should not be left in the peritoneal cavity unless they are positively necessary, I would advise against uniformly suturing the incision in the capsule. Drainage through the vagina is peculiar to August Martin, but probably the late Dr. Byford was the first to suture the capsule of a paroöphoritic cyst to the abdominal wound. His report was made to the Chicago Gynecological Society in 1881.

As George Granville Bantock is the recognized authority upon

suprapubic drainage, this method of treating the sac cavity may be forcibly presented by the following extract from a letter recently received. He says: " * * * Finally, as regards the treatment of the cavity, you should stitch the sac to the parietes by interrupted sutures—the first, at the lower angle of the wound, should catch up the sac just free of its mouth; then a double suture on each side passing from without inward, pursing the sac, and then going back from within outward, and tying over a roll of gauze or lint to prevent cutting into the skin; then another suture above, the same as the first. You should not cut away any of the sac until you see how much you require and you have put in your sutures. Finally, put a glass drainage tube into the sac. This is, I am sure, much better than the iodoform gauze drain as prescribed by Mikulicz. Should there be much oozing you should not be in a hurry to remove the drainage tube, and, if obliged to retain it until suppuration threatens or has actually taken place, you have only to wash it out two or three times a day with sulphurous acid (1:10), then substitute india-rubber tubing for the glass, and gradually shorten it as the cavity contracts. For washing out the sinus the best plan is to have a tube made of celluloid with a hole at the end, six inches long and of the calibre of a No. 2, 3, or 4 catheter, attached to a small syringe by means of a piece of india-rubber tubing. With this you can always insure clearing out the bottom of the sac. A sinus need never yield offensive discharge if you use the sulphurous acid sour enough."