Marcy (H. O.)

Compliments of the Author.

THE SURGICAL TREATMENT OF

Non-Pedunculated Abdominal Tumors.

BY

HENRY O. MARCY, A.M., M.D., L.L.D.,

OF BOSTON.

SURGEON TO THE HOSPITAL FOR WOMEN, CAMBRIDGE, ETC.

Read in the Section of Obstetrics and Diseases of Women at the Forty-first Annual Meeting of the American Medical Association, held in Nashville, Tenn., May, 1890.

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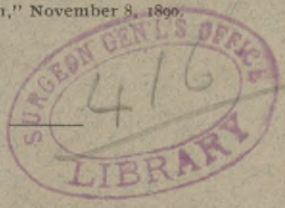

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THE SURGICAL TREATMENT OF NON-PEDUNCULATED ABDOMINAL TUMORS.

The ovarian cystoma which develop without a pedicle are rare, and yet are met with sufficiently often to make their study of interest and practical importance. They have been called intra-ligamentous, under the belief that they develop within the folds of the broad ligament, but I have never been able to demonstrate such origin. The explanation offered is that, by some error of development, the embryonic ovary becomes displaced. It has also been assumed that adhesions of the ovary to the folds of the broad ligament might cause these to grow with the tumor, and thus form a capsule over it.

The ovary, when not diseased, is often found with some degree of variation of attachment, as well as distribution of vessels. The pedicle may be so short that the deeper portion is almost, or quite within the reflexion of the peritoneal investment of the ligaments. When such a part becomes cystic, it will, of necessity, in its development, carry before it the peritoneum, and with it portions of the broad ligaments. Every operator, of considerable experience, has met with examples of this class of cases, and it has happened to me to find them in considerable variety, both as to the character of the growth and its origin. The variation in point of develop-

ment will cause a change of relationship of the surrounding organs. The uterus and bladder may be carried quite upwards and to the side opposite the point of origin, when this is nearly central; if it commenced anterior to these organs it will be crowded into the pelvic basin; if posterior to the uterus, the cyst may be deeply planted within the pelvis. I have removed, with great difficulty, such a cyst, multilocular, within a few weeks, where the tumor pressed quite down into Douglas' cul-de-sac, behind the uterus and bladder, completely filling the pelvis.

The attachments also vary greatly in their appearance. They may be thick and vascular, the ligaments so changed as to be recognized with difficulty. In one case, a dermoid cyst, weighing about eight pounds, but the tumor more solid than fluid, the outer fold of the right broad ligament, which was distinctly hypertrophied throughout, was carried over the tumor quite to the base of the liver. In another, a large monocyst, the development appeared to be beneath the peritoneum, posterior to the ligaments, extending behind the cæcum, quite to the root of the mesentery.

The cysts of the broad ligament are usually single, but they vary considerably in character, two of the most difficult of removal which I have ever met having been proliferous, or papillary growths. It is important for the physician, as well as the surgeon, to be familiar with the varying phases of such development of pelvic tumors, because of diagnosis, as well as treatment. It may and often is impossible to differentiate clearly these growths before section, but the diagnosis must be determined sufficiently to decide upon exploration; as early operations are advised in order to avoid complications which, in

their further development, add very greatly to the difficulties and dangers of removal.

The exact knowledge of pelvic tumors must often remain uncertain until after exploratory section, and the most experienced observers are not seldom the least sure of conditions which may exist. Where this is advised, it may seem almost superfluous to add, that the operator should do it with all the care requisite to meet the demands of modern surgery, that he should be prepared for any emergency, and deal with the factors involved therein.

We all remember the intense interest with which, for many years, the disposition of the pedicle of ovarian cysts was held in consideration. It may be assumed that few would now question its treatment by the intra-peritoneal method, with, in all aseptic cases, the closure of the abdominal wound.

The more general method, advised for the treatment of a large class of cystic tumors without pedicle, is a resection of as much of the cyst-wall as possible, and carefully stitching the retained portion to the lips of the abdominal wound, thereby shutting off the general peritoneal cavity, and treating the remaining cyst-pocket as an open wound with drainage. Even this is oftentimes exceedingly difficult, and the resulting mortality rates, in the hands of our most expert operators, are very large.

In the treatment of solid tumors of the pelvis, uterine growths especially, a great majority of operators still follow this method in a modified way, by making, so to speak, a pedicle out of the lower portion of the uterus, and attaching it, after constriction, extra-peritoneally, with the object of making it an external wound. The arguments urged in favor of these methods are

similar to those, at an earlier day, advanced for the external treatment of the pedicle of ovarian cysts by the clamp, etc.

In a certain very large measure, the objections to this method of treatment are those which caused the abandonment of the extra-peritoneal treatment of the pedicle, greatly emphasized. Those who attempt the entire removal of the growth and the closure of its base of attachment, do it by ligation in section, with the parts oftentimes so imperfectly secured, that great danger from hæmorrhage ensues, and frequently loss of life. Most operators who thus treat the basic attachment of the tumors hold subsequent complications in such fear that they do not deem it advisable to close the abdominal wound without drainage which, of itself, is an added danger of serious character.

The latest publication upon the subject by Dr. Meredith, of London,[1] I quote at some length, since it gives the method usually adopted in the Samaritan Hospital, where in all abdominal surgery the drainage tube is in general use.

Complications arising from extension of the growths beneath one, or possibly, both broad ligaments, with accompanying upward displacement and close adherence of the urinary bladder to the anterior surface of the tumor, as a consequence of its original development from the lower segment of the uterine body, often necessitates extensive enucleation in order to form a pedicle for the application of the serre-nœud wire. Occasionally, in such instances, the removal of the uterine appendages may be found feasible, and should then be performed in place of the alternative operation of hysterectomy. But, more often than not, in cases of such nature as that above described, the first-named procedure is not available with safety, and the major undertaking has to be faced. The chief dangers entailed thereby are due to *hæmorrhage*, which must, in the first place, be avoided

[1] "Present Position of Abdominal Surgery." Lancet, April 19, 1890. Page 836.

by securing the ovarian vessels in either side of the uterus. This is to be effected by transfixion and ligature of both broad ligaments below the level of the uterine appendages, and followed by their subsequent division after means have been taken to control the return circulation from the upper portion of the tumor, by the use of compression forceps. The next step required is that of freeing the displaced bladder from its connections with the anterior surface of the tumor. With this object, a horizontal incision through the capsule of the growth, beginning and ending, at the seat of ligature of the broad ligament, is carried across the front of the tumor, passing at a level of half an inch, or rather more, above the upper limit of the adherent bladder, which is then stripped downwards sufficiently to avoid its subsequent inclusion in the serre-nœud wire. Should these means not suffice for securing a suitable pedicle, resort must be had to further enucleation, necessitating the constriction of the base of the tumor by the use of an elastic ligature twice looped, and secured by clamping with artery forceps. Care should be taken to include in this ligature both the ovarian pedicles, and also the free border of the previously divided capsule connected with the fundus of the bladder. A horizontal incision through the uterine capsule, connecting at either end with the seat of ligature of the broad ligament, is now carried across the posterior aspect of the tumor, the base of which is then rapidly enucleated sufficiently to admit of the application of the serre-nœud wire, below the level of the elastic ligature, which is subsequently removed. The ultimate success of the operation, as before stated, depends in great measure upon the proper adjustment and management of the stump, by the adoption of means for ensuring the early protection of the peritoneal cavity from the dangers entailed upon it by the necrosis of the tissues constricted by the wire. The tumor having been cut away, after transfixion of its pedicle by a stout pin passed immediately above the wire, the distal portion of the remaining stump is to be trimmed down as much as possible, and its raw surface is then covered in by lacing together the edges of its peritoneal investment with a continuous suture. The margins of the divided parietal peritoneum are now accurately adjusted around the stump in the groove formed by the wire, before being closely united at its upper border by a silk suture, which should also include a fold of the peritoneum covering the posterior aspect of the stump immediately below the

wire. The ends of this stitch are then cut short, and the rest of the abdominal incision is closed in the usual manner. Finally, the stump is surrounded and covered in with dry, absorbent dressing, which should be left undisturbed for at least five or six days.

In an interesting paper published by Dr. Skene,[2] of Brooklyn, after emphasizing the process of enucleation quite as I have practiced it for years, he advises subsequent treatment as follows:

The management of the ligaments after the cystoma is removed, is first directed to the control of hæmorrhage. In some cases a general oozing is all that there is. Occasionally a wounded vessel here and there needs ligating. When the cyst extends deep down into the pelvis there is often very troublesome bleeding from veins. These should be ligated, if possible, but if that cannot be done, pressure with a hot sponge should be tried, and if that fail, styptics may be used. The ligamentous capsule now presents a pouch, the inner surface of which is raw, and from which there will be some bleeding and much serous oozing. This should be treated as follows: The upper portion of the opposing sides should be folded in so as to bring the peritoneal surfaces together, and these should be fixed by a continuous catgut suture. The suturing should begin on both sides, and be from the sides toward the centre, and close the parts, except at a point beneath the abdominal wound, where an open space should be left for the drainage tube. If the ligaments thus brought together by sutures can be brought up to the lower angle of the abdominal wound, they should be fixed to the abdominal wall by silk sutures passed through the ligaments on each side of the opening for the drainage-tube, and then through the wall of the abdomen. When the ligaments cannot be brought up to the wall of the abdomen a drainage-tube without side openings should be carried down to the bottom of the cavity.

While this mode of treatment is perfectly satisfactory in suitable cases, there are difficulties attending the operation in exceptional cases, and hence certain dangers. The cyst-wall may be easily torn, and hence the danger of leaving portions of it. When this happens it is neces-

[2] "Intra-Ligamentous Ovarian Cystoma." N. Y. Medical Record, April 19, 1890, p. 438.

sary to destroy the secreting surface. This may possibly be done by applying pure carbolic acid. The most difficult part of the operation, in some cases, is to stop the bleeding. This has been referred to; but I may say further, that the oozing at the time of operating, and the liability to suppuration which may occur afterward, render the convalescence rather tedious in many cases.

The late Dr. J. F. Miner,[3] of Buffalo, in a paper first published in 1869, in the *Buffalo Medical and Surgical Journal*, upon "Ovariotomy by Enucleation," furnished a contribution to the medical profession of permanent value. He taught the practicability of enucleating the cyst of the ovary from its peritoneal investment, a histological fact long known, but never made available in surgical practice, until brought forward by Dr. Miner. This most distinguished surgeon sought to make of practical value this fact. He states:

> There is no need to point out the advantages of this plan. Those, who have studied the history of ovariotomy, and who are familiar with the difficulties and objections which may fairly be urged against the ordinary methods of procedure, will at once perceive that, if enucleation is successful, there is no pedicle to keep open the lower angle of the wound, or to drag upon the parts. No unfavorable adhesions of the pedicle, no wires to be discharged by suppuration, and no crusts of burned tissue to be provided for. The abdominal cavity has simply been opened, and the diseased part removed, all that is left behind is capable of life.

The stripping of a large portion of the peritoneal investment of the cyst, and returning it within the peritoneum, as advised by Dr. Miner, offers little if any advantage over the use of the ligature in tumors where the pedicle is well-defined. The fear of hæmorrhage, the too general septic conditions, the returning within the peritoneum of a considerable portion of superfluous tis-

[3] Transactions of International Medical Congress 1876, p. 810.

sue, caused the method of Dr. Miner to fall into disuse. However, a modification of it, which I have used for a number of years without exception, is of great practical value. It consists in sewing off the pedicle, usually with several double continuous sutures, and then dissecting the peritoneal investment away from the cyst, at its base, to the extent of about an inch upon either side, and then, by a sero-serous continuous *tendon* suture (stitches taken parallel to the cut tissues), inverting the divided edges. The advantages which this procedure offers are, that the base is constricted sufficiently tightly to control hæmorrhage without producing necrosis or undue nerve tension, while the inversion of the divided edges leaves no freshly cut surfaces for infection.

The cystic tumors of the pelvis which, for any reason, fail to develop a pedicle, almost without exception may be safely treated by a modification of this method. The tumor, if cystic, is emptied of its contents as usual. The peritoneal investment is stripped from the cyst, which is removed by enucleation. Bleeding vessels are temporarily secured by pressure forceps or torsion. The investing tissues are seized by strong clamp forceps and drawn upward by an assistant, so as to define clearly the basic attachment of the growth. Then, with a double continuous tendon suture, they are sewed evenly through, as deeply as convenient beneath the attachment of the cyst, their entire extent, not seldom several inches in length. This completed, the hæmorrhage is securely controlled, and the redundant tissues are trimmed away with scissors, leaving only sufficient material for the inversion of the divided edges by a sero-serous continuous suture. In a very considerable number of cases of this type, I have been enabled to complete safely the operation, and to close the

abdominal wound, where, otherwise, it would have been impossible. In two instances the line of the suturing measured about 9 inches. In no case have I had complication of secondary hæmorrhage, or septic infection.

In illustration I quote from the record of the Boston Gynecological Society the report of a recent specimen, presented October 10, 1889:

Dr. Marcy presented an inflated unilocular cyst of the right broad ligament which he had removed at his hospital the previous week, assisted by Dr. A. P. Clarke, of Cambridge. The case was one of exceptional interest in that it had been allowed to develop until the sac and contents weighed 42 lbs. The girth of the patient below the umbilicus was over 40 inches. The operation was at last necessitated on account of dyspnœa and impeded circulation. The cyst had developed from the right broad ligament, not only without pedicle, but had carried up before it a fold of the peritoneum from its attachment in the median line to a point posterior to and on a line with the head of the cæcum. The question of its removal, therefore, was of difficult solution. A portion of the cyst wall could be brought into the line of the abdominal incision and stitched to the peritoneum, then drained and allowed to close by granulation. This necessitates, at the best, a long and tedious convalescence, rendered doubly objectionable from the weak and exhausted condition of the patient.

The wall of the sac, along the border of its attachment, was covered by extraordinary varicosed veins. This seemed to threaten unusual danger from hæmorrhage. The emptied cyst was put on tension and, commencing at a considerable distance from its attachment on either side, the peritoneal investment was divided (as shown upon the inflated specimen), and the cyst was enucleated. The divided edges were caught and held by three or four pairs of Spencer Wells' compression forceps, while Dr. Marcy sewed through its base, with a double tendon suture in an even, continuous seam, measuring about 9 inches in length. Owing to the extraordinary size of the vessels, a second line of sutures was carried parallel to the first through the double fold of the peritoneum, about half an inch nearer to the median line. The superfluous tissues were resected parallel to this, and the peritoneum was intrafolded by a line of continued tendon sutures, sero-

serous in character, the needle traversing the tissues parallel to the cut edges. The abdominal wall was closed in Dr. Marcy's usual method by four layers of tendon sutures, and sealed by iodoform collodion.[4]

The advantages of the above method are too obvious to require special mention. The cyst is entirely removed, the basic attachment is closed, constricted, but not devitalized by the even, continuous double suture, applied by means of the long curved needle set in handle with eye near the point, such as is most conveniently used in hernia, and which is familiar to most American surgeons. The tendon suture is preferable to catgut, but either, properly prepared, is trustworthy. Carefully sewed in the above manner, there can be no danger from hæmorrhage. The inverted serous surfaces leave no oozing stump or uncovered wound for absorption. The tissues lie evenly without strain or tension. Lymph in a few hours covers in the suture material and wounds made by the needle. The abdominal cavity, if necessary, is flushed with sterilized water, and the wound closed without drainage. Care must be taken not to include a ureter, not to pierce the bladder, or rectum; but the danger of sewing deeply in this way is really quite less than in the tying off piecemeal by the interrupted suture, as usually done.

There are cysts which, from changes of an inflammatory or other character, cannot be enucleated by the easy process of stripping the investing peritoneum with fingers. The experienced operator, however, will, by a painstaking dissection, usually succeed in saving the surrounding peritoneum. Fallopian tubes which have become pus sacs are often very troublesome in enucleation,

[4] The patient was discharged at the end of the third week, union primary.

but it can generally be effected without rupture and consequent danger from infection. Where the abdominal cavity is septic then drain, but not otherwise. Pelvic abscesses are obviously to be excluded from consideration by methods such as are under discussion.

It is equally important to advocate in this connection, the treatment of the remaining basic tissues in all cases of supra-pubic hysterectomy as well as the semi-solid tumors of the ovary, dermoid cysts, and cysts of the broad ligaments which are often found without a pedicle. Thanks to the labors of Apostoli, of Paris, it is a conceded fact that laparotomy for fibroid tumors of the uterus is considered less necessary than formerly. However, it cannot be doubted that a considerable number of cases are not amenable to treatment by electricity. Where the growth seriously imperils the life of the patient, and the surgical removal of the tumor is wisely taken into consideration, the importance of a pedicle consisting usually of the elongated cervical tissue is a marked factor in the problem, without which most surgeons decline operating. Nevertheless, it is frequently true that the uterine myoma, which fills the pelvic basin, interfering with the functions of its organs, thereby most often demands removal. When thus located, the cervical tissues rarely afford material for furnishing a pedicle, and the external treatment of the stump is impossible.

It is a well known histological fact that the growth of uterine myoma of necessity causes the formation of so called capsular investment, developed from the surrounding uterine tissue. In rare instances, where the tumor is single, and the uterus has not become too greatly deformed, it may be removed from its capsule, and the uterine

wall closed by suturing. The interstitial growths, however, usually develop from different centres and so alter the structure of the organ that the removal of the entire uterus is demanded. Under these conditions, the most available method of procedure consists in the division of the capsules and the enucleation of the growths, controlling hæmorrhage by pressure forceps. After the size of the organ is thus reduced, the remaining portion is put on tension, and the base is sewed evenly through, as near the junction of the peritoneal reflection from the bladder and rectum as is judged advisable, and the redundant tissue is cut away. These are divided by a V-shaped incision, so as to allow the easy coaptation of the peritoneal investment by a sero-serous continued suture, in the same manner, as advised in the treatment of non-pedunculated cysts. If the condition of the cervical canal seems to demand it, it should be treated by a drop of liquid crystals of carbolic acid, a strong sublimate solution, or the mucous membrane may be cored out by the knife.

When the condition of the growth will allow, it is a great convenience to first push down over the tumor the so-called rubber-dam which is constricted at its base by an elastic ligature. This simple procedure, suggested to me by the common practice of the dentist, encircling the base of the tooth while filling, oftentimes saves the loss of much blood and proves an exceedingly convenient protection to the abdominal organs. When hysterectomy is thus performed, hæmorrhage is under far better control than by the strong ligature which constricts to necrose the tissue. The pressure upon the parts enclosed is even and continuous, the sutures are speedily covered by a fresh deposit of lymph, and open wound surfaces

are entirely avoided. Strain and pressure upon the bladder and rectum are minimized and generally entirely wanting. The abdominal wound is completely closed, rendering drainage not alone unnecessary, but superfluous, and when the abdominal wound is properly sealed with iodoform collodion, subsequent infection is impossible.

There can be little doubt that the advantages of this method are many, and yet they are all based upon the fundamental principles of antiseptic surgery. Without a mastery of these principles and a familiarity with their application and religious exactitude in carrying them out, these operations should never be undertaken. The buried animal suture, unless introduced aseptically, thus hidden away in the remote recesses of the body, is sure to be attended with most disastrous results. But when itself, *aseptic* and *aseptically* applied in an *aseptic* wound, it becomes one of the most important factors in modern surgery, the value of which is as yet greatly underestimated and scarcely properly understood.