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VAGINAL HYSTERECTOMY FOR MALIGNANT DISEASE OF THE UTERUS.

By J. E. Janvrin, M.D.,

Gynæcologist to the Skin and Cancer Hospital, etc.

The well-known predisposition of the cervix uteri to the development of epithelioma has been referred chiefly to the presence of embryonic cells which remain as such, to a certain extent, during life; and in the light of our present knowledge as to the scope which local irritation plays in the development of cancer in all its varieties it is not at all strange that it should show itself as the prime factor in the development of epithelioma of the cervical tissue. Pozzi divides epithelioma of the cervix (and vagina) into four classes during the initiatory stage of its development.

1. Papillary or cauliflower.
2. Nodular or parenchymatous.
3. Cancer of the cavity of the cervix (boring or eating cancer).
4. Vaginal, usually commencing in the cul de-sac and then extending to the cervix and adjoining tissue.

In a paper upon the "Limitations of Vaginal Hysterectomy" published in the *New York Medical Record* July 9, 1892, by the author of this monograph, in speaking of the most common course of diffusion of epithelioma of the cervix, as it appeared to him from a clinical point of view, he gave the following as that most commonly observed by himself:

1. Epithelioma developing upon the cervix.
2. Epithelioma extending up and into the cervical canal.
3. Epithelioma extending up and into the uterine body.
4. Epithelioma extending to the tissues (cellular and glandular) surrounding the cervix.
5. Epithelioma extending downward upon the vaginal mucous membrane.
6. Epithelioma extending downward and into or through the vaginal wall.
7. Epithelioma or carcinoma developing primarily upon the endometrium.
8. Its extension to the body of the uterus.
9. Its extension to the uterine adnexa.

This classification of the primary deposit in, and extension from the mucous membrane of the cervix though crude in many respects, has been based upon the clinical study of nearly one thousand cases observed mostly during the past ten years.

It is perfectly evident that classes 1, 2, 3, 5, 7 and 8 are all amenable to vaginal hysterectomy with every promise of the best success as to a non-return of the disease. As regards classes 4 and 6 there are grave doubts as to the propriety of resorting to hysterectomy, while in class 9 the removal of the uterus is hardly to be thought of.

While we thus meet with a large number of cases in which the disease, from infiltration into the cellular and glandular structures surrounding the cervix, or from its extension to the uterine adnexa, has gone beyond the limits to which vaginal hysterectomy can properly be applied there still remains a much larger number of cases (included in classes 1, 2, 3, 5, 7 and 8) in which the operation should always be resorted to. This leaves but one class (No. 6) to be disposed of, viz., those cases in which the disease has extended *through* the vaginal wall. In such cases, on account of the invasion of the cellular tissue and the lymphatics, there is scarcely any hope of removing the entire diseased tissues unless the operation is extended to such a depth as to injure the rectum or bladder or ureters.

When the disease has extended thus far it is very doubtful as to the justifiability of any attempt at its removal; although, as stated in Pozzi's recent book, Mickulicz has expressed himself upon this point as follows: "As long as one regarded the bladder and the rectum as a *noli me tangere*, just so long did extirpation of the uterus fail of desirable results; there must be no fear in attacking both rectum and bladder freely, for they are not organs essential to life." Terrier also says (cited from same authority): "We should not hesitate to operate, since extirpation of a part of the rectum or of the bladder, which may be involved, will not be incompatible with existence." This, particularly as regards the bladder, is carrying the field of operation to a much greater length than the majority of operators at the present day are willing to follow; and to me it seems that the results would hardly justify the procedure. When the disease has extended so far as to involve the bladder or rectum, or both, the lymphatics lying between these organs must have become affected, and when this has occurred any attempt at vaginal hysterectomy would hardly be followed by exemption from a recurrence of the disease, and would also bring discredit upon

an operation which has a wide enough field for its work and which should be kept within its own legitimate limits.

Perhaps as cases multiply and fuller and even more satisfactory statistics accumulate as to the ultimate results in such cases as are now pretty generally operated upon the field of operation will be extended so as to include cases of invasion of the bladder and rectum. This is a point which at present has hardly been touched upon in practice, and therefore we have no statistics upon which to urge the operation in such cases.

Of the different forms of epithelioma of the cervix uteri undoubtedly the so-called cylindrical variety is by far the most frequently met with, and it has a decided tendency to diffuse itself from the cervix proper upward into its cavity and to the body of the uterus. Next in frequency is the pavement variety involving for a long time only the mucous membrane of the cervix or of the vagina.

In several cases which have come under my observation it has seemed to me to have begun upon the cervix and subsequently to have been transferred to the upper portion of the vaginal mucous membrane simply by attrition and absorption. Here then we have a new focus for the extension of the disease. It is however a most fortunate thing that the conservative resources of nature are now called into play, and a deposit of healthy newly formed connective tissue proliferation takes place in the vaginal wall, thus for a time separating the disease from the lymphatics of the cervix and vagina. Physical examination shows the mucous membrane *only* of the vagina involved, the vaginal wall not at all thickened and no infiltration of any kind underneath the wall, either of lymphatics or cellular tissue. In such cases of beginning invasion of the vagina the operation of vaginal hysterectomy gives the most hopeful outlook as to non-recurrence of the disease, provided sufficient of the vaginal wall is removed at the time of the operation. This is best accomplished by making, at the beginning of the operation a circular incision through the vaginal wall at least three-fourths of an inch below the diseased surface dissecting upwards and ligating any vessels requiring it, and then as you reach the level of the cervix go on in the usual method and extirpate the uterus, tubes and ovaries. I have had two such cases, one done over three years ago, and another early in the present year. There has been no return of the disease in either case.

Diagnosis.—The diagnosis of epithelioma of the os or cervix is easily made. Generally irregular hæmorrhages first draw the attention of the patient. The hard deposit at the base of the disease, its

coarse and vascular granulations, bleeding upon the least provocation, and the watery, bloody and peculiarly offensive discharge, together with more or less lumbar pain, and also in most cases evidences of impaired general health, easily decide the nature of the disease.

When the epithelioma begins in the endometrium the general symptoms are very like those attending its development upon the cervix or os, the local symptoms being of course somewhat different. The os and cervix are usually normal. Irregular hæmorrhages from the cavity of the uterus, the acrid, watery and offensive discharge, lumbar pains, an enlarged and sensitive uterus are the symptoms usually met with. These symptoms do not, however, always prove the existence of a malignant disease, for they may all exist, and frequently do exist in cases of fungous endometritis and also in degenerating multiple fibroma of the body. It is in these doubtful cases that a thorough dilatation of the cervix (under ether) and a careful exploration of the cavity by the finger, together with a thorough curetting and microscopical examination of the tissue removed is always demanded. In many cases of degenerating small submucous fibroids the careful exploration by the finger gives by far the most satisfactory aid in determining the actual condition of affairs. Where fibromata exist their presence is readily made out from the fact that we have, as a rule, quite a number of them developing perfectly distinctly, the one from the other, with spaces of perfectly healthy uterine tissue lying between them. Their easily defined and rounded form, even when that portion protruding through the mucous membrane is in a sloughing condition, presents a condition to the sense of touch entirely different from the pretty regularly diffused infiltration underneath an epithelioma of the uterine cavity and body. At the same time it must not be forgotten that the presence of fibromata *and* epithelioma of the body in the same case are by no means rare. I have successfully performed vaginal hysterectomy in three such cases, in two of which the presence of the fibroids was not known until the uterus was removed; while in the other the diagnosis of both conditions was made out prior to the operation. In these doubtful cases, as before stated, the microscopical examination of the tissue removed by the curette, or even by sharp forceps or scissors, also aids very greatly in forming a correct diagnosis.

A differential diagnosis between epithelioma, scirrhous, encephaloid and sarcoma of the cervix and body is by no means always easy, although each condition generally has some special indica-

tions which aid us in determining the variety as we meet it clinically. Whether it be one or the other there is but one thing to do, and that is to deal with it according to the most approved rules of modern surgery; and to me vaginal hysterectomy in properly selected cases seems to be the only rational treatment.

In what cases, when, and how shall we perform this operation?—In answer to the first question I would include *all* cases in which the disease is limited to the os or the cervix, and also all cases in which the disease has traveled down upon the vaginal mucous membrane, provided it is decided that it has not penetrated the deep tissues of the vaginal wall and become infiltrated into the lymphatics and cellular tissue; also all cases in which the disease, beginning in the endometrium, is still confined to the uterine body and has not diffused itself to the adnexa or the peritonæum. As to the propriety of performing hysterectomy when the bladder or rectum have become involved sufficient has already been said in the earlier part of this paper.

There are not infrequently met with cases in which the diagnosis between an extension of the disease to the adnexa, and an old pelvic thickening due to prior pelvic peritonitis, is somewhat difficult, perhaps even impossible. If the thickening is due to an extension of the cancerous infiltration into the ligaments, tubes and ovaries or peritonæum the general condition of the patient is almost always such that there is little difficulty in deciding the case. Besides this a cancerous infiltration is much more dense and resistant than the fibrinous exudates resulting from inflammation. This point in conjunction with the patient's general condition will generally aid us in forming a correct estimate as to the justifiability of total extirpation in these somewhat doubtful cases.

When shall we operate?—Taking it for granted that the operation should be done in all cases heretofore mentioned as coming within its scope certainly there is nothing gained by delay. The operation should be done at once. In a few cases, where there is considerable destruction of the cervix, and the tissues are breaking down rapidly, it is best to curette away all necrotic parts, apply a styptic, and for several days succeeding this use the dry iodoform applied directly to the raw surface. I have done this in quite a number of cases during the past six years. By this means we get rid of an amount of dead and offensive material, and the cervix is thus rendered almost absolutely aseptic and of course much less liable to cause sepsis during the operation for extirpation.

In many cases of cancer of the endometrium in which the discharge is considerable a preliminary curetting of the uterine cavity, followed by an application of pure carbolic acid, and drainage for several days by iodoform-gauze packing will so thoroughly do away with the discharge that there will be none whatever during the operation. I have resorted to these procedures in several instances, as the cases demanded the one or the other, and have found them of the greatest benefit, especially as to the saving of time and the exemption from annoyances during the operation for extirpation.

I fully agree with Fritsch, and have frequently made use of the same assertion in discussions upon this subject before the New York Obstetrical Society and other societies during the past five years, that the operation of vaginal hysterectomy in properly selected cases is, to me, an easier and less bloody operation than high amputation of the cervix.

How to perform the operation. Preparatory steps.—In cases in which the preliminary operation of curetting is not needed the usual local preparations consist of a thorough washing out of the vagina daily with the carbolated douche and then, having rendered the vagina and cervix perfectly dry by wiping with absorbent cotton, applying dry iodoform to the diseased os or cervix. This should be done for several days at least, the external genitals at the same time being thoroughly cleansed with soap and water and bathed with a mild antiseptic solution. The patient should also take a warm bath every day and the bowels should be thoroughly moved by a cathartic at least twenty-four hours before the operation, after which only milk diet should be given up to the evening preceding the day of the operation. Two or three hours before the operation the rectum should be cleared by a large enema, and at the same time the bladder of course empties itself.

The patient thus prepared and etherized is placed upon her back upon the table and well drawn down to its edge so that the hips project slightly. A Kelly's cushion is placed under the hips, the thighs and legs, properly protected by canton-flannel, bent upon the abdomen in the lithotomy position and each held by a nurse. An extra wide Simon speculum (with a deeper anterior curve than the ordinary blade, and made for me by the Ford Surgical Instrument Company) is introduced. Attached to the lower hook-shaped end of the handle is hung an ordinary tin pail, capacity one quart, filled with water. Its weight is usually sufficient to depress the posterior wall of the vagina, so that it is not necessary

to call upon an assistant for this purpose. The bichloride solution directed upon the cut surfaces from the fountain syringe during the operation, together with the blood, flows readily down the handle of the speculum into the pail and overflows into a larger receptacle placed below it. The external genitals and vagina having been thoroughly washed with soap and water and bathed with the antiseptic solution the cervix is grasped with a strong volsella and steadily drawn downward so as to bring it as near to the vaginal outlet as possible and held by an assistant. A circular incision through the vaginal mucous membrane at a sufficient distance to thoroughly clear the diseased tissue and at the same time not so far away as to endanger the ureters is made by scissors or scalpel. That portion of the incision in the anterior aspect of the vagina is then penetrated by the index finger of the left hand, or by the handle of the scalpel or blunt-pointed scissors, and the cellular tissue between the cervix and bladder gently separated, the utmost care being taken to avoid injury to the ureters or bladder. By keeping very close to the cervix this accident is easily avoided.

Having separated the bladder and ureters from the cervix and uterus up to the peritonæum and on either side out to the line of the broad ligaments, which fact is readily determined by the finger, the speculum is either removed or forcibly depressed and the tissues between the cervix and rectum are separated in a similar manner, up to the peritonæum.

The left index finger again introduced between the uterus and bladder touches upon the peritonæum when a tenaculum introduced and guided along this finger readily catches the peritonæum and an opening is quickly made by the sharp-pointed, slightly curved scissors. Passing the finger through this opening (the tenaculum and scissors being withdrawn) the opening is enlarged by tearing to either side down to the broad ligaments. The same procedure is then applied posteriorly and we have the uterus freed everywhere except as to the broad ligaments. Immediately upon entering the peritoneal cavity posteriorly a sponge, antiseptically prepared, to which a long string is attached, is pushed into the pelvic cavity behind the uterus to protect it from the fluids in the vagina, and also to hold up the intestines. The treatment of the broad ligaments, whether by compression forceps, clamps or ligatures, is a matter which every surgeon must decide for himself from actual experience with the operation. For my own part after an experience with forceps in seven cases and a larger experience with liga-

tures my preference is decidedly in favor of ligation. If the uterus can be drawn down sufficiently to permit the finger, introduced through the posterior opening, to pass around the fundus and hook over the broad ligaments, then a pair of forceps sufficiently long, can be made to include the entire ligament, the finger meanwhile protecting against nipping the intestines by the points of the forceps. When this can be done there is but one objection to it, and that is that the mass included being the entire broad ligament is quite large, and more sloughing is likely to occur than in cases in which the ligatures are applied. In several of my earlier operations I have applied the forceps, one to each broad ligament, in this manner and with perfectly satisfactory results, removing them at the end of thirty-six hours.

The use of several pairs of forceps to either broad ligament is objectionable on account of their bulk, their inconvenience, and the pain and discomfort which they often cause. In addition to this they interfere greatly with the gauze dressing and entail after manipulations which are not necessary where we use ligatures. In applying ligatures an extra large Peaslee needle, curved at a right angle and blunt pointed, generally accomplishes the purpose easily. Drawing forcibly down upon the cervix the needle, threaded with sufficiently strong silk, is carried far enough up to include the lower third of the ligament. Perforating the ligament from its anterior surface the ligature is grasped by a tenaculum and held while the needle is unloaded and withdrawn. The uterine artery is thus included in the first ligature. This portion of the ligament is then cut through by scissors (and the traction upon the cervix almost completely prevents hæmorrhage from the uterine side of the cut ligament) and one or two more ligatures are rapidly applied. The same steps are much more easily applied to the remaining ligament. In some cases where the broad ligaments are shortened, or the vagina is small, or the uterus so large as to prevent its being drawn down to the vulva I have made use of a needle specially devised for such cases. I have had this needle, or rather "ligature carrier," made by the Ford Surgical Instrument Company. It is constructed upon the principle of the Sims' uterine repositor. and with it the ligature can generally be passed with comparative ease even when circumstances are such as to absolutely preclude the use of the needles ordinarily used for this purpose.

The uterus having been removed slight traction upon the ligatures, which have purposely been left long, usually brings the ovaries and tubes into view, and they are readily ligated and re-

moved. It is always best to remove them in all cases in which the climacteric has not been passed, provided it can be done without delaying the operation too much. If, however, these organs are strongly adherent, or a condition of pyosalpinx exists, and for these or other reasons there is going to be great difficulty in reaching them per vaginam the question arises as to whether we shall at once proceed to open the abdomen and remove them or let them remain for a subsequent laparotomy. The condition of the patient at the end of the vaginal hysterectomy alone must decide the question as to adding the risk of a laparotomy to what has already been done. I should certainly defer any further interference unless the patient was in most excellent condition and showed no evidence of shock. My own experience in adding a laparotomy to a vaginal hysterectomy is confined to one case, and then simply for the purpose of ligating a bleeding vessel which, on account of the thickened condition of the left broad ligament from old pelvic inflammation, could not be controlled from below. The vessel was readily secured and the patient made an excellent recovery. In this case, however, it was a matter of necessity, and of course it was accomplished in a few minutes and was a very different thing from enucleating firmly adherent pus-tubes and ovaries.

A thorough cleansing of the vagina by the antiseptic douche, the withdrawal of the sponge from the pelvic cavity and the drawing down of the stumps well into the vagina, leaving the ligatures to protrude just posteriorly to the iodoform-gauze tampon complete the operation.

The only local after-complication that has frequently occurred, and in several cases has resulted fatally, is that of intestinal obstruction and paralysis. (For a full report of these cases see a paper on "The Pathology of Intestinal Obstructions following Abdominal and Pelvic Operations," by William Easterly Ashton, M.D., of Philadelphia, read before the Section of Obstetrics and Diseases of Women at the forty-third annual meeting of the American Medical Association at Detroit June 7, 1892, and published in the "Journal of the American Medical Association" July 9, 1892.) If the gauze tampon is so applied as to elevate slightly the intestines above all the raw surfaces, so that they cannot possibly come in contact with these raw surfaces, there will be no danger from obstruction. By gently spreading out the central piece of gauze to a T shaped affair, thus elevating the intestines (and omentum if it prolapses) above all the raw surfaces, the peritoneal cavity is completely shut off from any septic decomposition

which frequently occurs in the stumps. This central line of the tampon is held in its position by another piece on either side covering the stumps and gently filling the vagina. Of course each of the three protrude from the vagina and thus insure perfect drainage. I have used this method of applying the tampon for years and have never seen a case of obstruction of intestines following vaginal hysterectomy. I believe that obstruction of the intestines and its accompanying paralysis after vaginal hysterectomy is almost invariably due to a faulty method of applying the vaginal tampon. This statement applies especially to cases in which obstruction occurs after a complete operation, *i.e.*, cases in which not only the uterus but also the tubes and ovaries are removed. In like manner in some cases of incomplete operation, *i.e.*, where the tubes and ovaries are allowed to remain, old tubal disease, with its accompanying bands of adhesions, *may*, provided peritonitis follows the operation, produce intestinal obstruction which may prove fatal unless relieved by an exploratory abdominal section.