Abdominal Hysterectomy for Cancer of the Uterus.

The first surgeon to deliberately practice *the excision of the uterus for cancer* by the abdominal route was Freund on January 30, 1878. This intervention was rapidly followed by a series of others, but its mortality[1] was so great that Freund's operation was abandoned for vaginal hysterectomy which was advocated by Czerny in 1880. The immediate results of this operation were incontestably better but the remote more mediocre.

As the technic of celiotomy became better return to the abdominal route became rapid, and as a result the immediate prognosis became better and permitted a much more extended removal than by the vaginal route. By the abdomen it was possible to do *an extensive excision of the cancer*. With this new technic are associated the names of Mackenrodt, Riess, Rumpf, Clark, Werder and Wertheim, etc. More and more extensive operations were advised, with the purpose of removing at one and the same time the periuterine cellular tissue and the glands receiving the efferent lymphatics from the uterus. The congress in Rome in 1902 marked the apogee of these attempts. It was at this meeting that Jonesco advised preliminary ligature of the hypogastric artery and the "lumbar-ilio-pelvic hollowing out" extirpating all the cellulo-fatty tissue of the pelvis, iliac fossæ, and interior lumbar regions with the vessels and lymphatics they contain. About the same time Franklin H. Martin in America advised the partial excision of the bladder with implantation of the ureters in the rectum; Sampson advised the systematic excision of the ureters with reimplantation of their upper end into a higher point on the bladder wall.

[1] Ahlfed in 1881 found 72 deaths in 100 cases done by Freund; Gusserow found 106 deaths in 148 cases, 71.6, per 100.

These operations are often excessive and have to a certain extent been abandoned. In particular the systematic search for all the invaded glands has been abandoned, as anatomo-pathological researches show that this removal was most often useless or impossible.

In order to establish it it suffices to recall what researches have established in the last few years. We will study from this point of view the cancers of the body and the cervix separately, because from the points of view of extension to glands there is a great distinction between the two.

In thirty-four cases of *cancers of the body* of the uterus, Kronig found only five cases of glandular enlargement; in one case the inguinal glands, two cases the iliac glands, and two cases the lumbar glands. In four of these cases the uterine cancer had gone beyond the limits of operation and in the fifth a cancer of the ovary had previously been removed.

In consequence in all cases of cancer of the uterus which are capable of extirpation there was no glandular enlargement. The *conclusion to draw from these observations is that it is not necessary to search for the glands in cancer of the body of the uterus.*

In *cancer of the cervix* the invasion of the glands is, on the contrary, much more important. Schauta in fifty postmortem examinations of women, who died from cancer of the cervix, found thirty-two cases of infected glands, being 64 per cent. of the cases. The search for glands seems *a priori* to be indicated. But if we look for the situation of these glands we will see that in the greatest number of cases of infected glands we find aortic as well as pelvic glands may be in a state of isolated enlargement or degenerated. In 13 per cent. of cases only the cancerous degeneration is limited to the pelvic glands, the only ones that the surgeon is able to attack and then not always.

It may be objected that these statistics have been made of cases where the patients died of their cancer, thus being in a different condition to those for whom the operation is a matter of discussion. Let us then proceed to the examination of those who succumbed to surgical intervention. Schauta in ten women examined found only two with cancerous glands; Oehlecker in seven cases found two. It is true that Kronig in eighteen

operative cases found nine cases of glands; but it must be added that Kronig attempted the operation on many cases that by others would be regarded as inoperable by reason of the obvious extension beyond the uterus.

Kundrat, who studied conscientiously the question of glandular propagation in Wertheim's clinic, found in 80 cases 54 with ganglionic invasion, about 59 per cent. In 26 cases there were infected glands but these glands were only capable of extirpation in 13 per cent. of cases. We therefore find a figure about the same as that of Schauta.

Does this figure of 13 per cent. of *glandular degenerations, capable of being operated on,* authorize the systematic removal of glands and to expose the patients to a research which incontestably aggravate the immediate operative prognosis? We do not believe it. We are supported in our nonbelief by the results of the anatomo-pathological researches of Oehlecker, Rosthorn, Kromer, Cullen and Sampson, who show that the size of the tumors, the only factor revealed during a celiotomy, is not a certain index of a cancerous degeneration. Large glands may be noticed in women and they are merely inflamed, while quite small ones may be degenerated. If one wished to be sure of removing all the infected glands, one should remove the whole glandular chain, which is of course impossible.

Is failure the result of the abdominal operation? Not in the least. The study of recurrences after old operations shows us that the mischief reappears at the level of the cicatrix in the immense majority of cases. This agrees with the facts determined by Kundrat who, in 160 cases operated by Wertheim, found the *parametrium invaded in 55 per cent.*; with those of Brunet who, *in 72 per cent. of cases* where the parametrium was clinically and macroscopically free, nevertheless found in 72 per cent. of these cases cancerous infiltrations; the researches of Pankow, who, in 60 cases operated by Kronig, found the *parametrium affected* in 68.2 per cent., and finally Sampson in a study of Kelly's cases found the parametrium invaded in 20 out of 27 cases.[1]

Another interesting anatomo-pathological point, well exposed

[1] Sampson, A Careful Study of the Parametrium in 27 Cases of Carcinoma Cervicis Uteri and Its Clinical Significance. *Am. Jour. of Obst.*, New York, Oct., 1906, p. 433.

by Brunet's[1] examinations on Mackenrodt's cases and by Assereto[2] on Doderlein's, is that in a certain number of cases there exists *an invasion of the vaginal wall by the cancer, and yet there is no change in the corresponding mucous membrane.* We have had occasion to make the same observations.

The abdominal operation by permitting the extensive excision of the vagina and parametrium exhibits even in the absence of a glandular extirpation, an incontestable superiority over vaginal hysterectomy and as such merits substitution for the latter.

Indications.—All cases of cancer of the uterus do not justify an abdominal operation and one is obliged to limit oneself to a purely palliative line of treatment. In order to present the indication of so-called radical operation, it is necessary to do a certain number of exploratory examinations by digital vaginal examination, digital rectal examination, and the cystoscope.

One should not operate when the *vaginal examination* shows an extensive invasion of the vagina, in particular if its anterior wall is in contact with the bladder, or perhaps an infiltration *en masse* of the broad ligaments extending to their external third. We confine ourselves to a palliative treatment when the *rectal examination* shows a beaded induration in the utero-sacral folds or the presence of enlarged presacral glands. *The cystoscopic examination* of the bladder should always be carried out. It is evident that direct invasion of the bladder should arrest the surgeon. The same may be said of certain lesions which, according to Hannes, would indicate the partial invasion of the vesical coats. A prominence of the trigone which could not be explained otherwise than by a mechanical cause (forcing back of the bladder by a large intravaginal mushroom growth or by a strongly anteflexed uterus) or by folds or bullous edema of the mucous membrane.[3] According to Clark, the obliteration of a ureter would have great diagnostic value, as purely inflammatory infiltrations of the broad ligaments never lead to the arrest of the passage of urine.

[1] Ergbnisse der abdominalen Radikaloperatien des Gebarmutter-scheidegkrebies mittels Laparotomia hypogastrica. *Zeitschr. f. Geb.*, Stuttgart, 1905, T. LVI, p. 1.

[2] Assereto (L.), La propagazione del carcinoma del collo uterino al tessuto paravaginale. *Annali di obstetricia e ginecologia*, Milano, 1907.

[3] A bulging like a bowel of the vesical mucous membrane with production of papillomatous nodules has a great importance (Scheib); on the contrary, a bullous edema, according to unpublished researches of our interne, is without value.

The Operative Treatment.—Is there any preoperative treatment? Some gynecologists have advised a curettage of the cancer 8 to 10 days before the hysterectomy.

This practice has been in the main abandoned. It is well to do a curettage followed by cauterization before removing the uterus, but it is done at the same sitting. The preliminary curettage has, however, its uses in certain cases.

If a woman is very anemic as the result of continuous hemorrhages, curette and cauterize her cancer, under anesthesia or after a short anesthesia of ethyl-chloride. This curettage followed by tamponing with iodoform gauze arrests the hemorrhage and enables us to tone up the patients in about 12 days or so before the operation of hysterectomy.

Operation.—Before opening the abdmen, commence with a careful curettage of the cancer, followed by cauterization. This method has been objected to on the score that it disseminates infectious germs or cancerous cells. We believe that this fear is chimerical and we never hesitate to do a preliminary curettage and cauterization.

Again in destroying the ulcerated cancerous vegetations, habitat of an aerobic and anaerobic bacterial flora, we diminish the risk of septic contamination during the course of the operation and it often happens that in so doing we have discovered evidence of other propagation until then unknown and which contraindicates a more serious intervention.

If the curettage reveals that a hysterectomy may follow on, the rubber gloves are changed and a new operative material is produced for the abdominal intervention. The patient is placed in the Trendelenburg position and the surgeon makes a long incision so as to get a good exposure of the diseased parts. He inserts a large retractor in the pubic angle of the wound and some compresses against the intestines and before commencing the hysterectomy, he makes with great care an intraabdominal examination in order to find out the *operative conditions* of the case.

At this stage he should examine, first, the vesico-uterine fold and see if it is invaded by a cancerous nodule; in presence of such nodules, we should take into account the presence of simple cicatricial contraction of this fold. The examination should now

be extended to the broad ligaments and extensive infiltrations may be found in the aortic and presacral glands. As a result of this examination we decide whether a radical operation is necessary or a palliative intervention. This latter may include a hysterectomy and the excision of the uterus constitutes in certain cases the best of palliatives. It is certain that no extensive extirpations should be made in the cellular tissue, and in order to reduce the immediate operative risks to a minimum, the surgeon should confine himself to a simple operation and not carry out the complex manipulations of the cleaning out of the pelvis.

If a radical operation is decided upon, do it as follows: The uterus, having been seized with care, is drawn upward and a little to one side. All violence must be avoided in taking hold of it on account of the friability of the degenerated muscle fiber; it is advisable in cancers of the body, to employ forceps provided with teeth which penetrate as far as the neoplasm, and after ligature and division of the utero-ovarian pedicles, the upper portion of the broad ligament is incised between the middle broad ligament fold where the tube lies and the anterior which contains the round ligament. This latter is tied at a little distance from the uterus and divided; then the preuterine peritoneum is incised below the vesico-uterine fold. Separate the bladder from the anterior surface of the cervix, which is generally easy and may be done by pressing back the parts with a strip of gauze; if there are adhesions cut through them with small nips of a blunt-pointed scissors. When the separator has proceeded far enough on the vagina, we return to the broad ligaments in order to discover the ureters and to tie the uterine arteries; generally the anterior and posterior folds of the broad ligament, if there is no marked infiltration of the parametrium, are separated with ease like the pages of a book. The ureter, in which, by the way, it is useless to insert beforehand a catheter, follows, in its displacement backward the postero-internal fold of the broad ligament. To expose the field better, split the peritoneum externally toward the iliac fossa, as far as the cecum to the right and the iliac colon to the left, passing anteriorly to the utero-ovarian vessels.

If there are some enlarged glands found at this level, separate

them from the outside and remove them with the cellular tissue around them in drawing them toward the uterus.

In separating the parts of the lateral wall of the pelvis, the

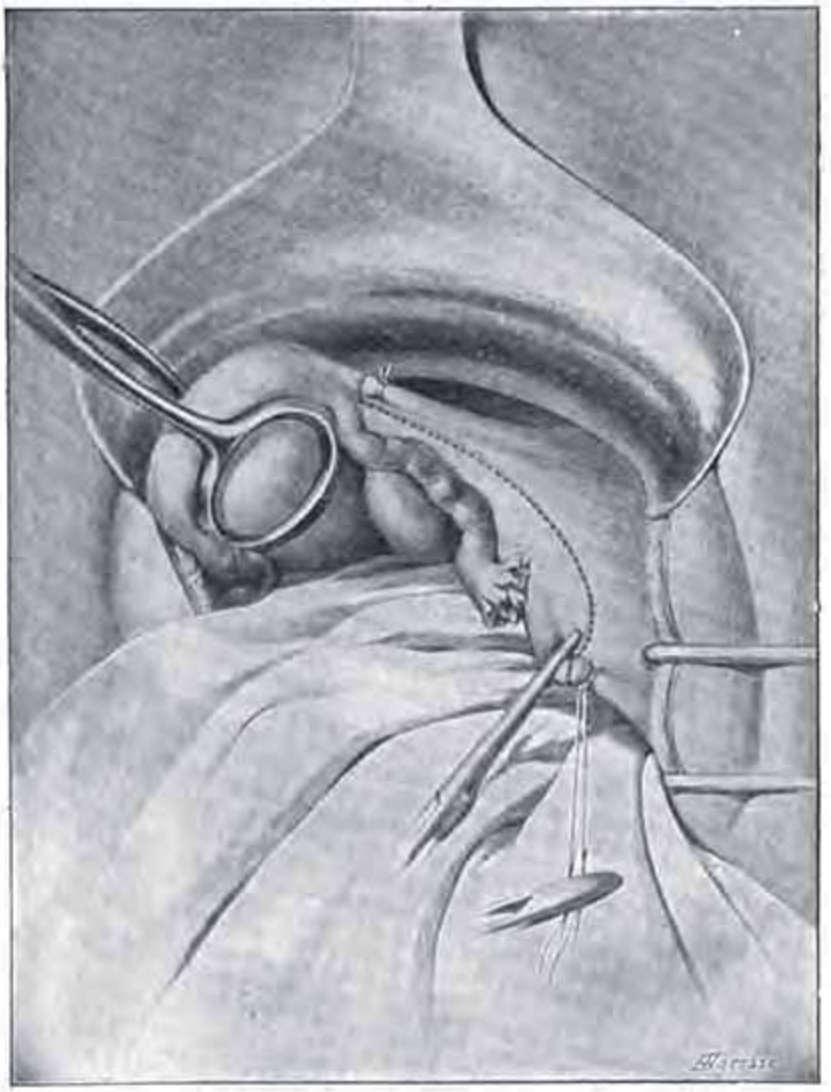

FIG. 320.—The uterus is drawn upward and to the left. The red dotted line shows the incision in the broad ligament. The utero-ovarian vessels and round ligament are tied.

large vessels, the lymphatic and the ureter are clearly exposed. The ureter follows, as we have already mentioned, the postero-internal fold of the broad ligament, which is held tense by the uterus being drawn to the opposite side. The uterine vessels

which are easy of access are then tied external to the point where they cross the ureter, without, however, going too far outside in such a way as to preserve the vesical arteries which spring

FIG. 321.—The broad ligament has been split. The ureter may be seen following the displaced postero-internal fold.

sometimes from the hypogastric by a common trunk with the uterine artery. Then place a pair of Kocher's forceps on this vascular pedicle nearly level with the uterus in such a manner as to prevent all hemorrhagic reflux by the veins, and then the

uterine veins and arteries are divided immediately inside the ligature.

Raising the pedicle of uterine vessels with the cellular tissue that surrounds them, it is carried toward the median line and

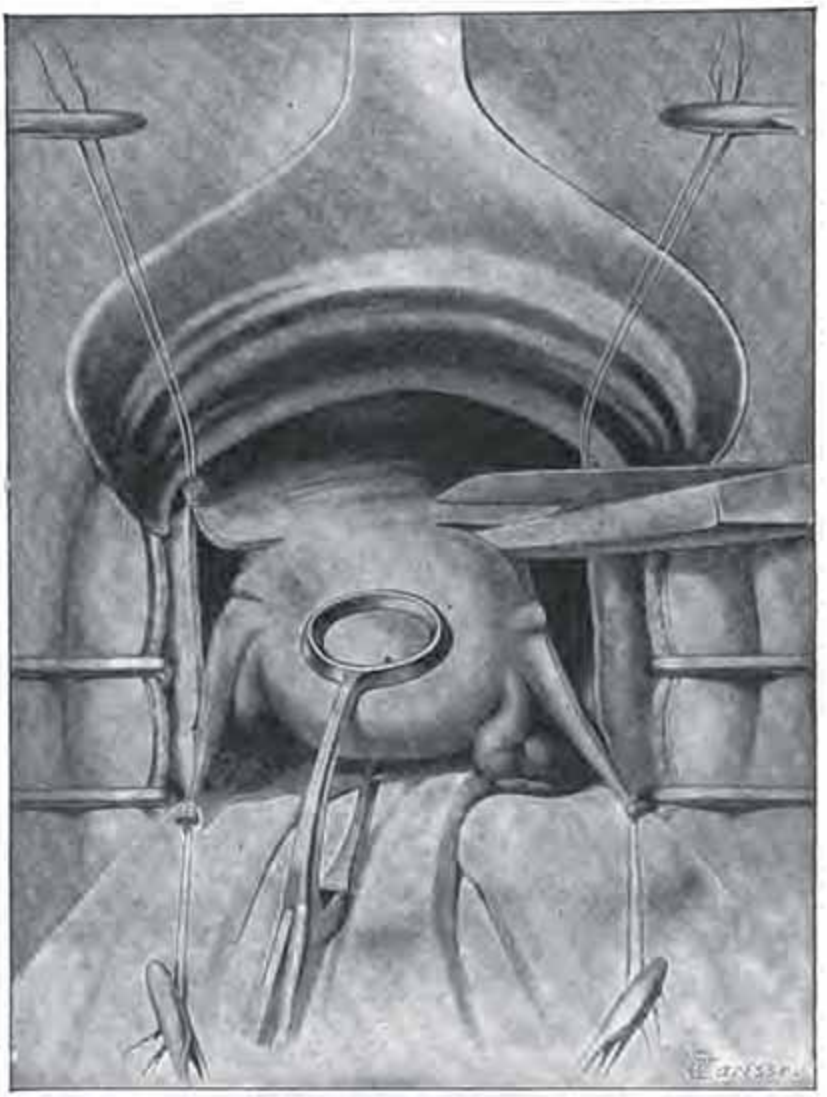

FIG. 322.—Division of the vesico-uterine peritoneum which is followed by separation and the pressing of the bladder forward.

the ureter is freed with a blunt instrument as far as the bladder, preserving, however, its conjunctival-vascular sheath and as much as possible of its posterior connections so as to best preserve its

nutrition. In the neighborhood of the bladder it is impossible, however, to isolate completely this canal (Fig. 323).

Drawing the uterus strongly forward and upward we cut through the utero-sacral ligaments, after tying them behind and

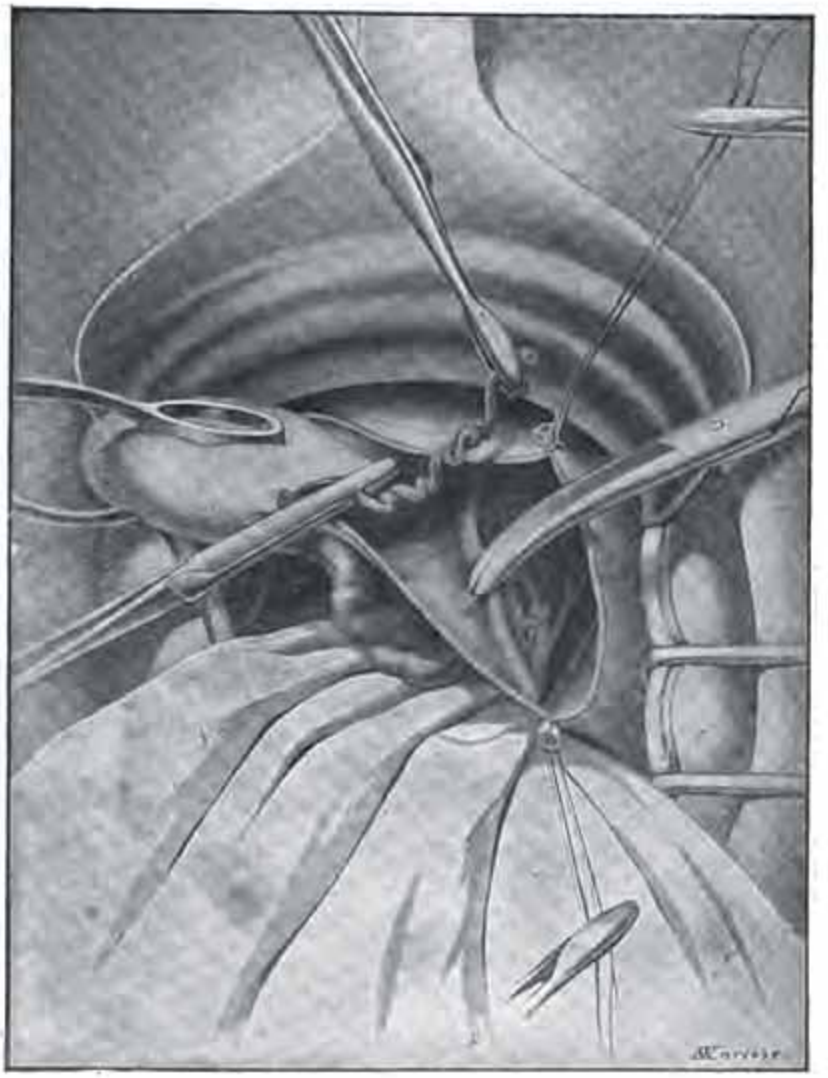

FIG. 323.—The uterine artery has been tied and divided. With the curved and blunt scissors the ureter is isolated and at the same time its own cellular sheath is preserved.

below the ureter, as near as possible to the wall of the excavation. As a rule we insert several successive stitches and as many ligatures in order to take up the arteries, veins and lymphatics that are contained in these ligaments.

As soon as they have been cut across above, using stitches already inserted, the recto-uterine peritoneum is made tense and is divided and it is separated by pressing back with a gauze compress the anterior face of the rectum. As one divides the

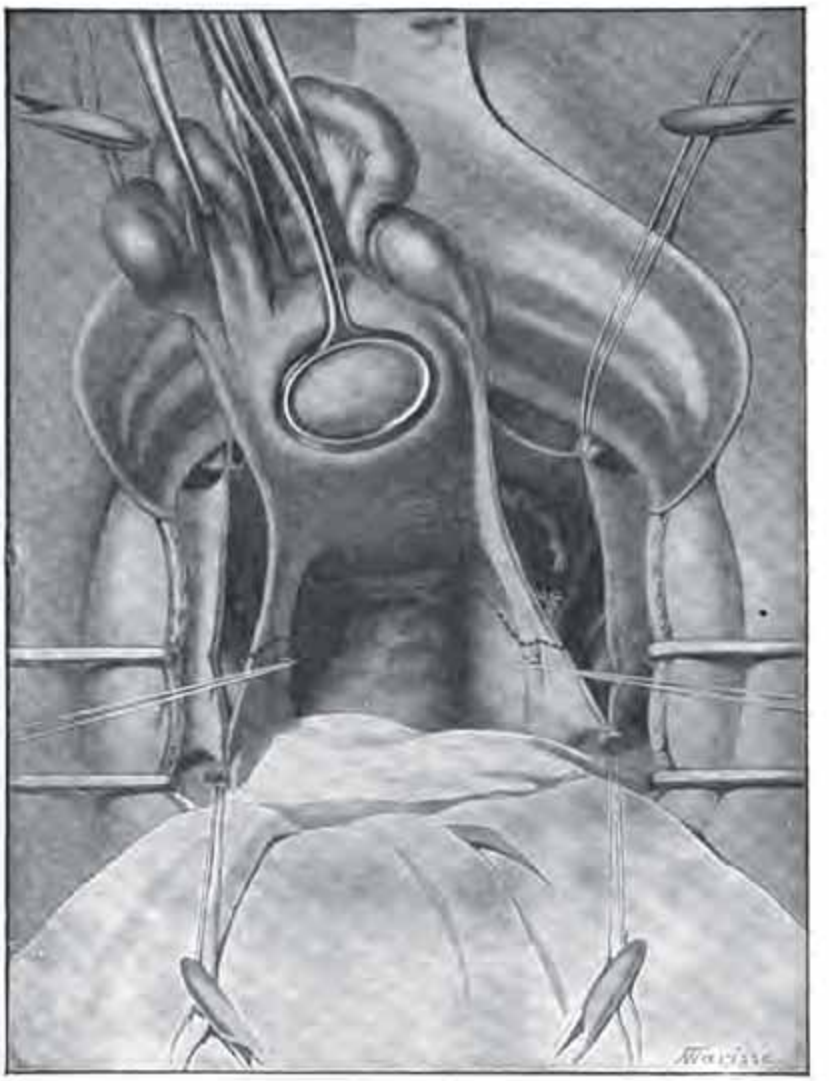

FIG. 324.—The uterus has been drawn upward and forward and the peritoneum posteriorly and the utero-sacral ligaments will next be divided along the red dotted line.

utero-sacral ligaments, it is observed that the uterus and vagina mount toward the wound, and this facilitates the cleavage between the vagina and rectum. Finally the superior one-third

or even the one-half of the vagina is seen to emerge from the excavation (Fig. 324).

Curved forceps may be placed on the last named (Fig. 316), following the practice of Wertheim, taking care that the two

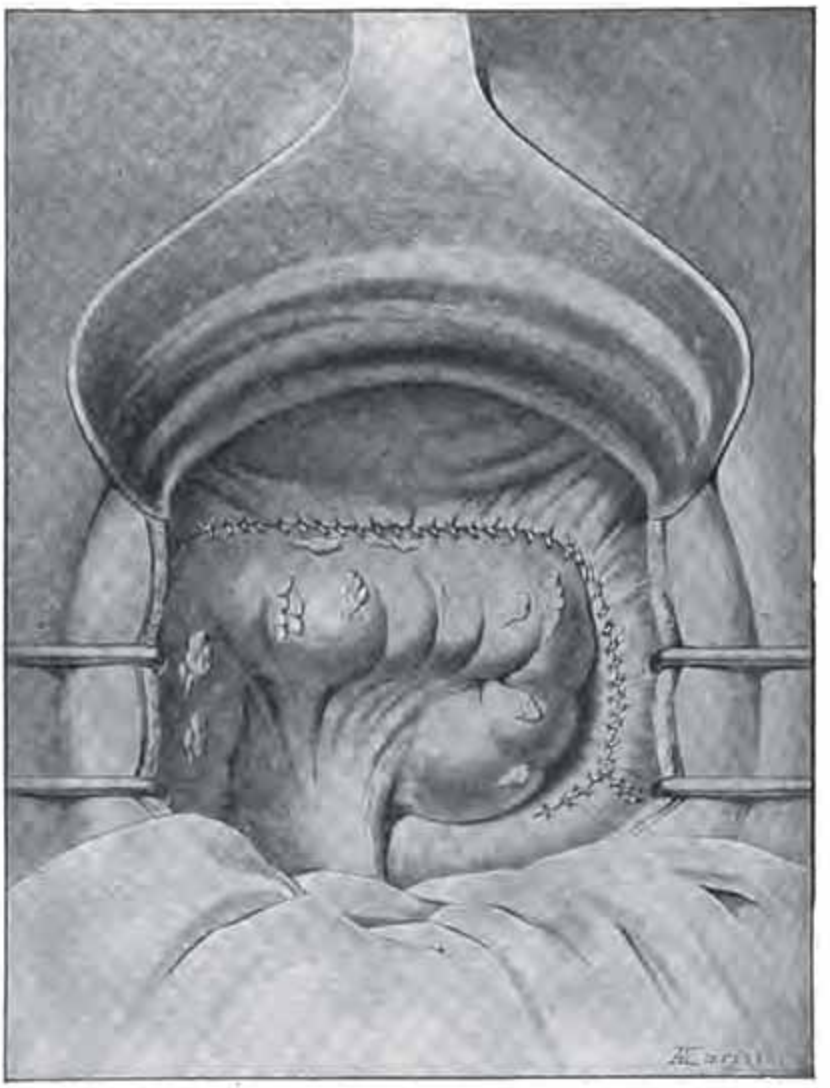

FIG. 325.—The operation is finished, the true pelvis is clothed with peritoneum, the pre-rectal peritoneum is sutured in the middle to the retro-vesical peritoneum.

forceps cross so as to close the whole width of the vagina; this is then divided with a scalpel below the forceps in such a manner as to remove the cancer in an isolated space. Bumm, whose practice we have often followed, does not use curved forceps,

which to a certain extent hamper the extensive removal of the parts.

He opens the vagina as far away as possible, commencing his incision on the least affected side of the tumor and then finally attacking the most affected tissues. He makes a sort of pedicle of the cancer in order to procure at its site the maximum of extirpation.

Pollosson recommends that once the uterus and vagina have been removed with the parametrium and enlarged glands included, to look for glands which may exist in the pelvic wall about the level of the bifurcation of the iliac vessels, extending along the length of the common iliac vessels and into the obturator fossa. They are recognized by sight and touch. Having located them, their dissection should be made with care, without crushing them, and endeavoring to remove with them the cellular tissue in which they are surrounded.

Having removed them, glance over the operative field, tying bleeding points and suture the peritoneum laterally as after an ordinary hysterectomy, uniting the retro-vesical to the pre-rectal peritoneum. As a preliminary to this, insert some iodoform gauze into the vagina (Fig. 325).

To produce drainage, Amann advises incising the posterior wall of the vagina with a thermocautery as far as the inferior limit of the lateral separation.

Modifications of the Operation.

Preliminary Freeing of the Vagina.—Some surgeons[1] have advised commencing the operation by a freeing of the vagina. After a circumferential incision of the vulvar orifice, they dissect up a mucous membranous cuff over an extent of about 4 cm., and they then close this cuff with a purse-string suture. The rawed surfaces, resulting from this separation, are brought together by sutures and the vulva is closed with the exception of a small space reserved for the introduction of a drain.

The perineal stage of the operation being finished, the surgeon goes on to the abdominal stage and removes the uterus "en bloc" with the vagina as a closed cavity.

We are enabled thus to avoid the contamination of the wound with the

[1] Imbert and Pieri. *Bull. de la Soc. de Chir.*, 1905, p. 925, *et Annales de gynécologie*, T. LXIII, p. 655; P. Duval, *Bull. de la Soc. de Chir.*, June, 1906, Report by J. L. Faure, p. 573.

septic products of cancer at the same time to avoid the cancerous grafts during the operation. In addition, the primary division of the vagina by leaving the uterus free to mount upward, permits us, according to J. L. Faure, to remove in the abdominal stage of the operation both the uterus and the peri-cervical region almost on a level with the abdominal wound, which greatly facilitates the delicate dissection of the ureter and parametrium.

Transverse Incision of the Wall and Partitioning of the Abdomen.—In cases of extensive cancers, Mackenrodt and Amann advise making a transverse incision in the abdominal wall and of cutting through the recti and thus give a full exposure of the parts. Having opened the abdomen they separate the peritoneum from the deep aspect of the anterior abdominal wall and suture it to the posterior aspect of the pouch of Douglas, thus shutting off the large peritoneal cavity and isolating by this septum the operative field.

In order to have a more enduring partition, Kronig takes the fascia transversalis with the peritoneum and thus avoids necrosis of the flap and the later bursting through of the intestine into the suppurative operative field, a state of affairs noted in some cases.

In this procedure make a curved incision which passes one finger breadth above the pubis and extends to within three finger breadths of the antero-superior spine of the ilium on both sides; cut through the skin and aponeurosis and then the recti about one-half a finger's breadth above the pubis. Tie the epigastric vessels which are to be seen on the external surface of the peritoneum.

Drawing the musculo-cutaneous flap upward, we put on tension, the peritoneum forming the floor of the wound and we can ascertain the limits of the bladder. We must not draw too strongly so as to separate the bladder from the symphysis; if its limits are not to be seen plainly, we may recognize them by palpation. We then open the peritoneum above the bladder.

Lower the head a little more at this stage so that the intestines fall toward the diaphragm and suture the peritoneal-transversalis fascia flap to the peritoneum of the posterior wall of the pelvis, beginning by a stitch which unites the utero-ovarian pedicles to the flap and then attaching this in front of the rectum. Laterally isolate the peritoneal cavity by suturing the anterior lip of the broad ligament, previously split, to the peritoneum of the lateral wall of the abdomen. We thus gain a splendid view of our field of operation, and at the same time an occlusion of the peritoneal cavity which prevents any irruption of the intestine. The uterus, upper part of the vagina, and the parametrium are extirpated in the usual manner.

Mackenrodt recommends detaching the parametrium from the pelvic wall in order to remove it in its entirety with juxta-rectal and pre sacral glands. We then see the glands along the length of the iliac and obturator vessels which are removed secondarily. Finally insert a vaginal wick. The uterus

must not be in contact with the gauze; to this end, bury it by suturing the lateral portion of the extremity of the vagina either to the bladder or to the vesical peritoneum. Close the operative field above by uniting the vesical peritoneum to the rectal peritoneum and carrying the sutures as far laterally as the utero-ovarian pedicles.

On the fifth day remove the gauze wick and make the patient sit up in order that the intraabdominal pressure may diminish as much as possible the existing cavity.

Complications.—The most important complication is either infection of the *peritoneum*, or of the *cellular tissue*, and according to Bumm[1] in cases of cancer, infection extends much further than the tumor, even to the extent that the tissues in the neighborhood of the uterus are almost constantly found to contain streptococci. In operating on these infected tissues, that infection of the peritoneum and the wound should take place is not to be wondered at. Patients who had fever before their operation are particularly dangerous subjects.

Curettage followed by thermo-cauterization is insufficient as the thermo-cautery hardly extends its action 1 cm. deep.

In order to have a more complete disinfection, Mackenrodt, after a curettage carried out on the day before the operation, tampons the vagina and the cancerous cavity with a long strip of gauze steeped in a solution of 10 per cent. commercial formol, which is then gently expressed. The vulva, the anus and internal surface of the thighs are greased with vaseline so as to avoid the irritating action of any drops which may overflow, and Bumm tries also antistreptococcal vaccination but, up to now, has obtained no results.

Fresh research appears essential to us in order to establish the cause of postoperative infections which are frequent enough after abdominal hysterectomy. We think, however, that it is useless to always call into question the preliminary infection of the cellular tissue of the broad ligaments and hold that the length of the operation and the contusive manipulations suffice to explain certain cases of cellulitis or peritonitis.

The same reasons cause *shock* to be dreaded particularly in fat patients with cardio-pulmonary affections.

[1] Bumm, Zur technik der abdominalen Extirpation de Karzinomatösen Uterus. *Zeitsch. für Geb. und Gyn.*, Stuttgart, 1905, T. LV, p. 173.

With the exception of infection and shock, the other most frequent complications are those connected with the urinary system.

Albuminuria with nephritis is not exceptional and may lead to a fatal termination.

Cystitis is very frequent and ought to be treated by catheterization and washing out of the bladder. *The traumatic lesions of the bladder* may be produced during its separation; *late necrosis* is rarer. It may be in connection with a too extensive denudation of the bladder and an insufficient re-clothing of it.

According to Mackenrodt the principal cause of this *late necrosis* is the participation of the bladder in the peri-cancerous inflammatory process. He advises in case of adhesions to freely resect the bladder, preserving the mucous membrane if possible and doing an immediate suture.

The lesions of the ureter[1] are much more important: this canal may be wounded during the operation; it has been wounded thus eight times in a primary series of 200 cases by Wertheim; three times in a second series equally of 200 cases. Secondary necrosis, followed by urinary fistula, coming on about the seventeenth or eighteenth day has been observed in 24 out of 400 cases or about 6 per cent. of cases.

It is the consequence of too extensive denudation of the ureter which floats like a telegraphic wire in the field or perhaps the ureter fixed by the cancer in the neighborhood of the cervix has been so injured that its wall has lost its resistance.

In order to avoid this, during the course of the operation, we should never lose the ureter from sight nor pinch it up, nor draw upon it, and finally not to isolate it from its surrounding cellular tissue.[2]

In traumatic lesions, it is necessary to do a uretero-cysto-

[1] Wilhelm Weibel, Das Verhalten der Ureteren nach der erweiterten abdominalen Operation der Uteruskarzinoms. *Zeitsch. f. Geb. und Gyn.*, Stuttgart, 1908,T. LXII, p. 184. Kronig resected the ureter voluntarily twelve times in order to increase the operability of the case, and once only for fear of second necrosis.

[2] Amann advises including the terminal part of the ureter in the thickness of the vesical wall by inserting some sutures which take up the most dependent portion of the posterior aspect of the bladder and unite it to the vesical peritoneum; he maintains the first portion applied to the lateral wall of the pelvis by uniting the pedicle of the uterine artery to the lateral peritoneum which is drawn a little downward. The ureter is thus maintained, so to speak, "on horseback," on a fork formed by the uterine artery and the hypogastric artery which lifts it up and applies it to the lateral wall of the pelvis (Amann, Ureterdeckung und Drainage bei ausgedehnter Beckenausraümung wegen Uterus karzinom. *Zeitsch. für Geb. und Gyn.*, Stuttgart, 1907, T. LXI, p. 2).

neostomy immediately; on the contrary, however, in fistulas following on necrosis of the canal, there is no need to be in hurry to do an intervention. These fistulas heal spontaneously in 70 per cent. of cases, from two weeks to four months after the operation and with conservation of the permeability of the ureter. We should not hasten to a too early nephrectomy until there are marked signs of ascending infection; the uretero-cysto-neostomy should be done in persistent fistula, when the corresponding kidney is healthy or even when diseased unless a disease of the opposite kidney contraindicates nephrectomy.

Results.—Abdominal hysterectomy with resection of the vagina and parametrium should be considered from a triple point of view: 1. Operability; 2. Immediate results; 3. Remote results.

1. *Operability.*—The abdominal operation, such as has been done for the last ten years, has enabled us to extend the domain of radical operations.

Pollosson managed to operate 56 per cent. of cancers that came to hospital; Wertheim, 60 per cent. to 65 per cent.; Doderlein, 69 per cent.; Bumm, 80 per cent.; Kronig, 87 per cent.

That is to say, a great number of surgeons do not hesitate to have recourse to a radical operation in those cases which would certainly never have been done before.

2. *Immediate Results.*—In spite of the great extension of the operation, the mortality is hardly more elevated than it was formerly in the days of vaginal hysterectomy. Leaving on one side *cancers of the body*, the mortality from which is almost nil, and considering only the *cancers of the cervix* we arrive at the following results.

Mackenrodt[1] in 69 cases had 16 deaths=20 per cent. In reality, the mortality is much less, because at the commencement Mackenrodt reserved the abdominal operation to cases which were unable to be extirpated by the vagina. Since he operated all cancers by the abdomen his mortality fell to about 11 per cent.

Doderlein,[2] 47 cases, 7 deaths = 14.8 per cent.

[1] Mackenrodt, Ergebnisse der abdominalen Radikaloperation der Gebärmutterscheidenkrebses mittels Laparotomia hypogastrica. *Zeitschr. für Geb. und Gyn.*, Stuttgart, T. LIV, p. 514.

[2] Döderlein and Krönig, Operative Gynäkologie, Second Edition, Leipzig, 1907.

Bumm,[1] 82 cases, 17 deaths=22 per cent.
Pollosson,[2] 133 cases, 17 deaths=12 per cent.
Scheib,[3] 149 cases, 30 deaths=20.1 per cent.
Franque,[4] 51 cases, 8 deaths=15.7 per cent.
Schindler,[5] 117 cases, 16 deaths=13.67 per cent.
Wertheim,[6] first series of 200 cases, 49 deaths=24.5 per cent.
Later series of 200 cases, 20 deaths=10 per cent.

As the second series of Wertheim's work appears we see how the mortality tends to diminish. It is the same with Pollosson's cases; while the first series gave a mortality of 18.5 per cent. the third series gave only 8.5 per cent. and the 36 last patients operated are all cured.

This amelioration in the immediate results is general. If only recent cases were cited we should, as Scheib says, find that Wertheim has a mortality of only 7.5 per cent. and Doderlein, 5 per cent., figures which agree with those of Koblank, who had 5.4 per cent. of deaths according to his latest report.

In fact there is a diminution in the mortality in the abdominal operation identical with that which occurred in the vaginal operation when the mortality fell from 20 per cent. to 4–8 per cent.

3. *Remote Results.*—For *cancers of the body of the uterus* remote results are excellent; in 13 cases of cancers operated by Doderlein, two died of intercurrent diseases, two died of metastasis in existence before the operation, eight are without any recurrence after more than three and one-half years have fled. According to Scheib 75 per cent. of cancers of the body of the uterus are definitely cured.[7]

For *cancers of the cervix* the remote results are very superior to those formerly the case in vaginal hysterectomy; above all when it is considered that cancers regarded as inoperable at the time

[1] Bumm, Zur Technik der abdominalen Exstirpation der karzinomatösen Uterus. *Zeitschr. für Geb. und Gyn.*, Stuttgart, 1904, T. LV, p. 173.
[2] Pollosson, Hysterectomy with Hollowing Out of the Pelvis. *Lyon chirurg.*, 1909, T. I, p. 333.
[3] Scheib, Klin. und Anat. Beitr. z. operativ. Behandl. des Uteruscarcinom. *Arch. für Gyn.*, Berlin, 1909, T. LXXXVII, pp. 1–233.
[4] Franque (Otto v.), Zur Statistik der operativen Behand. bei Uteruskarzinoms. *Mon. für Geb. und Gyn.*, Berlin, 1909, T. XXX, p. 29.
[5] Schindler, Statist. und anat. Ergebnisse bei der Freund-Wertheimtchen Radikaloperation der Uteruskarzinom. *Monat. für Geb. und Gyn.*, Berlin, 1906, p. 78.
[6] Wertheim, *Soc. internat. de chir.*, Bruxelles, 1908, T. I, p. 541.
[7] Scheib, Klinische und anatomische. Beitrage zur operativen Behandlung des Uteruskarzinoms. *Archiv für Gyn.*, Berlin, 1909, T. LXXXVII, pp. 1 and 233.

when only the vaginal route was practised, are removed by the abdomen. Bumm in 46 cases notes 17 recurrences, 6 patients were lost to view and 23, of whom 20 had been done over two years before, gave a result of 57 per cent.

Wertheim in 151 cases after operation had four deaths from intercurrent disease, 59 recurrences and 88 cures found after five years' interval, giving 59 per cent. of lasting cure.

Mackenrodt in 144 cases found 74 per cent. of the patients living after a variable period of eighteen months to six and one-half years after operation.

Scheib in the clinic at Prague finds 62.5 per cent. of his cases living after two years, after three years 58.8, after five years 28.5, and after six years 27.2.

Pollosson, in 1909, found 35 per cent. of cases operated before June, 1905, quite well; 61 per cent. were operated in 1905 and 1906; 69 per cent. were operated in 1907.

It is still difficult to come to a definite conclusion with regard to the radical cure of uterine cancers, as operations are not always made in identical conditions. It appears according to results published that certain gynecologists, Bumm, Mackenrodt and Kronig for example, intervene in cancers with extensive invasions and that they do a very extensive extirpation, searching for glands and carrying out their excavation as far as the levator and this explains the considerably higher early mortality in their results. Others, and particularly French surgeons, are not favorably disposed to the radical operation in cases of cancer which have manifestly spread beyond the uterus. These differences in the extension granted to the operability of cases and in the extent of the incisions explains the differences found in the statistics.

However, it is established to-day that the abdominal operation is superior to vaginal hysterectomy from the point of view of early and remote results.