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HYSTERECTOMY.[1]

INDICATIONS AND TECHNIQUE.

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(With eight illustrations.)

It is not proposed to discuss in this paper the etiology of the various conditions for which this operation is performed, nor shall the symptomatology and diagnosis occupy more space than is incidentally necessary to the consideration of the indications for the procedure; these points are too thoroughly settled to admit of further debate. The points which are still in dispute are amongst those which will arise during the study of this subject. It is not always safe, in forming conclusions, to draw one's inspiration from a promiscuous collection of statistics, for the reason that it is well known how loosely many of these are reported, and how thoroughly unreliable some of them are on account of the desire of the reporter to make as good a showing as his neighbor, in consequence of which many essential facts and truths are omitted. General statistics will therefore be ignored, and whatever deductions are drawn will be entirely from the author's personal experience, which has now reached the number of seventy-seven hysterectomies. The *indications*, as taught by this experience, are absolute and relative. They are:

1. Malignant degenerations of the uterus.
2. Fibroid tumors of the uterus.
3. Pelvic inflammations.
4. Prolapse of the uterus.
5. Inversion of the uterus.

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Malignant Degenerations of the Uterus.—The indications here are absolute, both as to the advisability of the operation and as to the complete removal of the organ, it matters little how high the death rate or how high the percentage of recurrence. The disease is incurable and the end certain under any other line of treatment. However small the number of cases cured may be, yet it is an undisputed fact that a certain proportion regain permanent good health. Should this number of fortunate ones be limited even to one or two in the hundred operated upon, it would be sufficient justification. When one considers the great relief which follows a simple curettement of a cancerous uterus, it can well be imagined how much more thorough and prolonged this relief is when the whole organ is removed. The number of permanent cures will be in direct ratio to the period at which surgery is employed: the earlier in the disease the uterus is removed the more chance of obtaining a satisfactory result. For this reason, when, from a careful study of the symptoms and history of a given patient, a reasonably strong suspicion of malignant disease exists, other conditions being rigorously excluded, the uterus should be removed. The justification for acting upon such advice will rest largely upon the mortality attendant upon the operation, as undoubtedly, under these circumstances, an occasional non-malignant uterus will be removed. This will matter little in comparison with the number of patients saved a miserable death; and even though the organ prove not to be cancerous, it will be a diseased one, giving rise to alarming symptoms, from which speedy and permanent relief will be obtained.

Twenty-five operations have been performed for primary cancer or sarcoma of the uterus; this number does not include those cases of malignant changes in uterine neoplasms, all of which are considered with the fibroid tumors. Of this number three have died from the operation. The three deaths were all preventable, and would not be likely to occur in another series of the same number. Two of them were the first two operations for vaginal hysterectomy ever performed by the writer. Single clamps on each side of the uterus were used for securing the broad ligaments; in both cases the clamps worked in a faulty manner, and one of the ovarian arteries retracted, after being cut, from the grasp of the clamp. In one case it was necessary to open the abdomen in order to secure the bleeding vessel.

The third death resulted on the fifth day after the removal of the uterus by means of catgut ligatures. The patient was exceedingly restless, the usefulness of the catgut being destroyed by its absorption, the light adhesions gave way and the stumps, which had been stitched into the vaginal opening and which at this time were sloughing, retracted into the pelvic cavity, setting up a septic peritonitis which proved fatal in twenty-four hours.

Experience and a more perfect technique would guard against the repetition of a death similar to the first two ; heavier catgut and more thorough suturing, together with a judicious restraint of a restless patient with drugs, would guard against a repetition of the last-mentioned accident.

Fibroid Growths.—The indications for surgical treatment of these conditions are relative. If the tumor be small, is of slow growth, and gives rise to no untoward symptoms, it should be allowed to remain unmolested, provided the patient may be in such a state of life that she is not necessarily exposed to conditions which predispose to inflammatory complications, and that she be not liable to change her place of residence to such quarters that she will be unable to obtain competent surgical aid should there be a future demand for it—a demand which will almost always be made sooner or later. Should the patient have advanced to within a few years of the menopause, it may be advisable to adopt, for the time being, the expectant plan of treatment. Under all other conditions a fibroid tumor of the uterus, however small, should be subjected to surgical treatment. Surgical treatment having been once decided upon, hysterectomy is the proper procedure to adopt. Myomectomy may in rare cases be the more desirable procedure, but can only be considered where the patient is of such an age as to make it desirable and possible for her to bear children, and where the uterine appendages are healthy and capable of performing their function, the reverse of which is true in the case of the majority of fibroid tumors. Under all other circumstances hysterectomy is the operation of choice. The withdrawal of ovariotomy from the category of operations applicable to the treatment of fibroid tumors is based on the fact that it, equally with hysterectomy, renders it impossible for the woman to conceive ; it not only allows the tumor to remain *in situ* for Nature to absorb, with the

chance, however slight, of this not occurring, but it usually leaves behind a diseased and useless uterine cavity and uterine walls, all of which may be gotten rid of surely and permanently at one stroke by the hysterectomy. Ovariotomy is often more difficult than hysterectomy, and is not infrequently impossible.

Hysterectomy as the operation of choice will, as in the case of malignancy, depend upon the mortality. The writer has removed forty-one fibroid uteri by means of this operation. Of this number four patients died—three after the supravaginal amputation of the stump, and one after complete extirpation. In the one case death was inevitable from the previous septic condition of the woman, due to electro-puncture. Two of the deaths were due to pulmonary complications; acute congestion of both lungs, in the case of one, ending in death within the first twenty-four hours, and a double pneumonia of the second resulting in rapid filling of both lungs and death within several days. These two deaths occurred in hospital practice within a few days of each other, and at a time when there was an epidemic of pulmonary complications following all kinds of operations in the house. At the time of the deaths there were in the house six or eight cases with lung troubles, some of whom were sick enough to cause considerable anxiety, and on some of whom only plastic operations had been performed. The epidemic abated as abruptly as it commenced. The fourth death was due to septic peritonitis in a case of complete extirpation, and was undoubtedly due to faulty technique, a cause which is entirely preventable.

Pelvic Inflammations.—The indications in pelvic inflammations are relative. All operators are having patients, whose uterine appendages they have removed for this disease, return only slightly or not at all better. The women suffer with their old pains, leucorrheal discharges, and hemorrhages. In two such cases the writer has subsequently removed the uteri with complete relief of all the symptoms. In two other cases the uterus, together with its appendages, has been removed at the first operation, with a perfectly satisfactory result. In no case was there a death.

In pelvic inflammatory disease in women the infection has first invaded the uterine cavity. In very many cases the endometrium remains permanently diseased and the uterine walls have

become invaded by inflammatory products, even with pus. In many cases of pyosalpinx the tissue is so diseased that the ligature cuts through like a knife, even when it is placed well up on the uterus. It is no more to be expected that uterine walls diseased to such a degree will regain their normal condition than to expect the same of the tubal walls under like circumstances. The mortality of hysterectomy under these circumstances should be no greater than after the removal of the appendages alone. This procedure should therefore be the operation of choice in all cases where the uterine walls are infiltrated with pus and the uterus materially enlarged.

Prolapsus Uteri.—The indications are relative. All cases in which the usual surgical means have been tried and failed should be subjected to hysterectomy as a sure means of cure. Women who are suffering from old complete prolapse, near, at, or past the time of change of life, are proper subjects for this procedure. Future child-bearing need not here be taken into consideration. The only questions to be considered are, first, whether or not the usual plastic operations give promise of a cure; second, the mortality of the operation. As to the first, it is well known to all operators that plastic operations, even when accompanied by a ventro-fixation, at times fail. As to the mortality, the uterus has been removed six times by the writer by vaginal hysterectomy without a death, and with complete success in each instance. Cases which are particularly applicable for this treatment are those with greatly enlarged and hypertrophied uteri, measuring five and six inches in depth, accompanied by profuse uterine discharges and hemorrhages. These uteri are not infrequently found to be cancerous, such being so in the case of two of the six reported. The operation should always be followed by plastic operations on the anterior and posterior vaginal walls for a repair of the relaxation of the vagina.

Inversio Uteri.—The operation is only applicable to old, chronic cases, and only then when judicious attempts at replacement by taxis and elastic pressure have failed. Taxis should not be tried longer than half an hour, with the patient under ether. If at the end of this time there is no sign of beginning return, elastic pressure should be resorted to either by the colpeurynter or Aveling's repositor. Should these fail after several days'

trial, vaginal hysterectomy is a proper and safe procedure. One case has been successfully treated in this manner by the writer.

The methods of performing hysterectomy are abdominal, vaginal, and the combined methods.

Abdominal hysterectomy is performed by—

1. Supravaginal amputation.
   (*a*) Treatment of the stump by the extraperitoneal method.
   (*b*) Dropping the stump.
2. Extirpation.

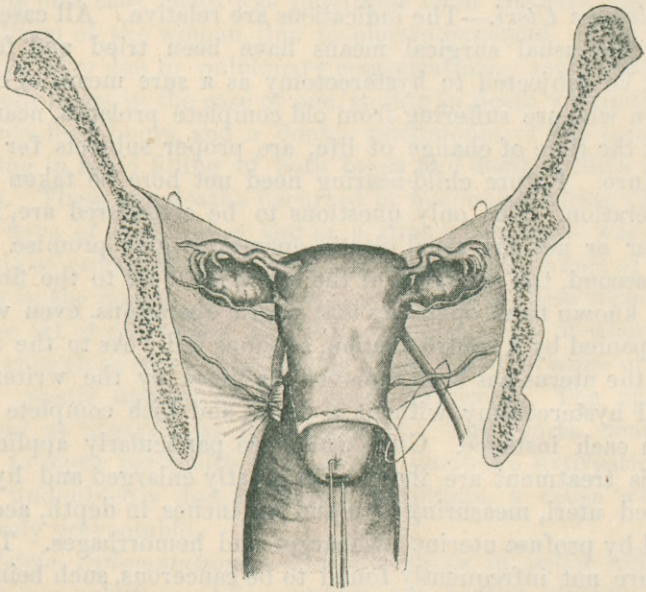

FIG. 1.—Vaginal hysterectomy with the ligature. First step: ligation of uterine arteries.

Vaginal hysterectomy is performed by—

1. Clamp operation.
   (*a*) Single clamp.
   (*b*) Multiple clamps.
2. Ligature operation.

All cases of prolapse and inversion of the uterus, all malignant uteri sufficiently small, and very small fibroid tumors of the uterus are proper subjects for the vaginal operation.

Fibroid tumors, excepting the very small ones, large malignant

uteri, and all cases of inflammatory uteri should be subjected to the abdominal operation.

The combined method is superfluous and more dangerous than either of the other two alone.

In the hands of the writer vaginal hysterectomy by means of the catgut ligature has proven the safest and most satisfactory of the vaginal operations. With the clamps there were four operations with two deaths, with the catgut ligature there were

FIG. 2.—Vaginal hysterectomy with the ligature. Second step.

twenty-seven operations with one death. Where the operation is performed for prolapse, the ligature operation, and stitching the stumps in the opening in the vaginal fornix, is absolutely necessary to success. The broad ligaments are thus made to act as guy ropes from above and give infinitely better support, with less chance of stretching, than would be the case if ventro-fixation or Alexander's operation had been relied upon.

When the abdominal operation is performed in the presence of malignant disease complete extirpation is necessary. In all

other cases the supravaginal amputation is preferable. Extirpation is a longer and somewhat more tedious operation, and in addition the subsequent condition of the vagina is that of a considerable shortening; the advantages of this procedure over the amputation do not compensate for these disadvantages. The uterus was removed by complete extirpation five times with one death.

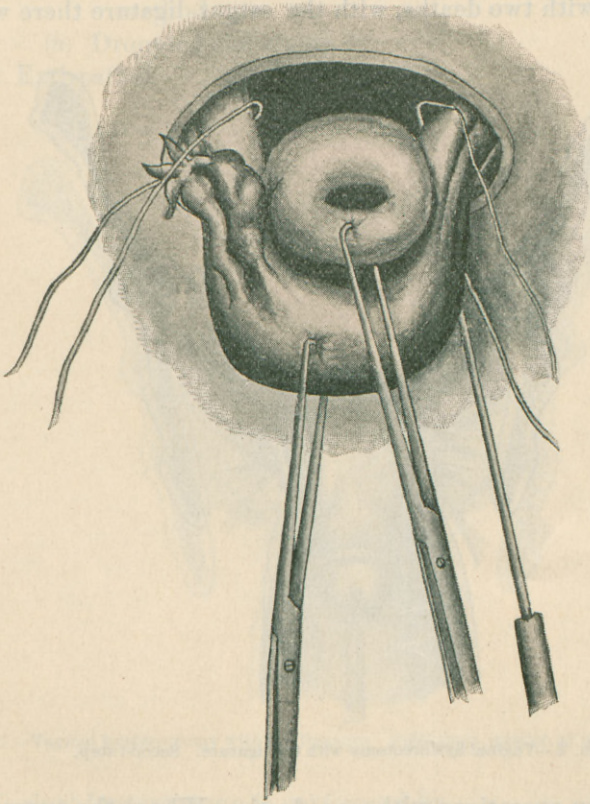

FIG. 3.—Vaginal hysterectomy with the ligature. Third step: the fundus inverted into the vagina, and the final ligatures in place.

As between the two methods of treating the stump, dropping it back into the pelvic cavity is preferable to treating it by the extraperitoneal method. The mortality is much the same, but other considerations all turn the balance in favor of the intrapelvic method. The extraperitoneal method is not applicable to intraligamentary growths. Twenty-eight operations were performed and the stump treated extraperitoneally; of these

two died. Thirteen cases were operated upon and the stump allowed to retract back into the pelvis; of these patients one died.

The supravaginal amputation accomplishes all that extirpation does; is applicable, with the exception of malignant uteri, to all conditions and diseases; is less difficult and tedious of performance; has less danger of septic infection, due to the smaller opening of the cervical canal than of the vagina; and, finally has less mortality. After the ovarian and uterine arteries are ligated and the uterus amputated, the cervical canal should be cauterized by means of the Paquelin cautery, closed by catgut or fine silk sutures, and the edges of the cut peritoneum closed over the stump.

Hysterectomy is a difficult operation, however performed,

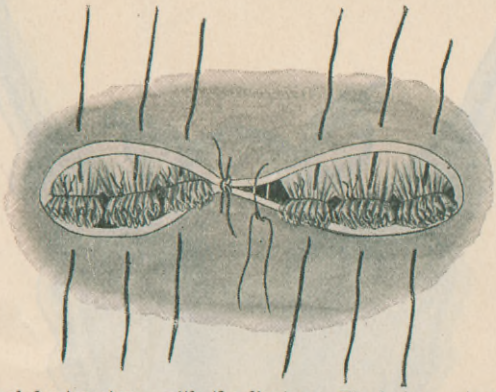

FIG. 4.—Vaginal hysterectomy with the ligature. Final step: uterus removed and stumps drawn down into the vagina; sutures in place ready for closing the vaginal opening.

and should never be undertaken by an incompetent operator. The mortality following the operation when properly performed should to-day be much less than is indicated by seven deaths in seventy-seven operations. It must be borne in mind that this mortality includes the accidents incident to gaining the requisite experience in manipulation, as well as those necessary to perfecting the technique.

The convalescence following hysterectomy is, in the majority of cases, as easy and uninterrupted as that following ovariotomy. A few more years will see the field of applicability of this operation greatly widened, the more so as the mortality decreases. The uterus is a useless organ in all cases where the ovaries or Fallopian tubes have been removed, and is only too frequently a source of discomfort, invalidism, and death.

The *technique* of vaginal and the two varieties of abdominal hysterectomy—complete extirpation, and the intrapelvic treatment of the stump after supravaginal amputation—have many points in common. In each operation the important point is to secure in separate ligatures the two ovarian and two uterine arteries; everything else is subordinate to this. Rigid antisepsis is absolutely necessary.

Vaginal Hysterectomy.—The patient being placed in the dorsal position, the perineum is well retracted with a Sims speculum. The cervix uteri is grasped with a pair of tenaculum forceps and drawn down. The vagina about the posterior portion of the cervix, from broad ligament to broad ligament, is cut loose

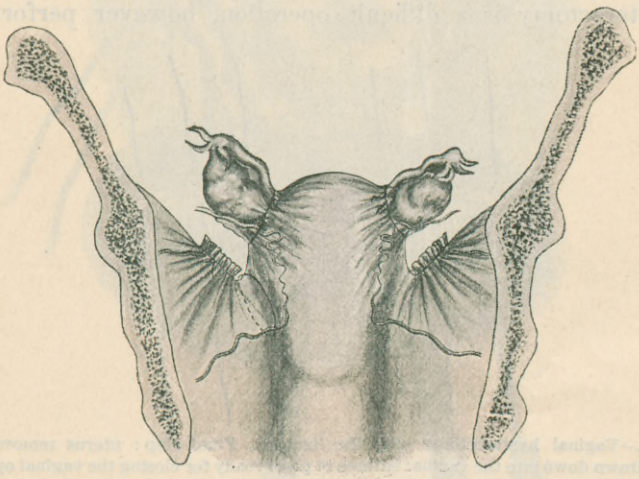

FIG. 5.—Supravaginal amputation of the uterus. First step: ovarian arteries ligated.

with a few strokes of a knife, and its peritoneal and mucous coats quickly whipped together by a continuous suture, to prevent bleeding. The vaginal mucous membrane is now incised on the anterior aspect of the cervix, from broad ligament to broad ligament, well below the attachment of the bladder. The connective-tissue attachments of the bladder to the cervix are loosened by forcing the finger between them and the uterus until the peritoneum is reached. This membrane is quickly penetrated by forcing a pair of blunt hemostatic forceps through it into the peritoneal cavity, and withdrawing them after having first widely separated the blades. Where it is possible the mucosa and serosa are stitched together, as was done posteriorly. The uterus is now entirely free from all its attachments except-

ing the broad ligaments. A succession of ligatures are placed upon these on each side, beginning from below and cutting the uterus free from the ligaments as each successive ligature is placed and tied. Three ligatures usually suffice for each broad ligament. The first one secures the uterine artery; the second includes the balance of the ligament up to the ovarian artery, which, after being tied and cut away, frees the womb sufficiently to allow of inverting the fundus into the vagina; it is thus a simple matter to place the final ligature, which, on each side, includes the ovarian artery. The ligature should be placed on the outer side of ovary and Fallopian tube, so as to allow of cutting

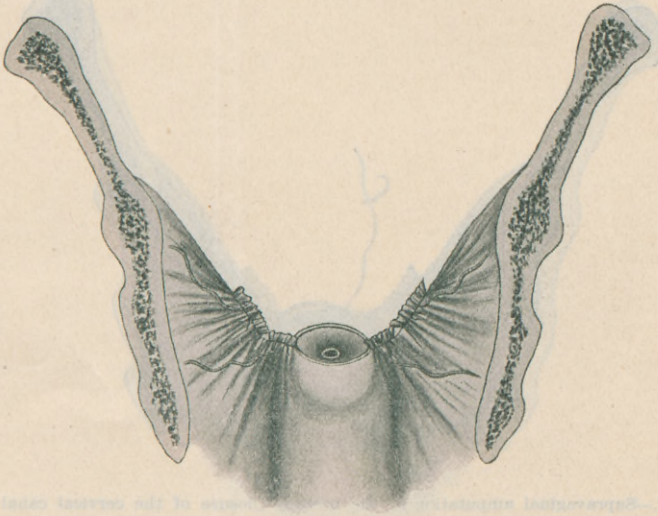

FIG. 6.—Supravaginal amputation of the uterus. Second step: ovarian and uterine arteries ligated and uterus amputated.

between them and the pelvic wall; in this manner both tubes and ovaries are removed with the womb. The uterus being removed, the three stumps on both sides should be drawn well down into the vagina and the vaginal opening closed about them, the sutures being so placed as to pass through the stumps, thus fixing them in their drawn-down position. When the operation is finished, nothing is seen in the vagina but the protruding stumps. The vaginal canal is douched with mercurial solution, well dried, and lightly packed with iodoform gauze, which is to be removed in the course of a few days. Catgut ligatures are used throughout.

Supravaginal Amputation, with Intrapelvic Treatment of the Stump.—The abdomen is opened in the median line, the patient being in Trendelenburg's position, with the intestines well back in the abdomen and the pelvis empty. A ligature is placed on each side of the uterus, close to the pelvic wall, including as much of the broad ligament as possible; a ligature to temporarily prevent bleeding from the uterus is placed close to that organ. After cutting between these ligatures and drawing the womb up, a second ligature is placed, if necessary, on each side, so as to include any remaining broad-ligament tissue, to

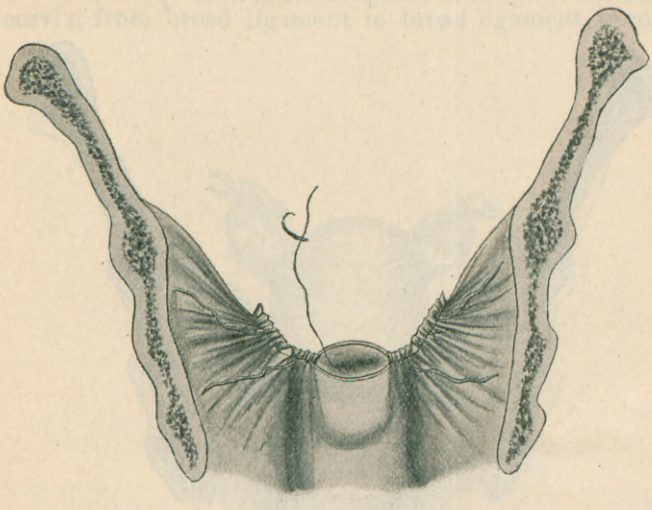

FIG. 7.—Supravaginal amputation of the uterus. Closure of the cervical canal with sutures.

the level of the pelvic floor. These attachments are also severed. The uterus being well drawn up, the uterine artery on either side is located by the finger and a ligature placed under it close to the uterus. After securing this vessel on both sides the uterus is removed as low down on the neck as possible, the amputation being made wedge-shaped. As soon as this is accomplished the cervical canal is cleaned with the knife or a Paquelin cautery, and the cut surfaces of the neck are brought together by several sutures. The peritoneal edges are now whipped together by a running suture from side to side of the pelvis, burying under it the cervix and all the stumps but the ones including the ovarian arteries. Even these may be cov-

ered by doubling the loose peritoneum over them from side to side by the aid of a few sutures, thus completely covering up all raw surfaces.

Complete Extirpation.—The steps of this operation are the same as the preceding up to the point of amputation of the uterus. Instead of this procedure the attachments about the cervix are freed and the uterus removed entire. The peritoneal reflection between the uterus and bladder is incised from side to side, and the bladder connective-tissue attachments gently sundered with the finger or the handle of the knife. The vaginal sheath, being reached, is opened, and with a finger in the

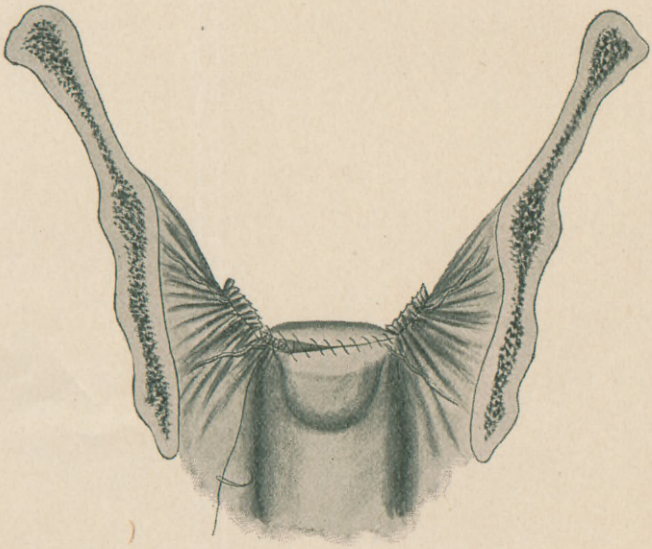

FIG. 8.—Supravaginal amputation of the uterus. Suture of the peritoneum over the cervix and stumps.

vagina it is no very difficult matter to free the attachments from the complete circumference of the cervix. This being accomplished, the edges of the vagina are brought together by a continuous suture. Thus any danger of infection getting into the raw surfaces from that canal is obviated. The peritoneal edges are sutured in a similar manner as in the preceding operation, all the stumps but the topmost ones being turned into the space between the vagina and peritoneum. Silk is used for the ligatures on the arteries, catgut for all suturing.

Drainage in any of these three operations is superfluous.

and by joining the loose peritoneum over them from side to side by the aid of a few sutures, thus completely covering up all raw surfaces.

Complications.—The stops of this operation are the same as the preceding, up to the point of amputation of the uterus. Instead of this procedure the attachments about the cervix are freed and the uterus removed entire. The peritoneal reflection between the uterus and bladder is dissected from side to side, and the bladder connective tissue attachments gently stripped with the finger as far as the handle of the knife. The vaginal sheath, being reached, is opened, and with a finger in the

Fig. 3.—Supravaginal amputation of the uterus. Suture of the peritoneum over the stumps and stumps.

vagina it is no very difficult matter to free the attachments from the complete circumference of the cervix. This being accomplished, the edges of the vagina are brought together by a continuous suture. Thus any danger of infection getting into the raw surfaces from that canal is obviated. The peritoneal edges are sutured in a similar manner as in the preceding operation, all the stumps but the uterosacral ones being buried into the space between the vagina and peritoneum. Silk is used for the ligatures on the arteries, catgut for all suturing.

Drainage in any of these three operations is superfluous.