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### OPERATIVE TREATMENT OF MYOFIBROMA UTERI.

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It is the province of this paper to discuss the operative treatment of myofibroma of the uterus. I take it for granted that I am expected to describe the safest and most efficient methods of dealing with such tumors with a special view of obtaining permanent relief for the patient. The time allotted for the reading of a paper on such an occasion is necessarily too limited to enable me even to enumerate what has been done in this department of surgery during the last twenty years. Almost every surgeon of experience has devised some modification of accepted operations so that the whole subject of the surgical treatment of nonmalignant tumors of the uterus remains in an imperfect and unsettled state, open for improvements in the future by additional reasearch and clinical experience. Instead of wearying you by a description of operations which have found their way into our text-books, it is my intention to give you a brief account of the operative procedures which I have adopted and which I now follow in the cases selected for radical measures. The technique of the operation must necessarily vary according to the location, size and number of the tumors and the presence or absence of complications. The most important classification is in reference to the route to be selected for the op-

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eration into: 1. Vaginal; 2. Sacral; 3. Abdominal. The surgical treatment of large and multiple myofibroma through the abdominal route embraces: 1. Salpingo-oöphorectomy; 2. Enucleation; 3. Laparo-myomectomy; 4. Laparo-hysterotomy; 5. Laparo-hysterectomy. I shall endeavor to describe as briefly as possible these various operative interventions as practiced by myself in the Presbyterian and St. Joseph's hospitals.

A careful selection of cases for the different routes and methods of operation distinguishes the scientific and successful surgeon from the routine operator. It will be my aim to point out the character and location of uterine myofibroma adapted for the different radical operations.

#### PREPARATIONS FOR OPERATION.

It is unnecessary for me to insist that no operation upon the uterus or its appendages by any of the routes mentioned should be performed without adequate preparations having been made with a view to securing an aseptic condition for the field of operation. Unless the indications for immediate operative interference are urgent, the preparatory treatment should be commenced at least three days before the operation. A daily tepid bath, mild saline laxatives, a light diet and rest continued for three days to a week will do much toward preparing the patient properly for the operation.

It has been my invariable custom to avoid the menstrual period for at least a week. In spite of weighty opinions to the contrary, I am satisfied that the liability to infection is greater at this time than during the interval. The greater vascularity of the parts to be operated upon during menstruation is another reason for selecting a more favorable time for the operation. Thorough disinfection of the vagina and external genitals must be secured in order to insure asepsis, irrespective of the route selected for the removal of the tumor. Shaving, liberal use of hot water and potash soap, and lastly a thorough scrubbing with alcohol and sublimate solution (1000) are the best known means to accomplish this object. The vagina should be tamponned with iodoform gauze and the part for the intended external incision covered with a compress wrung out of the same sublimate solution, the moisture and heat to be retained by an impermeable covering over the compress, and the whole held in place by a bandage. I make it a rule to repeat the disinfection immediately before the operation is commenced. The hands are disinfected in the usual way, and the

instruments by boiling for at least fifteen minutes in a one per cent solution of carbonate of soda. I have gradually abandoned the use of sea sponges and now use almost exclusively dry gauze compresses and gauze sponges, which are sterilized for each operation. Nothing but sterilized water is used during the operation. In reference to the selection of the anesthetic each case is subjected to a careful examination. In kidney, heart and pulmonary complications chloroform is administered. After the final disinfection, if a laparotomy is to be performed, the patient is dressed in a gown with endless sleeves and an oval opening in front corresponding to the region below the umbilicus, if a vaginal operation is contemplated a pair of drawers extending over the feet are used. These garments have been found exceedingly useful in the prevention of a fruitful source of accidental infection. Silk is used almost exclusively in tying vessels inside of the abdominal cavity and in vaginal hysterectomy, while catgut is used for buried sutures in closing the external incision, aided by silkworm gut sutures.

#### VAGINAL REMOVAL OF MYOFIBROMA.

This operation is applicable in all cases in which the tumor is attached to the cervix or its canal and in accessible intra uterine tumors not exceeding the size of a foetal head.

In cervical and pedunculated intra uterine myo fibroma I have entirely abandoned the use of the ecraseur and galvano caustic wire. I regard the use of the cold and hot wire as unreliable and dangerous. The operations by this method have often been followed by recurrence owing to incomplete removal of the tumor. The fear of dangerous hemorrhage in these cases is unfounded, provided the operation is performed properly and the iodoform gauze tampon is relied upon as a hemostatic. Removal by torsion is an unreliable and unscientific operation. In cervical and pedunculated intrauterine myofibroma I always resort to sub-mucous enucleation. A circular incision is made extending through the thickened mucous membrane sufficiently far from the attachment of the tumor so that the cuff of mucous membrane after the enucleation will cover the bed of the tumor. With a Kocher's director, blunt pointed scissors and the finger the mucous membrane is separated close up to the attachment of the tumor, when the latter is grasped with a vulsellum forceps and twisted around its axis until it is detached. This method of operating minimizes the hemorrhage, insures complete removal of the tumor and leaves enough mucous membrane to cover the defect.

After another thorough disinfection the cervix, or uterine cavity is tamponned with iodoform gauze, which is allowed to remain for three or four days. If the tumor approaches the size of a fetal head, its delivery can be accomplished most speedily and with the greatest degree of safety, with a pair of short obstetric forceps. If the cervix is not sufficiently dilated, rapid dilatation by the usual methods, aided, if necessary, by lateral incisions, must be resorted to before an attempt is made to remove the tumor. Large intrauterine myofibromata with attachment to the fundus are to be delivered by the use of forceps before enucleation is attempted. In several such cases I succeeded in producing by careful traction a partial inversion of the uterus which greatly facilitated the enucleation. In sessile submucous intrauterine myofibroma, operable through the vaginal route, the cervix is thoroughly dilated, the tumor grasped with a large vulsellum forceps, dragged downward as far as possible, when the mantle of mucous membrane and uterine tissue covering it is incised in a direction parallel to the long axis of the uterus and enucleation effected through this incision.

Whenever practicable the tumor should be removed in toto, and not by morcellement as the latter procedure is attended by greater danger of inflicting unintentional injury upon the surrounding tissues, as well as the risk of incomplete removal. A large sessile submucous tumor of the fundus of the uterus can be removed more safely by laparo-hysterotomy than by a vaginal operation. Large sloughing intrauterine myofibroma, not readily accessible from the vagina, should be removed by laparo-hysterectomy or laparo-hysterotomy in two stages as advised by Nussbaum.

#### SACRAL METHOD.

Kraske's operation for the removal of high carcinoma of the rectum, has recently been adopted by Hochenegg, Czerny, and others, for the removal of the carcinomatous uterus. I believe with Mueller, that the uterus can be rendered sufficiently accessible from this direction by removal of the coccyx without sacrificing a part of the sacrum or making a temporary resection of this bone; procedures which greatly complicate the operation and augment the danger to life from shock and remote complications. I can readily conceive that in the case of interstitial tumors of the lower segment of the uterus involving its posterior wall, the sacral operation would prove easier and safer than either the vaginal operation or laparo-hysterotomy. If the peritoneal cavity is opened it is closed by suturing after enucleation has been com-

pleted, and the wound closed throughout by buried sutures. If the uterine cavity is opened, an iodoform gauze tampon should be employed in such a way as to pack the bed of the tumor and drain through the uterus when the operation wound is closed by buried and superficial sutures.

#### ABDOMINAL SECTION.

Operations upon the uterus or its appendages for myo-fibroma of the uterus are indicated in cases in which the tumor gives rise to symptoms and is not amenable to successful treatment by less hazardous means. In many instances the method to be pursued must be determined upon after the abdomen has been opened, the location and size of the tumor determined and the existence and character of complications ascertained by a careful ocular and manual examination. On this account it is necessary for the operator to make careful preparations for the operation to meet successfully unexpected emergencies.

#### SALPINGO-OÖPHORECTOMY.

The removal of the uterine appendages for myofibroma has become an established operation. The curative effect of the operation is more marked in the myomatous, soft than the fibrous or hard variety. It is indicated in young females suffering from inoperable bleeding fibroids. It is contraindicated if the size of the tumor gives rise to mechanical disturbances incompatible with the functions of any of the important abdominal organs. It is of especial value in multiple myofibroma when the mass fills the cavity of the pelvis and is incorporated in a mass of adhesions which would render enucleation or hysterectomy impossible or at least dangerous to life. I have performed this operation a great many times and have never been disappointed in its results. In well selected cases it must be regarded as a radical or curative operation because the tumor gradually diminishes in size and the peritoneal symptoms if present likewise undergo progressive improvement. I have repeatedly seen a tumor the size of a child's head reduced to the size of an orange within from four to six months after the operation. If the tumor has occasioned extensive plastic pelvic peritonitis the operation often becomes one surrounded by many difficulties. The ovaries and tubes are frequently found completely buried in firm adhesions, rendering their isolation and removal a difficult task. At other times one or both ovaries cannot be found. The great secret of success in the enucleation of such appendages is to find the exact place to start from. Usually the

best guides are the cornua of the uterus and the broad ligaments. Tearing blindly among the adhesions in search for the ovaries or tubes without any anatomical landmark is dangerous practice and often terminates in disaster and abandonment of the operation. It is in cases of this kind that the Trendelenburg position proves of the greatest value. Another source of danger threatening the result of the operation is incomplete removal of the ovaries. The smallest fragment of living and attached ovarian tissue will interfere with the ultimate intent of the operation, the bringing about of the anticipated climax. The surgeon must therefore exercise every possible care to effect complete removal of both ovaries. The tubes should be tied close to the uterus and removed. Fine braided silk should be used as ligature material and the tube cut at least a third an inch below the point of tying to prevent slipping of the ligature. I always cover the stump with a thin film of iodoform. If the adhesions are numerous and firm, troublesome oözing may require the use of a Milkulicz drain. According to my observations diminution in the size of the tumor sets in as soon as the artificially produced menopause is initiated.

#### SALPINGO OÖPHORECTOMY AND MYOMECTOMY.

In multiple myofibroma of the uterus I have often combined advantageously removal of the appendages with enucleation. By this combined method I have been able to remove several tumors the size of a cocoanut, thus doing away at once with a health disturbing obstacle, and by the removal of the ovaries and tubes have prevented further growth of numerous smaller subserous and interstitial tumors.

The simultaneous performance of these two operations is indicated in the radical treatment of multiple myofibroma in young females if some of the larger tumors are favorably situated for enucleation. I regard a combination of these procedures under such circumstances preferable to hysterectomy, being less dangerous to life and resulting in less mutilation.

#### ENUCLEATION.

Enucleation without salpingo oöphorectomy is applicable in single myofibroma, or in cases in which the number of tumors is limited and adapted for this procedure. Tumors within the legitimate range of this operation must be either subperitoneal or interstitial. Tumors between the cornua and in the anterior wall of the uterus are most amenable to this method of treatment. The uterus must be brought well up into the external incision, and if it can be

done without losing too much time or inflicting additional injuries, temporary elastic constriction should be applied below the field of operation. The visceral incision should be made between and parallel to the large blood vessels. Enucleation is made with the finger or the use of blunt instruments. After the removal of the tumor the size of the wound is diminished by one or more rows of buried catgut sutures. The margins of the incision are then turned inward and their serous surfaces approximated by sero-muscular sutures of silk. For the purpose of guarding still more efficiently against hemorrhage a continued suture of fine catgut is applied over the silk sutures. If small tumors, not adapted for enucleation, can be felt, the operation should be followed by a salpingo oöphorectomy. In several cases of enucleation of a comparatively large tumor from the anterior wall of the uterus in which I did not wish to trust to suturing as a hemostatic agent, I sutured the margins of the visceral wound to the parietal peritoneum in the lower angle of the wound, folding the visceral peritoneum so as to shorten the wound, and packed the bed of the tumor with iodoform gauze, which was brought out at the lower angle of the abdominal incision. All of the patients operated upon by this method recovered without any untoward symptoms.

#### LAPARO-MYOMECTOMY.

Laparo-myomectomy and laparo-myomotomy are terms which signify the removal of a myofibroma, through an abdominal incision without opening the uterine cavity. This operation is, therefore, anatomically limited to the removal of subperitoneal and interstitial tumors. Enucleation and excision of tumors from the body of the uterus must be regarded in the light of radical as well as conservative operations; and should, therefore, be substituted for the more mutilating operation of hysterectomy, as far as possible, in young women. There can be no doubt that these and similar conservative radical measures will gradually limit hysterectomy to its legitimate sphere. The removal of a myofibroma, without sacrificing the uterus, bears surgically the same relations as resection of a joint to an amputation of a limb. It constitutes the ideal treatment in properly selected cases. Excision of myofibroma is indicated particularly when the tumor is located between the cornua of the uterus or in its anterior wall. If two or more tumors are in such close proximity as to permit their removal in the same manner, myomectomy should take the place of hysterectomy. I have recently removed a tumor weighing twenty-four pounds by

this method, and I can do no better in detailing the technique of the operation than by reporting this case in brief.

REMOVAL OF A MYOFIBROMA WEIGHING TWENTY-FOUR POUNDS BY LAPARO-MYOMECTOMY; FIXATION OF VISCERAL WOUND IN EXTERNAL INCISION. RECOVERY. Mrs. B., Irish, age twenty-nine, entered St. Joseph's Hospital, March 24, 1894. She always enjoyed good health until five years ago, when, after the birth of twins, she dis-

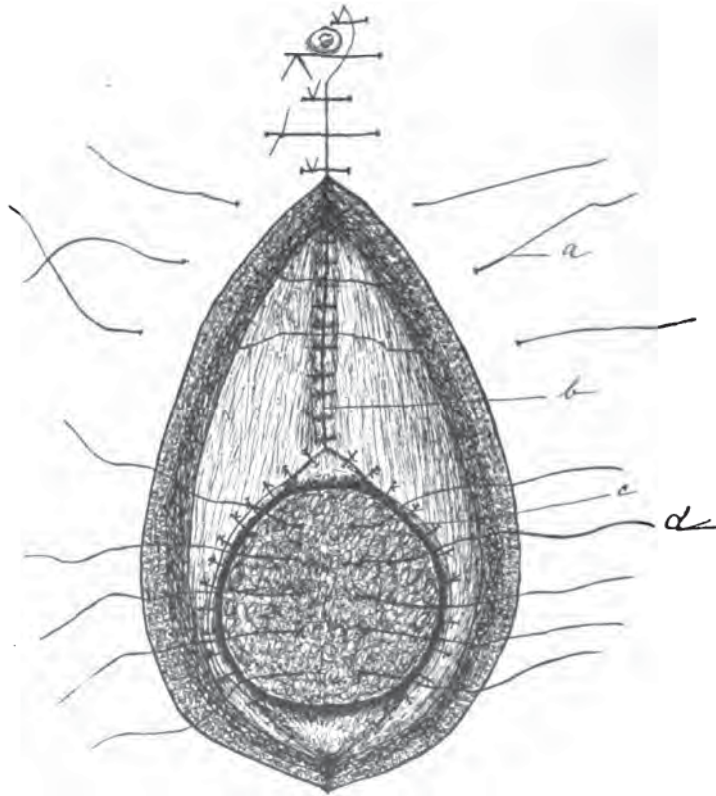


FIG. 1.

LAPARO-MYOMECTOMY.

A, Deep Sutures; B, Buried Peritoneal Sutures; C, Visceral Peritoneum Sutured to Parietal Peritoneum; D, First Row of Buried Uterine Sutures.

covered an abdominal tumor about the size of a large orange. The tumor did not increase much in size until her next pregnancy. Sixteen months ago she again gave birth to a child. A tumor the size of a child's head was discovered after delivery. Since that time it increased very rapidly in size. She nursed the child



until she was admitted into the hospital. Menstruation somewhat profuse. On examination a hard, smooth immovable tumor was found, which reached to the costal arch on both sides. Cervix barely within reach of the index finger. Diagnosis, myofibroma of the uterus.

Operation April 1. Incision from near the ensiform cartilage to within two inches of the pubes. At a point corresponding to the umbilicus the tumor was so firmly attached to the parietal peritoneum over a space the size of the palm of the hand that the visceral peritoneum corresponding to this area, had to be detached from the tumor. Vessels as large as a lead pencil from the deep epigastric supplied the tumor at this point, requiring numerous ligatures. Over the upper and posterior aspect of the tumor the great omentum performed a similar office. The omentum was tied in sections with fine silk before cutting it close to the tumor. The tumor was now delivered through the external incision, and the wound closed as far as possible.

The base of the tumor was then constricted with a solid rubber cord. The tumor was attached to the uterus between the cornua. It was amputated by two transverse elliptical incisions. The surfaces of the wound were brought in contact by four rows of sutures, the last of fine silk.

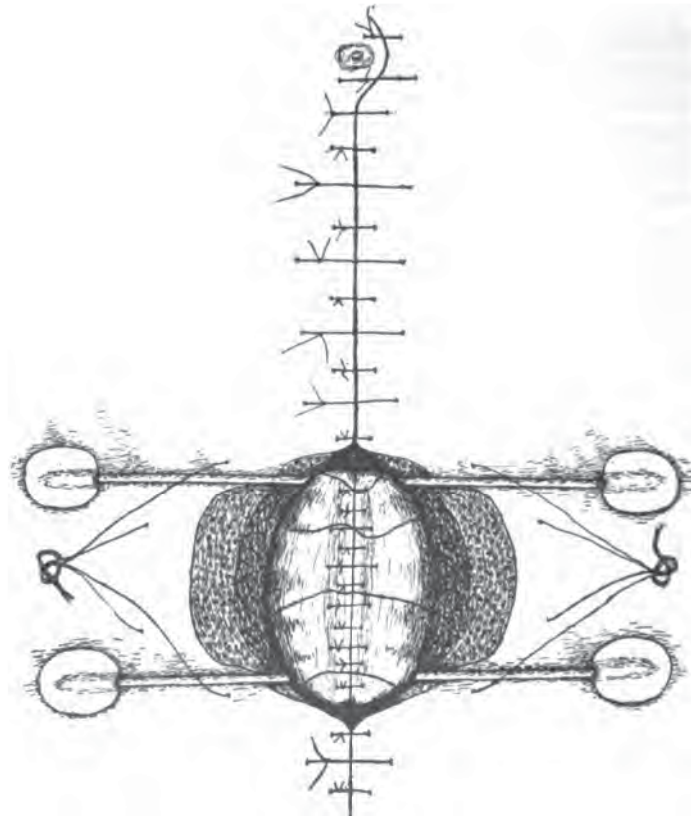
After the removal of the constrictor the fundus of the uterus was slightly twisted upon its axis, so that the line of suturing of the visceral wound corresponded with the direction of the abdominal incision when the parietal peritoneum at the lower angle of the wound was sewed to the visceral peritoneum near the line of suturing, and the uterus anchored in this position with two long steel pins, each of which transfixed one of its angles. Slight oozing occurred after removal of the constrictor.

The remaining part of the wound about two inches in length was packed with iodoform gauze after which the usual dressing was applied. On the second day the external dressing was changed as it had become saturated with bloody serum. On the third day the packing was removed and the wound closed over the uterus by two secondary sutures. The patient recovered without an unpleasant symptom, and nearly the entire wound healed by primary intention. There is no reason why this patient should not become pregnant again and give birth to a child without the occurrence of complications.

The case is of special interest to gynecologists and obstetricians from the fact that it proves that a myofibroma of large size

involving the upper part of the uterus, is not incompatible with a normal pregnancy and delivery.

I can readily conceive that a similar operation could be done with equal success if the tumor were located in the anterior wall of the uterus.



*fig. 2*

**LAPARO-MYOMECTOMY.**

Uterus held in lower angle of wound by two long steel pins.

**LAPARO-HYSTEROTOMY.**

Laparo-hysterotomy is a term used to designate the removal of a myofibroma through the abdominal route with opening of the uterine cavity and is used as a technical synonym for Caesarian section. It is indicated when the tumor is single, large, and projects into the uterine cavity, in other words, it should be resorted to in the

operative treatment of submucous or interstitial myofibroma not adapted for vaginal enucleation. I will illustrate the indications for and the technique of the operation, by a case reported to this society a year ago, "Laparo-hysterotomy, Its Indications and Technique," *American Journal Medical Sciences*, September, 1893.

The patient was a married woman, thirty-eight years of age, who had borne three children, the youngest being eight years of age. She dates her illness back ~~seven~~ years, but was not aware of its nature until recently. For the last six years menstruation has been profuse, and at times painful. She was admitted into St. Joseph's Hospital, Nov. 23, 1892, and the operation was performed a week later. Patient was somewhat anemic, otherwise her health was not impaired. On examination a hard, smooth tumor was found in the lower part of the abdomen, reaching upward as far as the umbilicus. Vaginal examination revealed a condition which very much resembled the first stage of labor.

The os uteri was found high up, widely dilated and occupied by a smooth, hard tumor, which might have been very easily mistaken for a fetal head. Bimanual palpation satisfied me that the tumor was partly intrauterine and single. Owing to the high position of the uterus and size of the tumor, I regarded a vaginal operation as uncertain and dangerous. I determined, if possible, to save the uterus and appendages, and to remove the tumor by laparo-hysterotomy. On opening the abdomen it was found that the tumor occupied the lower left and posterior part of the uterus. I incised the uterus in the median line from a point a little below the cornua to within two inches of the cervix. I had to cut through nearly the entire thickness of the muscular wall before the tumor was reached. The bleeding was moderate and was readily controlled by the use of hemostatic forceps. As soon as the tumor was reached the work of enucleation commenced. At a number of points I had to cut strong bands of connective tissue, which seemed to extend from the uterus into the substance of the tumor. When the lower part of the tumor was reached it was discovered that on the side toward the uterine cavity, at a point a little above the cervix, the enucleated part was covered by a patch of mucous membrane. Considerable hemorrhage attended and followed the enucleation, which was arrested by packing the bed of the tumor with a long strip of iodoform gauze. A uterine sound was now introduced from below, and the mucous membrane of the uterine cavity incised

upon it the whole length of the tumor in a downward direction, and the end of the gauze tampon brought down into the vagina.

The uterine incision was closed by bringing the margins of the wound in accurate apposition by a row of catgut sutures, about six to the inch, embracing everything except the peritoneum. Over this row of interrupted sutures a continued fine catgut suture brought the muscular tissue between the interrupted sutures in accurate contact. Sero-muscular sutures of silk were now used to invert the margins of the wound which brought in apposition two wide strips of peritoneum, and over these was again applied a continued fine catgut suture. This method of closing the wound arrested the hemorrhage from the cut surfaces completely. After careful cleansing of the uterus the organ was replaced into the abdominal cavity and the lower part of the omentum brought in con-

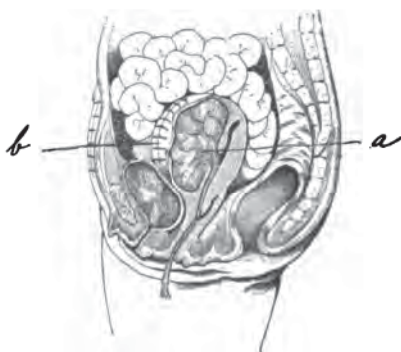


FIG. 8.

A, Bed of tumor packed with iodoform gauze; B, Sero-muscular sutures.

tact with its posterior surface. The abdominal wall was closed in the usual manner by four tiers of sutures. The tumor weighed four pounds. Not a single unfavorable symptom followed the operation. On the fifth day the tampon was removed, the vagina irrigated with a weak solution of corrosive sublimate and loosely packed with iodoform gauze, which was allowed to remain for four days. The patient left the hospital at the end of four weeks, and has remained in excellent health since. Menstruation has been normal in frequency and quantity since the operation. It appears to me that in such cases laparo-hysterotomy is the ideal operation and should take the place of oöphorectomy, hysterectomy, and vaginal removal by morcellation. In the nonpregnant uterus the tissues are much firmer and less vascular than when the organ is in the gravid state, and the incision down to the tumor has to be made

almost exclusively with the knife. The knife should be laid aside as soon as the tumor is reached, when enucleation is effected with the fingers, curved, blunt-pointed scissors, or a Kocher's director. The hemorrhage from the bed of the tumor can be controlled best by the aseptic tampon, which must extend into the vagina, serving at the same time the useful purpose of an efficient capillary drain. If the uterus is replaced into the abdominal cavity the visceral wound must be sutured with great care to prevent hemorrhage from the incised surfaces. Round needles must take the place of the ordinary surgical needles for the same reason.

#### LAPARO-HYSTERECTOMY.

The removal of the uterus for myofibroma is a confession on part of the surgeon that the disease has advanced beyond the reach of a more conservative operation. I am firmly convinced that at the present time this operation is too frequently performed for non-malignant disease. Many of our gynecologists appear to regard the uterus as an unimportant organ, ready to sacrifice it under the slightest pretext. When we read in the current medical literature week after week of hysterectomies done for myofibroma the size of a walnut, for simple hypertrophy, endometritis, flexion, prolapse, and removal of normal uteri for vague neurotic affections it seems to me it is time to protest against such thoughtless, reckless surgery. When the history of operative gynecology will be written in the course of another decade the prevailing tendency to mutilating surgery will constitute a black page and a sad reflection upon the alleged progress of this department of surgery during the present time. The sacrifice of an organ for an otherwise curable disease and the removal of a healthy organ for obscure nervous affections are operations unworthy of the scientific conscientious surgeon and the seeker of truth. The partial or complete removal of the uterus, like the amputation of a limb, must be regarded by the surgeon as a serious matter and should be resorted to only when the indications are clear and more conservative measures are inadequate. Hysterectomy for myofibroma is of all operations discussed in this paper the gravest and most mutilating, it must therefore be reserved for cases in which the local conditions are a source of suffering or danger to life and out of reach of more conservative procedures.

These remarks apply with special force to the treatment of patients suffering from this affection during the childbearing period. As stated before the indications for this operation can often only be

ascertained after the abdomen has been opened and the conditions revealed preclude the possibility of successful treatment by any of the operative procedures which have been described above. Hysterectomy is justifiable if the tumor is very large and involves the body of the uterus, or if the organ is affected by a number of large tumors not amendable to enucleation, also if for any reasons the appendages cannot be removed, the uterus being the seat of numerous small tumors. The great number of operative procedures that have been described for the removal of the uterus and are still being devised is the best possible proof that the present technique of abdominal hysterectomy has not reached perfection.

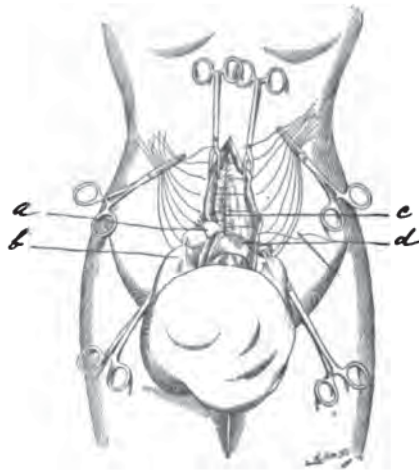


FIG. 4.

## EXTRA-PERITONEAL HYSTERECTOMY.

A, Ligature broad ligament ; B, Forceps compressing ; C, Buried peritoneal sutures ; D, Peritoneal cuff sutured to parietal peritoneum.

The most important questions that are being discussed in connection with this subject at the present time are: Should the entire uterus be removed? Is the extra or intraperitoneal treatment of the stump the safest? In answer to the first question I am of the opinion that in operations upon the uterus for nonmalignant disease the operative procedure should be limited to the removal of the diseased part of the organ, hence in the great majority of cases the hysterectomy will be a partial one. I can see no indication for the removal of the lower segment of the uterus when the disease is limited to the upper part of the organ, provided the stump can be disposed of in a safe and satisfactory manner. Conservation should

be the rule here as well as elsewhere. Complete hysterectomy becomes an unavoidable necessity if the entire organ is involved and in cases in which, owing to the location of the tumor or the existence of complications, the remaining part of the uterus cannot be treated in a safe and satisfactory manner. I have always regarded the extra peritoneal treatment of the stump as the ideal one as it secures more efficient protection against the two greatest immediate risks of the operation, hemorrhage and sepsis. I will give you a short description of the methods which I have recently devised in



FIG. 5.

performing hysterectomy for myofibroma. Hegar's and Schroeder's methods in my hands have resulted in a mortality of twenty-five per cent. During the last two years I have performed eighteen hysterectomies for myofibroma by a method which I have termed "extra peritoneal" with the result that not only every patient recovered but in no single instance was the operation followed by any untoward symptoms. I designate the operations as "extra peritoneal hysterectomy" because the external incision is closed before the uterus is removed and part of the peritoneal investment is preserved for a more successful treatment of the stump. With few exceptions the ovaries and tubes were removed at the same time. The broad ligament is tied and near the uterus clamped with a Spencer Wells forceps and cut between. Usually two ligatures and two forceps are necessary. The intestines above and behind the uterus are protected by a large compress. A circular incision through the peritoneum is then made on a level with the

section of the broad ligament and the peritoneum is then detached in the form of a cuff to a point where it is desired to apply the elastic constrictor.

At this stage of the operation the parts are well represented by Fig. 5. A solid cord of rubber is now tied firmly around the uterus, deprived of its peritoneal covering at the floor of the peritoneal cuff.

The uterus is now amputated and the uterine or cervical canal and surface of stump cauterized with the flat point of Paquelin cautery, or excised. The fascia of the recti muscles is brought together by another row of buried catgut sutures, the deep sutures

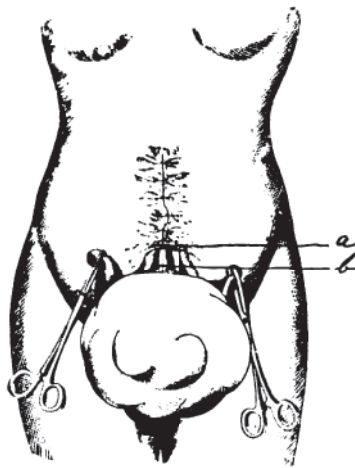


FIG. 6.

A, Rubber Ligature; B, Uterus deprived of its peritoneal investment.

tied, the stump dusted with iodoform gauze and the wound dressed.

The great advantages of this operation are: 1, absence of tension; 2, absolute control of hemorrhage; 3, minimum risk of infection; 4, diminished risk of injuring the ureter.

So far I have observed only one case of ventral hernia following as a remote consequence of the operation. One great disadvantage of the operation has been the inevitable sloughing of the stump outside of the elastic ligature. This drawback to this operation has, in common with all others which aim at controlling hemorrhage by constriction of the stump *en masse*. It requires usually from three to four weeks for the elastic ligatures to cut its way through, when the wound heals rapidly by granulation



leaving a funnel shaped depression at the point corresponding with the location of the peritoneal cuff. I have recently modified the operation in so far that I have dispensed with the elastic constrictor, disposing of the stump in such a manner as to place the wound in a condition compatible with healing by primary intention.

EXTRA PERITONEAL LAPARO-HYSTERECTOMY WITHOUT THE USE OF PERMANENT ELASTIC CONSTRICTION.

The operation is performed in the same manner as described above, only that the elastic constrictor is dispensed with, after the employment of other permanent hemostatic measures. After the



FIG. 7.

Operation Completed.

uterus has been amputated the uterine arteries are tied, the uterine cavity disinfected by cauterization, or a strip of mucous membrane is excised when the amputation surface, made in the form of a transverse, shallow depression, is approximated by three or more rows of buried sutures of catgut for the purpose of controlling parenchymatous hemorrhage. Two or more secondary sutures are inserted, and the wound corresponding to the extent of the peritoneal cuff packed with iodoform gauze. On the third or fourth day this gauze is removed and the secondary sutures tied, thus approximating the abdominal incision accurately over the uterine stump. I have performed this operation only once, but the result was so satisfactory that I will briefly report the case.

EXTRA-PERITONEAL LAPARO-HYSTERECTOMY WITHOUT PERMANENT ELASTIC CONSTRICTION; PRIMARY HEALING OF EXTERNAL WOUND.— Miss M., age thirty-eight, American, entered St. Joseph's Hospital April 3, 1894. Profuse menorrhagia for ten years, with two intervals, during which menstruation was nearly normal. Noticed an enlargement in the lower part of the abdomen for the first time two years ago. One year later a firm mass the size of a hen's egg was discharged spontaneously per vaginam. For years the patient has suffered from indigestion and constipation. Patient is very

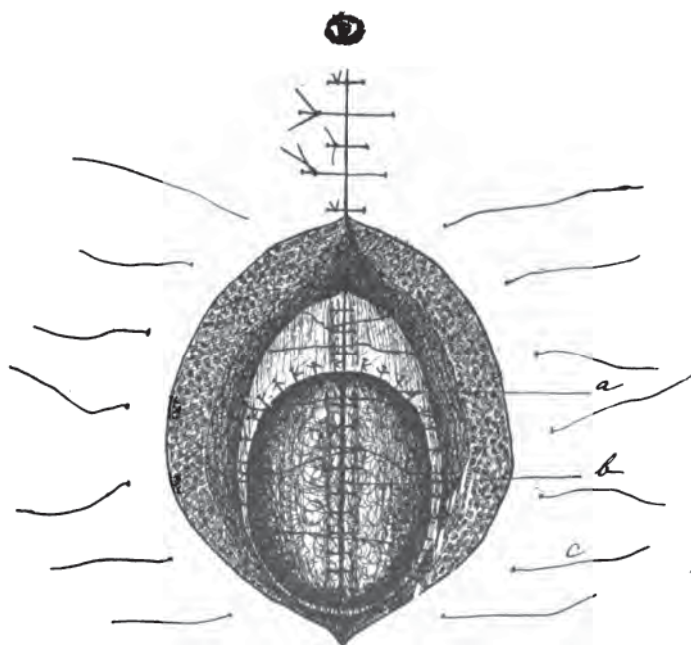


FIG. 8.

LAPARO-HYSTERECTOMY WITHOUT THE USE OF PERMANENT ELASTIC CONSTRICTION.

A, Peritoneal cuff sutured to parietal peritoneum; B, Muscular part of uterus sutured in form of cone by buried sutures; C, Secondary sutures.

anæmic, otherwise general health not much impaired. The uterus is movable and corresponds in size to a six months' pregnancy. Cervix high up, canal not dilated.

Operation, April 6. Medium incision from two inches above umbilicus to near pubes. Removal of appendages with uterus. No adhesions. Peritoneal cuff about three inches in length. Amputation made in such a way that the surface of the stump pre-

sented a shallow trough. Mucous membrane of the uterus excised to the extent of half an inch, canal closed by a row of catgut sutures, ligation of uterine arteries. The cut surfaces were approximated by three rows of buried catgut sutures. On removing the elastic constrictor only slight oozing. Packed the surface with iodoform gauze over which the secondary sutures were loosely tied in a loop, securing thus uniform compression of the extra peritoneal part of the stump. Dressing changed on the second day. On the third day the gauze packing was removed and the secondary sutures tied. Primary healing of wound. Patient was able to leave her bed at the end of four weeks. Great improvement of her general health during this time. Examination of the specimen revealed two large interstitial tumors, one attached to the fundus the other projecting from the posterior wall of the uterus. My experience in connection with this case has convinced me of the superiority of resorting to this method of controlling hemorrhage over constriction of the uterus by elastic ligature, clamp or *ecraseur*. By excluding the peritoneal cavity by suturing the peritoneal cuff to the parietal peritoneum, the surface of the stump is at all times accessible to treatment and efficient compression can be made with the iodoform gauze tampon to arrest parenchymatous, oozing after ligation of the uterine arteries and suturing of the cut surface by several tiers of buried sutures. I am hopeful that more accurate suturing will render the gauze tampon superfluous in which event the external incision can be closed throughout over the stump, thus securing the same favorable conditions for primary healing of the external incision as by the intraperitoneal method, with the advantages of securing more efficient hemostasis and a minimum risk of infection.

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