

# VAGINAL STERILIZATION

## INDICATIONS AND OPERATIVE TECHNIQUE\*

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**S**TERILIZATION of the female is a recognized procedure and is performed as a prophylactic measure in order to save, or at least prolong, the life of the individual. The operation is done at the insistence of a specialist in one of the diagnostic fields of medicine because that physician feels if the patient were to become pregnant at a subsequent time her life might be endangered. The rationale of sterilization is to increase the span of life in those women who are afflicted with chronic disease which may become aggravated during the course of a pregnancy. This is true of all chronic diseases to which the human race falls prey with the exception of syphilis which is more amenable to treatment during pregnancy than it is at other times. If we continue to allow these women to conceive and carry on with their pregnancies we are taking unnecessary chances with the lives of our patients, we are adding unnecessary hours of worry and anxiety to our lives, and we are defeating all the other work we are doing in an effort to show a decrease in our maternal mortality.

The responsibilities of the medical profession lie in the direction of timely and adequate diagnosis of an existing medical, neurological, or mental condition. The surgeon should not take it upon himself to pass the severity of the existing condition or the amount of extra strain that that particular individual can stand in the form of pregnancy and labor. All patients in whom there is any small bit of doubt should have the advantage of a thorough examination by a competent specialist. It is only by such unselfish cooperation that the medical profession

can honestly have all physically deserving patients sterilized, and by this means show much needed progress toward a substantial reduction in the maternal mortality statistics.

The commonly practiced contraceptive measures are, in a way, methods for temporary sterilization, but the uncertainty of their ultimate efficiency adds worry to the already troubled mind of the chronically ill patient. Our contention is that any contraceptive used over long periods of time is futile because it is either unsafe or adds further disease to that already present. Stem pessaries that are inserted into the cervical canal are actually harmful. Every patient who wears one of these devices develops an endocervicitis and cervicitis from the constant contact between the foreign body and the highly specialized cells of the endocervical canal. Leucorrhea always develops, and many women have a residual discharge that is so intractable as to necessitate amputation of the cervix or even total hysterectomy. In several cases which we have seen, the patients had presented themselves to their physicians for periodic removal and cleansing of the stem pessary. When the device was removed from the cervical canal virulent organisms were liberated, traveled through the pelvic lymphatics into the general circulation and fatal generalized sepsis resulted.

The cup pessary is undesirable for several reasons. It is necessary to remove the pessary before the onset of each menstrual period and to re-insert it after the period is ended. Thus it is necessary for the patient to visit her physician twice each month for removal and re-insertion of the cup. Many women do not have

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rigidly regular periods, and if a patient begins to menstruate at an unexpected time the cup blocks the cervical exit for the

Finally, we have the commonly practiced coitus interruptus. If followed out properly this method is safe for the prevention of

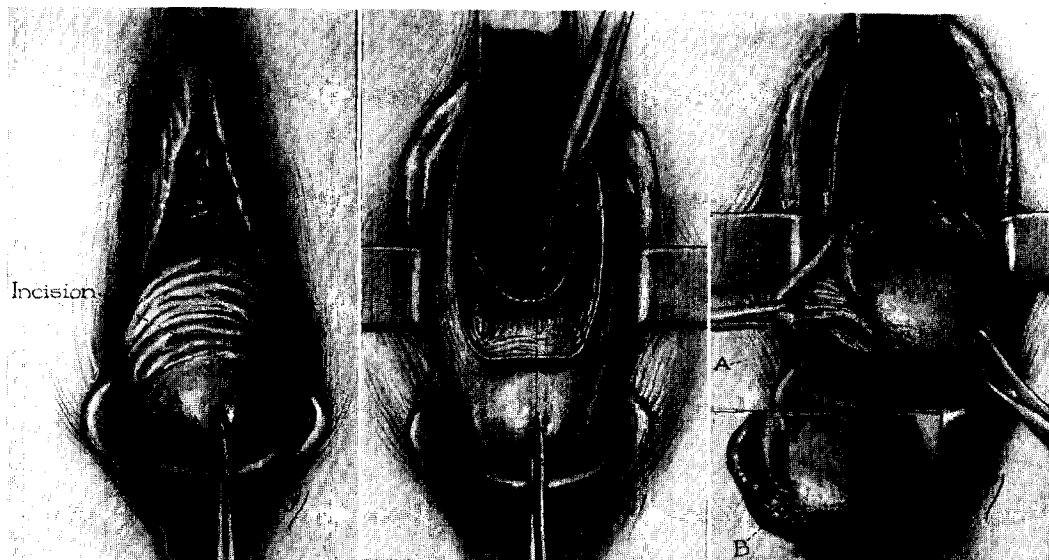


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 1. Incision in cervical mucosa.

FIG. 2. Vaginal mucosa and bladder reflected. Peritoneum opened, uterine body visualized.

FIG. 3. A. Resection of tube and uterine cornu. B. Closure of uterine cornu.

menstrual blood and there is a damming back of this blood. If the reflux is sufficient in amount it may spill through the fimbriated end of the tube and result in the very annoying and hard to treat endometriosis.

The use of medicated jellies or medicated douches is bound to fail in about 5 per cent of cases, and if we depend on them in our patients who must not become pregnant there is always the fear that the contraceptive will not prove successful. The semen is deposited in the posterior vault of the vagina, and quite frequently the patient fails to reach this place with the douche or the jelly and pregnancy may result.

The use of the condom is a comparatively safe measure. But even here unforeseen accidents occur and the purpose of the contraceptive is defeated. Not infrequently during the course of coitus the condom breaks and the parties concerned are unaware of this accident. Thus the relative safety of the condom is not absolute.

pregnancy, but the effects of this practice on the individuals using it may prove disastrous. Primarily there is the fear that premature ejaculation may take place and semen be deposited in the vagina. The nervous strain attached to this constant worry will eventually tell on the individual who has some illness which absolutely contraindicates pregnancy. Secondly, the persons who practice coitus interruptus withdraw before the orgasm is reached, and in this manner they are constantly being fomented to the point where pelvic congestion reaches a maximum without culmination of the act. This is an underlying factor in the production of so-called nervous individuals and is prone to produce irritable, dissatisfied, and nervously unstable patients. Thus we see that the practice of coitus interruptus adds nervous strain to an already damaged body and our medical task is made a more difficult one.

After an analysis of the most common contraceptive practices we are forced to the conclusion that the patient who,

the abdominal approach is difficult and at times even impossible if some ether is not used in order to get the proper amount

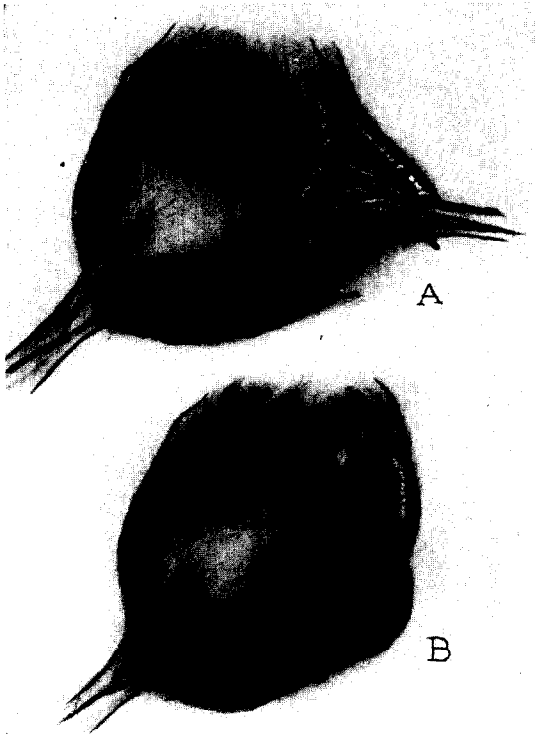


FIG. 4. A. Tube and broad ligament being brought over uterine horn. B. Peritonealization of uterine horn by tube and broad ligament. Note tube ligated by each stitch.

for some medical reason, is in need of sterilization is not adequately protected by the use of contraceptives. We cannot rely upon any of the foregoing measures to keep our patients from becoming pregnant indefinitely. The obvious conclusion, then, is that actual sterilization by operation is the only procedure that will insure both sterility and the maintenance of the mental balance of the sensitive patient.

In performing the operation for sterilization we prefer to use the vaginal route and we advocate that route of attack to all surgeons who are called upon to do the operation because of its technical simplicity and because it is much easier on the patient. Gas anesthesia can be successfully employed for the vaginal operation, while



FIG. 5. Incision for fundal vaginal hysterotomy.

of relaxation. If necessary local infiltration anesthesia may be used with little discomfort to the patient, but in doing laparotomy local anesthesia fails as often as it proves successful. So we see that from the point of view of anesthesia alone the ill patient is better off with the vaginal operation than when the abdominal route has been employed.

Any patient who has borne children has a sufficiently dilated vaginal tube to enable one to enter the abdomen from the vagina without difficulty. Most patients of this type require some vaginal plastic work which can be done in conjunction with the sterilization and thus save the necessity for a combined operation or for two separate operations. Even though the patient has not had children the procedure can be successfully carried out without a great amount of difficulty. If the vagina is not sufficiently relaxed a Schuchardt incision can be made and the vagina enlarged to enable of facile completion of the operation.

The vaginal route is also advantageous because it saves opening the abdominal wall and handling the intestines. This cuts down on the amount of postoperative discomfort, reduces to a minimum the amount of gas pains and intestinal distention, reduces the chances of a generalized peritonitis and ileus, and removes the possibility of mid-line abdominal hernia. Of secondary consideration are the time factors involved. The vaginal operation can be done in shorter time than an abdominal operation and thus the length of time of anesthesia is reduced. This may, in some conditions, be of distinct advantage to the patient. The vaginal route also proves to be an economic time saver because the patient is allowed out of bed and out of the hospital more quickly than she would be if laparotomy had been performed.

Finally, if therapeutic abortion is to be done at the time the patient is sterilized, both operations can be carried out at one time without any considerable increase in the operative difficulty, in the time necessary to complete the operation, or in the postoperative morbidity.

#### INDICATIONS FOR VAGINAL STERILIZATION

*Cardiac Indications:* Mitral lesions with myocardial changes are notably dangerous during pregnancy or labor. Any woman who has a cardiac lesion and in whom there has been at some previous time a cardiac decompensation should be sterilized. Such a patient runs a very great risk of developing another, and more severe, decompensation if she should become pregnant. Pregnancy is likely to terminate disastrously because of the extra load added to an already injured heart muscle. This applies to all previous cardiac decompensation whether occurring during the course of a pregnancy or not.

Mitral stenosis by itself does not constitute a hard and fast indication for sterilization, but any patient with a high grade mitral stenosis, with or without

regurgitation, should be watched very carefully during the course of a pregnancy. If at any time in the first trimester she shows signs of cardiac embarrassment or beginning decompensation abortion should immediately be performed and she should be sterilized. Decompensations beginning in the second or third trimesters are best treated medically until viability of the child occurs, and then labor induced or cesarian section performed. This is advocated because labor or termination of pregnancy after the third or fourth month are as hard on the patient as full term delivery. Any woman who, after one or several pregnancies, develops a mitral valve lesion should be sterilized as soon as her medical condition permits. She already has her family and the danger of further pregnancies need not be hazarded.

*Renal Indications:* Every patient with a definite deficiency in kidney function should be sterilized because if a pregnancy ensues and the added work of elimination for both the mother and fetus is put on already damaged kidneys the result may prove dire. This is particularly true for patients who have had a true nephritis of pregnancy with marked edema, albuminuria, hyperpyrexia, and a retention of nitrogenous products as evidenced by the blood chemical findings. Unlike the acute toxemias of pregnancy, true nephritis does not entirely disappear after the termination of the pregnancy and the patients never return to their normal states. Therefore subsequent pregnancy is likely to prove of serious consequence.

Patients with tuberculosis of the urinary tract should also be sterilized because we know that pregnancy has an activating effect on tuberculosis and may stir up a quiescent affair. If the patient has had one kidney removed because of a tuberculous process she should be sterilized in view of the fact that most often renal tuberculosis is bilateral even though it may not show up in the opposite kidney for several years after the primary focus had been removed. If such a woman should

become pregnant a fatal outcome can be anticipated.

We do not want to convey the impression that every woman who has had a nephrectomy should be sterilized. We have delivered several patients who had had previous nephrectomy for calculi, and their pregnancies, labors, and postnatal courses did not deviate from the normal. Therefore we say that previous nephrectomy is not an indication for sterilization except in cases where the kidney had been removed because of tuberculosis or where the function of the remaining kidney is found, by laboratory procedures, to be below normal.

*Pulmonary Indications:* We all know that patients with active pulmonary tuberculosis should not become pregnant because of the activating effect of the pregnancy on the tuberculosis. The course of the tuberculosis becomes more rapid during the pregnancy. This does not mean that every woman who has had an active pulmonary tuberculosis should be sterilized. If a woman has had an arrested tuberculosis for five years with no evidence of activation during that time she may safely become pregnant and, under very careful supervision, carry to term with no ill effects. But if a woman with active tuberculosis periodically becomes pregnant and undergoes frequent therapeutic abortion, that woman should be sterilized. Or should a multi-gravida develop a pulmonary tuberculosis and progress is noted in the course of treatment of that disease she should be sterilized in order that a pregnancy should not interfere with the ultimate cure.

*Otolaryngological Indications:* One ear condition is known to be aggravated by pregnancy, many patients having no signs of this disease until they become pregnant. That condition is otosclerosis. If a patient suffering from otosclerosis becomes pregnant and the effect of the pregnancy on the ear condition is noticeably bad, that patient should have a therapeutic abortion and sterilization. If a patient with this

disease presents herself with a history of previous gestation having caused a marked increase in the symptomatology, that patient should be sterilized because subsequent pregnancy will undoubtedly cause an increase in her difficulty especially since otosclerosis is a progressive disease. A nulligravida with otosclerosis and a great desire for a child may be allowed to become pregnant, but she should be warned that her ear condition will probably become worse. If the symptoms become so marked as to force the patient to seek relief she should be aborted and sterilized.

Tuberculosis of the larynx usually accompanies an active pulmonary tuberculosis, but rarely it may occur independently. If a patient has a laryngeal tuberculosis that patient should be sterilized under the same conditions and for the same reasons that a patient with active pulmonary lesions should have the operation performed.

*Local Anatomical Indications:* Local anatomical conditions, usually the result of pregnancy, frequently demand plastic repair, but these repairs are of no avail if the patient subsequently becomes pregnant and during the labor and parturition the operative repair is torn down. Large cystoceles and rectoceles, third degree lacerations of the perineum, vesicovaginal fistulae, rectovaginal fistulae, cervical lacerations extending beyond the internal os, and prolapse of the uterus fall in this group. All women presenting themselves for repair of the afore-mentioned conditions should be sterilized as a part of the operation in order to preserve the work done at the time of the operation. In doing the interposition operation the sterilization is an important part of the procedure, inasmuch as should pregnancy follow great difficulty will befall the patient and therapeutic abortion is frequently necessary to relieve a uterine or bladder incarceration. The only exception of this rule is the nulligravida with a uterine prolapse. This may be repaired without



sterilization in order to give the patient a chance to bear children.

*Social Indications:* Frequently we are approached by the social service departments of our hospitals and requested to sterilize certain patients for social reasons. Some of these requests we are forced to deny, but we feel that there are certain definite social indications for this operation.

There are apparently normal parents who have had several mentally deficient children. If this condition recurs in several children of the same parents there is a definite reason for sterilization in order to save these parents from bringing into being any more of those pathetic creatures who will eventually become wards of the state.

Another grave social problem is that of the unmarried mentally deficient girl who is promiscuous in her sex relationships and who becomes pregnant at frequent intervals. Sterilization of such an individual, with the permission of the parents and the juvenile court, is a desirable thing both from the standpoint of the family of such a girl and for the welfare of the community.

Amaurotic family idiocy is a rare condition that is prone to recur in certain families. If this condition is found in the offspring of one woman more than one time, that patient is entitled to sterilization in order to protect her from the danger of bringing more such infants into the world.

*Neuro-psychiatric Indications:* In some states there is a law making sterilization of the insane compulsory. It is definitely known that certain types of insanity have a tendency to recur in the offspring of the person afflicted. Many of these patients have recessions of their mental conditions, but if during such a period of betterment of condition that woman becomes pregnant there is likely to be a relapse of great severity. Therefore sterilization of such a patient is desirable both because of the good it may do the patient and because of the reduction in the numbers of the potentially insane.

Certain women, otherwise absolutely sane, develop a true psychosis during the course of a pregnancy. These patients have an absolute clearing of symptoms after the termination of the first pregnancy in which the condition developed, but with subsequent pregnancy the mental upset becomes worse and of longer duration. Such a patient should not be allowed to go through more than one pregnancy because of the danger of a permanent return of the previously encountered mental condition. We also see cases of puerperal psychosis in patients who go through their pregnancies and labors normally but during the course of the puerperium develop a psychosis. The majority of these women recover eventually, but to allow such a patient to again become pregnant is not good judgment inasmuch as she may develop a more severe and more permanent psychosis during her next puerperal period. Sterilization of women in this group is strongly advocated.

Chorea gravidarum, a very severe neurological condition that occurs in the course of pregnancy, is very likely to again appear during the next period of gestation in a more severe form. The choreiform movements may become so violent that the patient cannot control herself sufficiently to maintain her equilibrium. Falls are very frequent during these attacks and at times there are such severe injuries resulting from these falls that the patient is permanently crippled or dies. There are also cases reported where the movements were so violent and of such constant character as to completely exhaust the system and end in death from cardiac failure. Inasmuch as this condition is likely to recur during subsequent pregnancies, it is safest to sterilize the patient after the termination of the first pregnancy in which the chorea was observed.

True epilepsy is another indication for sterilization both because the patient herself is endangered and because the disease may be transmitted to the offspring. The danger of the patient lies

in the direction of increasing the severity of the epilepsy. It is known that the seizures are of more frequent occurrence and of greater severity during the course of a gestation, and following multiple pregnancies there may be a permanent change for the worse in the condition of the individual. Although the transmission of epilepsy to the offspring may be debatable there can be no question that if a mother with this condition has a child who shows an epileptic tendency, that woman should be sterilized in order to prevent her bringing more of her kind into being.

The rare neuromuscular conditions, pseudo-hypertrophic muscular dystrophy, progressive muscular atrophy, and myasthenia gravis are all characterized by a muscular weakness. If a patient with any one of these diseases becomes pregnant and extra weight is added to that which the weakened muscles must support, the general condition of that patient will suffer and the muscular condition will become aggravated because of the added strain. If patients suffering from these conditions are sterilized and the possibility of pregnancy is removed, the treatment of the neuromuscular disease can proceed without interruption.

#### THERAPEUTIC ABORTION

Unfortunately, many of the patients suffering from these conditions do not present themselves for examination until after pregnancy has taken place. Our problem now is twofold, doing away with the pregnancy and sterilizing the patient in order to obviate the possibility of future pregnancy. But even this double problem need not be difficult. In employing the vaginal route of operation the therapeutic abortion can be done as a part of the sterilization operation without adding much to the technical difficulties of the procedure. In doing the combined sterilization and abortion we prefer to do a fundal vaginal hysterotomy instead of the tradi-

tional transcervical uterine evacuation. In doing the operation by this method we do not go through the frequently infected cervix and so cut down on the chance for postoperative infection. In following out this technique we do not encounter sepsis such as we see on occasion in the patients who have had pregnancy terminated by the transcervical approach.

#### OPERATIVE TECHNIQUE

Sterilization can always be accomplished by the use of radium or the x-ray, but we rarely employ these methods of procedure because of the disadvantages attendant on their use. The x-ray and radium sterilize by a destruction of the ovarian function. This means that the patient will be thrown into the menopause, and menstruation will cease. In many patients the cessation of menses will prove a damaging psychic factor, while in others the symptoms accompanying the menopause may be very severe. Therefore we advocate the use of these forms of sterilization only in women who are approaching the age of the menopause or in those who have such serious medical conditions as to make even the very simple vaginal operation dangerous.

It must be remembered that in the course of the operation the abdomen is opened through the vagina and we must be very particular about the preoperative preparation of these patients. The external genitals and vaginal tube should be thoroughly washed with tincture of green soap and sterile water three times, with great care to get up to and behind the cervix. The soap is washed out with sterile water or with 1:5000 bichloride of mercury solution. The vagina is then thoroughly saturated with one-half strength tincture of iodine or the surgical preparation of mercurochrome, special attention being given to the posterior vaginal vault and the cervix. When the cervix is brought into view it is again swabbed with the iodine. These simple precautions will go a long way toward reducing to an absolute

minimum the chances of postoperative infection.

We will describe the technique that we use for simple vaginal sterilization, that for the repair of cystocele in conjunction with the sterilization, and that for the performance of therapeutic abortion during the course of the sterilization operation.

*Simple Sterilization:* The perineum is held back by the use of a weighted vaginal retractor. The anterior and posterior lips of the cervix are grasped by single tooth volsella tenaculæ, and the uterus is pulled down into the vagina. Two cubic centimeters of obstetrical pituitrin are injected into the cervical tissues in order to promote uterine contraction as well as generalized contraction of the pelvic vessels and so cut down on the amount of bleeding encountered during the course of the operation. An incision is made across the anterior lip of the cervix (Fig. 1) just below the insertion of the bladder on the uterine wall. This incision is carried through the vaginal mucosa and sub-mucous fascias. These fascias are then separated from the uterine wall, from side to side and upward by means of sharp dissection. A plane of cleavage will soon be found which will enable one to strip the bladder and its attached mucosa from the anterior wall of the uterus by gentle pressure with the gauze-covered finger. This separation of the bladder from the uterus is carried up to the point where the peritoneal reflection is brought into view. A narrow anterior retractor is now inserted between the reflected bladder and the uterine wall, and traction on this retractor gives one a good view of the peritoneum. The peritoneum is now incised and this incision is widened by inserting both index fingers and pulling them apart. This brings the fundus of the uterus into view and the anterior retractor is now placed between the upper peritoneal flap and the uterus (Fig. 2). The cervix is now pushed backward into the posterior vault of the vagina and in this manner the fundus is forced down toward the

vaginal opening. The uterus is now grasped with a single toothed volsellum forceps, and by gentle traction is delivered into the vagina. This brings into view the entire uterine body together with the tubes and their insertions in the cornua.

The tube is grasped with a hemostatic forceps about  $\frac{1}{2}$  inch from the uterine horn and cut across. This incision is carried parallel to the tube as far as the uterine horn and across this, removing with it the interstitial portion of the tube (Fig. 3A). The uterine horn is now closed by a continuous running suture of chromicized catgut interlocked every second or third stitch (Fig. 3B). Care must be taken to bury the cut end of the interstitial portion of the tube. The proximal end of the cut tube is then brought over this portion of the uterine horn and sutured. In sewing the tube and its broad ligament attachment to the uterus care is taken to go around instead of through the tube. Thus we are peritonizing the raw edges of the uterine cornua and at the same time each stitch is surrounding and constricting the tube so that maintenance or re-establishment of the patent lumen is impossible. The same procedure is carried out on the other side (Fig. 4B). In the large series of cases in which we have employed this operation we are not aware of a single instance in which it has failed to sterilize permanently.

The uterus is now replaced in the abdominal cavity and the anterior retractor is taken out from beneath the peritoneal flap and reinserted beneath the bladder. The index finger is put into the abdominal cavity and the peritoneal edge is found and secured by a suture. The peritoneum is closed by several interrupted sutures of catgut. The anterior retractor is now removed and the bladder together with the attached mucosa is pulled down into place. The vaginal mucosa is now closed by interrupted sutures of chromic catgut.

*Sterilization with Repair of Cystocele:* If cystocele is present and operative treatment is decided upon in conjunction



with the sterilization, the technique is somewhat varied. In these cases it is necessary to separate the bladder from the vaginal mucosa at the outset and then to separate the bladder from the uterine wall. The same primary incision is made through the vaginal mucosa and then a curved rounded tip scissors is insinuated between the vaginal mucosa and the bladder. After pushing the scissors as high as possible it is opened and in this manner the bladder is separated from the vaginal mucosa. The mucosa is now split up the mid line as far as the separation has been completed, and in repeating the process the division of layers is carried on as high as the urethra. Lateral separation of the mucosal flaps is very readily carried on by gentle pressure with the gauze-covered finger.

The bladder is now separated from the anterior uterine wall as previously described, and the sterilization operation is carried out. After the sterilization is completed and the peritoneum is closed we proceed with the repair of the cystocele.

The vaginal mucosa is trimmed in order to tighten the covering of the bladder when the repair is completed. The lower edge of the bladder fascia is now caught and sutured to the uterine wall  $1\frac{1}{2}$  to 2 inches higher than its previous insertion. This elevates the bladder on the uterus and prevents it from coming lower down on the cervix. The bladder is sutured to the uterus with three interrupted sutures, one in the mid line and one on either side. The subpubic fascias are now brought together from side to side. This tightens the urethra and acts as a support for both it and the bladder. The vaginal mucosa is now brought together in the mid line by a continuous interlocked suture of chromic catgut starting near the urethra and proceeding downward. When a point below the newly made insertion of the bladder is reached, the suture is brought through one side of the vaginal mucosa, through the uterine musculature, and then through the other side of the vaginal

mucosa. This type of stitch is carried on down to the lower edge of the vaginal incision. By taking these bites through the uterine wall we form another barrier in the path of the bladder should there be a tendency for it to slide down, preventing such a possibility and at the same time eliminating any "dead space" that may exist between the wall of the uterus and the vaginal mucosa. The transverse incision across the cervix is closed by several interrupted chromic catgut sutures. A retention catheter is put in place and left for five to seven days in order that the bladder may be kept empty during this time. This emptiness of the bladder allows it to regain its muscular tone and shrink in size. Thus, with increased bladder tonus, there will not be a tendency for over-distention and the primary causative factor in cystocele is removed.

*Sterilization with Therapeutic Abortion:* If therapeutic abortion is to be performed in conjunction with the sterilization the technique is not varied until the uterus is delivered into the vagina. A transverse incision is made across the fundus of the uterus anteroposteriorly (Fig. 5). The incision can be made from side to side and carried on to the removal of the uterine cornua, but we prefer the anteroposterior incision because in the mid line of the uterus no major vessels or large branches of these vessels need be cut across and the operation is practically bloodless. When the uterine cavity is opened into the products of conception can be squeezed through the incision in toto. The decidua is lightly curetted out through the incision and all is very carefully sponged away in order to prevent the possible development of an endometriosis. The incision in the uterus is closed by a running suture of chromic catgut, and this in turn is covered by a serosal stitch of fine plain catgut for purposes of peritonization. The sterilization operation is now carried out and completed as described.

[For Conclusions see p. 539.]