# Chapter 5
# DISPLACEMENTS OF THE UTERUS

## Points in Anatomy

The uterus is situated about the center of the pelvic cavity (Fig. 435) with the body of the organ inclined forward, the long axis of the organ being directed to a point above the symphysis pubis, the direction varying in different individuals and in the same individual at different times. The uterus is not fixed in one position, but can be moved easily in all directions—upward, downward, forward, or laterally. It is pressed somewhat backward in the pelvis when the bladder is distended and somewhat forward when the upper part of the rectum is distended.

It is clear, therefore, that the uterus possesses normally a considerable range of mobility, and it is only when it remains beyond the normal range that it can be said to be displaced.

**What Holds the Uterus in Normal Position?** As just stated, there is nothing that holds the uterus immovably in any one position. By a combination of several factors it is prevented, ordinarily, from going beyond certain limits, and is permitted free mobility within those limits.

The factors that thus assist in maintaining the uterus within normal limits are the pelvic floor, the broad ligaments, the uterosacral ligaments, the round ligaments, the normal weight and size of the uterus, and the normal tone and fullness of the pelvic tissues. The combination of supporting and balancing and guy-rope action of these structures is suggested by the somewhat similar combination in the working of a swing (Fig. 436).

## Kinds of Displacement

There are three kinds of uterine displacement which constitute clinical entities requiring separate consideration, namely, retrodisplacement, prolapse, and inversion. Anteflexion of the cervix is the designation applied to the condition in which the cervix bends forward so that its axis is directed along the vaginal canal, instead of across it as normally. This condition is nearly always a developmental defect due to persistence of the fetal position of the cervix. The corpus uteri develops forward normally but the cervix fails to assume its normal direction. The simple position of the cervix causes no disturbance. The imperfect development is the important factor in the frequently associated dysmenorrhea and stenosis of the cervical canal, and hence the condition is best considered along with other developmental defects in Chapter 12.

Anterior displacements of the corpus uteri and lateral displacements of the uterus occur only as incidental conditions in the course of other diseases, usually an enlarging tumor or abscess, and hence do not require separate consideration.

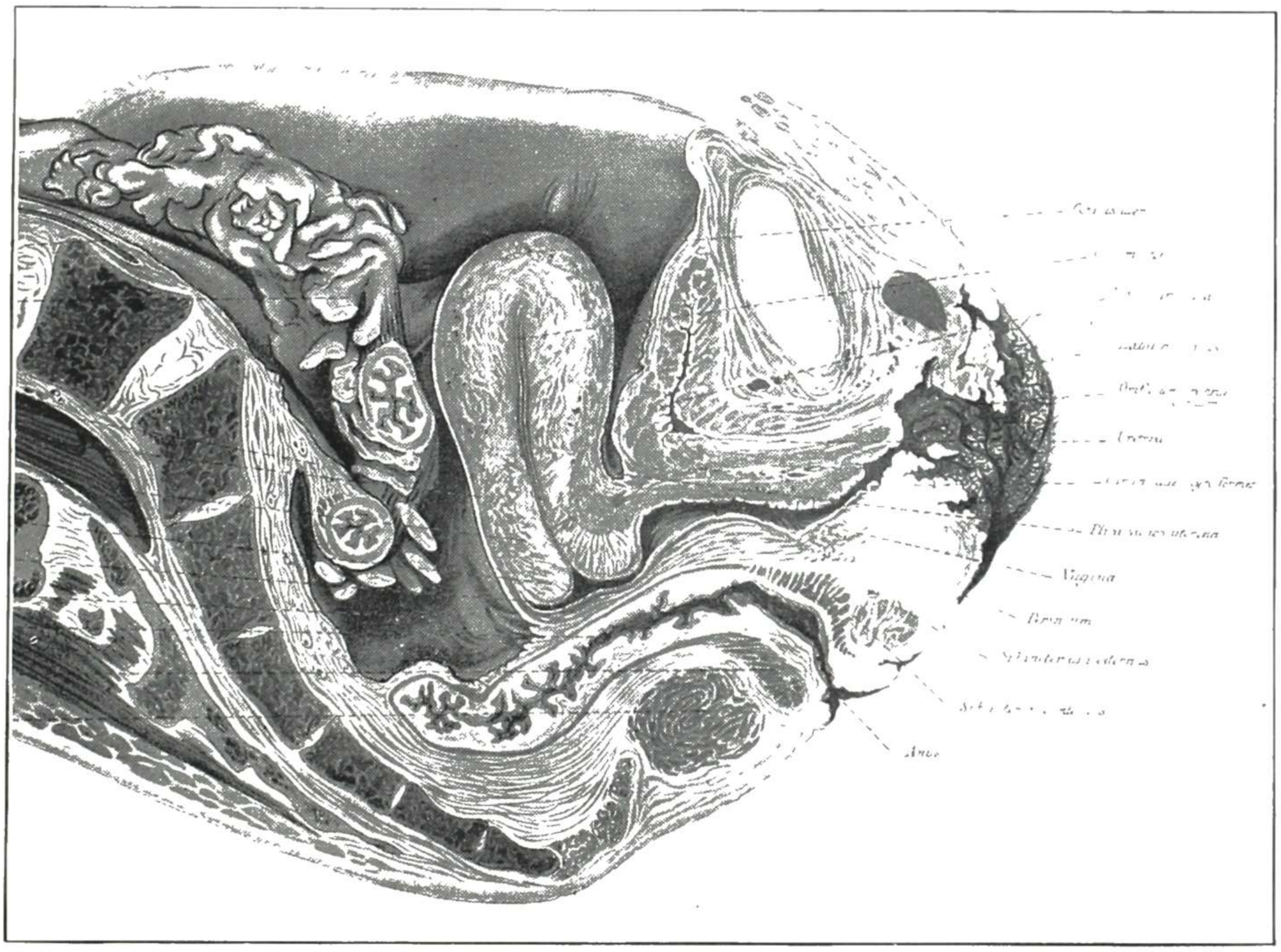



Fig. 435.—Section of a frozen body, showing the normal position of the uterus. (From Sellheim: Weibliches Becken.)

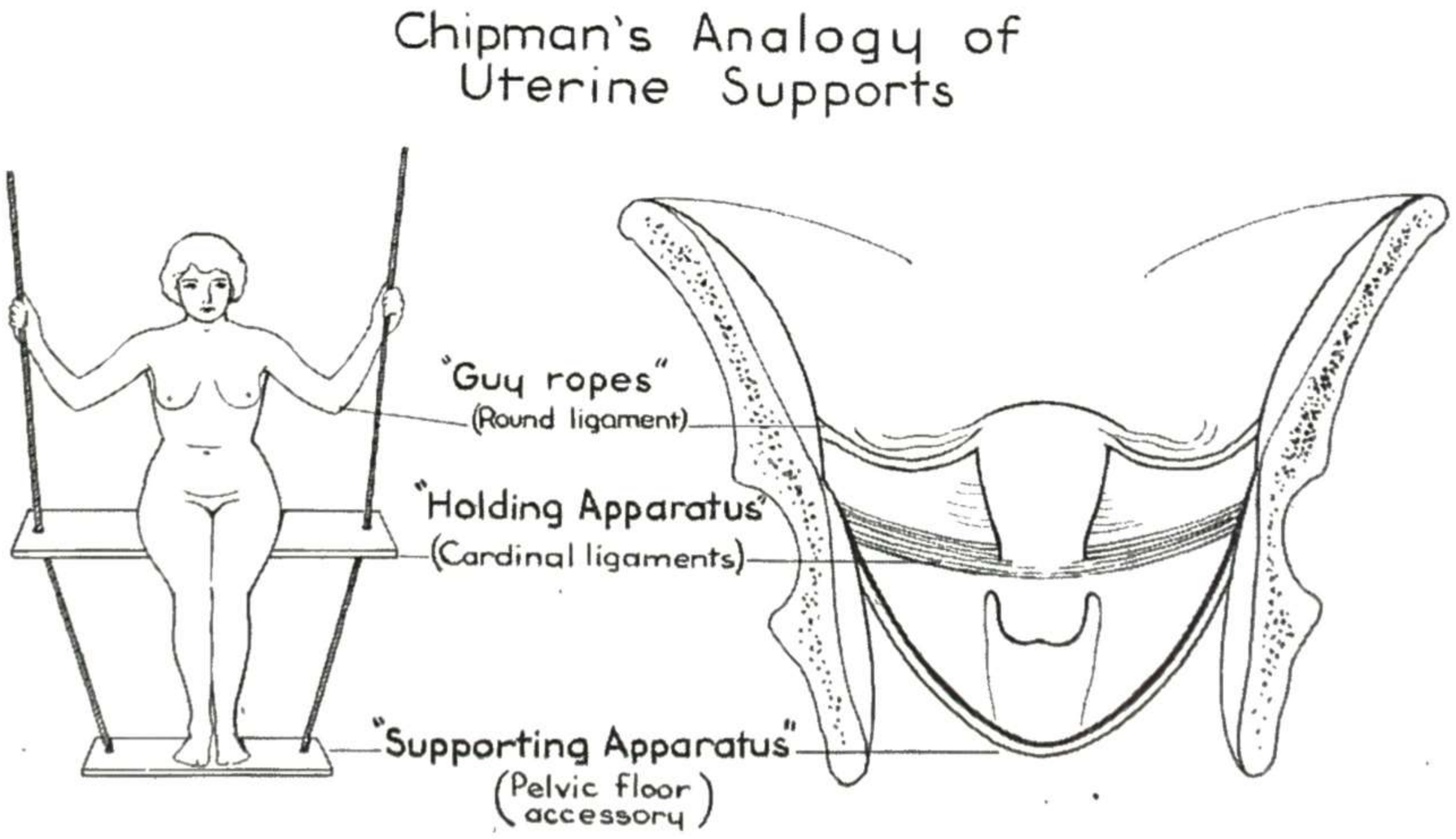



Fig. 436.—The coordination of supporting structures, which permit required movements of the uterus and yet hold it within normal limits, is well represented by the components of a swing supporting the body as in this illustration. (From Ward, after Chipman: South. Surgeon.)

## RETRODISPLACEMENT OF UTERUS

Dannreuther in a series of 3,400 consecutive office patients had an incidence of retrodisplacement in 12.5 per cent of the cases, and of these 19 per cent were developmental.

Backward displacement of the uterus occurs in four forms. The most common form is shown in Figs. 437 to 439. It is a combination of version and flexion. The whole uterus is turned back to a certain extent and then the corpus is bent back still farther. If it is desired to go beyond the general diagnosis of retrodisplacement and specify the particular type, this common

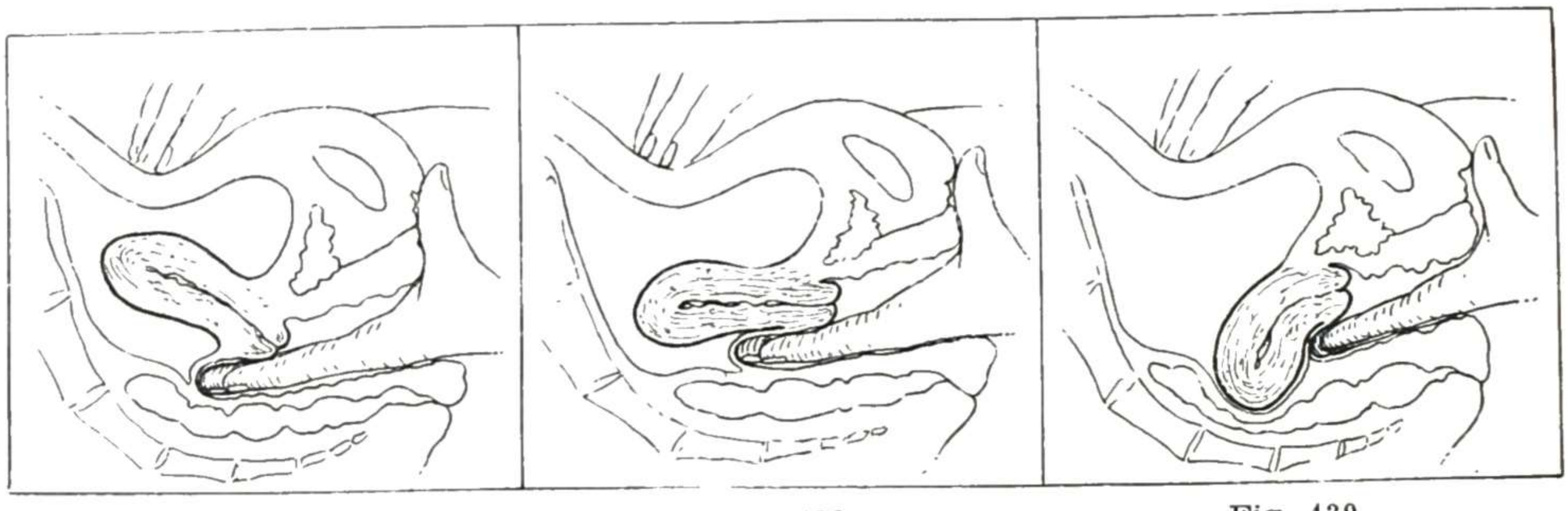


Fig. 437. Fig. 438. Fig. 439.

Figs. 437 to 439.—The three degrees of retrodisplacement of the uterus and the touch signs of each. Fig. 437, First degree—corpus out of reach of examining fingers, both above and below, Fig. 438, Second degree—vaginal fingers feel posterior surface of corpus uteri extending directly back. Fig. 439, Third degree—vaginal fingers impinge on corpus uteri turned down into the posterior cul-de-sac.

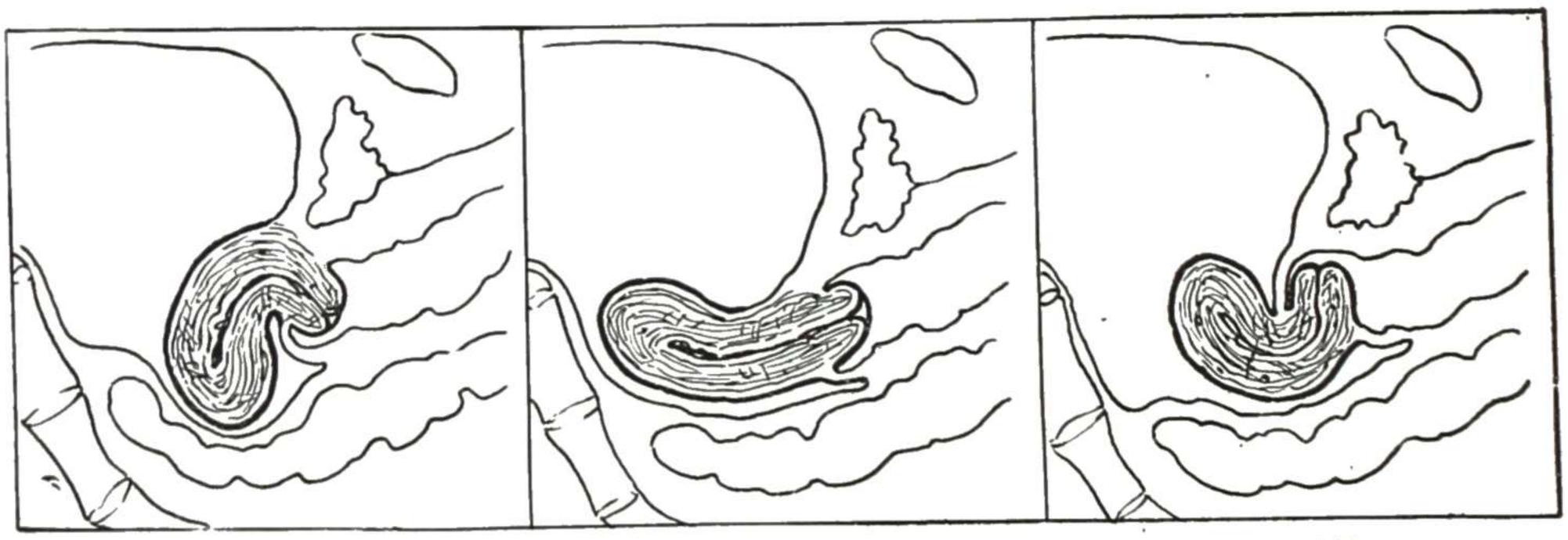


Fig. 440. Fig. 441. Fig. 442.

Figs. 440 to 442.—Retroflexion and retroversion of uterus. Fig. 440, Pure retroflexion, the corpus uteri being *bent* sharply back while the cervical axis is maintained in its usual relation with the vagina. Fig. 441, Pure retroversion, the whole uterus being *turned* back while the relation of the corpus to the cervix is undisturbed. Fig. 442, Retroversion of a uterus with an anteflexed cervix (retroversion).

A pure retroflexion or pure retroversion is a rarity, nearly every case being a combination of the two, hence the use of the term "retrodisplacement" which covers both flexion and version.

type could be designated "retroversioflexion." Occasionally a pure retroflexion, as shown in Fig. 440, or a pure retroversion, as in Fig. 441, is encountered, but they are infrequent. There is a still rarer type, in which a uterus with an anteflexed cervix becomes turned backward in the pelvis, as shown in Fig. 442. The descriptive designation of this would be "retroversion of uterus with anteflexion of cervix." It has been referred to as "retrocession," but that is only a general term meaning "a going back" and hence does not indicate the special condition present.

In general when the uterus is found back, the diagnosis should be "retrodisplacement of uterus," avoiding the terms "retroversion" and "retroflexion" except in those cases in which the physician has been able to examine deeply enough really to differentiate the different types. In many cases, owing to the difficulties of deep pelvic palpation, one is doing well to determine definitely that the uterus is retrodisplaced. "Retrodisplacement" is the term the authors shall use generally in referring to backward displacement of the uterus. It includes retroversion and retroflexion and any combination of the two.

## Etiology

Retrodisplacement of the uterus may be due to causes connected with childbirth (relaxed floor, subinvolution) or to nonpuerperal causes, such as developmental defect or enlarging tumor. Developmental defect as an etiological factor is often overlooked. On account of imperfect development, the infantile position of the uterus persists to some extent. In such cases the imperfect tissue development of uterus and adjacent structures is likely to be a larger factor in the causation of symptoms than the simple backward position of the uterus. In cases with congenital displacement there is a foreshortening of the anterior lip of the cervix and the anterior vaginal fornix; the uterus is usually smaller than normal and its mobility is limited. There are other symptoms associated with a disturbed endocrine balance.

Knowing that a large proportion of retrodisplacements are due to the stretching of the supports in childbirth and the backward tendency of the heavy subinvoluted uterus, preventive measures are employed. These consist of measures to aid normal involution of the uterus and adjacent tissues postpartum and avoidance of conditions which would interfere or which would put extra strain on weakened structures during the process of repair. The backward tendency of the heavy uterus is counteracted by (a) having the patient lie on the abdomen or side during convalescence rather than on the back and (b) beginning the knee-chest posture program after the pelvic blood-vascular system is sufficiently readjusted and stable to eliminate the danger of embolism —that is, in four to six weeks after delivery if the uterus is found in retrodisplacement on checkup examination at that time.

Falls may be disregarded as a cause of retrodisplacement of the normal uterus. As previously explained, the uterus is not fixed but is normally movable within wide limits, and provision is made for its return to the normal position after these physiologic excursions. The uterus is so well protected from jars and shocks that only a severe injury which breaks the protecting bony pelvis is at all likely to cause pathologic retrodisplacement, and then only through direct change in the adjacent structures by injury or exudate.

## Pathology

The essential pathologic change is indicated in the name and in the definition. The amount of backward displacement may be very conveniently expressed as first or second or third degree. In retrodisplacement of the **first degree,** the fundus lies just about at the promontory of the sacrum, in the **second degree** the fundus lies in the hollow of the sacrum, while in the **third degree** it lies well down in the cul-de-sac below the level of the internal os (Fig.

439). Of course, in practice all gradations are found, from the normal position to the most marked backward displacement. The exact dividing line between the different degrees is not distinct and the division into first and second and third degrees is an artificial one, but it is convenient and usually cases on examination may be placed in one class or the other and so recorded.

## Symptoms

The symptoms accompanying retrodisplacement of the uterus are due principally to the complications. There has been some question as to whether uncomplicated retrodisplacement causes any symptoms. In many cases where retrodisplacement is found it is clearly incidental, the symptoms being due to some other condition. It is important to recognize this fact and to differentiate accurately the cause of the patient's distress before subjecting her to operation or other troublesome treatment for the retrodisplacement. This incidental symptomless retrodisplacement is found principally in the nonparous and in the aged. In the active childbearing period the uterus is large and heavy, and troublesome discomfort may result from circulatory disturbance which in a less active uterus would be unnoticed. Consequently it is in such cases that correction of a movable retrodisplacement by pessary and knee-chest posture may give complete relief.

Retrodisplacement of the uterus may cause discomfort or may aggravate distress due to other lesions, the latter being the combination condition present in most cases requiring operation. The principal associated symptoms are menorrhagia, backache, leukorrhea, bladder and rectal distress, and sterility.

## Diagnosis

The symptoms mentioned are common to many diseases and hence are not at all distinctive of retrodisplacement. The **diagnosis** of retrodisplacement must rest upon the physical examination. In examining the patient it is found usually that the cervix is lower and farther forward than is normal, and that it also points forward.

When making the bimanual examination, search is made for the body of the uterus in its normal location, by placing the ends of the fingers in the front of the cervix and pushing the cervix upward and backward and at the same time pressing the fingers of the other hand into the pelvis from above. In retrodisplacement it is not there, so, placing the vaginal fingers back of the cervix and making bimanual examination, a mass is found back of the cervix, which is about the size and shape of the body of the uterus and apparently continuous with the cervix.

If the uterus is in only the first degree of retrodisplacement (Fig. 437), the fundus may be so high as to be out of reach of the vaginal fingers, and yet far enough back to be out of reach of the fingers above. The difficulty is much increased if the patient holds the abdominal muscles tense. In these cases the body of the uterus may sometimes be raised so that it can be felt by the abdominal hand by pushing up the cervix with the fingers in the vagina. This lifts the whole uterus—body and all. If the displacement is marked (that is, second or third degree), the fundus can usually be felt by the vaginal fingers, back of the cervix (Fig. 439). When a mass is felt in front or behind the

cervix, it must then be determined whether or not the mass is the corpus uteri. Figs. 443 to 454 show the principal conditions that must be taken into consideration in the differential diagnosis.

The differential diagnosis is made by making out the position, size, shape, consistency, tenderness, mobility and attachments of the mass, as explained under Gynecologic Examination (Chapter 2).

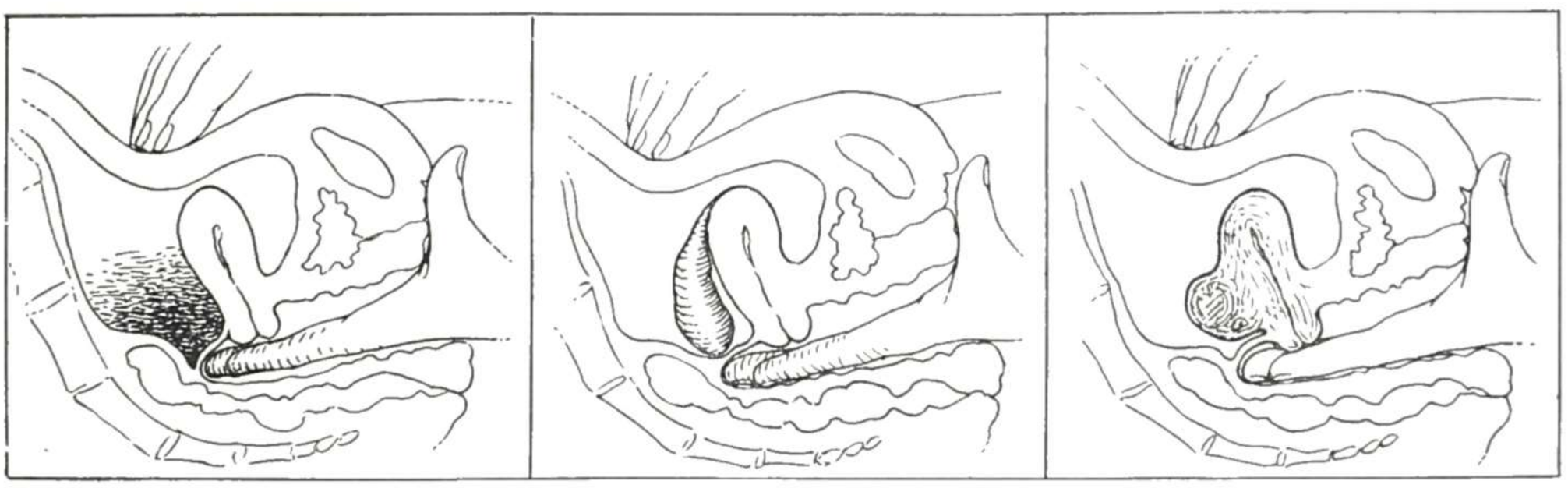


Fig. 443. Fig. 444. Fig. 445.

Figs. 443 to 445.—Differential diagnosis of retrodisplacement of uterus. Conditions simulating retrodisplacement. Fig. 443, Inflammatory exudate in the cul-de-sac, which may be mistaken for retrodisplacement when corpus uteri is not identified above on account of a thick or tense abdominal wall. Fig. 444, Tubal mass in cul-de-sac simulating the corpus uteri in that situation. Fig. 445, Myoma of the posterior uterine wall which may cause considerable difficulty in differential diagnosis from retrodisplacement.

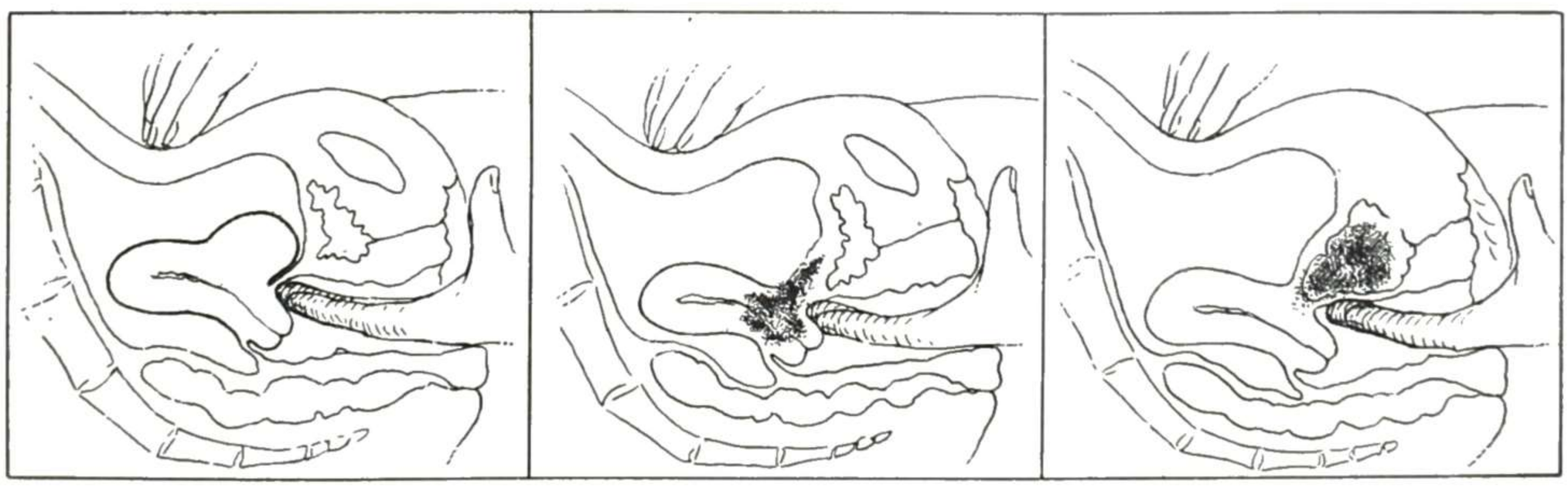


Fig. 446. Fig. 447. Fig. 448.

Figs. 446 to 448.—Differential diagnosis of retrodisplacement of uterus. Conditions that may obscure a retrodisplacement. Fig. 446, Myoma of anterior uterine wall that simulates the corpus uteri. Fig. 447, Uterine carcinoma with infiltration in front of cervix that may be mistaken for the resisting corpus uteri. Fig. 448, Tumor of bladder that gives a resisting mass in the general position of the corpus uteri.

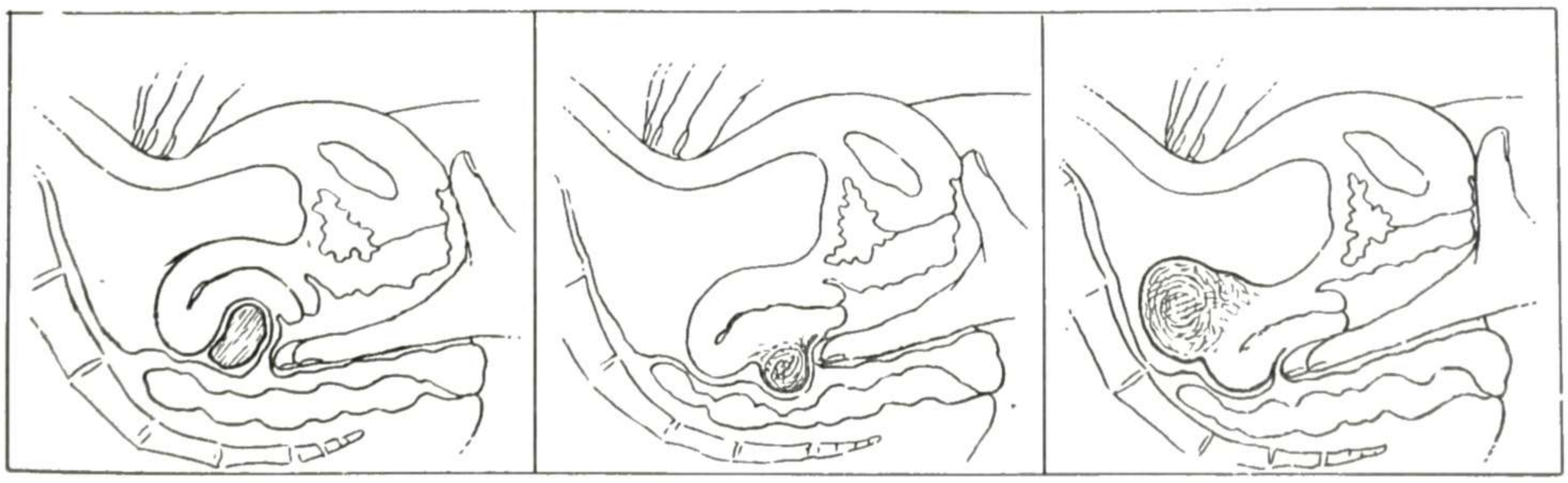


Fig. 449. Fig. 450. Fig. 451.

Figs. 449 to 451.—Differential diagnosis of retrodisplacement of uterus. Complicated cases of retrodisplacement. Fig. 449, Adnexa prolapsed under the retrodisplaced uterus. Fig. 450, Myoma in the posterior wall of the retrodisplaced uterus. Fig. 451, Myoma on the anterior part of the fundus of the retrodisplaced uterus.

**Determine Mobility.**—After having determined that the body of the uterus is backward, and about how far backward, the next point to determine is whether or not it is freely **movable.** The vaginal fingers are pressed well in under the fundus, and an attempt is made to lift it (Figs. 455 to 458). If it cannot be raised from its position, it is fixed. The fixation may be due to adhesions or to the fundus being caught under the promontory of the sacrum.

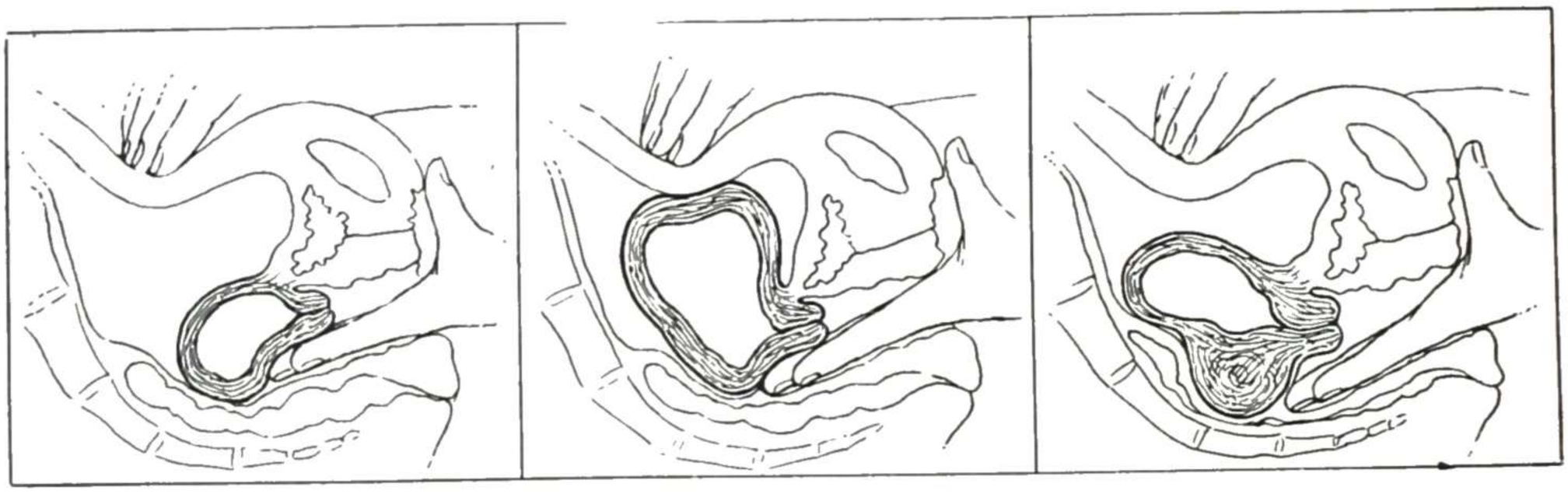


Fig. 452. Fig. 453. Fig. 454.

Figs. 452 to 454.—Differential diagnosis of retrodisplacement of uterus. Confusing conditions associated with early pregnancy. Fig. 452, Retrodisplacement with early pregnancy. Fig. 453, More advanced pregnancy with sacculation of the softened wall posteriorly. Fig. 454, Retrodisplacement with early pregnancy and a myoma in the posterior uterine wall. Keeping the possibility of such troublesome combinations in mind will often save an embarrassing mistake in diagnosis.

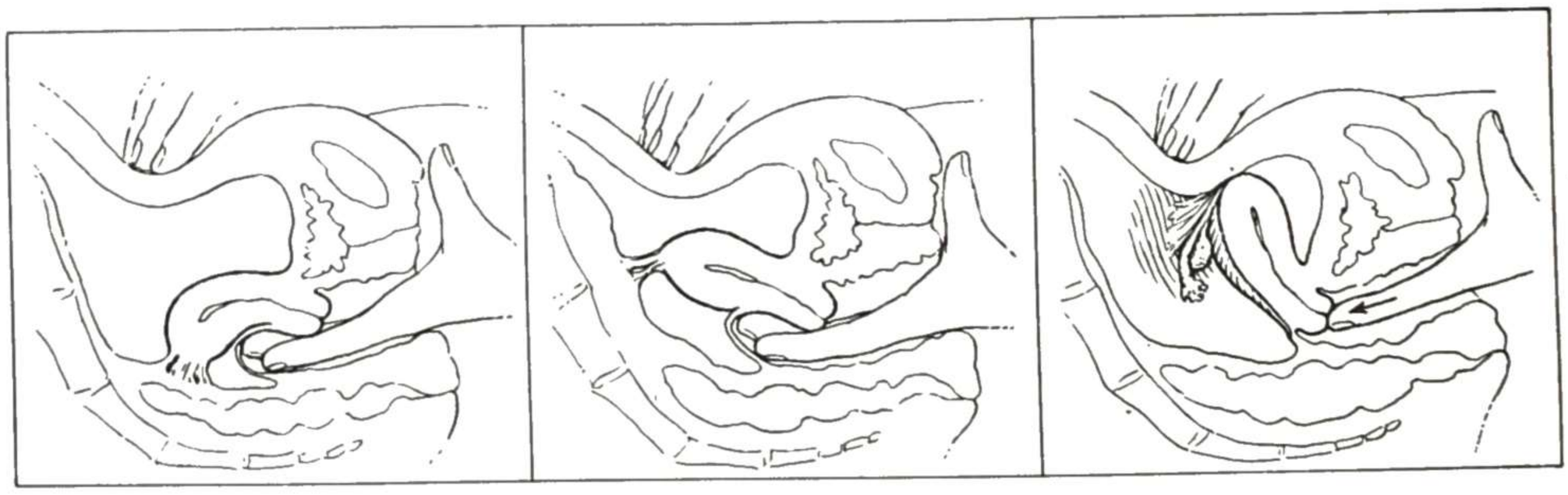


Fig. 455. Fig. 456. Fig. 457.

Figs. 455 to 457.—Determining the presence and extent of adhesions in retrodisplacement of the uterus. Fig. 455, The fundus uteri adherent low posteriorly. It cannot be gotten away from this region. Fig. 456, Adhesions higher. These usually permit considerable movement of the fundus uteri but it cannot be raised high enough to be caught with the abdominal fingers. Fig. 457, Light adhesions in the adnexal region. The fundus can usually be raised high enough to be caught with the abdominal fingers but does not come well forward or will not stay forward when released.

To determine which condition is present, catch the cervix with the tenaculum forceps and pull it downward and forward (Fig. 459). This maneuver pulls the uterus forward and away from the promontory. Then, while holding the uterus in that position, the fundus may be lifted past the promontory (Fig. 460), provided it is not otherwise held. If the uterus still cannot be raised, it is probably **adherent**—i.e., fixed in its false position by adhesions, the result of inflammation. This probability is increased if there is evidence of inflammation about the tube on either side. Endometriosis may also fasten the uterus back.

There is one other condition that may cause the uterus to be held in its backward position. Sometimes when the fundus lies low in the cul-de-sac, the

sacrouterine ligaments produce some constriction above it and prevent its return. This action of the sacrouterine ligaments is increased if the cervix be strongly pulled upon. This is a rare condition and is possible only when the uterus is in the third degree of retrodisplacement.

**Complications.**—There are several conditions that frequently accompany retrodisplacement and that must be taken into consideration. For example, relaxation of the pelvic floor, chronic cervicitis, endometrial hyperplasia, chronic metritis, salpingitis with or without exudate and adhesions, and tumors of the uterus or adnexa.

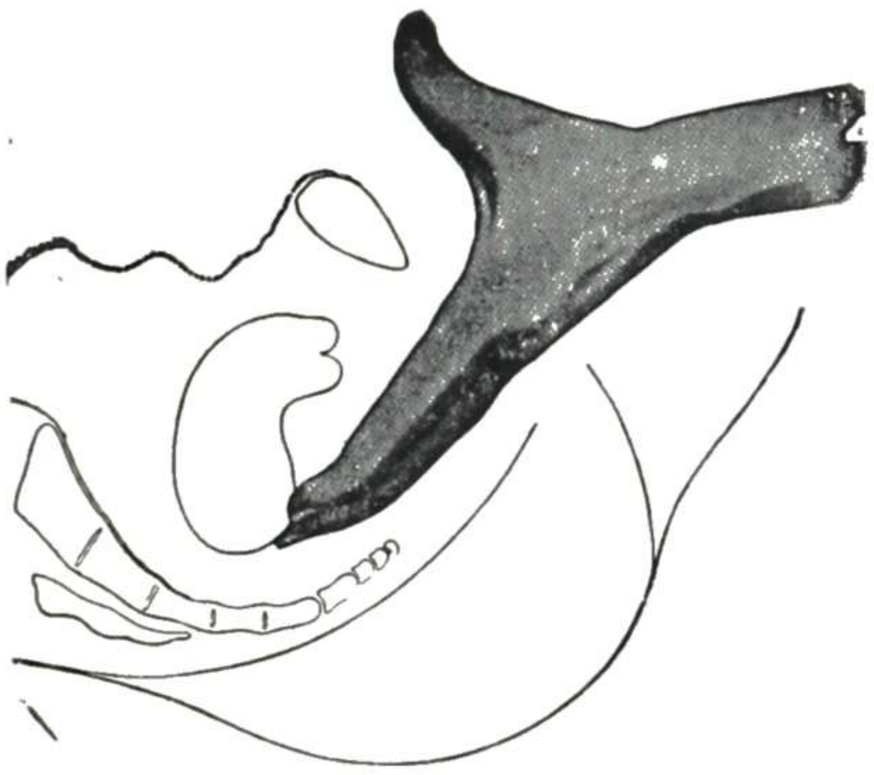


Fig. 458.

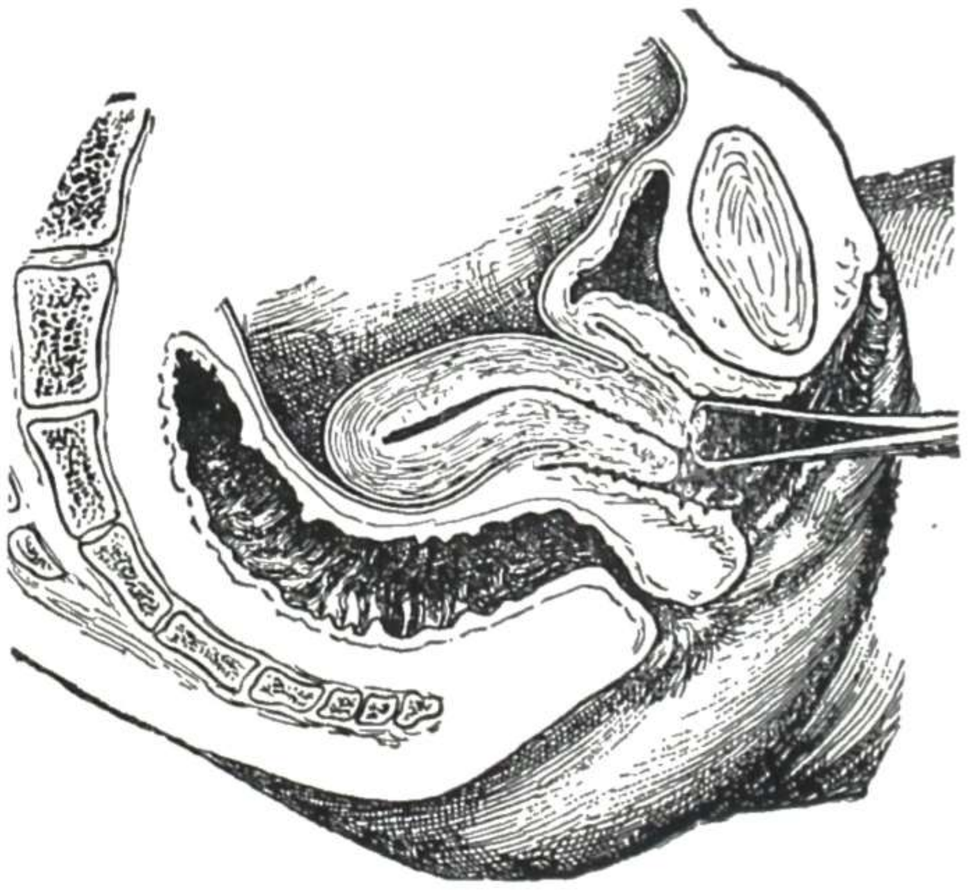


Fig. 459.

**Fig. 458.—Attempting to raise the fundus uteri, to determine whether or not it is fixed. This is also the first step in bimanual replacement of the uterus. (From Pryor: Gynecology.)**

**Fig. 459.—Bimanual replacement. Catching the cervix and pulling forward the uterus, so the fundus will be clear of the sacral promontory. (From Kelly: Operative Gynecology.)**

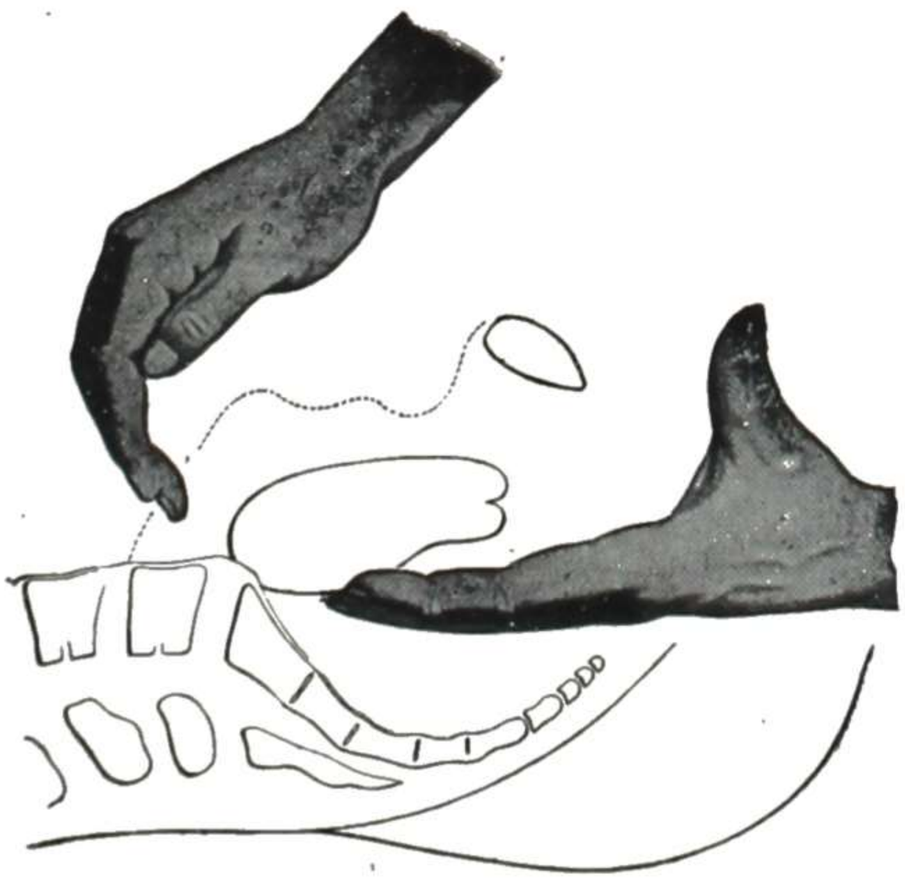


Fig. 460.

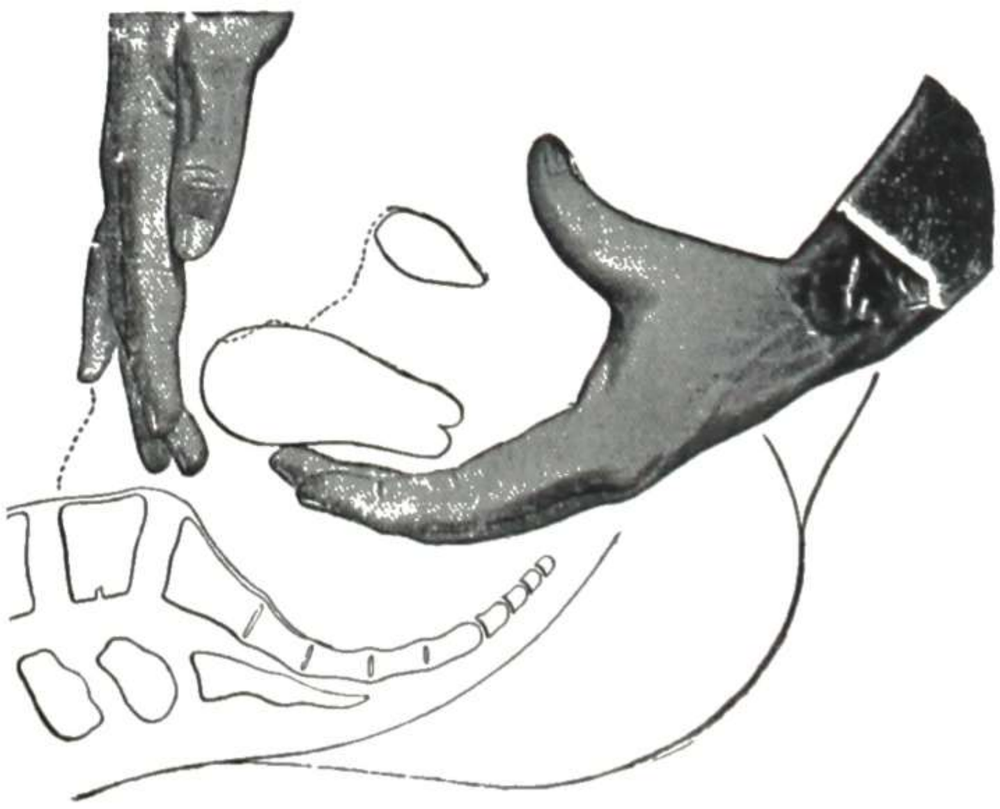


Fig. 461.

**Fig. 460.—Bimanual replacement. Raising the fundus uteri past the sacral promontory. (From Pryor: Gynecology.)**

**Fig. 461.—Bimanual replacement. Working the abdominal fingers down over the sacral promontory, so as to get behind the fundus uteri and bring it forward. (From Pryor: Gynecology.)**

The last two mentioned may cause trouble in determining the exact location of the body of the uterus. In examining a patient, do not stop when you find one lesion, but make a thorough examination and find all the lesions present.

## Treatment

If there are no symptoms, no treatment is needed. But the patient should be kept under observation so that, if symptoms do develop, effective treatment may at once be instituted before the case has run along and developed complications. In Dannreuther's series 31 per cent had no symptoms.

The treatment to be adopted depends on whether the uterus is movable or adherent.

### WHEN THE UTERUS IS MOVABLE

In a case of retrodisplacement with movable uterus, the first step in the treatment is to **replace the uterus** to its proper position. There are two ways of doing this—by bimanual manipulation or by employment of the knee-chest posture.

**Bimanual Replacement.**—By the manipulation employed in the bimanual examination, the uterus is often replaced.

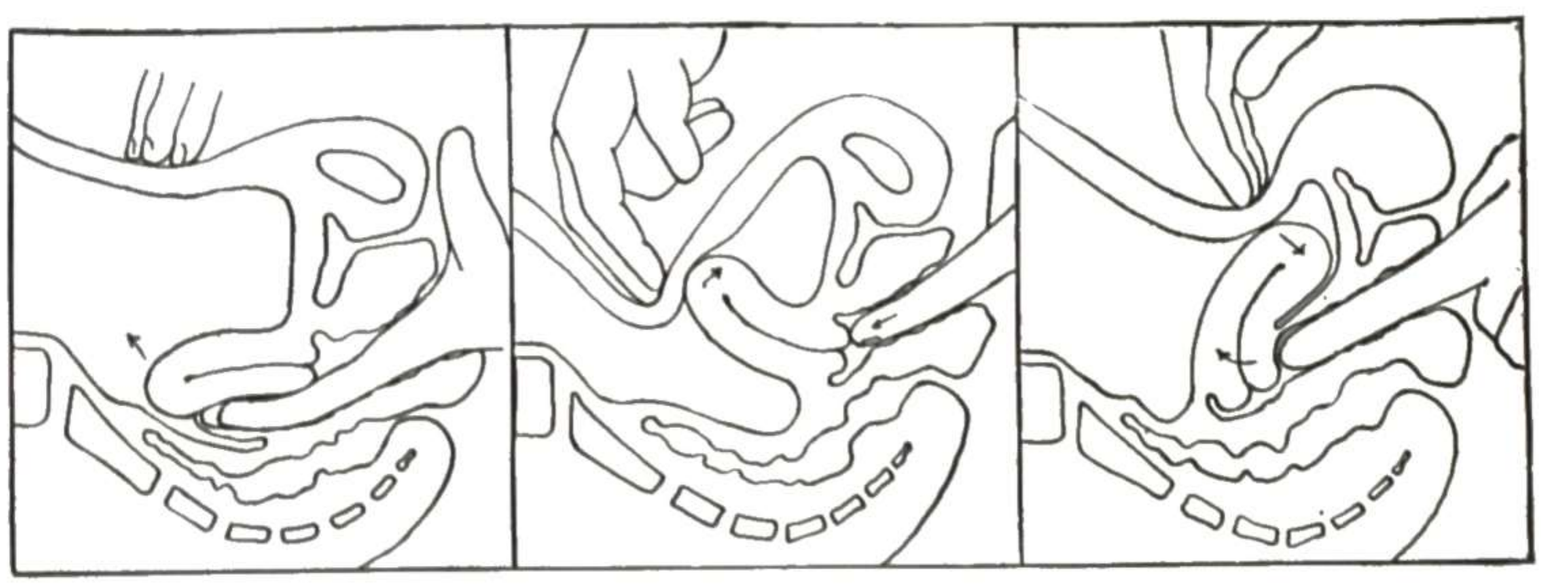


Fig. 462. Fig. 463. Fig. 464.

Fig. 462.—Attempting to raise the uterus, to determine whether or not it is fixed. This is also the first step in bimanual replacement of the uterus.

Fig. 463.—Bringing the fundus forward and pushing the cervix backward and upward.

Fig. 464.—The uterus brought forward into position. This shows also the method of taking the backward flexion out of the uterus, by bending it firmly over the vaginal fingers.

If it cannot be replaced by the ordinary bimanual examination methods, then catch and draw down the cervix with a tenaculum forceps (Fig. 459), and raise the fundus as high as possible with the fingers in the vagina. Then press the abdominal hand deeply into the back part of the pelvis, locate the promontory, and work along it into the pelvis back of the uterus (Figs. 460 and 461). The fundus uteri is then brought forward and at the same time the cervix is carried backward, as shown in Figs. 462 and 463. After bringing the fundus forward, bend it well down over the vaginal fingers as shown in Fig. 464, in order to take out any backward flexion that may be present.

To carry out these manipulations successfully, the abdominal walls must be relaxed, the uterus not very tender, and the bladder empty. If the patient has a thick layer of adipose tissue, the examining fingers sometimes cannot get near enough to the uterine body to manipulate it satisfactorily. If the patient holds the abdominal walls tense, on account of pain or nervousness, the abdominal fingers cannot reach the uterus. If the uterus is inflamed and tender, the pressure necessary to these manipulations causes too much pain.

**Knee-Chest Posture.**—When the uterus, though movable, cannot be replaced by the bimanual manipulations, the knee-chest posture may be used. After the patient has been placed in this position (with the clothing about waist thoroughly loosened), the Sims speculum is introduced. The cervix is then caught with the tenaculum forceps and pulled forward. This brings the fundus uteri out from the promontory and permits it to fall forward into its proper position. The cervix is then pushed well backward into the hollow of the sacrum, and a pessary is put in to hold it there.

The old method of replacement by sound or repositor is mentioned only to be condemned. The sound or intrauterine repositor used in this way is dangerous. A uterus that is not adherent can usually be brought forward by one of the two methods already mentioned. In a uterus that is adherent the use of a sound or repositor is liable to lead to inflammation or perforation of the uterus.

In some cases the uterus and adjacent tissues are too tender to permit the manipulations necessary for replacement. In such a case, hot vaginal douches, purgatives, and the knee-chest posture morning and evening for a few days may diminish the tenderness very much. In such a case, after the knee-chest posture has been taken morning and evening for a few days, the uterus may be found forward at the next examination.

**The Pessary.**—After the uterus has been replaced, then comes the problem of holding it there. The most convenient and efficient device for this purpose is the pessary. In uncomplicated cases this is often all that is needed.

## Varieties of Pessary

Innumerable forms have been recommended, and to attempt to mention all of them would be a waste of time. They have long been made of hard rubber and are now available in translucent plastic material; also a type is available which can be compressed for insertion similar to the Findley pessary. With the new chemical plastics as well as with the rubber pessaries, watch should be kept for possible allergic reaction with allergic patients. Both the hard rubber and the plastic pessaries may be molded by heating in hot water, thus permitting some adjustment to special conditions.

The following three forms are the principal ones used at present in the treatment of retrodisplacement, and they are sufficient in practically all cases in which a pessary is the preferable method of treatment.

1. **Hodge Pessary.**—This pessary, devised by Hugh L. Hodge, professor of Diseases of Women in the University of Pennsylvania from 1835 to 1863, may be taken as the type of the hard rubber ring pessaries. It is the original model from which nearly all other pessaries of that character descended. It is still much used and, as explained later, is the most suitable one for certain conditions.

2. **Albert Smith Pessary** (Figs. 465 and 466).—Albert H. Smith modified the Hodge pessary in two important particulars. He narrowed the anterior end so that it fits well up into the narrow portion of the pubic arch, the point projecting slightly into the arch. This tends to keep the pessary from turning or

slipping about in the vagina and at the same time causes the anterior part of the pessary to lie higher—so that it is out of the way and does not interfere with coitus or with the introduction of a douche nozzle. His other modification was a lengthening of the posterior arm of the pessary. This pushes the posterior vaginal fornix further upward and backward, thus increasing the ability of the pessary to hold the cervix uteri well back in the pelvis.

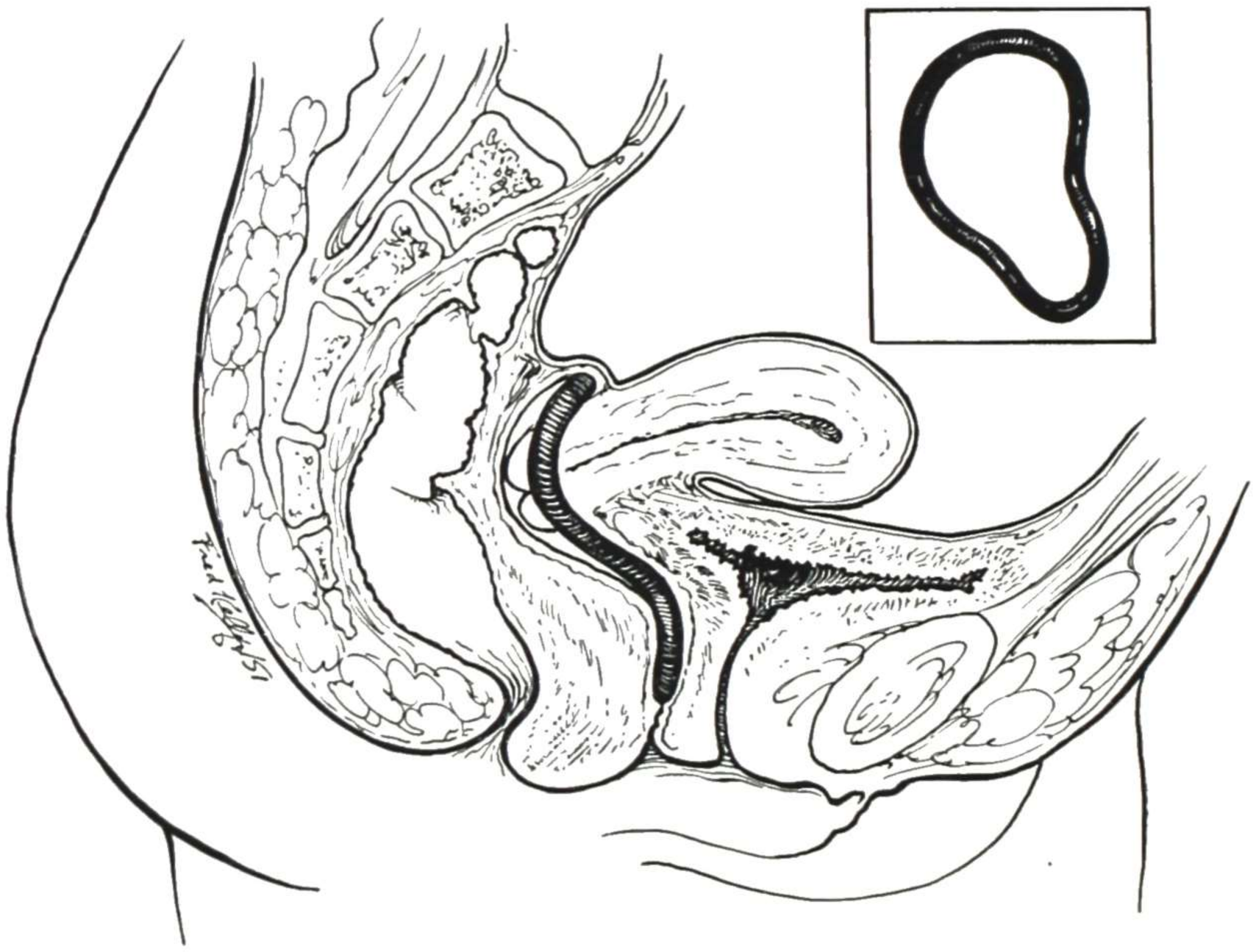


Fig. 465.



Fig. 466.

Fig. 465.—Smith pessary in place after the uterus has been brought forward; inner end behind the cervix holding it up and back, and the outer end resting on the muscles of the pelvic floor. Anteriorly it gets its support from the soft tissue between it and the pubic arch.

Fig. 466.—The Smith pessary. The shape of the pessary is adapted to the contour of the vagina, and this keeps it from turning or slipping out.

3. **Thomas Pessary** (sometimes called the Smith-Thomas pessary).—T. Gaillard Thomas modified the Smith pessary by thickening the posterior end into a bulbous enlargement. This distributes the pressure over a larger surface of the posterior fornix.

## Action of the Pessary

The action of the Hodge pessary and its modifications, as ordinarily used in a case of retrodisplacement, is to **hold the cervix back** in the hollow of the sacrum (Fig. 465). As long as the cervix is held well back in the pelvis, the fundus uteri will stay forward where it belongs. The pessary holds the cervix uteri back in place by holding back the posterior vaginal vault (to which the cervix is closely attached) and also by pushing upward and backward on the sacrouterine ligaments, thus putting them on the stretch. To accomplish this, the anterior portion of the pessary must have a rather firm support, which it gets from the pubic arch (with intervening soft tissues) and the pelvic floor.

The action of the pessary, with its many curves, seems to be a veritable puzzle to many students and to not a few practitioners, yet it is clear enough when properly approached and studied. The principle of action is the same as though a straight stick extended from the pubic arch to the posterior vaginal vault. As long as the anterior end of the stick is supported by the pubic arch, neither the posterior vaginal fornix nor the cervix, which is closely attached to it, can approach the vaginal outlet. The cervix can move up and down through a small arc, but it cannot come any nearer the vaginal outlet and consequently as the cervix is held well back in the pelvis the fundus uteri stays forward.

This is practically the action of the pessary. It takes its fixed **point of support** from the **pubic arch** (the soft tissues intervening), being held up against the narrow part of the arch by the **pelvic floor.** As long as the anterior end of the pessary is properly supported (held stationary), the posterior end holds the posterior vaginal vault and the attached cervix well back in the pelvis. The ring shape of the pessary and the various curves are simply to adjust it comfortably to the adjacent structures. The open ring permits the cervix to project through the pessary, the sides to lie well out of the way in the lateral angles of the vaginal canal, and the uterine secretion to flow outward without hindrance.

The marked upward bend of the posterior portion of the pessary increases its ability to push the posterior vaginal fornix upward and backward and put the sacrouterine ligaments on the stretch. The long upward curve of the front part of the pessary with the narrow anterior end permits the anterior end to lie up out of the way in the narrow part of the arch, and also furnishes a slope against which the perineum and front part of the pelvic floor act advantageously, helping to support the pessary in both an upward and backward direction and thus taking some of the pressure off the extreme anterior end.

When the pelvic floor is severely torn, it permits the pessary to sink lower in the pelvis. The anterior narrow end lies at a wide part of the arch, a part too wide to furnish support for it and it slips outside a short distance. This permits the cervix to come forward and then the fundus goes backward. In such a case, if we use a pessary with a wider anterior end (e.g., the regular Hodge pessary) it, being wider, impinges on the sides of the arch and holds the cervix back where it belongs. In very severe laceration, the marked relaxation of the pelvic floor allows the pessary to come so low—to such a very wide part of the arch—that not even the Hodge pessary will stay in. In such a case some temporary relief may be given by other styles of pessary to be mentioned later.

## Selection of Pessary

The selection of the pessary best adapted to a particular case concerns the style, size, and special modifications.

As to **style** or form, in retrodisplacement the authors prefer the Smith pessary (Fig. 466), in all but exceptional cases.

The exceptional cases in which this pessary may not be satisfactory are as follows:

Where there is a severe laceration of the pelvic floor. In these cases a pessary with a wider anterior end is required, as previously explained. Here

the regular Hodge pessary is usually the preferable one. In lacerations of extreme severity, where the parts are so relaxed that neither the Hodge nor Smith pessary will stay in, the inflated ring pessary or one of the other forms mentioned under Prolapse may give some temporary relief. For permanent relief in such a case operative measures are required.

When there are painful inflammatory lesions about the uterus or a prolapsed and tender ovary, time spent with pessaries is time wasted, as far as any permanent relief is concerned.

As to the **size** of pessary to be selected, the approximate length may be determined by measuring with the examining fingers the distance from the posterior vaginal vault (pushed well up) to the pubic arch. The length of the pessary should be a trifle less than this. The width of the pessary which the vagina will accommodate may be determined approximately by the apparent roominess of the vagina as felt in vaginal palpation.

However, the size of pessary that will keep the uterus in position with the least discomfort can be determined certainly only by trial, and several pessaries may have to be worn for a short time before the most satisfactory one for that particular case is settled upon. A pessary that is too small fails to hold the uterus in position and tends to slip out. A pessary that is too large causes pain.

The **special modifications** refer to slight changes in shape from the regular form, occasionally required to make the pessary more comfortable or more satisfactory in retaining the uterus in position.

1. General Narrowing of the pessary. The pessaries as purchased maintain a ratio between the width and the length (the longer the pessary the wider it is). As a rule this is desirable. In some cases, however, the vaginal opening is too small to admit a pessary of sufficient length. To overcome this difficulty, drop the pessary in boiling water (e.g., in the instrument sterilizer) until it becomes slightly pliable, then remove it with a forceps, grasp it with a towel, and squeeze it so as to narrow it laterally to the required extent, and hold it thus until it cools, the cooling being hastened by allowing cold water to run over it. Do not keep it very long in the hot water or it will become so pliable that it flattens into a simple ring, which is not desirable unless a very extensive reshaping is required.

The Findley folding pessary is a hard-rubber pessary of the Smith form which has a soft-rubber insertion at each end, thus permitting the pessary to be narrowed or folded for introduction by simple squeezing as it is introduced, the pessary returning to its original shape when inside. It is convenient when a patient with a small vaginal opening requires a long pessary. Experience with flexible rubber pessaries, however, would indicate eventual hardening and cracking of the flexible ends.

2. Local Bending. When softened in boiling water, the hard-rubber pessary may be modified in shape in various ways to adjust it to special conditions, such as a tender spot to be avoided or a condition requiring increase or diminution of the longitudinal curves.

### Pessary Used Only After Replacement

The pessary is ordinarily not used until the uterus has been brought forward. The pessary is not, as many suppose, used to push the fundus uteri

forward, neither is it used to prop the fundus forward. The pessary has nothing to do directly with this part of the uterus. All the pessary does is to hold the cervix well back in the pelvis, as previously explained, and then in the ordinary state of affairs the fundus must stay forward.

There are **some exceptions** to the rule that a pessary is used only after replacement. In some cases of roomy pelvis, in which it is difficult to raise a movable fundus uteri because it gets out of reach, a pessary may be used somewhat as an extension to the finger, to help raise the fundus within reach of the abdominal fingers.

Again, in a case of movable uterus which cannot be brought forward satisfactorily, if a pessary is introduced and the patient instructed to take the knee-chest posture twice daily, the uterus may be found forward at the next examination a few days later.

## Introduction of the Pessary

Ordinarily the pessary is introduced with the patient in the dorsal posture, immediately after the uterus has been brought forward by bimanual reposition, as already described.

Before introducing a pessary, cleanse it thoroughly in an antiseptic solution and then lubricate it with a suitable ointment. In introducing it into the vaginal opening, if the opening seems rather small, put one finger in the vagina and depress the perineum strongly to make room for the pessary. Remember, in introducing a pessary or speculum or the examining fingers into the vagina, if the opening seems small and more room is desired, the pressure must always be made backward, depressing the perineum. The least pressure forward will pinch the tissues against the pubic arch.

The introduction or placing of the pessary is carried out as follows: Hold the pessary by the anterior end, depress the perineum well with one finger (Fig. 467) and introduce the posterior end with the breadth of the pessary lying in the anteroposterior diameter, which is the largest diameter of the opening. The pessary should be held somewhat obliquely so as not to make painful pressure on the urethra (Fig. 468). When the pessary is about halfway in (Fig. 469), turn it so that the breadth of the pessary lies laterally (Fig. 470), and the posterior arm is directed upward. Then push the pessary along until it will not go any farther. It stops because the posterior end is against the anterior lip of the cervix. Then introduce a finger into the vagina beneath the pessary, catch the posterior bar with the finger tip (Fig. 471), depress it (Fig. 472) and then push the pessary past the cervix. Fig. 465 shows the pessary in place.

After the pessary is in place it is well to have the patient walk about the room a little, to see whether there is any discomfort. If there is any decided pain or marked discomfort, try a smaller size or another form.

## Instructions to Patient With Pessary

The care of a patient having a pessary in place includes the following points:

**Visits to the Physician.**—When the pessary is introduced the patient is directed to return in a week, or before if there is any pain. There is more or

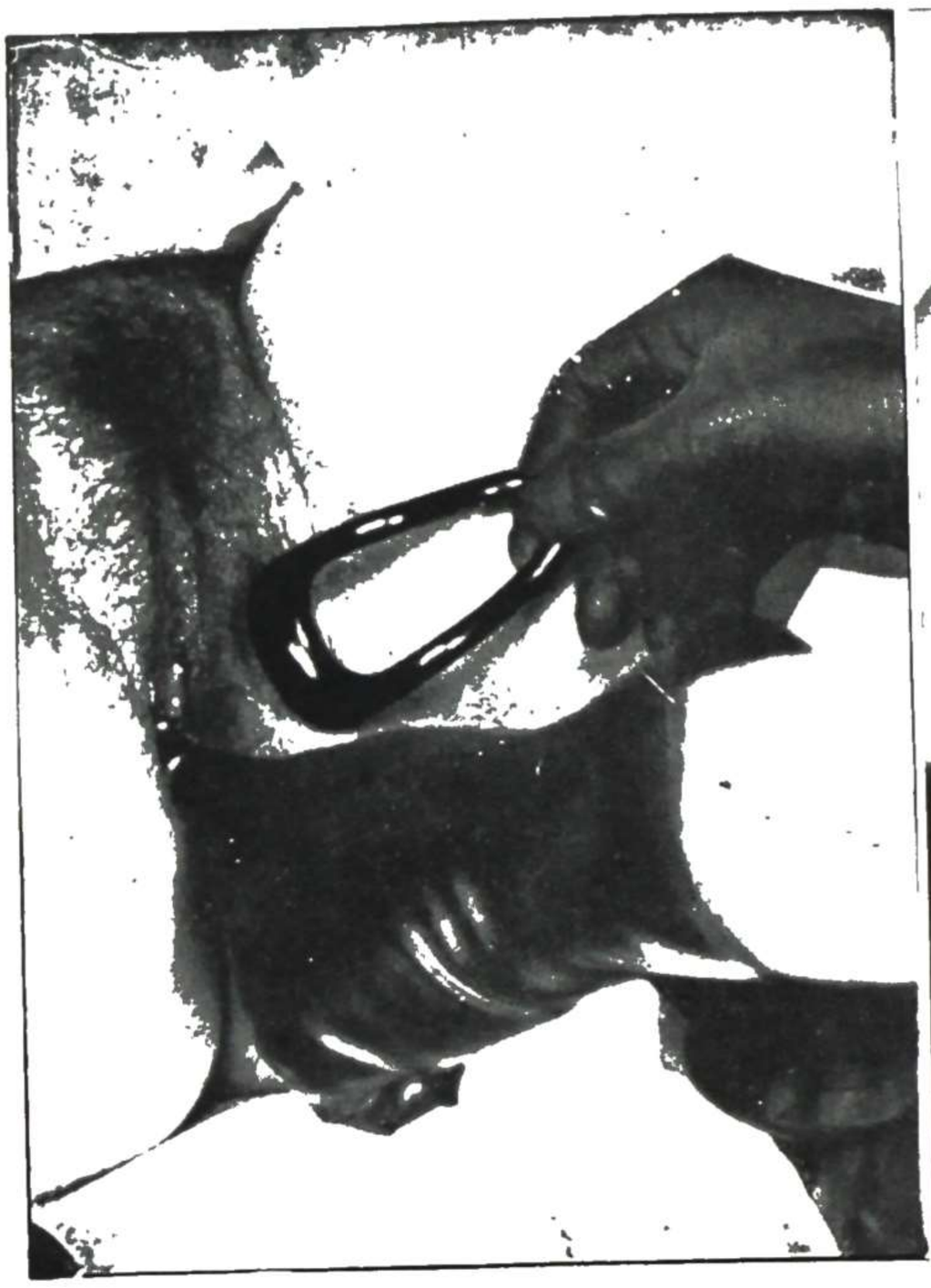


Fig. 467.

Fig. 468.

Fig. 467.—Introducing the pessary. First step—depressing the perineum.

Fig. 468.—Introducing the pessary through the vaginal opening. The width of the pessary lies in the anteroposterior diameter of the opening, which is the long diameter, but is turned somewhat obliquely to avoid the urethra.

Fig. 469.

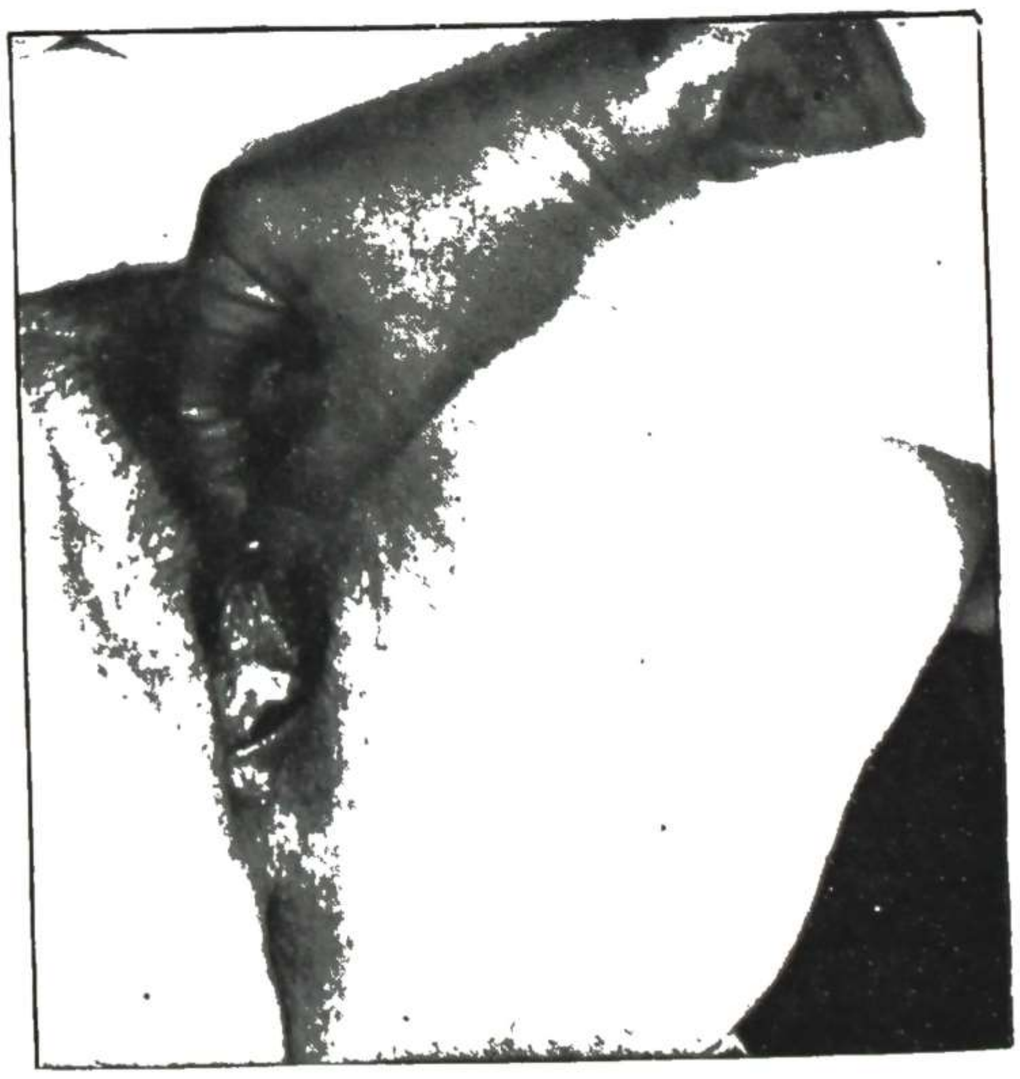


Fig. 470.

Fig. 469.—Introducing the pessary. The pessary is turned so the width lies transversely, for the transverse diameter is the long diameter of the vaginal canal, though not of the vaginal entrance. The pessary is then pushed in until its further progress is stopped by the cervix.

Fig. 470.—Introducing the pessary. The pessary is now well within the vagina and ready for turning.

less uncertainty for the first week or so, as to just how the pelvic structures will accommodate themselves to a pessary. For that reason it is well to instruct the patient to return at once if any unusual pain is felt or if the pessary appears to slip out of position.

When the pessary is found satisfactory at the second and third visits, it is to be assumed that it will prove satisfactory right along, and as long as the patient feels well she need not return, except every month or six weeks as conditions indicate. This return at regular intervals of a few weeks is important in every case (though, exceptionally the intervals may be longer) for three reasons—(a) because the pessary is liable to accumulate concretions that may prove irritating, (b) because long-continued pressure may produce irritation at some point in the posterior vaginal fornix, and (c) because it is important to know whether the pessary is doing the work it is used for, and whether everything is going as it should. Injurious pressure on the wall is indicated by a distinct groove or ridge with infiltration in the affected area. When such is present, the pessary should be left out for a few weeks or a different form used. If necessary to leave the pessary out for a time, the knee-chest posture night and morning is to be employed.

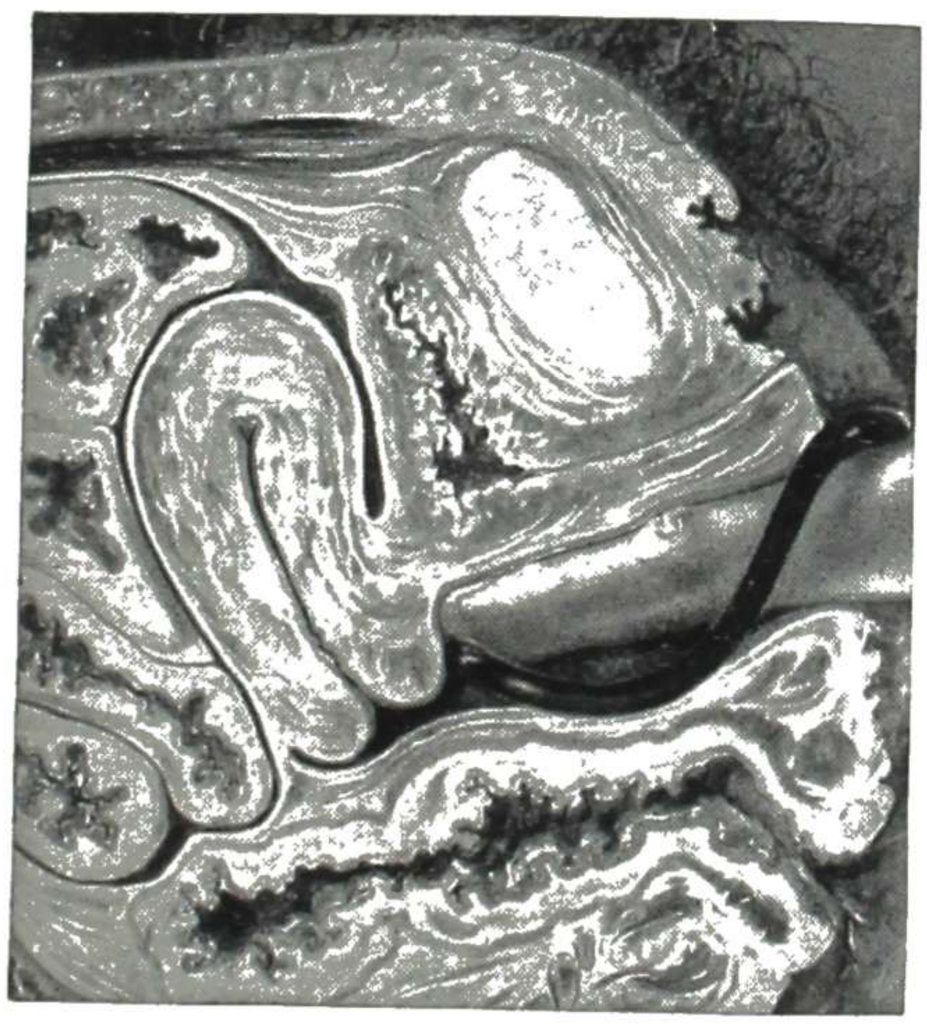


Fig. 471.

Fig. 472.

Fig. 471.—Introducing the pessary. The index finger is passed to the top of the posterior end, which is then depressed until it can be pushed past the cervix, as shown in Fig. 472.

Fig. 472.—Introducing the pessary. The posterior end depressed and being pushed past the cervix. The pessary is shown in place in Fig. 465.

**Douches.**—The patient wearing a pessary should take a vaginal douche every day or every few days. If the discharge is very free, it may be advisable to take two douches daily. If there is practically no discharge, two douches weekly may be sufficient. Ordinarily the patient is directed to take a douche once daily or every other day.

**Knee-Chest Posture.**—The knee-chest posture (Fig. 473), taken by the patient night and morning, is very useful in those cases in which the uterus tends to return to its old position or in which the patient complains of downward pressure in the pelvis. It causes the patient some inconvenience and is not

necessary when the pessary holds the uterus well up and entirely relieves the symptoms. But in many cases of damaged pelvic floor, its use along with the pessary is very advantageous. Incorrect positions are shown in Fig. 474 and 475.

The **activity of the patient** need not be curtailed on account of the pessary. The pessary is meant to hold the uterus in proper position and restore the patient to comparative health, so that she can pursue her usual activities without disturbance. If the patient cannot pursue her usual activities after the pessary has been worn a month or two, the pessary has failed of its purpose, and some more effective method of treatment is indicated.

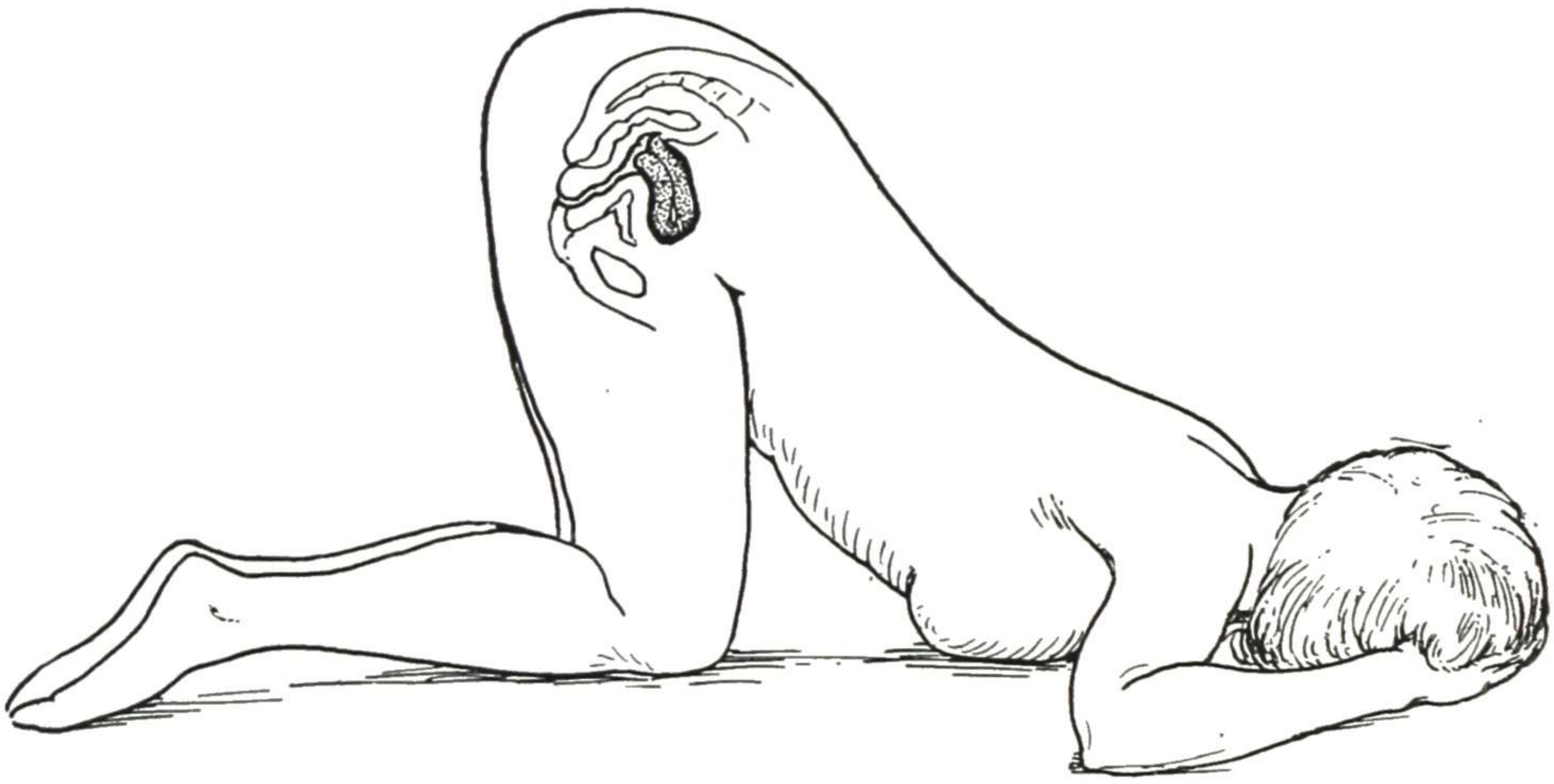


Fig. 473.—The knee-chest posture, showing the pelvic structures in outline and the tendency of the uterus to gravitate forward.

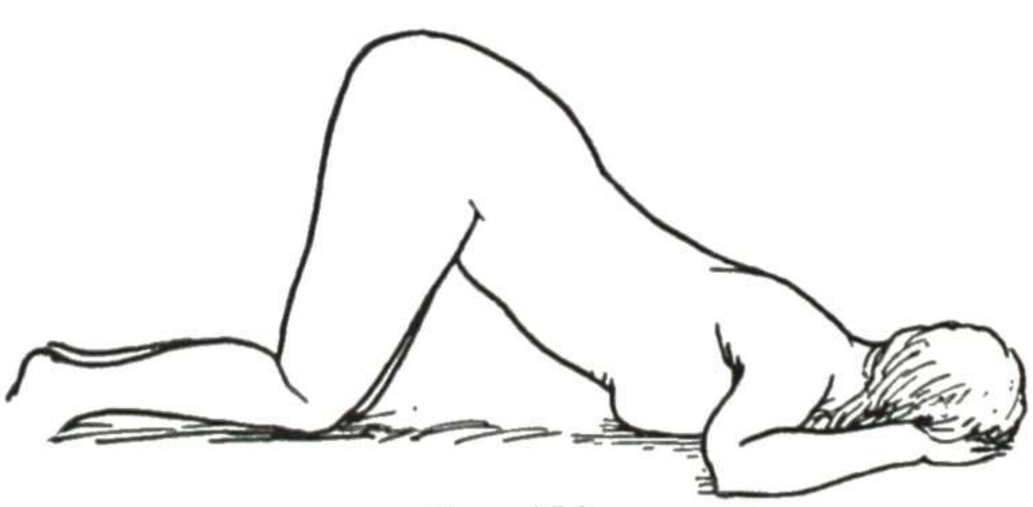


Fig. 474.

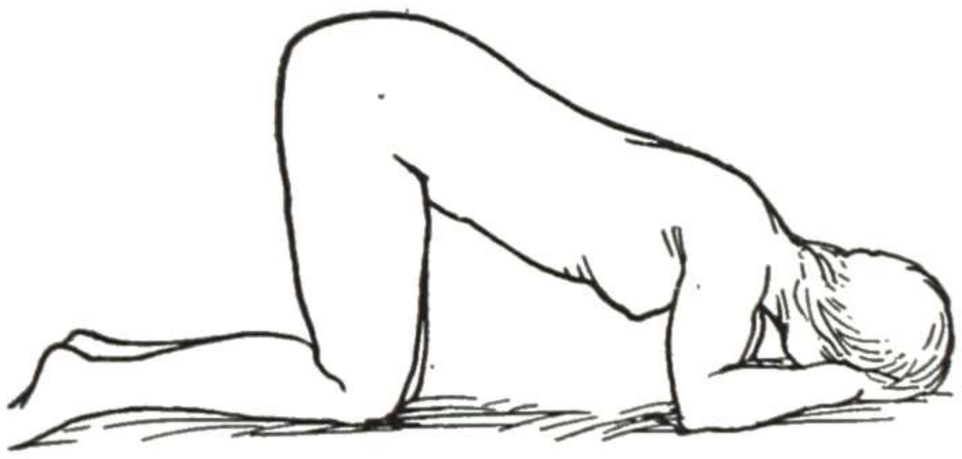


Fig. 475.

Fig. 474.—Incorrect knee-chest posture. The knees are too far back.
Fig. 475.—Incorrect knee-chest posture. The chest is not brought down to the bed.

In some cases, the replacement of the uterus and wearing of the pessary are carried out principally to increase the chance of pregnancy, and in such cases coitus is permissible from the first. It is well to mention this fact to the patient or her husband, as otherwise it may be thought that coitus is not possible while the pessary is in place.

If pregnancy should develop, the pessary should be worn just the same until the uterus has become large enough to prevent its sinking back into the pelvis. The douche should then be taken only warm—not hot, for a hot douche may excite uterine contractions and lead to miscarriage. Usually along in the

third or fourth month the pessary is taken out, as it is of no further use, and if left in longer it might cause irritation and disturbance.

Occasionally a pessary excites pain shortly after pregnancy takes place. If so, it should be removed, the patient being directed to take the knee-chest posture two or three times daily, to keep the fundus uteri forward.

## When to Discard the Pessary

The time at which the pessary may be discarded varies much in different cases, and in each case is more or less a matter of trial. A very good rule is to leave out the pessary after the uterus has remained in position continuously for six months. Direct the patient to return in a few days. If the uterus has returned to its old backward position, replace it and use the pessary again for several months.

If the uterus maintains its forward position without the pessary, direct the patient to return again in two weeks. If then the uterus is in proper position and the patient is feeling well, she may be discharged, being directed to return if symptoms should at any time reappear.

**The Inflated Ring Pessary.**—The action of the inflated ring pessary is principally to raise the uterus and adjacent tissues somewhat and to support them. It has no particular action in holding the cervix well back in the pelvis nor in maintaining the uterus in a proper forward position. Consequently, the field of usefulness of this particular form of pessary is in those cases in which the uterus cannot be got into the forward position or cannot be maintained there. The simple supporting of the uterus, thus overcoming the slight prolapse which is present in most cases of retrodisplacement, often gives the patient much relief, though the retrodisplacement has not been corrected.

## Persistence of Symptoms

The effect just noted of the simple support of the uterus serves to show the importance of the slight PROLAPSE in these cases and serves to show also that the retrodisplacement, as a factor in the causation of the symptoms and as a factor to be considered in the treatment, is not of such exclusive importance as one might infer. The relief that follows operative replacement and permanent correction of the retrodisplacement is due, to a large extent, to the simultaneous elevation of the uterus and adnexa.

When there are troublesome symptoms that are not relieved by the measures previously mentioned, operative treatment is required. The various classes of operative measures are mentioned further along.

In order that the operative treatment may prove satisfactory, the patient should be put through a most careful and thorough pelvic examination, that the exact cause of the persistence of the displacement may be accurately determined, and the form of operative treatment selected accordingly.

In a large proportion of the patients who have borne children, there will be found a relaxed condition of the pelvic floor and of the broad ligaments and sacrouterine ligaments. It is evident that in such a case the simple bringing of the fundus uteri forward and fastening it there is only a small part of the necessary work. The pelvic floor must be strengthened, and some means

must also be used to lift up the uterus and thus overcome the prolapse due to the relaxation of all the supports of the organ. In many of these cases the uterus is large and heavy from subinvolution or other pathologic process.

## WHEN THE UTERUS IS ADHERENT

When the fundus uteri cannot be brought forward by the methods previously described and no tumor that is responsible for the fixation can be felt, it is assumed that the uterus is "adherent," i.e., held in its abnormal position by the products of pelvic inflammation, affecting the tube or the peritoneum or the connective tissue. The fixation may be so close that the fundus cannot be moved appreciably, or it may, on the other hand, permit considerable movement in various directions, but not enough to allow the fundus uteri to be brought entirely forward.

For the purposes of treatment it is convenient to divide these cases of adherent retrodisplacement into two classes: (1) those in which the inflammation is acute or subacute, and (2) those in which it is chronic or has practically disappeared, leaving only the sequelae.

**Inflammation Acute.**—These cases present, in addition to the retrodisplacement of the uterus, the usual symptoms and signs of acute or subacute pelvic inflammation. The symptoms presented by the patient are due principally to the inflammation, and the treatment is at first directed wholly to that.

When the inflammation subsides, the troublesome symptoms may disappear to such an extent that no treatment for the retrodisplacement is required. It is the relief of pain and discomfort that the patient seeks and when this can be secured simply by the relief of the inflammatory trouble, it is not necessary to disturb the uterus. In fact, as a rule, anything in that direction short of removal of the inflammatory focus will tend to stir up again the troublesome symptoms.

Operation is required, however, in a majority of these cases sooner or later, either because of a persisting focus of inflammation, with chronic invalidism, or because of the sinking and dragging of the heavy retrodisplaced uterus on the damaged and sensitive adnexa or adjacent structures. In the case of a partially movable uterus, the wearing of a pessary (for example, the inflated ring pessary) that holds the heavy uterus up will sometimes give considerable relief. Such a pessary prevents the constant dragging of the uterus on its supports and on the sensitive adnexa and in that way gives relief, though there is no correction of the retrodisplacement.

**Chronic Inflammation.**—In the chronic cases, fixation of the retrodisplaced uterus is usually due to inflammation beginning in a fallopian tube; consequently it is frequently accompanied by salpingitis and an inflammatory exudate involving one or both tubal regions. There may be a collection of pus in a tube or in the mass of exudate about the tube, or there may be only a mass of inflammatory exudate without pus, or there may be only adhesions. If the previous inflammation was in the connective tissue, there will be infiltration remaining from the pelvic cellulitis (parametritis). In either case, the uterus is found in an abnormal position and cannot be replaced by the methods previously described.

In these cases, considerable relief may be given by measures that tend to allay the accompanying pelvic inflammation, that stretch the adhesions, and that support the uterus to some extent. However, such complications giving active trouble usually require operation.

In cases with only old adhesions holding the uterus, manual stretching of the adhesions by repeated slow pressure to raise the fundus may eventually be effective in replacement. When a more evenly distributed gradual pressure is advisable, as in cases of pregnancy with retrodisplacement, a long bag containing mercury may be used with the knee-chest posture. The empty end of the bag is slipped into the vaginal vault and then the mercury allowed to fill it, the pressure to be maintained over a considerable period depending on conditions and the patient's reaction.

## Operative Treatment

The objects of the operative treatment are two: first, the removal of products of inflammation and of damaged organs as far as necessary and, second, the lifting and bringing forward of the body of the uterus and fastening it. This requires major operative work.

Fig. 4 shows the course of the round ligaments, the shortening of which in various ways constitutes the usual special step in retrodisplacement operations. At first the shortening of the ligaments was carried out extraperitoneally by opening the inguinal canal on each side, the first successful operation being performed by Alexander of Liverpool in 1881.

Later, when the advances in antiseptic and aseptic technique reduced the high mortality of intraperitoneal work, the ligament shortening was carried out by intraperitoneal operation. This enabled coincident surgical treatment of the associated inflammatory lesions which rendered so many retrodisplacement cases not amenable to extraperitoneal shortening.

The type of retrodisplacement due to imperfect development of the uterus from the infantile position may not cause any trouble requiring treatment. But if there should be associated symptoms and correction be attempted, permanent correction is likely to be found difficult because of the general tissue fixation and the poor development of the structures used to maintain correction. In these cases, endocrine treatment to promote further development is indicated in addition to any mechanical means employed.

The operative procedures used for intraperitoneal correction of retrodisplacement are three main types: those which shorten the round ligaments and change the direction of the pull by fastening the ligament to the posterior part of the uterus; those which shorten the ligaments by fixing them in the anterior abdominal wall; and those which fix the fundus to the anterior wall directly. This latter should only be used in cases where pregnancy is eliminated. In the first group the Baldy-Webster is the original and there are numerous modifications; in the second group the original Gilliam and the Crossen modification are the ones most frequently used, and the Olshausen and Kelly are the ones used for ventral fixation. The accompanying table shows the types of procedures used by Dannreuther in his series.

With any of these procedures the uterosacral ligaments, if stretched, should be tightened and the pelvic floor repaired if relaxed. Reefing of the

ligaments is not satisfactory in cases where there is a marked displacement of the uterus. Details of the operative techniques and selection of the type of procedure to use are given in detail in *Operative Gynecology*.

| TYPE OF PROCEDURE | NUMBER OF CASES |
|---|---|
| Baldy-Webster suspension | 80 |
| Crossen-Gilliam | 160 |
| Ventrifixation | 28 |
| Mann plication of round ligaments | 12 |
| Olshausen suspension | 5 |
| Coffey plication of round and broad ligaments | 1 |
| Total | 286 |

Exclusive of operations for displacements associated with tumors.
(From Dannreuther.)

## PROLAPSE OF UTERUS

Prolapse of the uterus is that condition in which the uterus sinks decidedly below its normal level in the pelvis and appears at or near the vaginal opening. It is known also as "procidentia," and is frequently referred to by patients as "falling of the womb."

### Etiology

The largest factor in the origin of uterine prolapse is the **great stretching** of the birth canal and adjacent tissues incidental to the passage of the child in parturition. The component structures of the pelvic floor have already been described and illustrated, and the supravaginal supporting diaphragm of muscular and fibrous structures is shown in Figs. 476 and 477. Subinvolution of these stretched tissues is an important item in their remaining loose and nonsupportive. Open tears may contribute some, but not much when repaired at the time.

**Retrodisplacement** of the uterus is another factor contributing to prolapse. Retrodisplacement disarranges the positional combination which is an important aid in the supporting mechanism. When the uterus is forward in normal position, intra-abdominal pressure tends to push it forward more and to strengthen the support, as indicated in Fig. 476. When the uterus is in retrodisplacement, its axis is directed toward the pelvic outlet, and the intra-abdominal pressure tends to push it down in that direction, as shown in Fig. 478. The continuance of this downward pressure, day by day, gradually stretches the supports, and the uterus and attached structures are pushed lower and lower, as shown in Fig. 479. Retrodisplacement not only disarranges the normal positional combination support but also places the uterus with the small end directed toward the outlet so that it becomes a wedge which will gradually dilate the lower part of the birth canal, even though it may have been repaired.

Prevention of prolapse consists of (a) repairing tears at delivery, (b) aiding normal involution by every means, and (c) correcting retrodisplacement if present.

A special type of case due to childbirth damage is that in which the prolapse comes on after the menopause, long past the time when trouble from birth injury is expected. This paradoxical happening is explained by the

fact that after the menopause the atrophy of muscular tissue may so interfere with the normal tone and fullness as to lead to the development of prolapse at that late age, the previous relaxation of the pelvic floor not having been sufficient in itself to cause it.

A third factor which appears in the origin of prolapse in some cases is **imperfect development** of the pelvic structures. In infancy the uterus extends upward in the direction of the vaginal axis and with the cervix in line. As development continues, the whole uterus comes forward, with the corpus more

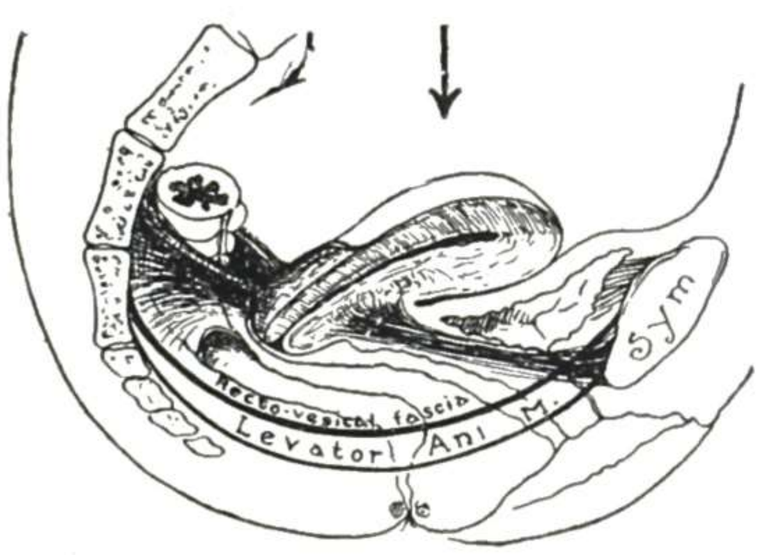



Fig. 476.

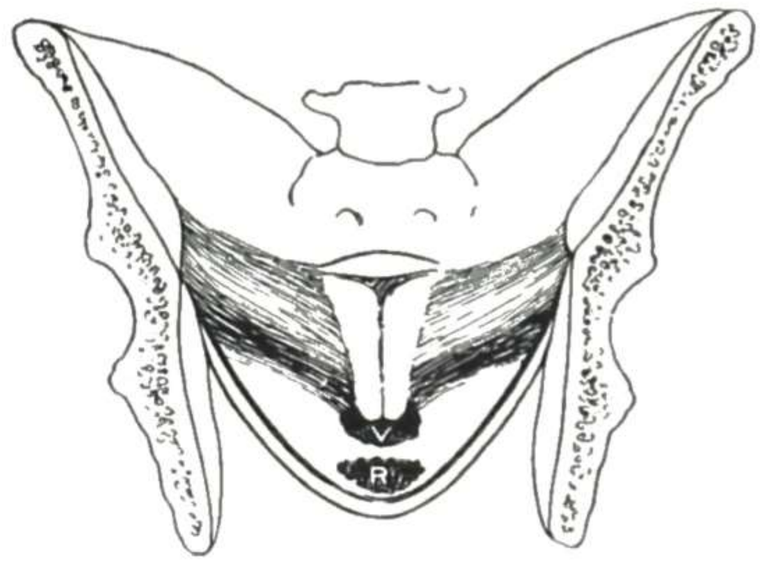



Fig. 477.

Fig. 476.—The upper diaphragm and the lower diaphragm of the pelvis, showing the sling action anteroposteriorly. In the upper diaphragm, the anteroposterior sling is formed by the uterosacral ligaments posteriorly and the uteropubic fascial plane anteriorly. In the lower diaphragm, the anteroposterior sling, indicated here diagrammatically, is formed by the levator ani muscles and surrounding fasciae, with supplementary muscles in front and behind.

This illustration indicates also the deflecting action of the corpus uteri, which receives the intra-abdominal pressure upon its posterior surface and distributes it toward the margins of the supporting diaphragm.

Fig. 477.—The upper diaphragm and the lower diaphragm of the pelvis, showing the sling action transversely. In the upper diaphragm the transverse sling is formed by the broad ligaments, and particularly by the strong supporting structures forming the lower portion of the broad ligaments. In the lower diaphragm, the transverse sling is formed by the levator ani muscles and surrounding fasciae, shown here diagrammatically.

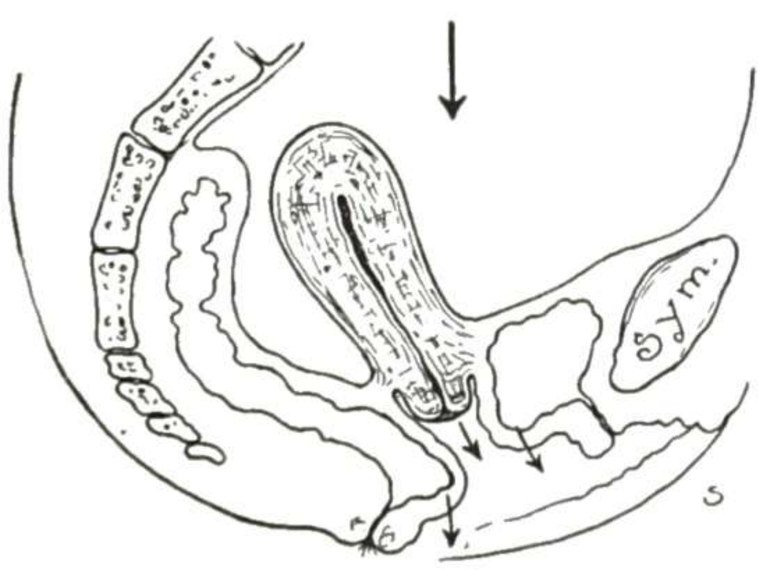



Fig. 478.

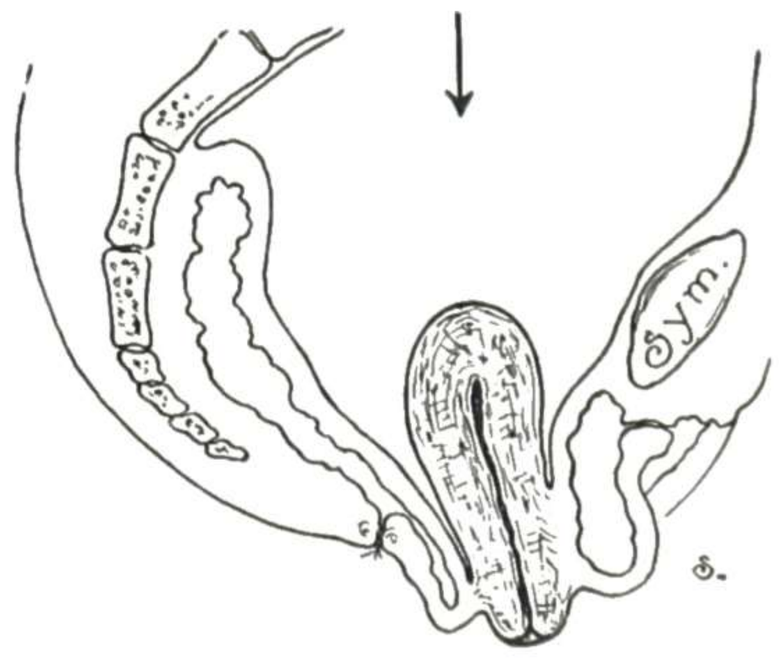



Fig. 479.

Fig. 478.—Disarrangement of the deflecting mechanism by retrodisplacement of the corpus uteri, accompanied by relaxation of the pelvic floor. In the presence of such conditions, the development of prolapse is ordinarily only a question of time, for there is no adequate resistance to intra-abdominal pressure.

Fig. 479.—Prolapse of uterus and bladder developed. The intra-abdominal pressure tends to push the structures farther and farther out of the pelvis.

so. When development is imperfect, the infantile position may persist. As a cause of prolapse there are two items in this developmental defect. One is the retrodisplacement of the uterus, favoring prolapse as explained above, and the other is the tissue weakness characteristic of poorly developed structures. Lacking the tone and supporting strength of well-developed tissues, they gradually give way under the stress of adult activity and permit the uterus

to prolapse. Remembering these facts, one will not be so astonished at encountering uterine prolapse in the nullipara or even in the virgin. A point to be kept in mind in handling this type of case is that the pelvic tissues lack the normal strength and resistance, and when repaired in the usual way are very likely to stretch again with return of the prolapse. Consequently, care should be taken to employ measures which will give extra guard against recurrence.

Another point is that this defect may be associated with more extensive defective development, including spina bifida occulta (Fig. 480). Laws has called attention to the role, often overlooked, of occult spina bifida and its accompanying weaknesses as a factor in bladder dysfunctions, uterine prolapse in nullipara, sphincter weakness, and regional nerve disturbances. He states that "the symptoms may be absent till adult life and then be considered as due entirely to injuries of childbirth," and again, "the vaginal plastic surgeon should think of occult spina bifida in terms of innervation of the skin, muscles, and connective tissue of the pelvic floor." Jacoby has recently reviewed the literature on this subject.

Fig. 480.—Showing infant with spina bifida tumor and prolapsed cervix. (From Torpin: Am. J. Obst. & Gynec., May, 1942.)

## Pathology

In considering prolapse, it must be kept in mind that the uterus normally has considerable up and down movement. Respiration causes movement of the uterus, which is noticeable during the speculum examination, especially with the patient in the Sims posture.

There may be considerable exaggeration of the usual downward displacement without any symptoms, and that could hardly be called pathologic. The condition is not called prolapse unless there is marked downward displacement, and this is almost always accompanied with backward displacement of the uterus.

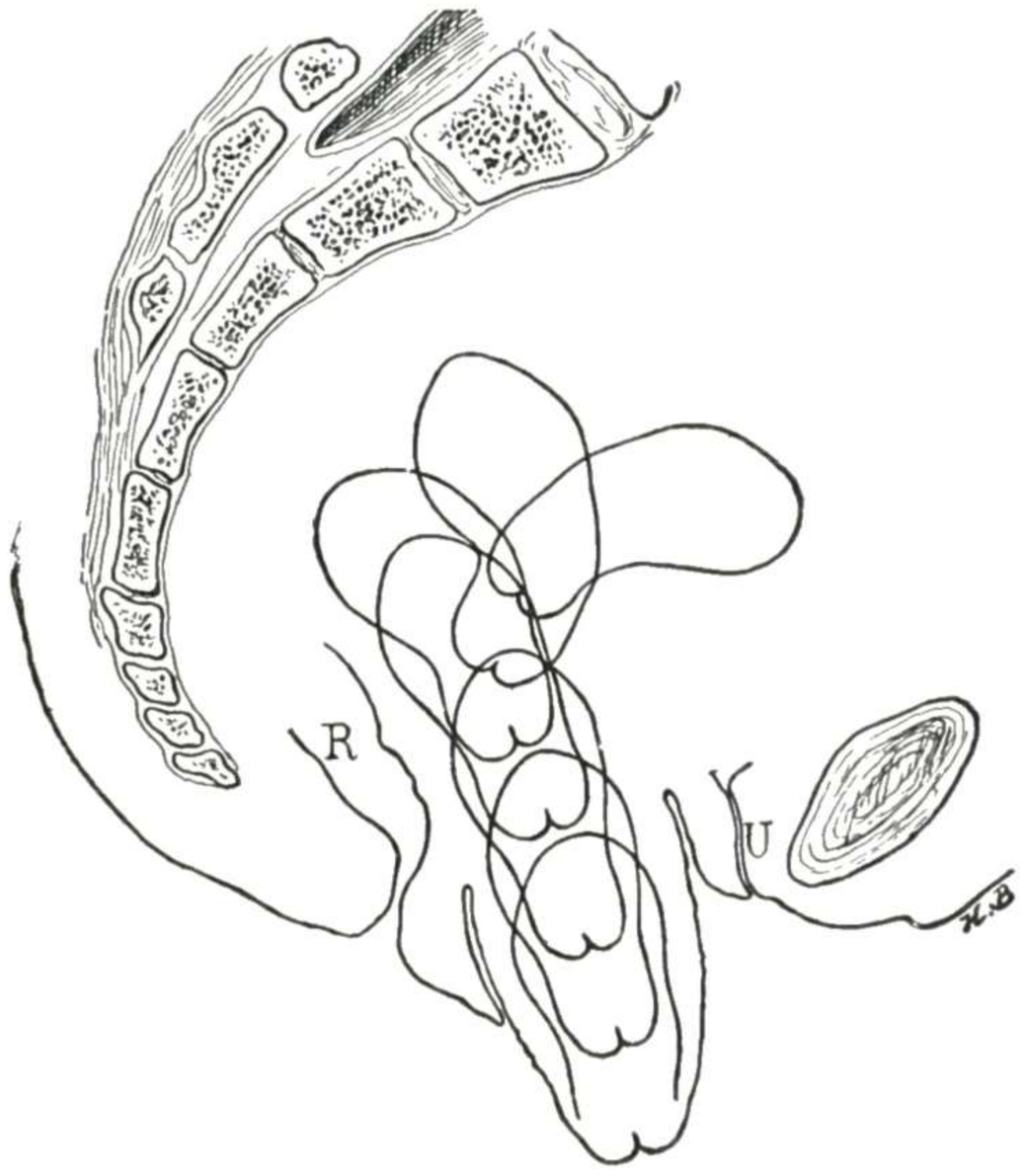



Fig. 481.—Prolapse of the uterus, showing the various steps in the process. (From Kelly: Operative Gynecology.)

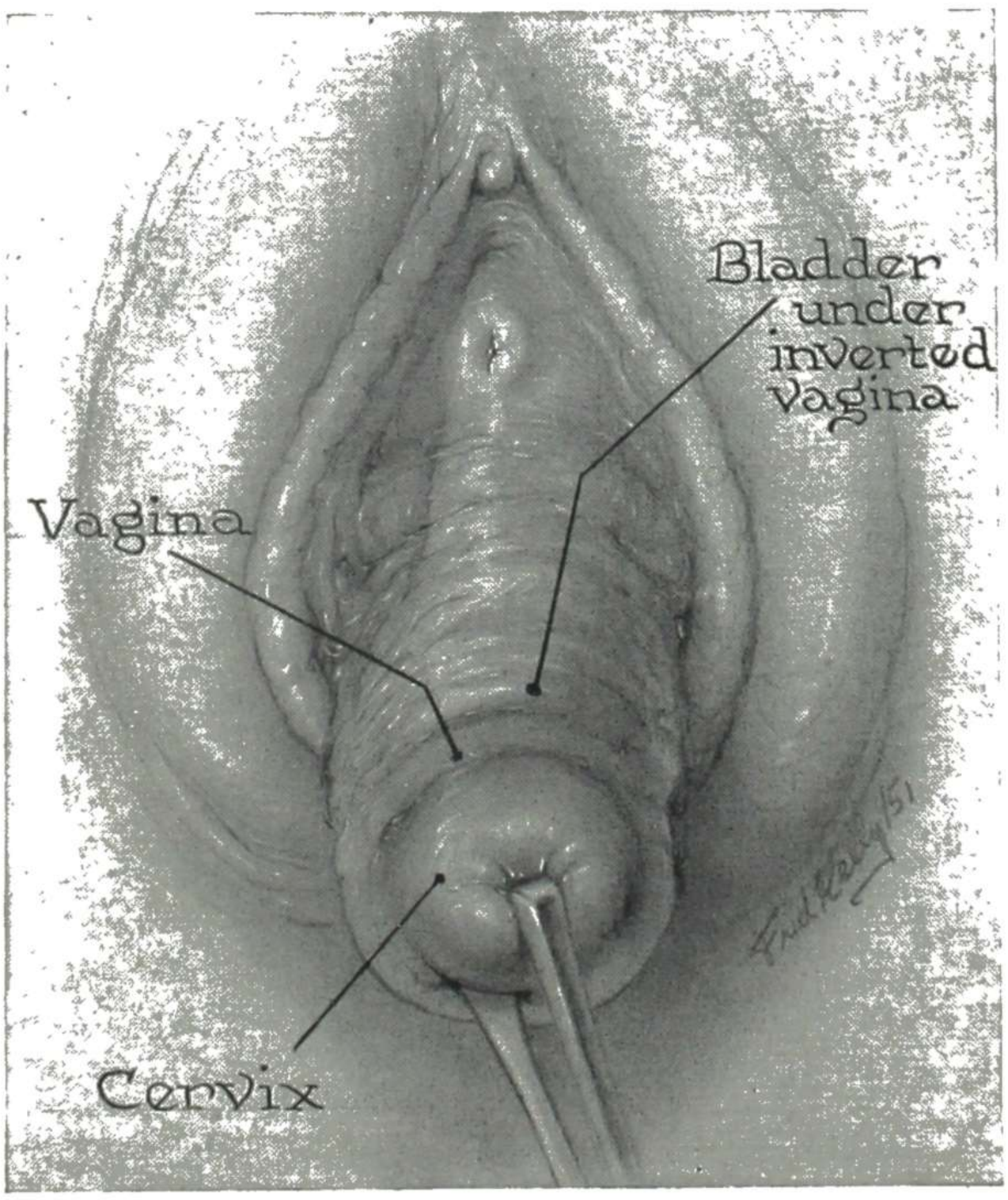



Fig. 482.—Prolapse of the uterus. As the uterus descends, the vagina is inverted, and the bladder behind the anterior vaginal wall is dragged down with the uterus.

Prolapse is a progressive process, as indicated in Fig. 481. If the cervix is just appearing at the vaginal orifice, the condition is designated as prolapse of the FIRST DEGREE. If the cervix protrudes from the vaginal orifice a considerable distance but not more than half of the uterus is outside, it is called the SECOND DEGREE. If the larger part of the uterus lies outside the pelvis, it is called the THIRD DEGREE, or complete prolapse (Fig. 482).

In the usual case of prolapse, the uterus is found retrodisplaced and low in the pelvis, the pelvic floor is found lacerated and there is present more or less endometritis with discharge. The vaginal walls also are relaxed and thrown into folds by the position of the uterus, and may be found projecting outward at the vaginal opening, forming an anterior or posterior colpocele.

The projecting vaginal wall precedes the cervix on its downward journey. If the bladder follows the projecting vaginal wall, as it frequently does in severe prolapse, the condition is known as cystocele. In some cases of severe prolapse, the anterior rectal wall follows the projecting posterior vaginal wall, forming rectocele.

The cervix in many cases has been severely lacerated and is chronically inflamed and is the seat of cystic disease and of irritating discharge. In severe prolapse, ulcers often appear on the cervix or vaginal walls, being due to irritation of the clothing and to interference with the circulation of the prolapsed portion. The interference with the circulation may be due to two factors—constriction of the prolapsed portion by the vaginal opening and stretching of the uterine blood vessels with consequent diminution in their caliber. All the ligaments of the uterus are stretched until they give practically no support, and the lower pelvis is occupied by the intestines instead of by the pelvic organs, which are prolapsed outside. Sometimes coils of intestines may lie in the cul-de-sac behind the uterus, outside the vaginal opening.

## Symptoms

The symptoms of prolapse of the uterus are dragging pains in the back and pelvis, worse when walking, some protrusion at the vulva, and sometimes difficulty in urinating. In some cases the protruding bladder must be pushed back into the pelvis before the patient can urinate. Even then there is more or less residual urine which is likely to lead to cystitis. Some patients complain of partial incontinence of urine when coughing or laughing. In exceptional cases, it is this partial incontinence that brings the patient to a physician, and he must recognize the cause or he will fail in the treatment.

Examination reveals as follows in the different degrees of prolapse:

**First Degree.**—The pelvic floor is relaxed and there is more or less protrusion of the vaginal walls. The uterus is usually retroverted and the cervix is low in the pelvis and far forward, near or at the vaginal opening. Coughing or straining causes the cervix to sink lower and the vaginal walls to protrude more.

If there is still doubt as to whether the uterus sinks low enough to be called prolapse or to cause symptoms, the patient may be examined in the standing posture, but this is rarely necessary.

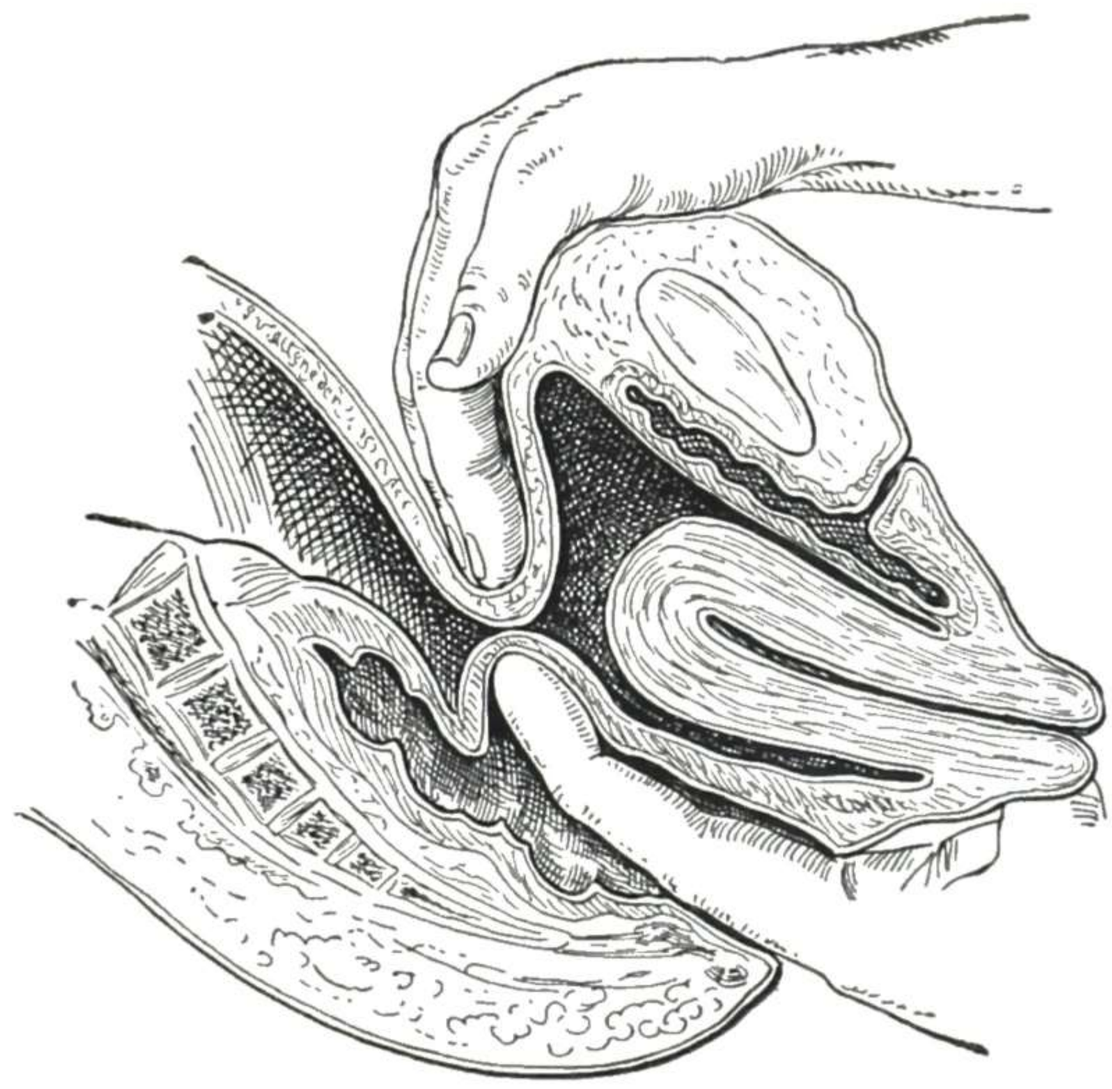


Fig. 483.—Determining the position of the body of the uterus by rectoabdominal palpation, in the differential diagnosis of prolapse from elongation of the cervix. (From Ashton: Practice of Gynecology.)

Fig. 484.—Prolapse of uterus—third degree, the entire uterus lying outside. (From Hirst: Diseases of Women.)

**Second Degree.**—The cervix is found protruding at the vulva and may be made to protrude more by bearing down. There is also protrusion of the vaginal walls and sometimes of the bladder. Rectoabdominal examination (Fig. 483) shows the fundus uteri low in the pelvis.

The cervix and vaginal walls may return into the pelvis when the patient is lying down. There is more or less erosion about the cervix and sometimes ulceration.

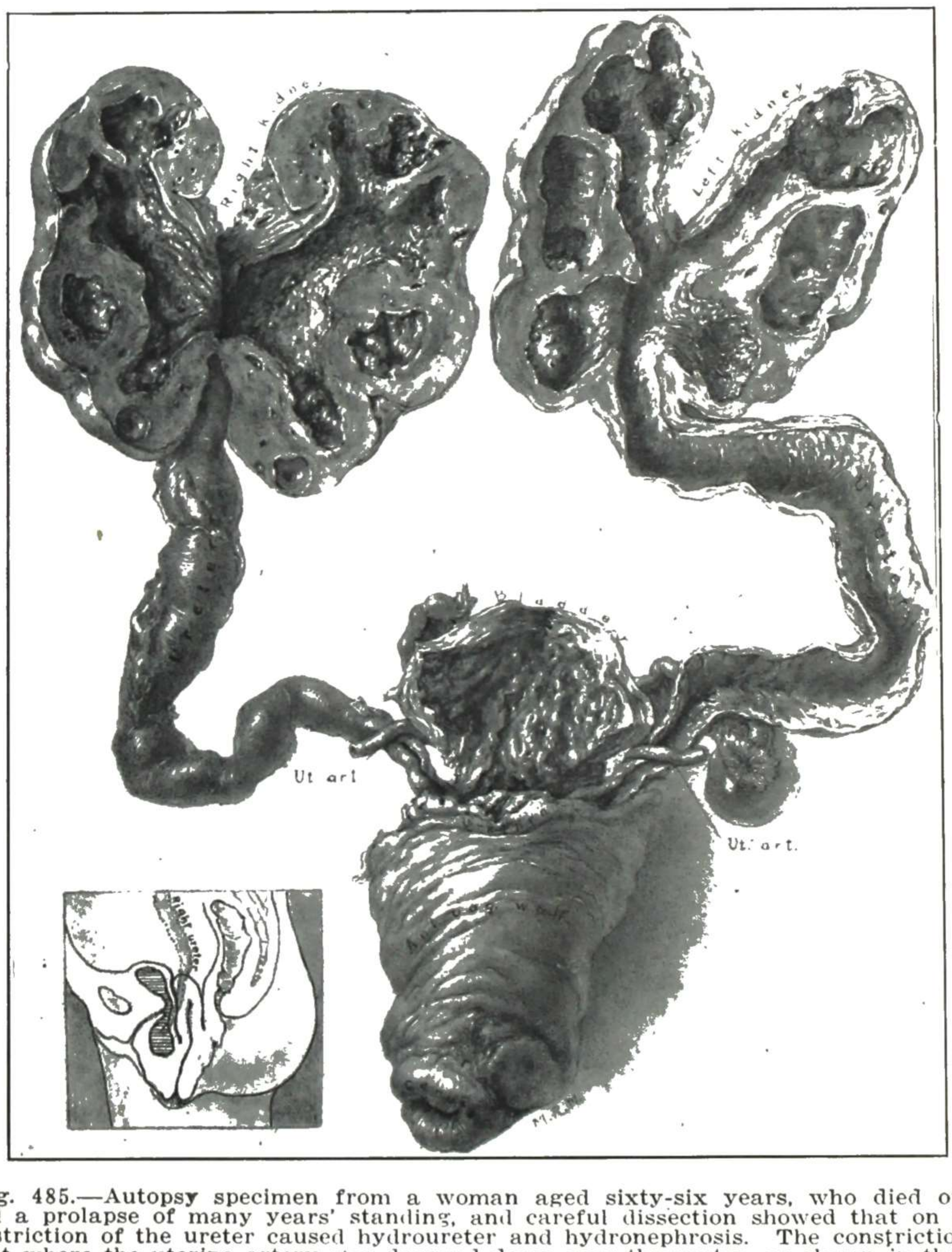



Fig. 485.—Autopsy specimen from a woman aged sixty-six years, who died of uremia. She had a prolapse of many years' standing, and careful dissection showed that on each side the constriction of the ureter caused hydroureter and hydronephrosis. The constriction was at the point where the uterine artery was dragged down over the ureter, as shown in the illustration. (From Wallingford: Am. J. Obst. & Gynec.)

**Third Degree.**—There is a mass nearly as large as the fist protruding from the vulva and lying between the thighs (Fig. 484). It is covered by the turned-out vaginal wall which, from friction of the clothing, has become dry and hard, resembling ordinary epidermis. At the lower part of the mass is the cervix, which is represented by a hard nodule with an opening in the center and more or less erosion or ulceration about it. The appearance of the cervix depends upon how much laceration of the cervix there has been.

Grasping the mass and palpating it to determine its contents, there is found a hard elongated mass—extending upward from the cervix. Usually the size and shape of the uterus can be accurately made out. From the cervix there is more or less discharge which may be clear and glairy, resembling the white of an egg, or it may be mucopurulent.

If the bladder has prolapsed also, it is felt as a thick cushion of soft tissue in front of the hard uterus. If there is a question as to the presence of bladder in the mass, a sound may be introduced to determine that point, but it is better to avoid sounding the bladder unless there is strong reason for doing so, as it may introduce infection. The vaginal wall often presents spots of ulceration, especially about the cervix, and there may be much irritation over the whole mass and about the external genitals.

The residual urine and recurring attacks of cystitis and the dragging and narrowing and kinking of the ureters from the gradually increasing prolapse, eventually cause damage to the upper urinary tract.

The duration of the prolapse is a factor in the extent of damage—that is, all the time that a prolapse of considerable extent is allowed to continue without adequate support there is increasing damage to the ureters and kidneys. The progress of such condition is so gradual that it may escape notice until brought to attention by infection in the damaged tract. In Fig. 485 is shown an autopsy specimen from a patient who came into the hospital with long-standing prolapse and uremia.

Investigators have listed various factors in such ureteral narrowing, such as, stretching and narrowing of the intramural portion of the ureter in the bladder prolapse, compression of the ureters outside the bladder by the constricting ring of the pelvic floor through which the mass prolapses, and constriction of the ureters by the overlying uterine arteries being pulled down over them. In the case shown in Fig. 485 the pressure of the dragged-down uterine arteries was apparently the particular factor in the ureteral stenosis, which led to the extensive double hydroureter and hydronephrosis. Infection entering the damaged tract completed the destruction of the kidneys.

## Differential Diagnosis

Any swelling in the vagina or mass projecting outside may be mistaken for uterine prolapse, such as cystocele or rectocele or pedicled myoma, coming outside or still inside the vagina, or enlarged cervix or inverted uterus—all of which are shown in Figs. 486 to 491. Being rather unusual, the following conditions may cause an error in diagnosis:

1. **Hypertrophy of Cervix.**—In this condition (Fig. 490) the body of the uterus is felt nearly at its normal height in the pelvis. Also the depth of the uterus is increased, the amount of increase depending on the length of the hypertrophied cervix. Furthermore, the posterior vaginal wall is usually not pushed down, as it would be by a prolapse of the uterus, and the bladder is usually not involved in the projecting mass.

2. **Tumor or Cyst of Vagina.**—By careful digital examination, the cervix may be felt above the projecting mass and near its normal position.

3. **Tumors of Uterus, Projecting From Cervix.**—Such tumors are, of course, more or less pediculated and almost invariably they are fibroids. In

such cases, there is felt near the vaginal entrance a mass, which may be hard or soft (Figs. 488 and 489). If the mass is sloughing, part of it will be soft. No cervical opening can be felt in the mass and, by exploring higher around the mass, the cervical ring can be felt at the upper part of the vagina. If the tumor is sloughing, there is usually bleeding and a very offensive discharge. Furthermore, by bimanual examination, the body of the uterus may be felt near its normal position.

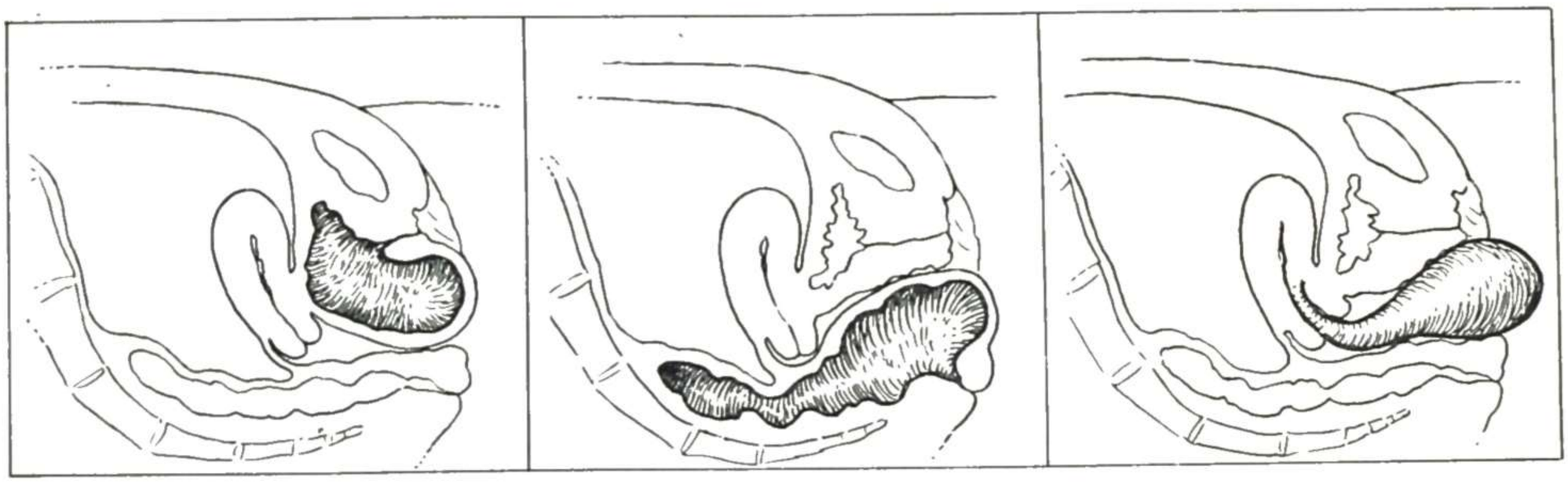


Fig. 486. Fig. 487. Fig. 488.

Figs. 486 to 488.—Differential diagnosis of prolapse of uterus. Other conditions that cause a projecting mass at the vaginal outlet, and which may be mistaken for uterine prolapse. Fig. 486, Cystocele. Fig. 487, Rectocele. Fig. 488, Projecting pediculated myoma.

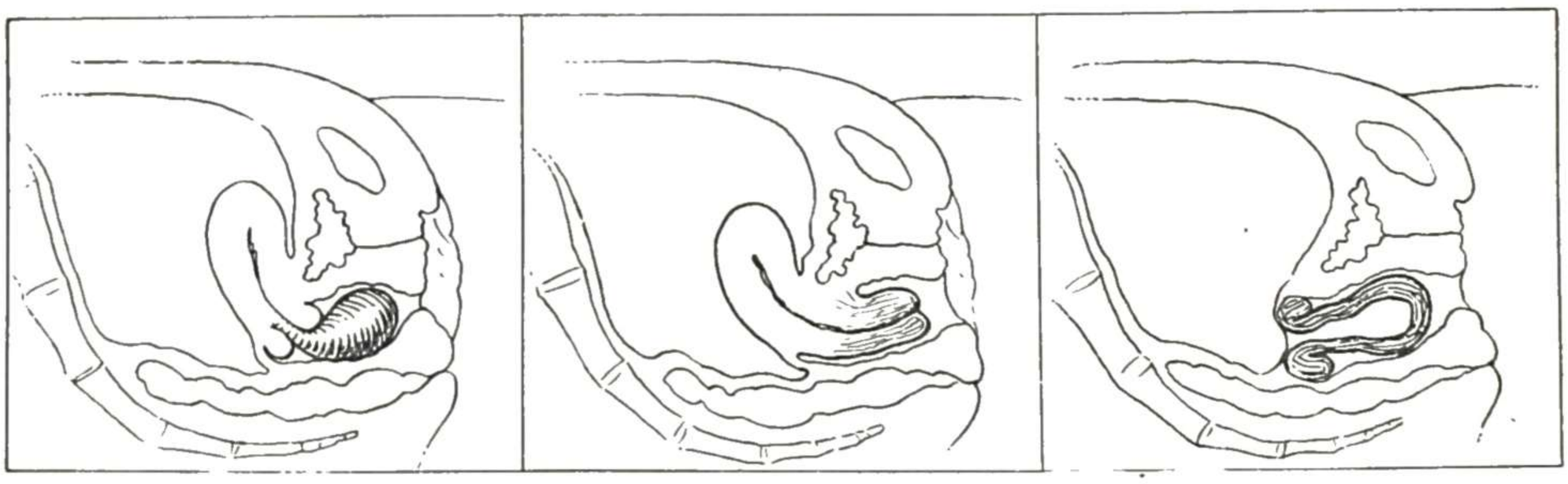


Fig. 489. Fig. 490. Fig. 491.

Figs. 489 to 491.—Differential diagnosis of prolapse of uterus. Other conditions that cause a mass low in the vagina. Fig. 489, Pediculated myoma from uterus. Fig. 490, Elongated cervix uteri. Fig. 491, Inverted uterus.

4. **Inversion of Uterus.**—In a case of inversion, a large mass, apparently a tumor, is felt in the vagina (Figs. 491 and 502). The vaginal walls can be felt extending up past the mass. If it is sloughing, there will be bleeding and a foul discharge. Furthermore, the body of the uterus is not felt where it ought to be (Fig. 503, *A*). It is apparently nowhere in the pelvis, and by deep bimanual examination a depression may be felt with the abdominal hand at the upper end of the vagina—a cup-shaped depression with a hard margin, where the body of the uterus should be (Fig. 503, *B*). Inversion differs from a tumor in that a sound cannot be introduced far into the uterus, for the cavity is more or less obliterated.

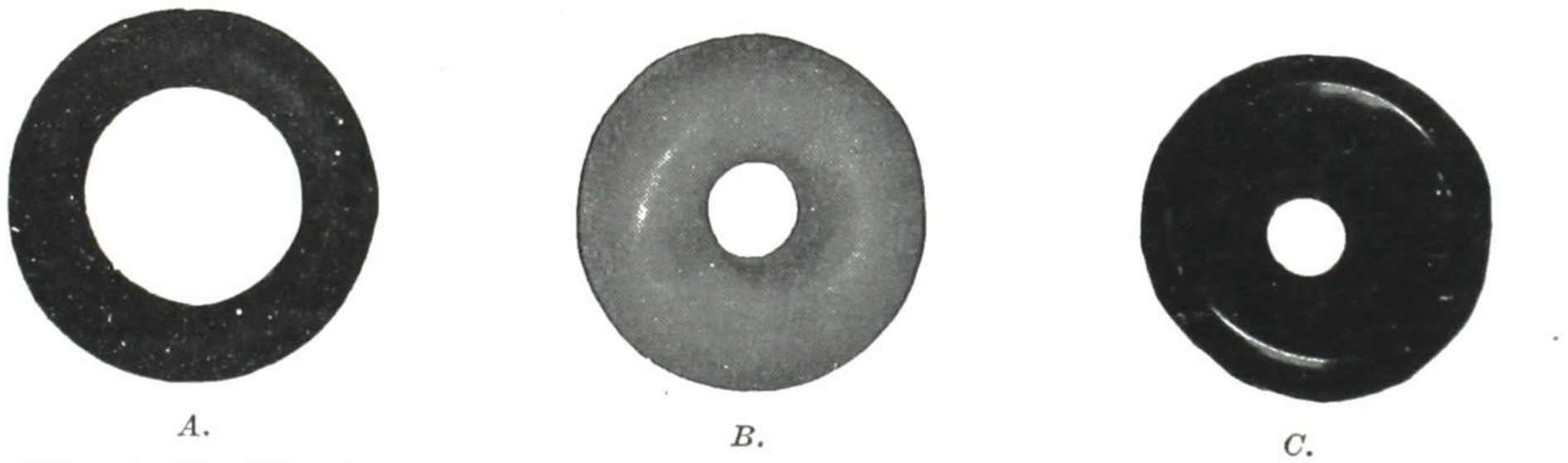
## Treatment

The means of treatment may be divided into two classes—palliative and curative.

## Palliative Measures

The palliative measures after reduction of mass and treatment of irritation or ulceration are (1) pessary support, to keep the uterus and bladder within the pelvis, and (2) tampons and other palliative measures for conditions not suitable for pessary treatment.

In extensive prolapse there are frequently ulcers of the vaginal wall which should be healed before a pessary is used. This is accomplished by the administration of estrogenic creams and tampons. In some cases a smooth pessary such as the Gellhorn can be used advantageously with the cream. It is surprising how rapidly the ulcers will clear up under this regime.



*A.* *B.* *C.*

Fig. 492.—*A*, Flexible ring pessary. *B*, Inflated ring pessary. *C*, Hard rubber disk pessary.

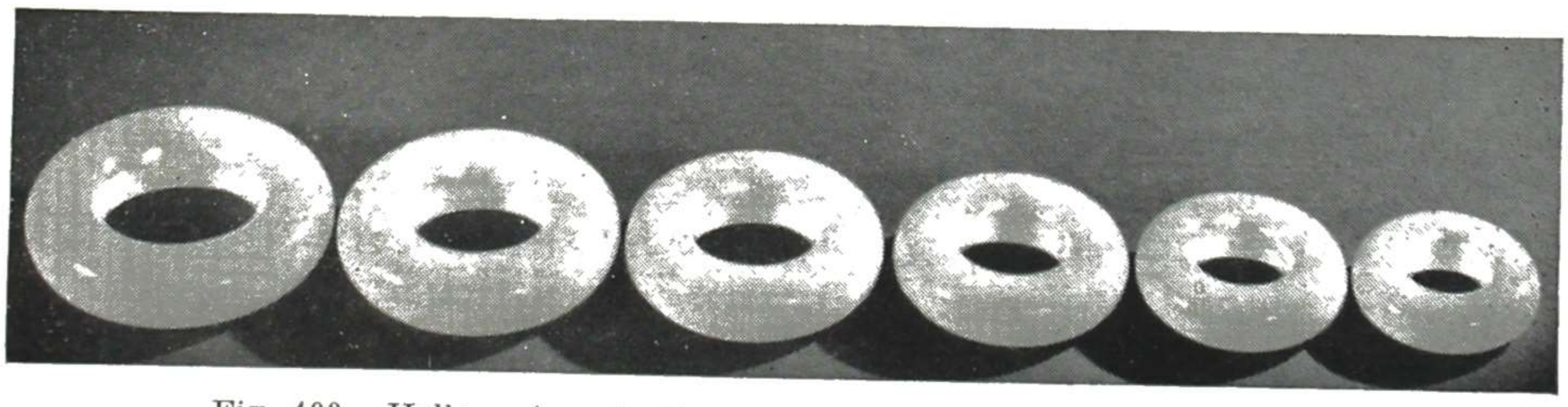


Fig. 493.—Hollow ring plastic pessaries. (Courtesy A. S. Aloe Co.)

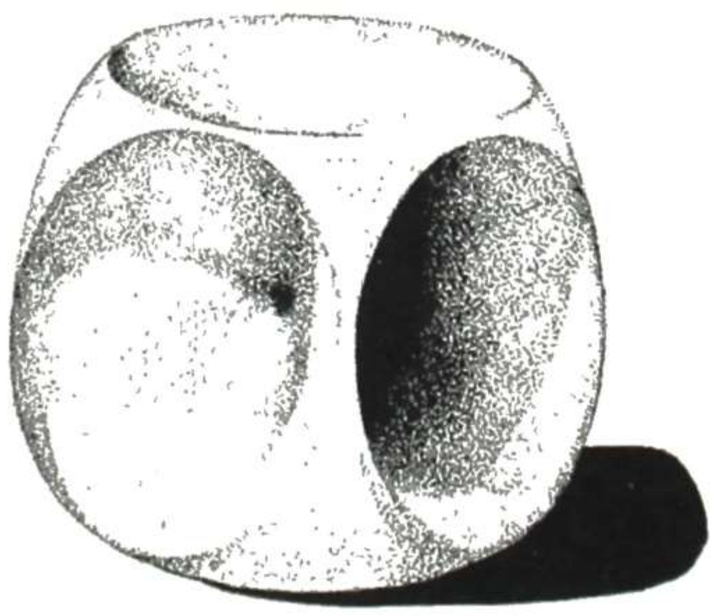


Fig. 494.—The Bee-Cell pessary. (Courtesy The Bee-Cell Company.)

**1. Pessaries.**—If there were no drawbacks to pessary treatment, its continued use in preference to operation might be advisable in those cases in which it gives subjective relief. But unfortunately there are drawbacks. Aside from the troublesome home care by the patient and the expense of necessary visits to the physician, there is the ever-present chronic vaginal and cervical irritation from the pessary. Much study has been given to the serious problem of eliminating this irritation, and considerable progress has been

made. The most important thing is not the shape and materials of the pessary but the *removal* of it each night, thus relieving the pressure-irritation and permitting thorough cleansing of the vagina.

Ring Pessaries.—The ring or disk pessary (Figs. 492 and 493) is the simplest type of prolapse pessary. It is introduced edgewise and then turned so that the ring lies crosswise in the vagina. It is sufficient for some of the milder cases. If there is much relaxation of the pelvic floor, the ring tends to turn and slip out.

Bee-Cell Pessary.—A new type of soft rubber pessary has been reported by Hutter. "It consists of a cube of a soft rubber each side of which is concave. As a result of these concavities, the pessary is soft, light, and easily compressible. The support from it is due to the suction action of the six concave surfaces." Hutter has used it successfully in over a thousand cases. In a recent case it was the only type of support that a patient of mine was able to use. The patient lubricates it, compresses it, and inserts it well up into the vagina. In order to remove it she breaks the suction with the finger, then grasps the pessary, compresses it and withdraws it. The pessary is shown in Fig. 494.

Menge Pessary.—The Menge pessary consists of a hard rubber ring with a detachable stem which prevents the ring from turning in the vagina. As ordinarily used (left in place continuously between office visits) the Menge pessary has the disadvantage that it blocks the vaginal canal, thus interfering with cleansing of the vagina and with coitus.

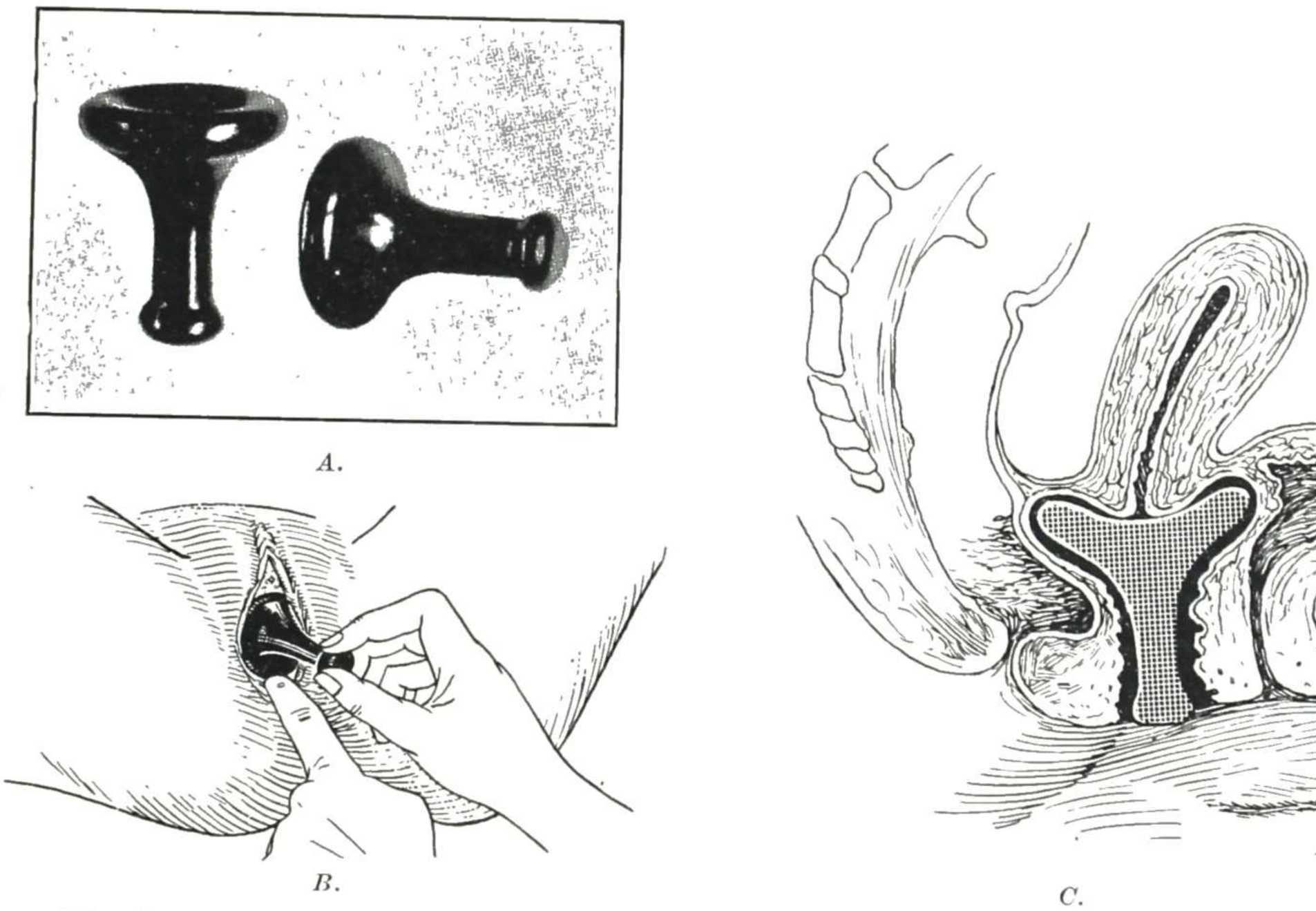
By attaching the stem before introduction and using a smaller size of pessary, it is possible to introduce and remove it as one piece; and by definite instruction some patients may be taught to do so. It is difficult, however, for the patient to remove this pessary, because the stem is short and rounded with no ridge or grasping surface. This disadvantage is overcome in the Gellhorn pessary.

Gellhorn Pessary.—This pessary (Fig. 495) has the supporting characteristics of the Menge type and yet is removable by the patient. The pessary is introduced as follows, quoting from Gellhorn's article.

"It is inserted, well lubricated, edgewise and in an oblique direction, so as to avoid the urethra, while the perineum is strongly pushed downward. It is introduced into the vagina by a corkscrew-like motion. Once within the vaginal lumen, the pessary is pushed upward until only the extremity of the stem shows in the vaginal entrance. The appliance then lies transversely beneath the cervix, as shown in Fig. 495, *C*. The patient removes the pessary every night by pulling on the handle of the stem, turning the latter to one side, and then reversing the steps of introduction. Straining downward will facilitate this procedure." Very stout patients have some difficulty in removing the pessary, and in these cases looping a heavy string around the knob of the stem permits the patient to remove it with ease. Blair has modified this pessary, making it of clear plastic material and having a hole through the stem for drainage (Fig. 496).

Gehrung Pessary.—In those cases of severe prolapse not amenable to the previously mentioned pessaries, particularly where the cystocele slips out beside them, the Gehrung pessary (Fig. 497) is very helpful. When properly placed, it usually gives effective support to the troublesome bladder and uterus

and yet does not interfere with vaginal-vault douching or with coitus. But it cannot be removed and replaced by the patient. In fact the manipulations of introduction are such as to require careful study and practice by the physician for his use of them.



*A.* *B.* *C.*

Fig. 495.—The Gellhorn pessary. *A*, General appearance. *B*, Introducing pessary. The perineum is to be strongly depressed. *C*, Pessary in place. [These pessaries and modifications are now made of clear plastics.] (From Gellhorn; Am. J. Obst. & Gynec.)

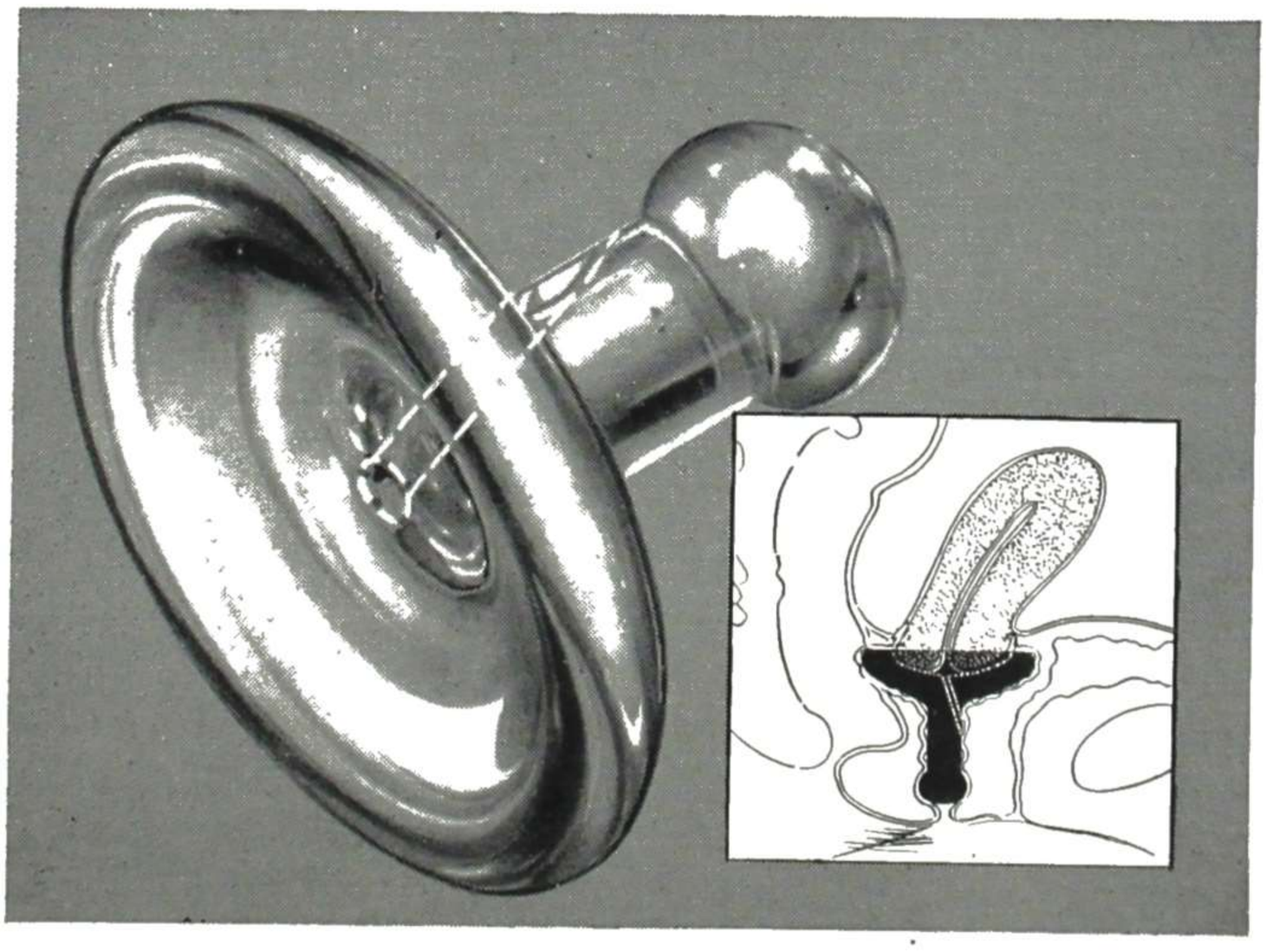


Fig. 496.—Blair modification of the Gellhorn pessary. (Courtesy A. S. Aloe Company.)

The Gehrung pessary avoids the wedge-action by which other pessaries tend to dilate the vaginal opening, by pressing into the superior surface of the supporting shelf as shown in Fig. 497. This causes a depression on each side in which the pessary becomes "set" so that it does not slip around.

The introduction and satisfactory adjustment of the Gehrung pessary require considerable study and experience. In introducing the pessary the right heel is grasped in the fingers of the right hand, as shown in Fig. 497, *A*. The upper arch is below. With the right heel held to the left side of the vulva, the left heel of the pessary is pushed into the vaginal opening as far as it will go (Fig. 497, *B*). Then the right heel, still grasped in the fingers of the right

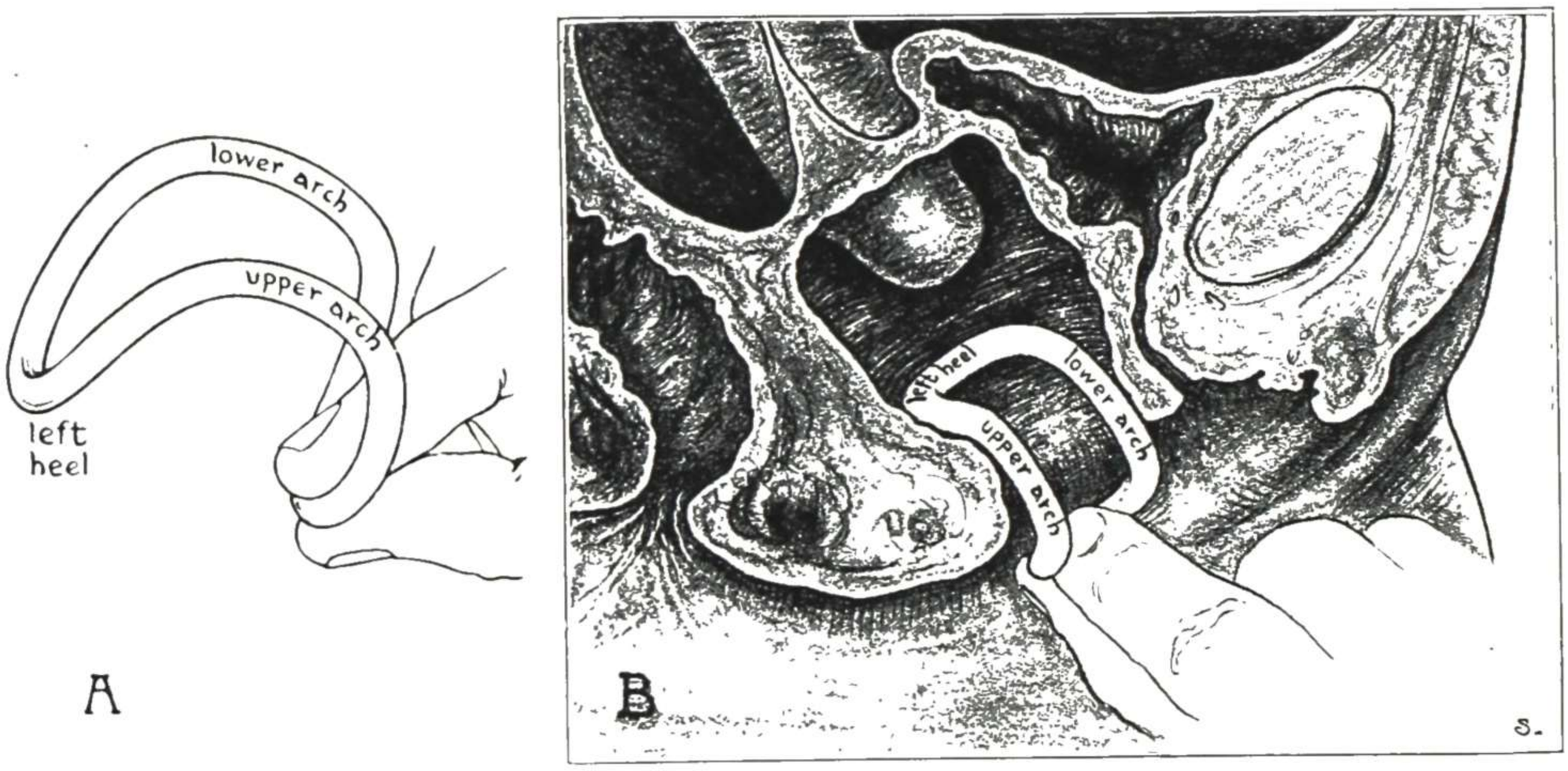



Fig. 497.—Introducing the Gehrung pessary. *A*, Showing how the pessary is held. *B*, First step in the introduction—see directions for introduction.

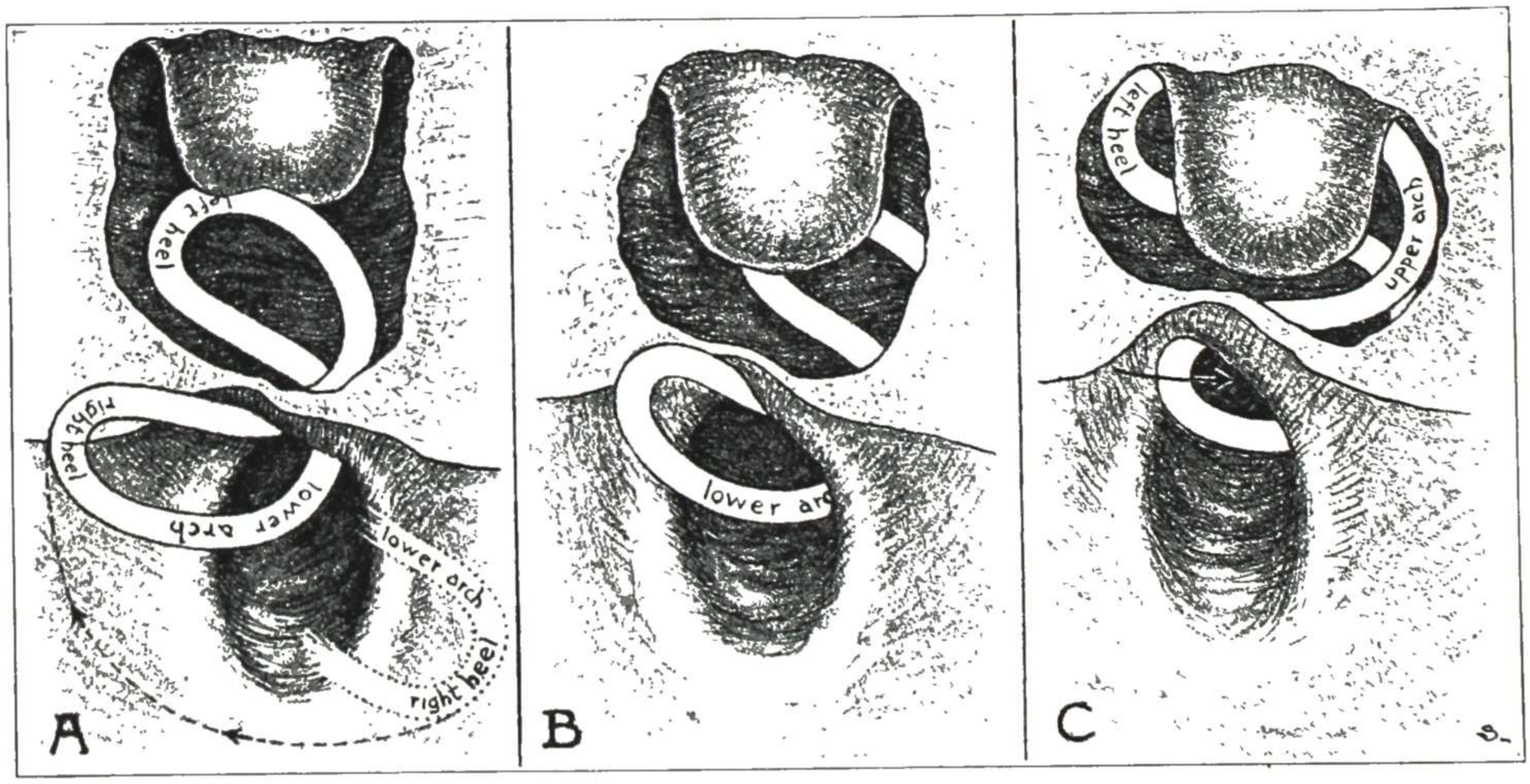



Fig. 498.—Introducing the Gehrung pessary. *A*, Swinging the right heel to the right side, which carries the left heel under the cervix to the left side and brings up the upper arch, which was below. *B*, Pushing the pessary around the vaginal wall back of the cervix, in order to get the right heel within the vagina. *C*, Further progress in the same direction.

hand, is swung across to the right side as indicated in Fig. 498, *A*. This brings uppermost the upper arch which was below, and causes the left heel of the pessary to pass under the cervix (Fig. 498, *A*) to the patient's left side (Fig. 498, *B*). Now the pessary is pushed in farther, the left heel passing around behind the cervix far enough to permit the right heel to slip inside (Fig. 498,

*C*). The right heel of the pessary is then pushed along the vaginal wall to the right side (Fig. 499, *A*), until the right and left heels are situated symmetrically on each side of the vaginal opening (Fig. 499, *B*). The next step is to push the pessary up (Fig. 499, *B*) until the lower arch lies above the vaginal opening and behind the urethra, and the upper arch supports the uterus and base of the bladder (Fig. 499, *C*). This puts the supporting arches in the position shown in Fig. 499, *C*, and the heels of the pessary take hold at the sides of the vaginal opening as shown.

If the heels tend to slip around at first, a little tannic acid powder may be used on each side, to prevent slipping until the heels become set.

Cup and Belt Pessary.—This form of support consists of an abdominal belt to which are attached rubber cords which in turn hold in place a hard rubber stem and cup extending into the vagina (Fig. 500). It is an old form of pessary which sometimes gives much relief in extreme cases in which every form of pessary depending on the pelvic floor for support slips right out. Of course this pessary, as well as other pessaries, is only a makeshift giving temporary relief, and curative operative procedures are indicated in suitable cases. But some of these women are not in physical condition for operation, while some others refuse operation, preferring to get along with a fairly satisfactory pessary. A modification sometimes useful is that form in which a ball is substituted for the cup at the top of the stem.

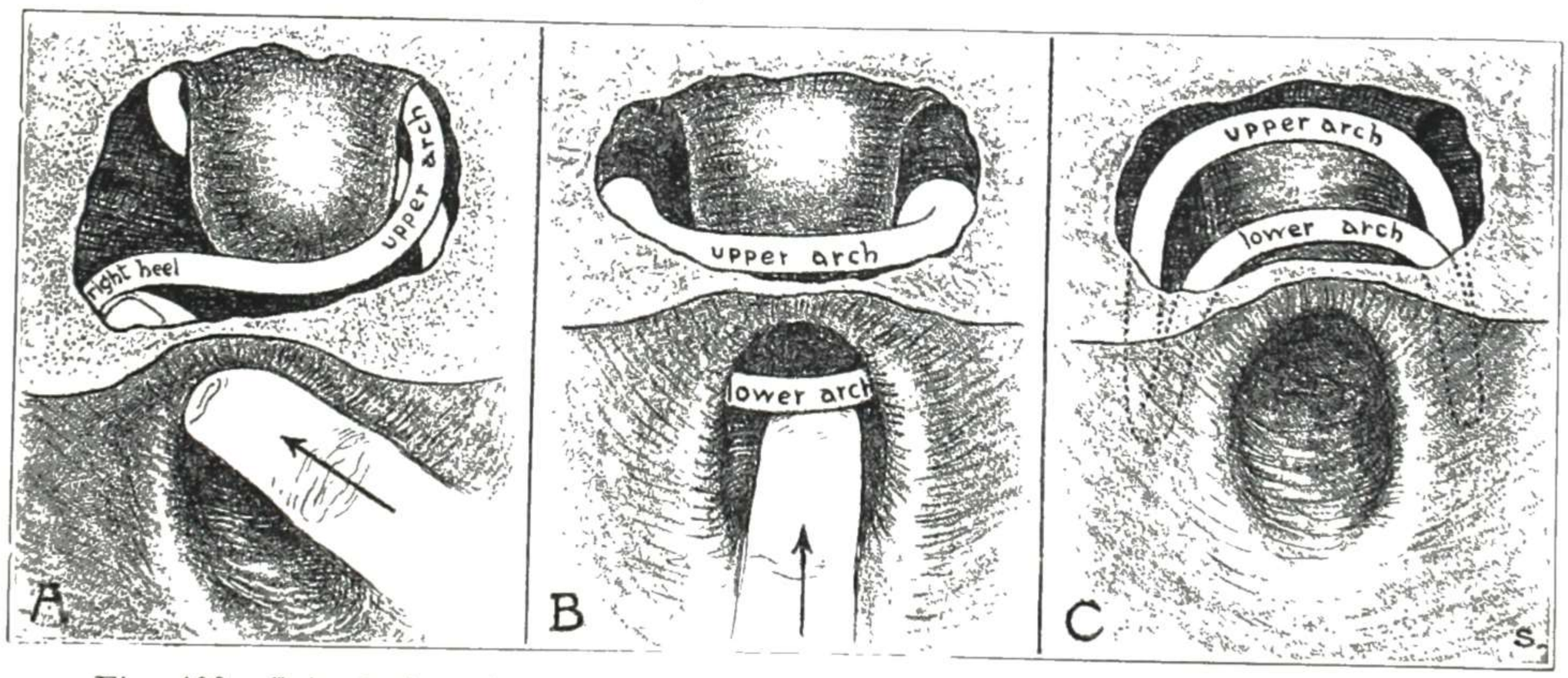
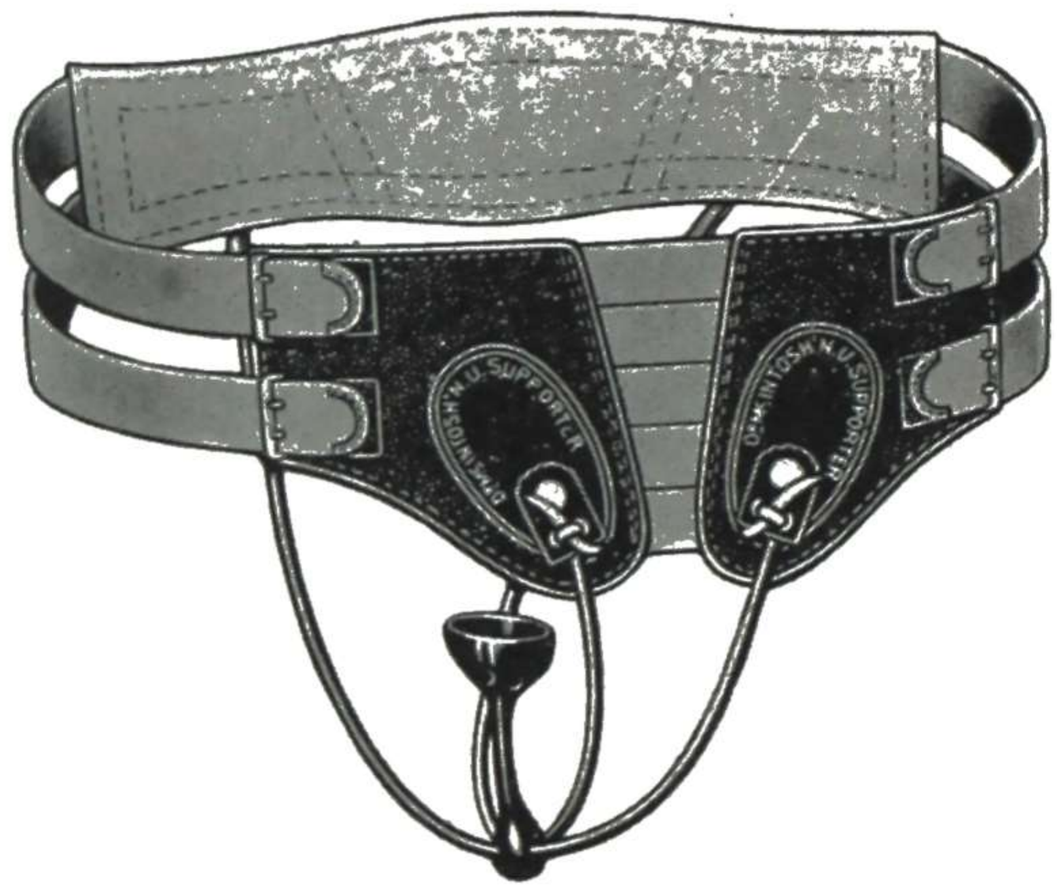



Fig. 499.—Introducing the Gehrung pessary. *A*, The right heel within the vagina and being carried to its position on the right side. *B*, The two heels situated symmetrically on each side. The arches are still too low. *C*, The arches pushed up into place back of the symphysis.

**2. Tampons, Rest in Bed, Astringent Douches.**—Where no form of pessary will hold the structures back, a firm vaginal packing of gauze or cotton tampons may be placed, preferably with the patient in the knee-chest posture or in Sims' posture. This packing will hold the uterus up temporarily and, by placing a pad over the vulva and holding it firmly in place by a strong T-bandage, the packing may be kept in place two days. This method is very useful when treating the ulceration often found about the cervix and also to give temporary relief while preparing the patient for operation.

If the patient can spare the time to go to bed and remain there a week or two, taking astringent douches when not packed, she will experience con-

siderable relief from pain and discomfort. This, plus the use of estrogenic cream, is especially important when there is ulceration of the cervix or vagina requiring treatment.



*A.*


*B.*

Fig. 500.—*A*, McIntosh uterine and abdominal supporter. *B*, Uterine and abdominal supporter, with pessaries. (Courtesy A. S. Aloe Co.)

## Curative Measures

The pessary treatments outlined above are reserved for poor operative risks, very old patients, and patients refusing operative correction. It is

Fig. 501.

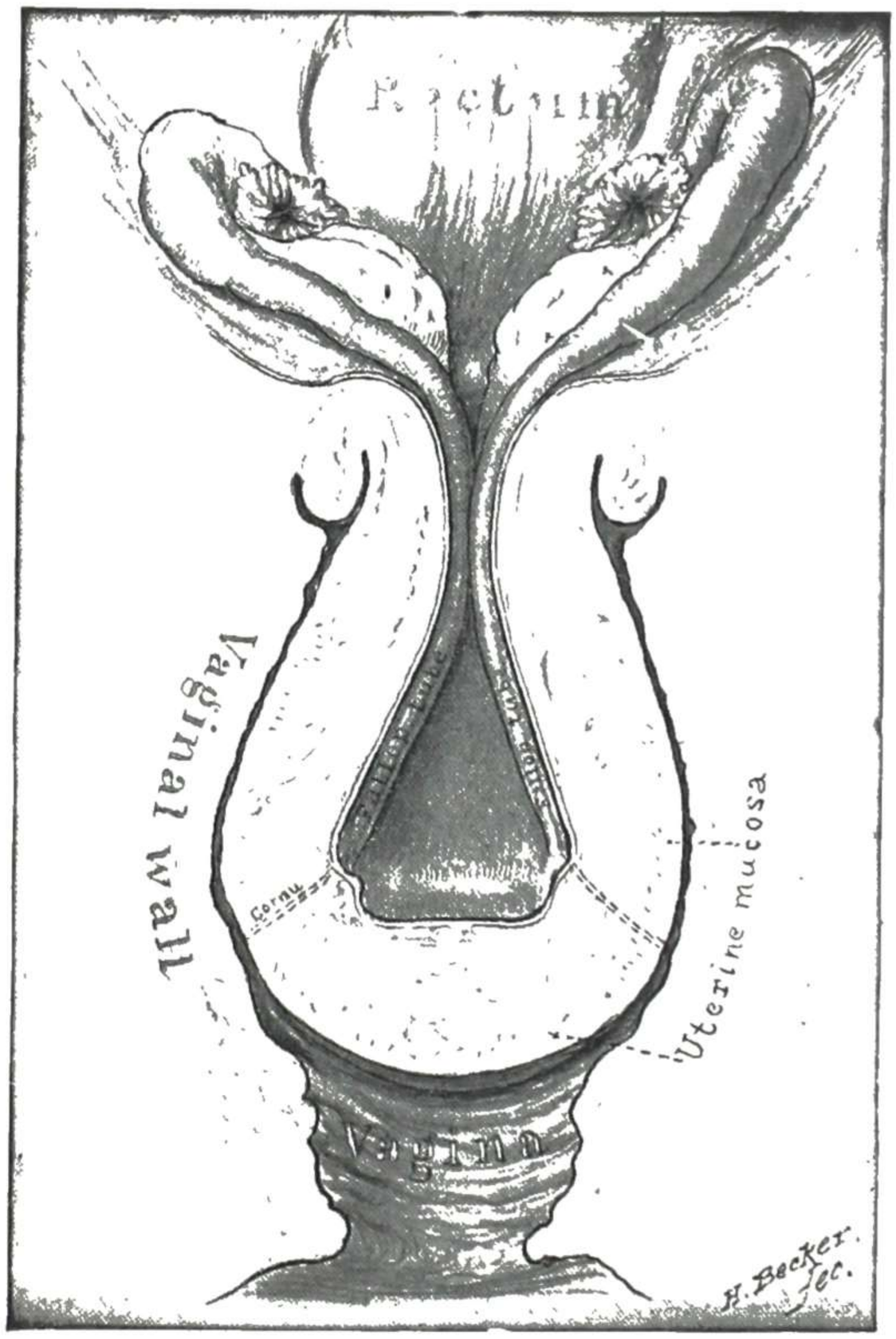
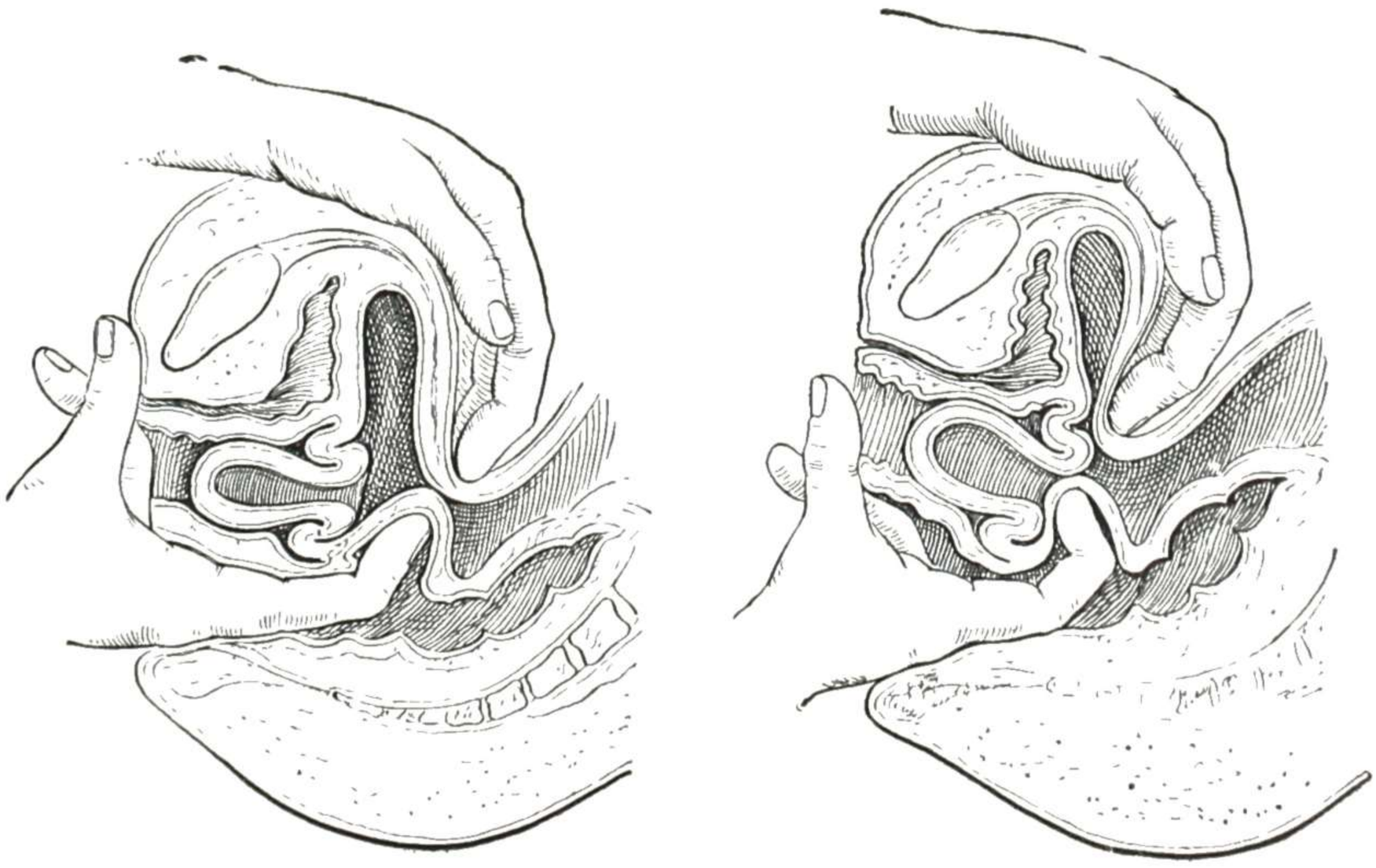



Fig. 502.

Fig. 501.—Complete inversion of the uterus, forming a large mass at the vulva. This is a postpartum inversion and the placenta is still attached to the turned-out fundus uteri. (After Bumm, from Williams: Obstetrics, D. Appleton-Century Co.)

Fig. 502.—Inversion of the uterus, forming a mass in the vagina. (From Kelly: Operative Gynecology.)



*A.* *B.*

Fig. 503.—Diagnosis of inversion of the uterus. *A*, Determining the absence of the body of the uterus from the pelvic cavity. *B*, Determining the presence of a cup-shaped depression above the cervix. (From Ashton: Practice of Gynecology.)

possible to operate safely in most of the cases, for the procedures can be done under local anesthesia; with modern methods of blood replacement and use of the antibiotics the risk has largely been eliminated.

The operations used are divided into two classes: (a) those that preserve all the genital functions, and (b) those that do not.

Prolapse of the uterus and adjacent organs giving sufficient trouble to require operative treatment requires extensive work by an experienced surgeon, with careful adaptation of method to type of prolapse and complications. Much advance has been made in the operative handling of prolapse cases, and the various operations suitable for different types of cases and complications are considered in detail and freely illustrated in *Operative Gynecology*.

As to indications for curative operation, it is important to keep in mind the danger of ureteral narrowing and back-pressure when second or third degree prolapse is allowed to continue unrelieved over a long period. The advance of minor prolapse to the more marked degree is so gradual and with so little acute disturbance that patients became accustomed and adjusted to it and sometimes prefer to go along with the annoyance rather than submit to operation or employ pessary treatment with sufficient consistency to keep the uterus in place.

In advising such a patient, the physician must give weight to the demonstrated tendency toward ureteral narrowing, with the gradual insidious development of hydroureter, hydronephrosis, and damage to kidney function (Fig. 485). These facts emphasize two items concerning treatment in prolapse cases. First, prolapse of second or third degree requires treatment (operative or by pessary) which will keep the uterus and bladder in place and check the tendency to hydroureter and hydronephrosis, even though there is no severe subjective disturbance from the prolapse. Second, a patient coming for operation for prolapse should have preoperative investigation as to hydroureter and hydronephrosis, that precautions may be taken to meet existing handicaps in that direction.

## INVERSION OF UTERUS

Inversion of the uterus (Figs. 501 to 503) is a serious and rare displacement which is nearly altogether an obstetric affection. It occurs only in the puerperal state, except when due to the dragging weight of a tumor. When due to a tumor it simply constitutes one of the pathologic conditions incident to the tumor and does not require separate consideration. When occurring with a tumor, it is usually with a submucous myoma, and the condition is described and illustrated with that subject in Chapter 7. The puerperal type (Figs. 501 and 502) constitutes a serious obstetric emergency, of which full description is given in obstetric textbooks.

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# Chapter 6

# INFLAMMATORY AND METABOLIC DISTURBANCES OF THE UTERUS

In addition to inflammation and new growths and displacements of the uterus there are certain organic changes due largely to disturbance in the metabolism of the organ—either from endocrine disorders, as in endometrial hyperplasia, or from defective circulation and allied conditions, as in subinvolution.

The gynecologists of the past generation grouped a large number of conditions which we now know are due to other causes under the general heading of "Pelvic Congestion." Gustave Cotte devoted a chapter in his book to a discussion of the functional disturbances caused by pelvic congestion. Howard Taylor has recently reviewed the effects of vascular congestion and hyperemia on the structure and function in the female reproductive system and concludes that the early changes are due to congestion and that if this persists long enough fibrosis results. Some of the conditions which Taylor includes in this "congestion-fibrosis syndrome" are "mastodynia," premenstrual breast engorgement and certain types of "chronic mastitis," uterine congestion and hypertrophy, many cases of menorrhagia, cervical hypertrophy, and the majority of cases of "endocervicitis," the congested and "cystic ovary," and many of the cases of dyspareunia, dysmenorrhea, and obscure pelvic pain.

A similar syndrome has recently been described by Theobald under the designation of pelvic sympathetic syndrome. He feels that many of the symptoms result from a lowered threshold for stimuli in the nerves supplying the uterus and parametrium. The factors causing this lowered threshold may be inflammation, congestion, excessive sexual indulgences, mental distress, and others. His treatment consists of cauterizing the endometrium and the cervix with a silver nitrate stick. The patient then uses some vaginal antiseptic jelly or suppository twice daily and takes 5 mg. dienestrol three times daily for six weeks. At the end of this period if the symptoms are not relieved a second treatment is given. In patients with ovarian pain which persists, he injects 1 per cent procaine into the recti muscles; with persistent pain from prolapse, injection of procaine into the broad ligaments gives relief. Theobald states that though the threshold of the affected nerves may be restored to normal by hypnosis and psychotherapy, he feels that his therapy is simpler and that it gives a higher percentage of lasting cures.

In a recent psychosomatic study of pelvic congestion, Duncan and Taylor conclude that emotional disturbances are a definite factor in the etiology of this symptom complex.