

## PROLAPSE OF THE VAGINA FOLLOWING ABDOMINAL HYSTERECTOMY\*

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VAGINAL prolapse following hysterectomy is relatively rare in proportion to frequency of that operation. Although the condition is not a common occurrence, it is seen frequently enough to interest gynecologists in its prevention and cure. It has been very rarely observed following hysterectomy operations which have been performed in more recent years, and especially by surgeons who pay particular attention to pelvic surgery. There is still some difference of opinion as to the type of hysterectomy, total or subtotal, which is most likely to be followed by prolapse of the vagina. It has occurred following both types of hysterectomy, and it has been believed that removal of the cervix with severance of its supporting ligaments predisposes to prolapse of the vaginal vault. However, it is probable that factors other than the removal of the cervix are distinctly involved in this condition.

### Material

The material for this study consisted of 16 cases of prolapse of the vagina, all following subtotal abdominal hysterectomy. Patients with enterocele of the posterior cul-de-sac alone following vaginal hysterectomy are not included in this group, only cases of prolapse of the vaginal vault. These cases were observed in private and hospital practice over a period of seventeen years. During this period, no such cases were observed following either total abdominal or vaginal hysterectomy. A similar, and more extensive observation, was made by McKinnon and Counseller.<sup>1</sup> In 24 cases of postoperative vaginal herniation, they found that 23 followed the incomplete operation and only one followed total hysterectomy.

In none of the cases reviewed in this report was the hysterectomy performed by a gynecological surgeon, or one especially interested in pelvic surgery.

Indications for removal of the uterus were not definitely obtained in every case. However, in six cases, the operation was done for myomas, and in one case, a subtotal hysterectomy was performed for carcinoma of the uterine fundus. In three cases, the hysterectomy operation was performed primarily for correction of uterine prolapse. The complaint of all of the patients when seen with vaginal prolapse, was a mass protruding from the vagina, which was more or less incapacitating. Also, dysuria and incontinence were complaints of some patients.

Table I shows the treatment given in 14 of the 16 cases. Also listed are the ages of the patients, the time of occurrence of the prolapse following the hysterectomy, and the results of the treatment given.

\*Read before the Central Association of Obstetricians and Gynecologists at Louisville, Ky., on Oct. 23, 1947.

TABLE I. - SIXTEEN CASES OF VAGINAL PROLAPSE FOLLOWING ABDOMINAL HYSTERECTOMY

NUMBER	AGES	OCCURRENCE OF PRO-LAPSE AFTER HYSTERECTOMY	TREATMENT	RESULTS
8	32-65	0-16 years	Plastic repair	7 completely satisfactory 1 partially satisfactory
4	62-68	1-15 years	Colpocleisis	Satisfactory
2	67-69	5-12 years	Pessary	Relief
2	49-67	0-10 years	None	

In five of the cases observed, there was complete eversion of the vagina. In two of these cases, repair had been previously attempted and was unsuccessful. In eight cases, the operation employed was a plastic procedure utilizing the same supportive structures and following the same operative principles which are used by many pelvic surgeons in repair of genital prolapse at the time of vaginal hysterectomy.

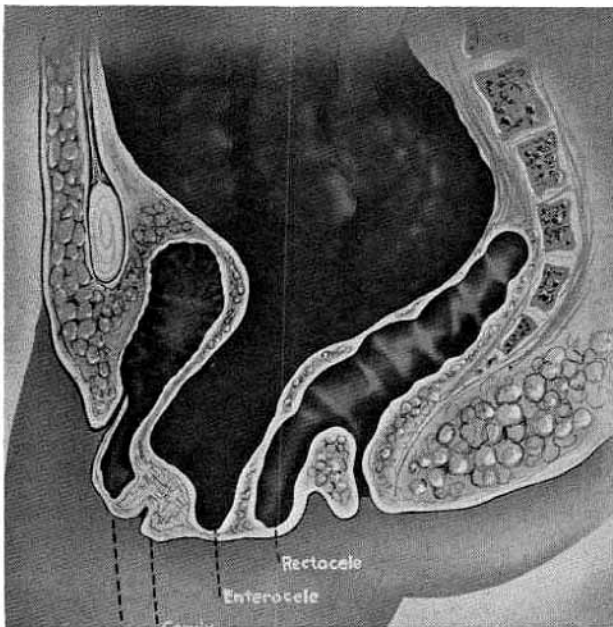


Fig. 1.—Prolapse of the vagina following subtotal hysterectomy.

### Technique of Plastic Operation

The mucosa of the everted vagina is incised by a midline incision extending posteriorly from a point just below the urethral meatus and encircling the cervical stump. The vaginal mucosa with the underlying fascia is widely dissected from the bladder. The bladder is separated from the cervical stump with or without opening the peritoneal cavity anteriorly. The posterior cul-de-sac is then opened. This is usually done very readily because of the protruding enterocele. The fascial attachment of the transverse cervical (cardinal, or Mackenrodt ligaments or parametrium), and uterosacral ligaments to the stump

are clamped, cut, and ligated. The uterosacral and transverse cervical ligaments fuse at their uterine attachment and do not appear as distinct structures, but as a single fascial attachment. It is frequently not advisable to attempt to remove the entire stump because of peritoneal adhesions. But the canal with its epithelial lining can be removed, leaving the remainder of the cervix to which the ligaments are attached. A portion of the peritoneum of the enterocele between the uterosacral ligaments is removed and the overstretched uterosacral ligaments identified. These ligaments are united by chromic No. 1 interrupted sutures. These sutures are carried as high toward the promontory of the sacrum as is possible, to approximate the peritoneum and musculofascial structures without causing undue tension. This step prevents a recurrence of the enterocele of the posterior cul-de-sac.

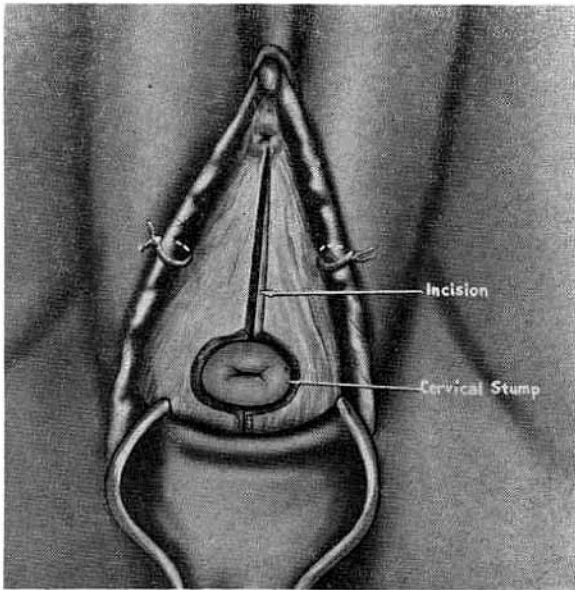


Fig. 2.—The everted vaginal wall is opened by a midline incision encircling the cervical stump.

The next suture (on a strong cutting-edge needle) is passed through the vaginal mucosa just beneath the attachment of the labia minora and carried into the periosteum of the pubis and then through the strong fascia structures lateral to the urethra. This suture then takes in the ligament stumps and passes through the sutured uterosacral ligaments, the peritoneum, and vaginal wall posteriorly. It is well to encircle the ligament stumps with a few stitches to secure hemostasis and prevent tearing out. A like suture is placed on the opposite side.

After these inclusive sutures are placed (but not tied), the fascia of the anterior vaginal wall (the pubocervical fascia), if discernible, is dissected from the vaginal wall flaps. In many of these cases, this fascia is somewhat fragmentary and cannot be sutured as a separate structure. When this is the case, all the structures in the vaginal wall are united as one layer in a single row of sutures. When the anterior vaginal fascia is adequate in amount and strength, it may be imbricated. If the patient has had urinary incontinence, the urethra



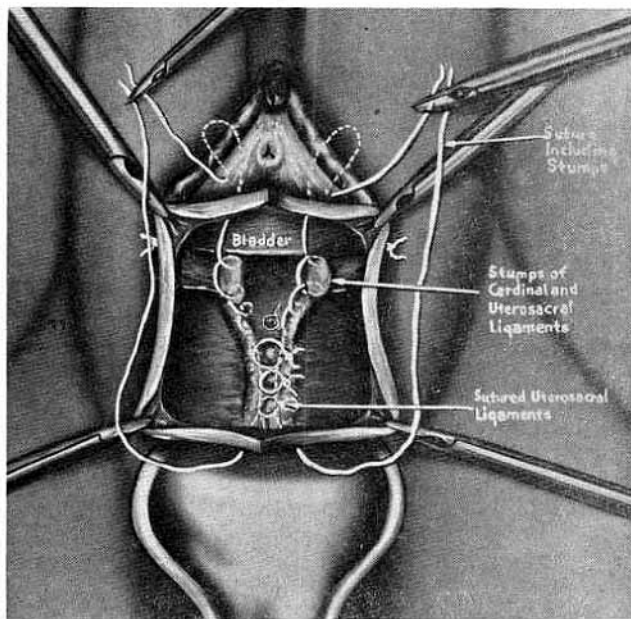


Fig. 3.—The cervical stump is removed. The fascial attachments to the stump have been ligated. The uterosacral ligaments are sutured together and a suture is passed through the vaginal wall anteriorly, the periosteum of the pubis, around the ligament stumps, and out through the posterior vaginal wall. This suture is tied after the vaginal mucosa is closed.

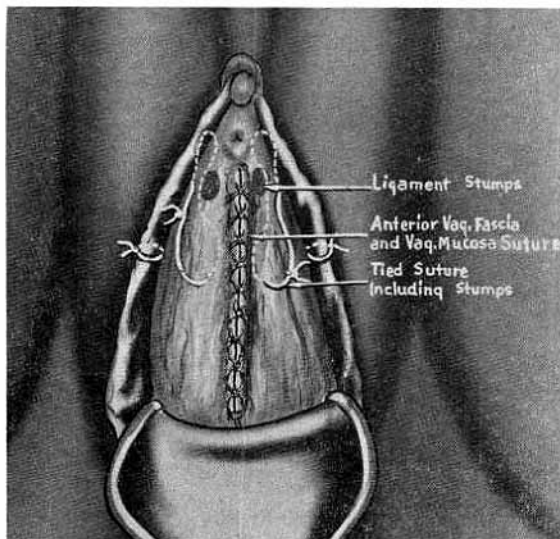


Fig. 4.—The pubocervical fascia and vaginal mucosa are sutured. The inclusive sutures attached to the fascial supportive structures are now tied.

is dissected free and a succession of mattress sutures taken, as is the usual procedure for the cure of incontinence.

The vaginal wall is sutured by interrupted sutures, before the inclusive sutures attached to the ligaments are pulled taut and tied. If the vaginal wall is sutured before the sutures attached to the ligaments are tied, more accurate approximation can be attained. This method of repair of vaginal prolapse is similar to that described by Heaney<sup>2</sup> and others for the correction of prolapse at the time of vaginal hysterectomy. The procedure appears to be particularly suitable for the cases of incomplete prolapse but may be inadequate for some cases of complete herniation of the vagina.

In four cases of complete vaginal prolapse in older women in whom a functioning vagina was of no concern, an occlusion operation of the Neugebauer-Le Fort type was performed. In every case, the results were very satisfactory.

In the material of this report, no abdominal operations were performed, although such procedures appear suitable for cases of complete prolapse in younger women in whom a functional vagina is desirable, especially if vaginal repair has been unsuccessfully attempted, or following complete hysterectomy, where the supporting structures appear to be inadequate for repair.

A perineorrhaphy should regularly be performed with any procedure for correction of this condition. It is important in doing the perineorrhaphy not to remove an extensive amount of vaginal wall because this will diminish the capacity of the vagina, which is unavoidably shortened by extensive plastic procedures.

### Discussion

From a review of this small group of cases, it is likely that in many instances genital prolapse existed at the time the hysterectomy was performed, was unrecognized, and the operation selected was not adequate for its correction. However, this is not always the case. In some elderly patients, the loss of pelvic fat and atrophy of the pelvic supportive structures associated with advancing years permit prolapse of the vaginal vault which is not present at the time of hysterectomy. Occasionally, a large uterine tumor that cannot enter the true pelvis prevents prolapse of the uterus but, after its removal, prolapse of the cervical stump or vaginal vault occurs.

Anatomical studies of the supports of the uterus and vagina by Curtis and his associates<sup>3-5</sup> and studies of the mechanics of uterine support by Mengert<sup>6</sup> have unquestionably shown that uterine and vaginal support in the main depends upon the integrity of the derivatives of the endopelvic fascia which is attached to the lower portion of the uterus, the cervix, and upper portion of the vagina. Uterine and vaginal prolapse is always the result of injury or congenital defect of these structures. They have been confused by nomenclature, but are frequently named the paravaginal fascia, the transverse cervical, and uterosacral ligaments. The paravaginal extension of fascia is so important that the vagina does to a great extent support the cervix rather than the cervix contributing to the support of the vaginal vault.

In most instances, prolapse of the cervix or vaginal vault following removal of the uterus is preventable. Clinical experience and anatomical studies have shown that suspending the cervix or vaginal stump by the round and infundibulopelvic ligaments, which are not supporting structures, following hysterectomy is a useless procedure. Suture of the anterior and posterior



fascias of the vagina, which are extensions of the transverse cervical and uterosacral ligaments, aids in supporting the stump, but if the paravaginal fascia is intact, vaginal prolapse is not likely to occur if no attempt whatever is made to suspend the stump. If descensus is present at the time hysterectomy is contemplated, vaginal removal of the uterus and repair of the hernial defect is the procedure of choice. In cases of large uterine tumors associated with descensus, a combined vaginal and abdominal operation may be necessary.

When vaginal prolapse does occur subsequent to hysterectomy, it presents a surgical problem that is considerably more difficult than genital prolapse before the uterus has been removed.

From the number of surgical procedures which have been devised for the correction of vaginal prolapse, it is obvious that no single, or simple operation will give satisfactory results in every case. Vaginal occlusion operations have been used for uterine and vaginal prolapse for many years, but are suitable for only a limited number of patients. For elderly and noncohabitating women, it is a short and simple operation which usually gives very satisfactory results. In patients who are not good surgical risks, a partial or complete colpocleisis operation may be performed with local infiltration anesthesia. A vaginal operation has been devised by Miller<sup>7</sup> which attaches the vagina high in the pelvis to the uterosacral ligaments. Other procedures which attach the vagina to the anterior abdominal wall have been devised by Brady<sup>8</sup> and Ward,<sup>9</sup> using silk sutures and ox fascia lata. More recently, an abdominal operation has been employed wherein strips of rectus fascia have been attached to the vaginal stump which reinvert the vagina. Satisfactory results have been reported.

### Summary

Sixteen cases of vaginal prolapse following subtotal abdominal hysterectomy were studied. Prolapse of the cervical stump occurred within from less than one year of 16 years following the hysterectomy. No cases were observed following total abdominal or vaginal hysterectomy.

The treatment in 14 cases consisted of: a vaginal plastic procedure in 8 cases; colpocleisis in 4 cases; and 2 cases were treated by wearing a pessary.

A study of the anatomy and mechanics of uterine and vaginal support and also clinical observation demonstrate that removal of the cervix with the fundus of the uterus does not predispose to prolapse of the vagina.

When uterine descensus is present at the time of hysterectomy, vaginal removal of the uterus and repair of the hernial defect will prevent subsequent prolapse of the vagina.

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### Discussion

DR. EDWARD ALLEN, Chicago.—The large number of new procedures reported in the recent literature is direct evidence of its frequent occurrence in the inadequacy of our varied techniques. A similar discussion and devising of new techniques is going on in the consideration of inguinal and femoral herniation. Many inguinal and femoral hernias are still recurring. The constitutional inadequacy of most of these individuals is well recognized. It is difficult to build a permanent water-tight dam out of secondhand lumber. Until we can build and breed more adequate structural supports into our adolescents and generally do better obstetrics, I fear we will have this problem continuously with us. Complete prolapse in the nullipara is strong circumstantial evidence to this fact.

It is very interesting that all of the patients observed by Dr. Bickel had been subjected to abdominal hysterectomy. Avoidance of this complication is one of the usual reasons given for removing the uterus through the abdomen. I should like to ask Dr. Bickel what percentage of these cases had evidence of vaginal repair other than episiotomy.

It is naturally a much more difficult procedure to secure adequate functional results in repair of a complete eversion of the vagina than it is when the herniation has occurred through a relatively small break in the fascial planes. The difficulties are increased considerably if scar tissue is present from a previous attempt at operation, although I believe some of our good results are due to causing scar tissue in the right place. The majority of the patients upon whom I have operated for this condition have had supravaginal abdominal hysterectomy without any, or with very inadequate, attempts at pelvic repair. However, this same condition existed in two patients in whom the uterus had been removed vaginally; the third patient had had the usual vaginal hysterectomy and repair. Again, this demonstrates a fact which we have all known for a long time, namely, one cannot successfully suspend the vaginal vault from above by attaching it to any of the intra-abdominal structures alone. As the author states, Curtis, Mengert and others have shown by anatomic and experimental studies the great importance of the parametrium which we call the cardinal and uterosacral ligaments and paravaginal fascia. One recognizes this fully during vaginal hysterectomy; when these structures are divided, increased mobility of even a greatly enlarged uterus immediately occurs. This increased mobility is frequently entirely inadequate to complete the hysterectomy until the vaginal canal is straightened out by depression of a high perineal body by a strong resident or Schuchardt's incision.

For many years, most of the men on our gynecologic service have, in marked prolapse or eversion, sutured the round ligament stumps high along the urethra in approximately the same position as Dr. Bickel has described. We have anchored them to the vaginal mucosa and para-urethral fascias but have not included the periosteum of the pubis. Generally the right ligament is sutured to the left angle and the left to the right, forming a sling. However, we have felt that the change in angulation produced in the vagina was more important than the building of a wall of tissue which is normally so mobile and so easily stretched. I venture a guess that the excellent results reported by Dr. Bickel were increased in part by a change in the angulation of the vagina when the posterior ligaments were drawn far forward rather than the fixation to the low level of the pubic periosteum. This drawing forward of the posterior supports should in a sense obliterate the cul-de-sac, which most of us feel is quite important in this type of repair. It is felt that this, as well as the high suture of the uterosacral ligaments, directed the downward thrust of the abdominal contents backward toward the hollow of the sacrum and strong upper levator sling rather than mere supports from the lower margin of the symphysis pubis. However, Miller, in describing his repair operation, believes that stronger high sacrouterine fixation will hold the vault of the