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# TRANSPOSITION OF THE UTERUS AND BLADDER IN THE TREATMENT OF EXTENSIVE CYSTOCELE AND UTERINE PROLAPSE.*

## A Further Consideration of the Subject.

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(With twelve illustrations.)

The objects of this paper are:

I. To point out the chief lesions of cystocele and uterine prolapse and the mechanical principles underlying their repair.

II. To direct attention to some of the more important steps in the operation.

III. To fairly apportion the credit due various men in devising, developing and popularizing the operation.

IV. To discuss the results obtained by others.

V. To consider the author's personal experience with especial reference to complications and incomplete cures.

The word "transposition" is used in preference to "interposition" because it expresses more clearly than does "interposition," the essential features of the operation under consideration. "Interposition" suggests a change in the position of the uterus only. There is, however, a change in the position of both uterus and bladder, the altered position of the bladder being the more important feature.

I. Cystocele is hernia of the bladder through the vesicovaginal septum and is generally the result of injury at child-birth with subinvolution. The protrusion of the bladder and the senile changes in the tissues which occur after the menopause gradually increase the size of the hernia. The hernial opening, in extensive cases of cystocele, extends sagitally from the pubes to the cervix and transversely across the entire anterior portion of the pelvis. The anterior vaginal wall is usually so much thinned by stretching and laceration that no definite borders of the hernial opening can be palpated. A urethrocele with thickening of the mucous membrane over the body of the urethra is often coexistent.

* The most recent previous reports by the author: 1906, *Surg., Gyn. and Obst.*, ii, 654; 1909, *Surg., Gyn. and Obst.*, viii, 471.

Uterine prolapse is hernia of the uterus. In prolapse of the uterus the broad and uterosacral ligaments are elongated, the vaginal canal dilated, the perineum relaxed and usually lacerated. The cervix and the body of the uterus are frequently enlarged from passive congestion, edema and hyperplasia. The cervix

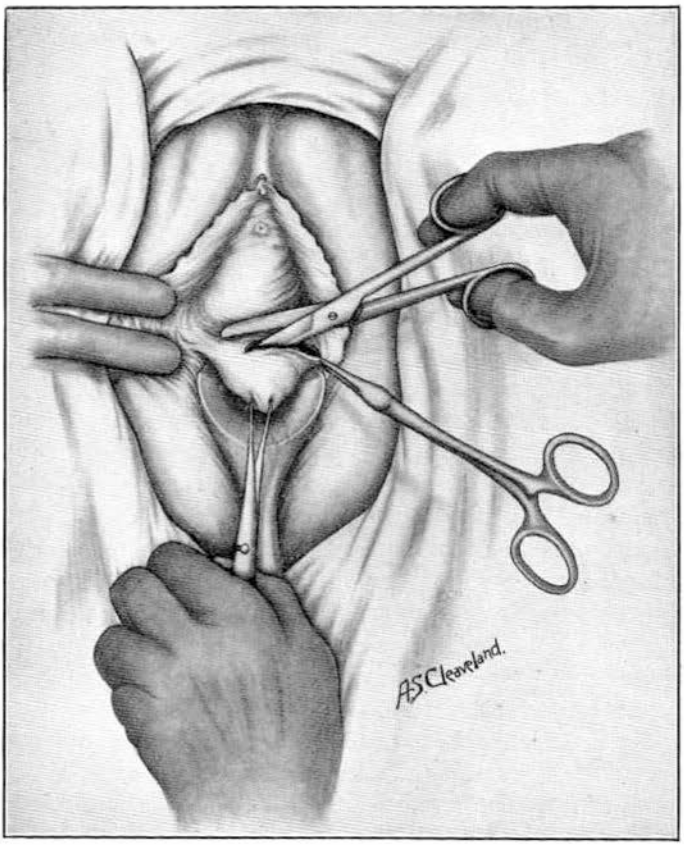


FIG. 1.—A transverse incision is made across the vagina at the junction of the anterior vaginal wall and cervix.

may be cystic and eroded as a result of lacerations, infections and friction.

A cure of the cystocele necessitates firm closure of the hernial opening through which the bladder protrudes. This is accomplished by interposition of the body of the uterus.

A chief factor in the cure of the uterine prolapse consists in twisting the broad ligaments, thus very much diminishing their

length. This rotation places the fundus anteriorly near the pubes and tilts the cervix up into the hollow of the sacrum. When the large prolapsed uterus is forward beneath the bladder the congestion and edema soon disappear, atrophy takes place and the uterus is thus much decreased in weight. These are important factors in affording permanent relief.

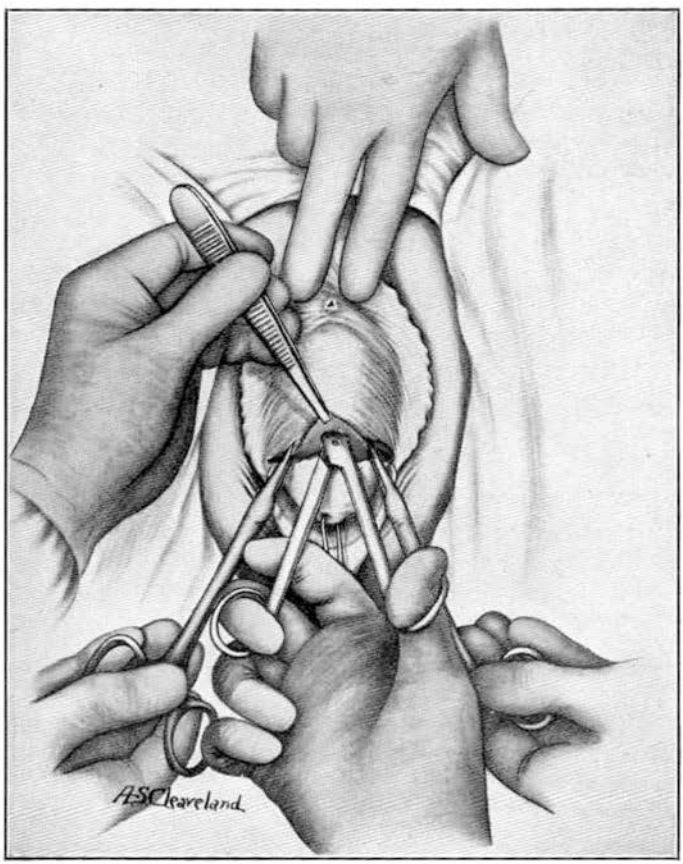


FIG. 2.—Care is used in inserting the scissors to keep the points pressed against the vaginal wall.

II. Since the author's technic has appeared in detail in former publications some of the more important features only will be discussed at this time.

A. Separation of the vaginal wall from the bladder (Fig 2). This can be done with entire safety by blunt dissection with the scissors if the points of the scissors are kept continually in con-

tact with the anterior vaginal wall. The width of separation of the handles of the scissors is determined by the amount of resistance encountered and by the size of the cystocele. In starting the blunt dissection care should be taken to strike the plane of fascia, which is suprisingly distinct between the bladder and vaginal wall. Thus blood-vessels are not injured, dissection is

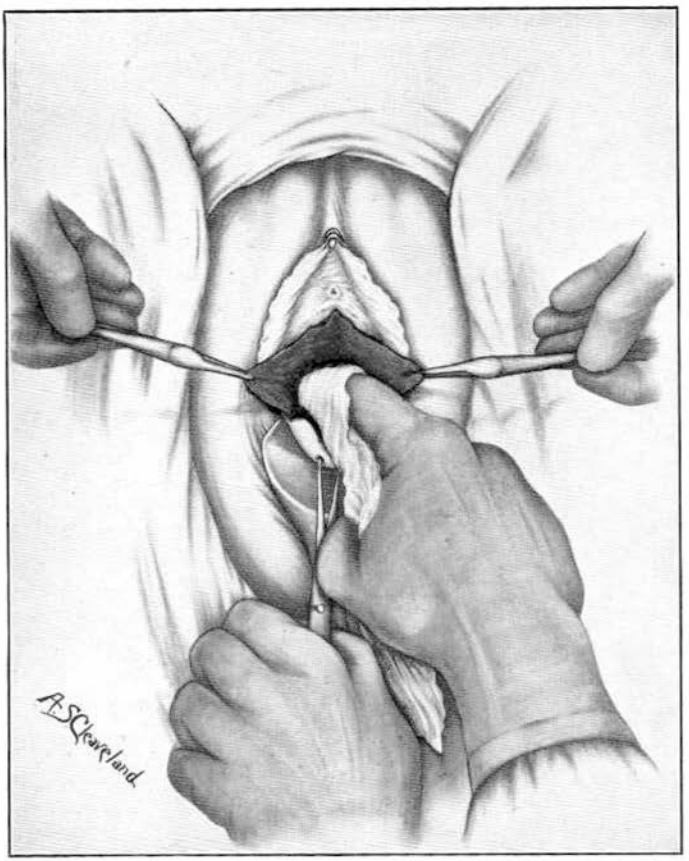


FIG. 3.—With gauze over the finger further separation of the vaginal wall from the bladder may be easily accomplished.

facilitated, and wound secretion is minimized. Experience has induced me to make the amount of separation less than formerly as a wide separation sometimes causes complications and is not essential to success.

B. Separation of the bladder from the uterus.

This is also safely done with scissors. Care is used to find the

plane of fascia between the bladder and cervix which is as distinct as that between the bladder and vagina (Fig. 4). In this dissection the points of the scissors are kept continually pressed against the cervix. Final separation is made with the finger when necessary.

C. Incision of the peritoneum.

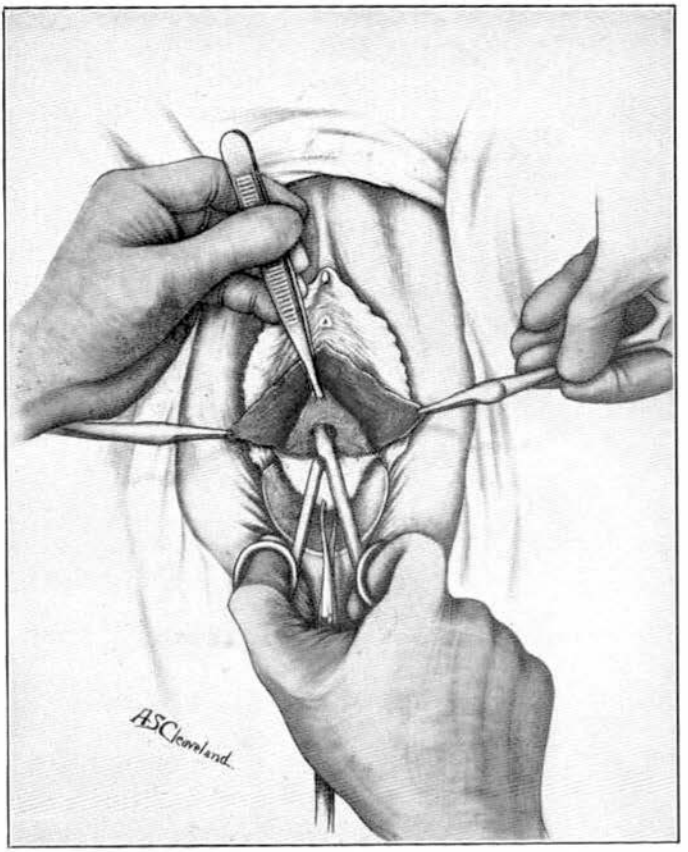


FIG. 4.—The plane of fascia is usually as distinct here as it is between the bladder and vaginal wall.

A long narrow retractor is placed in such a manner that the bladder is displaced forward and the anterior uterine wall covered by peritoneum is exposed. The peritoneum is now easily picked up with tissue forceps and incised.

D. The suture.

One continuous chromicized catgut suture fastens the uterus to

the vaginal wall and closes the vaginal incision (Fig. 9). The fundus of the uterus should be sutured near enough to the urethra to make impossible a paritial recurrence of the cystocele (Fig. 8). Any noticeable hypertrophy of the vaginal mucous membrane over the body of the urethra should be excised before the suture is introduced. Otherwise it will protrude on standing and produce

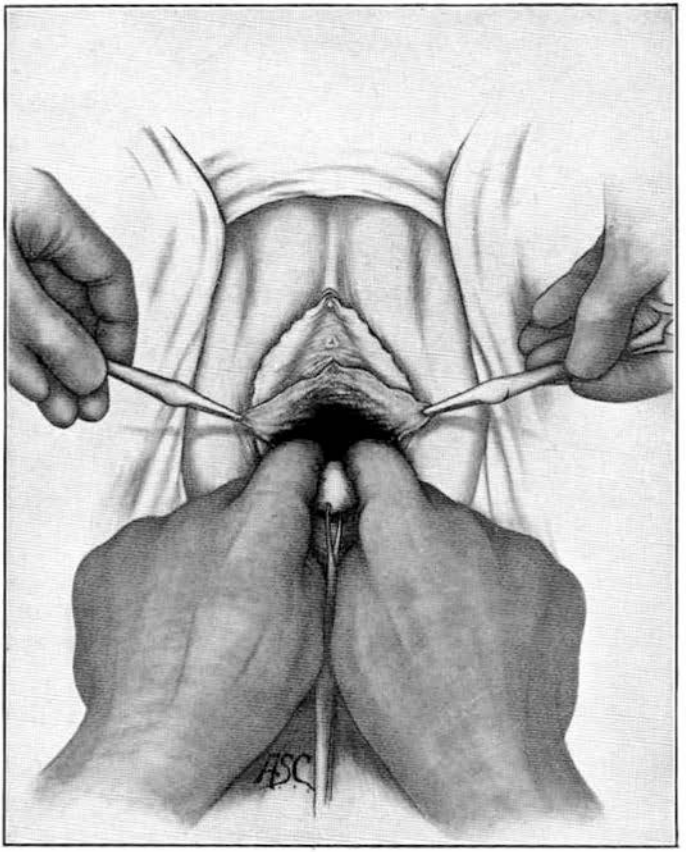

FIG. 5.—The amount of separation should be enough to permit the delivery of the body of the uterus.

some distress. If a urethrocele is present the suture should be passed through the vaginal flap so that when tied it will draw the urethra up into its normal location. In cases of very large cystocele some of the redundant tissue is excised but enough is left to insure broad surfaces for approximation. Continuing backward with the suture the wound made by the original trans-

verse incision is at times closed sagitally to lengthen the vagina and diplace the cervix further backward and upward.

The operation is completed by making thorough repair of the posterior vaginal wall and is accomplished with a modified Hegar or Emmet perineorrhaphy.

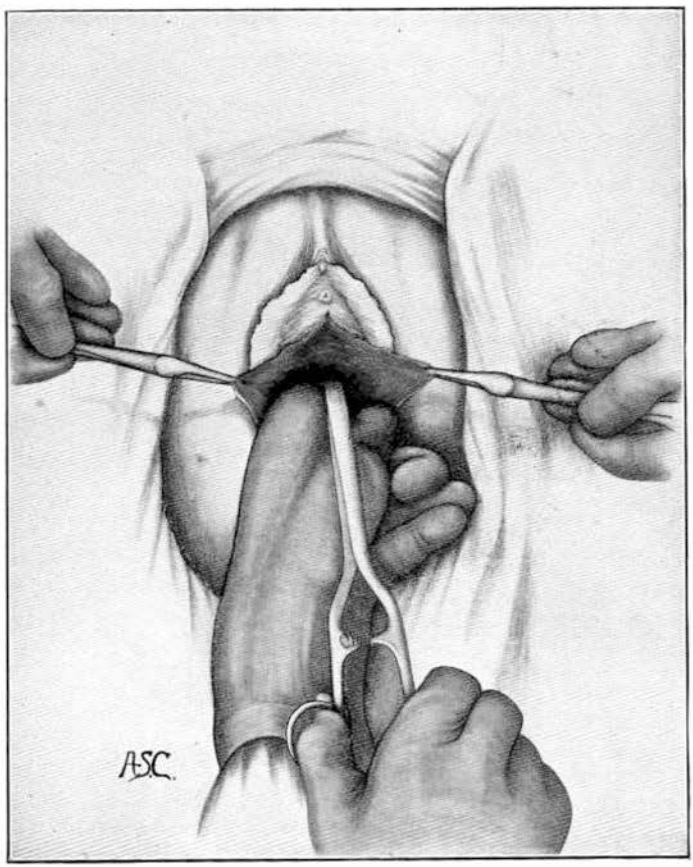


FIG. 6.—The anterior uterine wall is grasped with a single volsellum forceps inserted under the guidance and protection of the index-finger.

Figure 11 of the completed operation shows quite accurately the relative positions of the bladder, uterus, vagina and perineum. A surprisingly small amount of bulging of the anterior vaginal wall results. Conjoined palpation impresses one that the uterus is left but little more anteverted and flexed than is often the case in a normal individual. On cystoscopic examination the posterior wall of the bladder shows some convexity over the region of the interposed body of the uterus.

Modifications of the operation which may be required are the following:

1. Excision of the isthmic portion of the tubes (Fig. 12). This operation is done in exceptional cases during the child-bearing period. This operation is we believe not often indicated. The

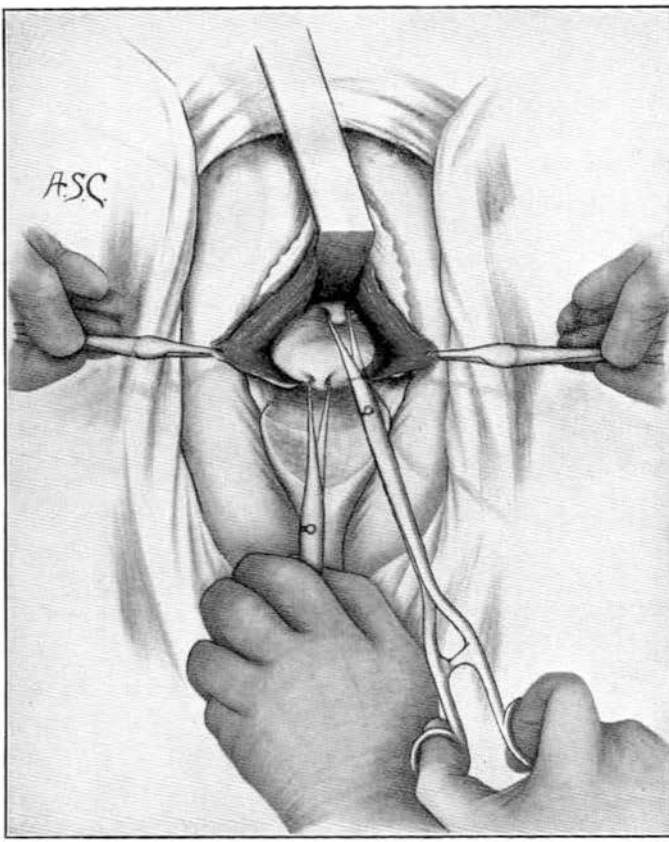


FIG. 7.—One should use care not to attempt delivery of the anterior surface of the uterus as the diameters of this are much greater than are the diameters of the fundus uteri.

displacements during the reproduction period are seldom too extensive to be repaired by procedures which do not interfere with gestation or labor, such as anterior colporrhaphy, advancement of the anterior vaginal wall or vaginal fixation of the round ligaments.

2. Excision of a portion of the uterus.

The technic of this is given in the writer's last publication

(1909). The amount of tissue removed varies in different instances. In some cases there is left only enough of the uterus to occlude the hernial opening. The operation is facilitated by excision of the entire endometrium when much repair work upon the cervix is required. This simplifies the technic and eliminates

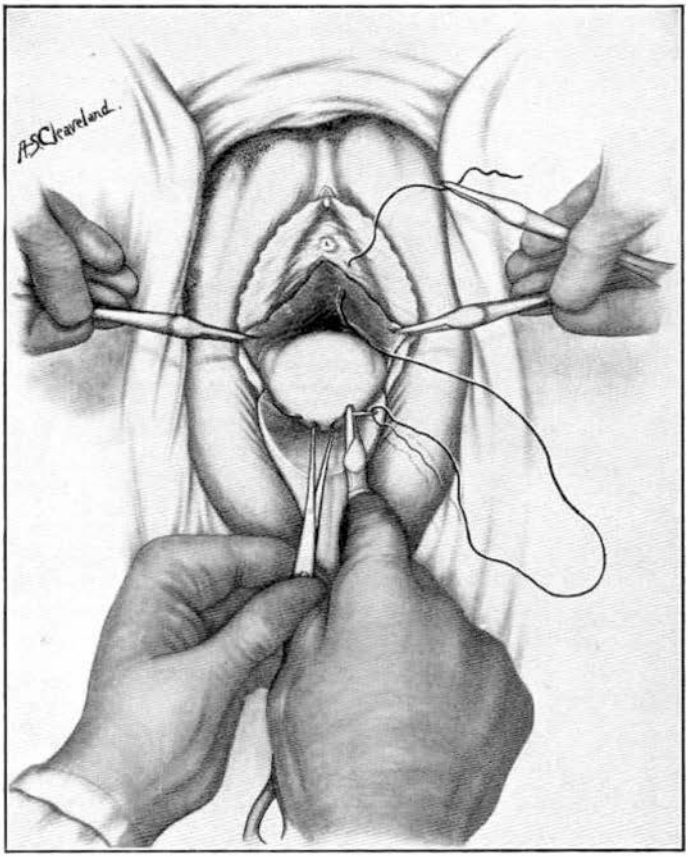


FIG. 8.—Care should be exercised not to fix the uterus so that it will press upon the urethra—but it should be brought down sufficiently to prevent a possibility of a portion of the bladder herniating between the fundus and pubes.

the danger of a resultant stenosis of the cervix. This operation is occasionally made when the uterus is so large and the broad ligaments so elongated as to endanger recurrence of the uterine prolapse.*

*The modified operation of severing the broad ligaments from the cervix and joining the cut ends in front of the cervix has been abandoned because of unsatifactory results.

3. Occlusion of the entire uterine and vaginal canals. This includes excision of the anterior uterine wall and complete extirpation of the endometrium and vaginal mucosa. The vaginal canal is obliterated by a continuous suture. This is occasionally done in the very bad cases in elderly women when there is no objection to obliteration of the vaginal canal. This procedure is an extended LeFort operation and is I believe the only known procedure which is certain to prevent any recurrence of the uterine prolapse in some of the very extensive cases.

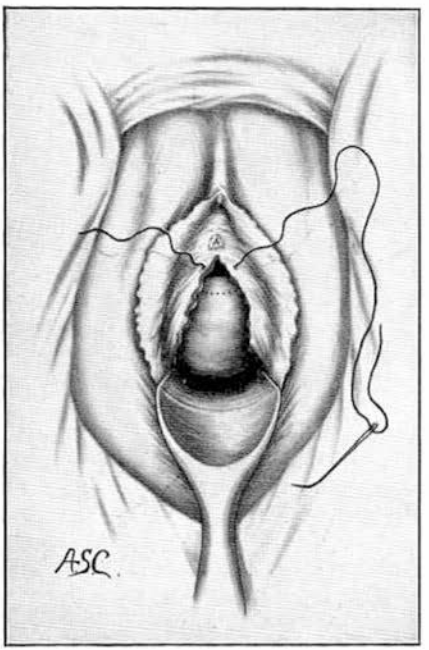


FIG. 9.—The uterine fixation is made and the vaginal opening is closed with one continuous catgut suture.

III. From an exhaustive study of the literature combined with personal observation and a considerable experience with this operation extending over a period of fourteen years, the writer wishes to summarize the accomplishments of those who have made the transposition operation a success.

Dührssen (1894) was the first to perform and to describe the operation of transposition of the uterus and bladder. He unfortunately included his description in a paper on "The Operative Cure of Immovable and Fixed Retroflexed Uterus." The

technic was so incorporated with numerous other vaginal operations in the treatment of 207 cases of retroflexion of the uterus that it failed to receive recognition until the operation was later independently described by other surgeons.

He evidently did not fully comprehend the value of his technic in the cure of cystocele and prolapse, and did not arouse any

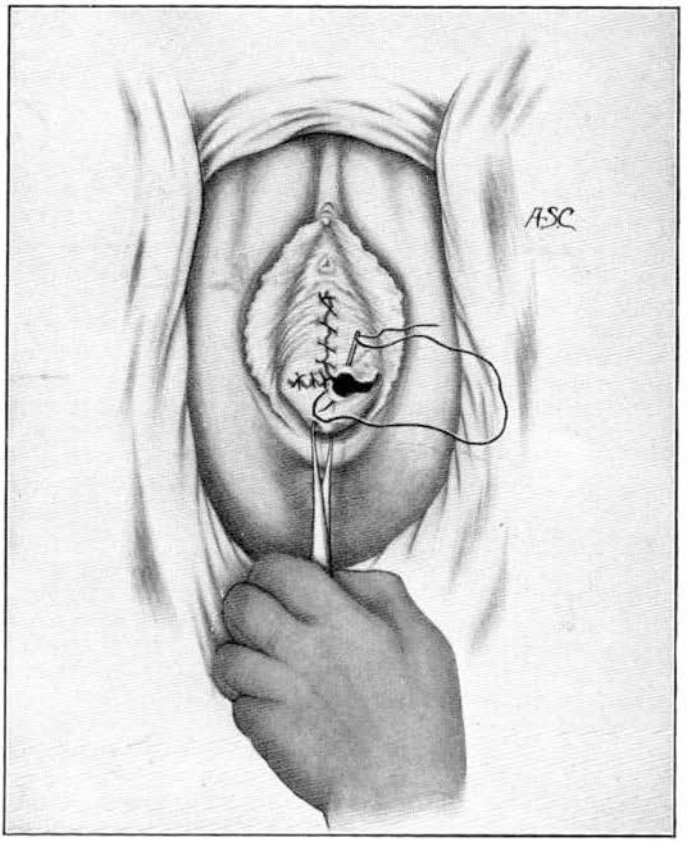


FIG. 10.—Experience has induced me to excise less of the vaginal wall than formerly and to include more of the vaginal wall in the suture so as to get broad surfaces of approximation.

considerable interest in the subject. Those who have since independently developed the same operation have more keenly appreciated its possibilities.

The work of Freund (1896) stimulated many to further work. He opened the peritoneal cavity through the posterior vaginal fornix, brought the uterine body down through the opening,

made a drainage hole through the fundus and sutured the uterus in its new position. The greater part of the uterus was thus left uncovered in the vaginal canal.

In January, 1898, the writer, independently developed and used for the first time the operation which he continues to employ at the present time. The results from three operations were published in 1899, and the advantages of the method then strongly urged.

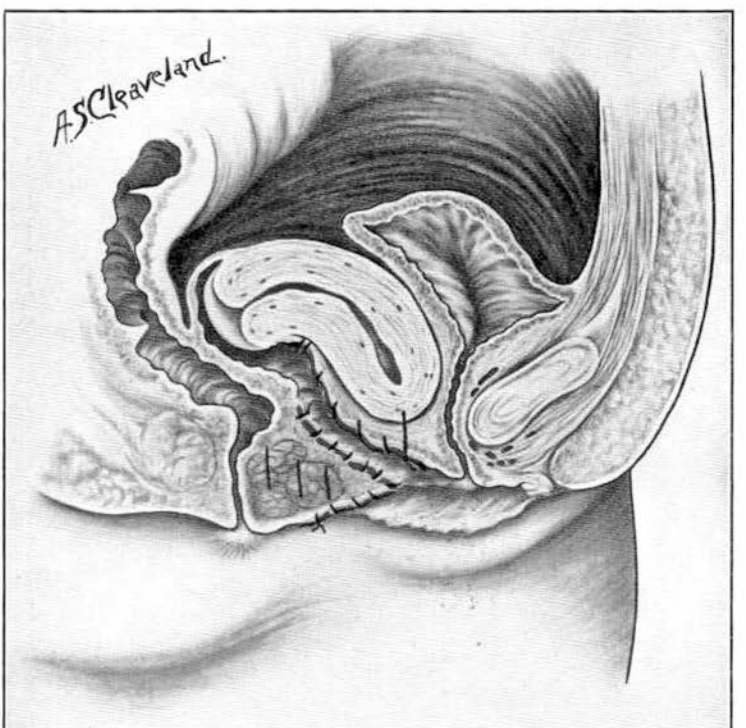


FIG. 11.—A sagittal section shows the relative positions of the bladder, uterus, and vagina and the location of the sutures with the operation completed.

Wertheim in 1899 independently used and recommended an operation based upon the same principles, differing only in that he at that time left a portion of uterine body exposed in the vaginal canal.

Stone (1899) developed an operation for uterine prolapse and cystocele and described it in part as follows: "The bladder is pretty widely separated from the uterus and broad ligaments and the edge of the incised vagina sutured to the anterior surface of

the uterus as high as the insertion of the round ligaments." He supplemented the operation by additional work performed through an abdominal incision.

Schauta (1909) claims much credit for closing the vaginal flaps over the uterus, and urges a modified technic whereby the bladder peritoneum is sutured to the peritoneum of the posterior surface

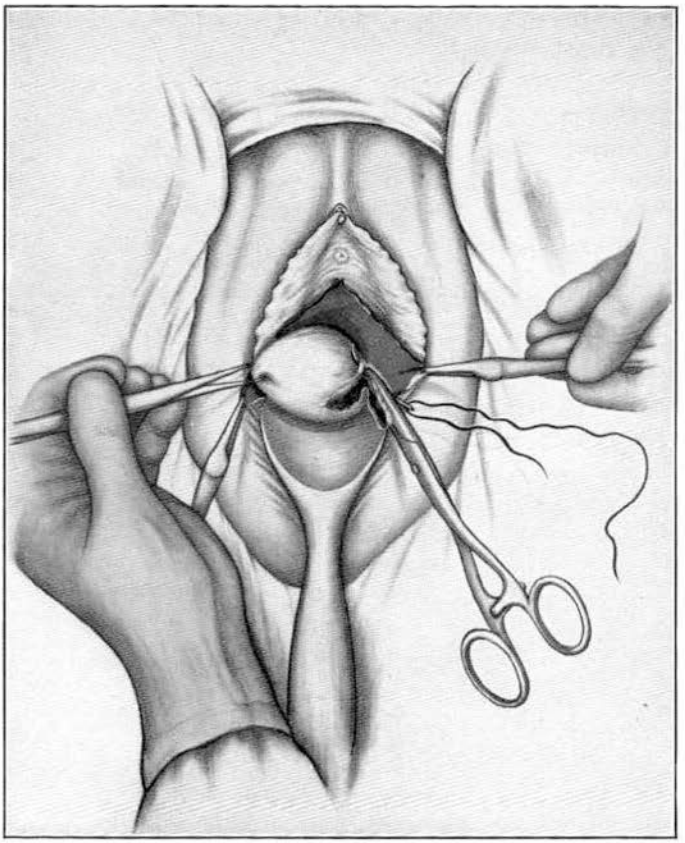

FIG. 12.—When indicated the isthmic portions of the tubes are excised.

of the uterus. The closure of the vagina over the uterus was included in my original technic eleven years before Schauta's publication. The suturing of the peritoneum is time-consuming, increases the dangers of infection and is unnecessary, as the peritoneum of the uterus and bladder remain in contact without suture. Schauta, however, deserves credit for recognizing the value of the transposition operation and for urging its use.

Fuchs (1909) in an able article reviews the results obtained by European operators who now employ the transposition operation and adds to our knowledge by relating his experiences and impressions. Others, notably Bucura (1901), Stone (1908), Violet (1909), Frankenthal (1909), Stoeckel (1910), Bröse (1910), and Bandler (1910) have added valuable experiences to the interesting literature of this subject.

IV. Results Obtained:

The following list is given with the understanding that it represents only in a crude way the results obtained by others who have employed this operation. The majority of operators obtain satisfactory results in from 80 per cent. to 90 per cent., although statistics derived from all available sources give a wider range in the number of permanent cures both above and below this percentage.

| Operator | No. of operations | Year reported | Complete cures |
|---|---|---|---|
| Bucura | 16 | 1902 | 93 per cent. |
| Bröse | 44 | 1910 | 84.4 per cent. |
| Döderlein | 47 (100 in 1909) | 1907 | 71.8 per cent. |
| Fuchs | 39 | 1909 | 97.4 per cent. |
| Frankenthal | 100 (estimated) | | |
| Gawriloff | 45 | 1909 | 91.1 per cent. |
| Krönig | 15 | 1910 | 67 per cent. |
| Löwit | 113 | 1911 | 66.6 per cent. |
| Mayo | 48 (100 in 1911) | 1909 | 96 per cent. |
| Petri | 11 | 1909 | 81.8 per cent. |
| Schauta | 110 | 1909 | 77.9 per cent. |
| Scharpenack | 100 | 1907 | 93 per cent. |
| Stoeckel | 40 | | |
| Wertheim | | | |

*Remarks.*—Stoeckel (1910) urges mobilization of the entire cystocele by careful separation of the bladder laterally in addition to separation in the median line, and in so doing makes preliminary ligation of the vessels encountered when dividing the "bladder pillars."

Occasional injury to the bladder is reported. Quite likely this occurs more frequently than is stated, but is an uncommon accident in the experience of good operators.

Döderlein (operative gynecology), Scharpenack (1907), Fuchs (1909), and Schauta (1909) ascribe recurrence of greater or lesser degree to incomplete or poorly healed perineorrhaphy.

Scharpenack encountered recurrent small cystoceles between

the fundus and urethra due to fixation of the fundus in a faulty position.

Many, notably Landau, Fuchs and Löwit (1911), believe that excision of a wedge-shaped portion of the corpus or cervix in case of a large uterus or long cervix insures against a recurrent prolapse. Löwit in a series of thirteen wedge-shaped excisions encountered high fever in the first four and hemorrhage necessitating hyterectomy in one. Thereafter he inserted a gauze wick for drainage and the remaining eight patients ran a perfectly satisfactory afebrile course.

Postoperative hematomata, says Lichtenstein (1909), collect either in a space left between the uterus and bladder or between the uterus and anerior vaginal wall. These he avoids by fixation of the bladder to the uterus with many sutures, and by sutures anteriorly between the uterus and anterior vaginal wall with accompanying excision of the redundant vaginal tissue. Complications and unsatisfactory results are as a rule limited to the region of operation and exert but little harmful influence upon the general health of the patient. Fatalities have been recorded only in rare instances, mostly as the result of pulmonary embolism.

V. Personal experience, with special reference to complications and unsatisfactory results.

The author's experience with this operation dates from January 28, 1898. The number of cases operated are approximately 225. The hospital records prior to 1905 are not complete. I have private records of the patients operated during the last seven years and these (141 cases) are chiefly depended upon for a report at this time. Of the 141 cases eighty-nine had the usual operation performed. The following modified operations were performed: Myomectomies, nine; excision of parts of the Fallopian tubes, twelve; excision of portion of uterus, fourteen; operations for other complications, such as salpingitis, ovarian cysts, complete laceration of the perineum, etc., fifteen. There has occurred one death which resulted from pneumonia on the eight day. Ten patients had postoperative fever of 101° to 102.4° for a period of from three to eight days. Of these one had an exudate in the culdesac following resection of the uterus, one developed catheter cystitis, two had pyosalpinx when operated, and in one pus was found in the paravaginal tissues at the time of operation. In the remaining five febrile cases the cause of the fever was in all probability due to retention of serosanguinuous

fluid in the wound. This readily decomposes on account of the close proximity of the bacteria which are always found in the vaginal canal.

The cystocele has not to my knowledge recurred in a single instance. It is a mechanical impossibility for the cystocele to recur if the operation is properly performed. A cure of the cystocele is the important part of the operation because the extensive cases are usually found after the menopause at which time the bladder is the only actively functionating organ involved in the operation.

A few of the patients (probably 5 to 10 per cent.) have had some recurrence of the uterine prolapse. In three patients the fundus of the uterus protruded after a considerable interval. These patients were cured by excision of the protruding part of the uterus and suture of the wound. In one case, a small senile uterus, the cervix and body protruded parallel to the vulva.

Drs. Mayo report a similar recurrence in their practice. One would expect a larger number of recurrences of the uterine prolapse as these patients often have a general abdominal ptosis and it is impossible to repair the hernia of the uterus with mechanical precision without obliteration of the vaginal canal. Some recurrence of the uterine prolapse is not particularly disturbing, because excision of the protruding part and suture of the wound is easily done and gives good results.

A number of points learned by the writer as a result of difficulties encountered during operation and recurrences consequent to operation are deemed worthy of emphasis.

1. Blunt dissection with the scissors along easily found planes of fascia saves untold difficulties with hemorrhage. In earlier operations this dissection was needlessly extended far laterally between the bladder and uterus with the result that the ureters were endangered and considerable unnecessary bleeding occurred. The wide separation also predisposes to retention of wound secretion and infection. We therefore do not agree with Stoeckel that widely extensive division of the tissues between the bladder and uterus is desirable.

2. After the bladder is separated the insertion of a narrow, long retractor between the bladder and uterus allows a clear view of the peritoneum over the fundus. This can then be incised without danger of injury to the bladder or intestine. Without the assistance of the retractor this step in the operation is frequently difficult and dangerous. Injury to the bladder with

the scissors complicated two operations. In one of these a preceding inflammation made the injury unavoidable; in the other instance the technic was at fault. Closure of the torn bladder wall was easily accomplished by means of a purse-string catgut suture. Uneventful recoveries followed.

3. If the uterus is very large, the broad ligaments very long, the cervix much hypertrophied or eroded, an excision of a wedge-shaped portion of the anterior wall of the uterus or a high amputation of the cervix is essential to a good result.

4. The occurrence of hemorrhage with accumulation of blood either between the uterus and bladder or between the uterus and anterior vaginal wall, as encountered by Lichtenstein, need rarely occur if separation is made along fascial planes as described by means of blunt dissection with the scissors. Should there be any bleeding sutures placed deeply through the cervix on either side will include the vaginal branches of the uterine arteries and stop the hemorrhage.

5. Some elevation of temperature will occur in occasional cases as it is impossible to avoid some retention of wound secretion, contamination with vaginal bacteria and possibly colon bacilli. The use of a gauze drain we believe tends more to increase decomposition than to prevent retention of wound secretion. When fever occurs we have found that elevation of the head of the bed and the use of moist dressings over the vulva is soon followed by drainage of an offensive secretion and consequent normal temperature.

6. When the bladder and uterus are transposed the forces which tend to produce a recurrence of a prolapse of the two organs oppose each other. Any tendency to recurrence of prolapse of the bladder tips the uterus further forward, twists the broad ligaments more and thus elevates the uterus in the pelvis; any tendency to prolapse of the cervix elevates the body of the uterus and thus raises the bladder, which in its new position rests upon the posterior surface of the uterus.

NOTE—Much of the work on this paper was done by my associate Dr. A. H. Curtis.

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