A TECHNIC FOR THE MANAGEMENT OF THE LARGE CYSTOCELE WHEN ASSOCIATED WITH NON-MALIGNANT DISEASE OF THE CERVIX AND MYOMATA UTERI

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(From the Clinic of the Woman's Hospital.)

THE recognition that cystocele is a true hernia of the bladder and that its repair rests upon the same principles governing surgical procedures for the cure of hernia elsewhere in the body, is a development in gynecologic surgery of the past thirty years. Sims (1871) was the first to completely expose the base of the bladder as it is done today, but he did it quite by accident, and did not employ this method again.

The etiology of the occurrence of cystocele and the principles of fascial support of the bladder we owe to Hadra (1888) and to him belongs the credit for first suggesting in 1889 the freeing of the bladder from the cervix and anterior vaginal wall and "resuturing the bladder to the anterior cervical lip as high up as possible." Hadra considered the point on the cervix where the bladder and vagina are firmly attached to one another to be of especial importance—"as a centre upon which the connection and the mutual support of the three organs depend—and the reattachment and restoration of normal relations between the bladder, vagina and cervix is what we ought to look for." Hadra apparently did not perform the operation, for, after giving this technic, he says "I have had no experience in it but I can promise that the following little operation answers our purpose very well," and describes passing a suture through the vaginal tissue on either side of the cystocele and fastening to the cervix, a procedure similar to that employed by Emmet.

The first, however, to appreciate that a prolapse of the bladder is a true hernia seems to have been Munde,[1] who, in 1890, in an article in the *American Journal of Obstetrics,* of which he was then editor, entitled "True Cystocele or Vesicovaginal Hernia," says that "stitches should include separated muscular fibers of the anterior vaginal wall instead of merely drawing together the vaginal mucous membrane." Two years later Skene in "Hernia of the Bladder" gives credit to Munde for this conception of cystocele as a bladder hernia and describes an operation which he had performed on the principle for

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repair of hernia. The freeing of the bladder was, however, limited "to the extent of the hernial opening in the muscular layer of the vagina," but the lateral edges of the muscular layer of vagina he brought together with sutures. This, so far as I have been able to find in the literature, is the first operation undertaken for cystocele with the knowledge on the part of the operator that he was dealing with a hernia and the intent to effect a cure by freeing the bladder from the vaginal wall and then bringing together the separated muscle in the wall of the hernial sac.

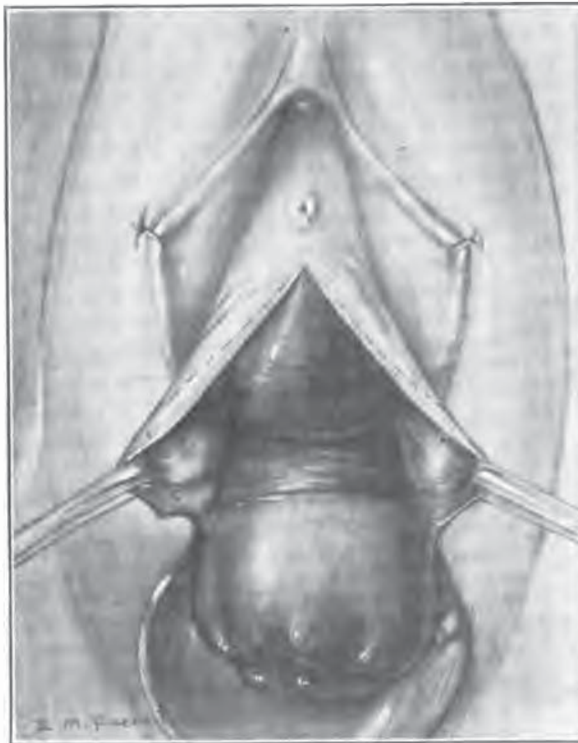

Fig. 1.—Cystocele associated with diseased cervix and myoma of the fundus (with or without procidentia).*

The operation of "vaginofixation" associated with the names of Mackenrodt, Sänger, Dührssen, Schücking and others was the forerunner of the interposition operation and the improved operation of cystopexy. Mackenrodt did the operation first in 1888 by passing a suture through the cervical canal and fundus of the uterus to the vesicouterine attachment and vagina without freeing the bladder. As the bladder was in danger of being injured by this stitch, Mackenrodt later made the opening of the vesicouterine peritoneum a preliminary step to the operation, but never freed the bladder extensively.

*Figs. 1, 2, and 3 are after Ward's technic for cystopexy and amputation of the cervix. Fig. 4 from Martin's Heftapparat.

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The next in order chronologically seems to have been the "flap" splitting method of Sänger." The technic of flap splitting was first applied to the repair of the pelvic floor by Lawson Tait, and by Sänger somewhat later. Sänger applied this technic to the anterior vaginal wall and the operation generally bears his name, but he himself in 1892 gives credit to Gersuny and Arx for being the pioneers in this work. While Sänger approved of bladder separation from the anterior wall of the vagina far out laterally on either side, he disapproved of its separation from the uterus and in this point differed from both Arx

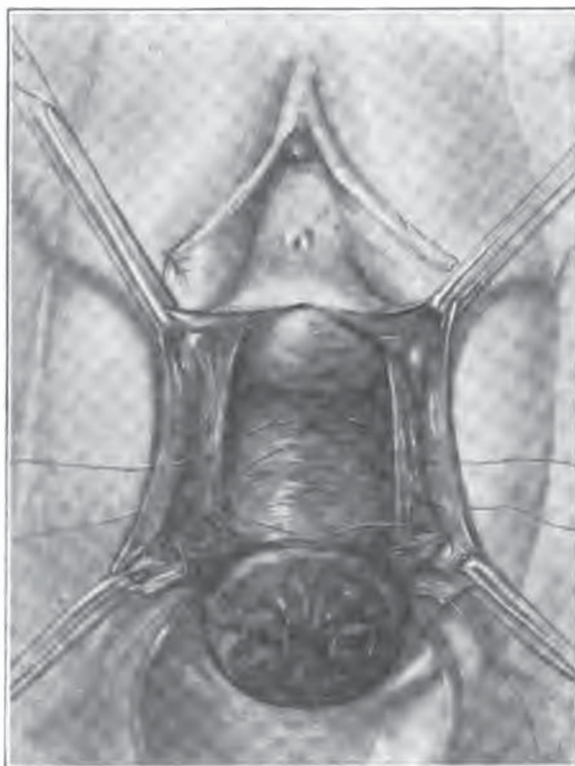

Fig. 2.—Freeing of the bladder and cutting off the thinned-out sac. Amputation of the cervix. Alexandroff's stitch and angulation of the vagina. (Note that the bladder is not attached to the anterior surface of the uterus, but left free.)

and Gersuny who separated the bladder from the uterus but not so high as the peritoneal attachment which they left intact. Arx is the first to mention the elevation (Einstülpung) of the bladder as an important step in the operation but he accomplishes this by turning the bladder mucosa upward into a ridge or cone within the bladder after the method of Emmet. Gersuny and Martin both employed this infolding of the bladder wall which they maintained by interrupted sutures.

The first description of an operation performed after the technic

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suggested by Hadra was that given by Stone, of Washington, (1889) who separated the bladder from the uterus and after excising the thinned-out portion of the vaginal wall sutured it to a point on the anterior surface of the uterus on a level with the origin of the round ligament and then opened the abdomen and made "a further separation of the bladder from the uterus and sutured the reflexure to the scarified surface of the uterus near the fundus." If he considered it advisable, he also did a ventral fixation.

It has been of no little interest to me to trace the origin of the transposition operation or as it is known in German literature, the interposition operation. I was a student in Vienna when the discussion was

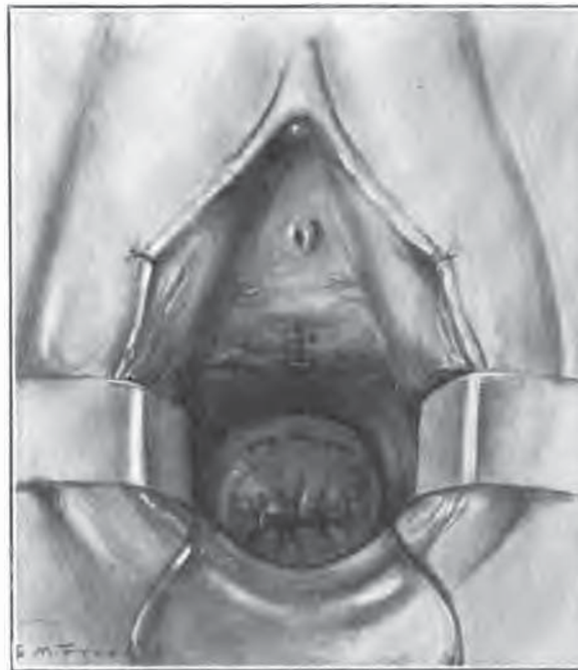

Fig. 3.—Vaginal part of the operation completed.

keenest as to whether the credit for priority belonged to Schauta or Wertheim, and as I was for several months in the clinics of Schauta at the Krankenhaus and also in the clinic of Wertheim at the Kaiserin Elizabeth Bettina Pavilion, I had ample opportunity to hear this discussion from both sides,—but I never heard any credit given to an American surgeon. As the operation is known today in German text books as the Schauta-Wertheim operation, I think it may not be amiss to present the facts in detail.

In 1894 Dührssen reported a series of 250 cases upon whom he had done a "vaginofixation" operation. I mention this because Dührssen

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has been credited sometimes as being the first to do the transposition operation, but there is nothing in his report to warrant this assertion. Dührssen did incise the vesical peritoneum frequently to avoid injuring the bladder, but his technic is that of Mackenrodt in vaginal fixation of the fundus of the uterus in cases of retroversion.

In 1896 Freund, when operating for prolapse, made a posterior colpotomy incision and brought the fundus through the opening into the vagina and fastened it to the walls of the vagina. The uterus thus

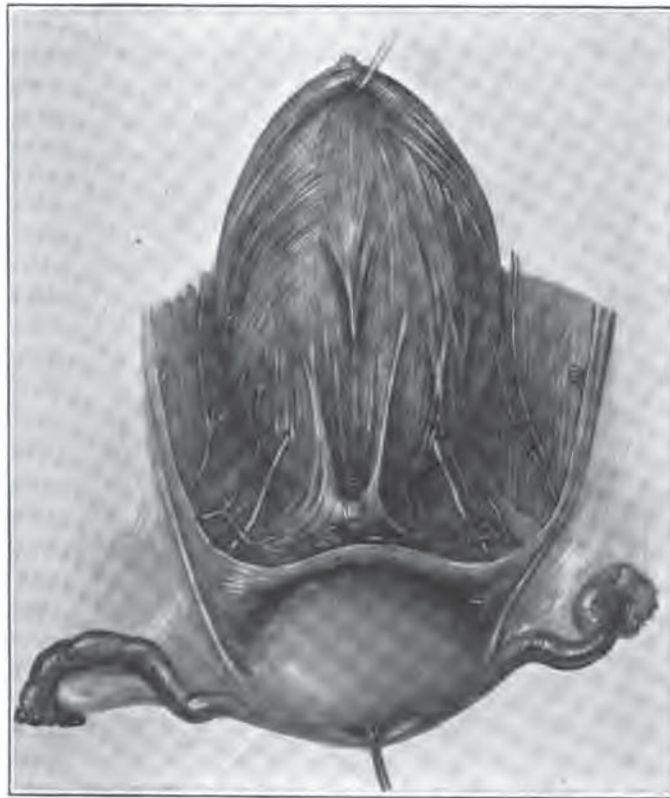

Fig. 4.—The bladder has been completely freed from its vaginal attachments. (Note stitch plicating the tissue and attaching the bladder to the cervix.)

lay in the vagina without any vaginal covering. Freund then made an incision in the fundus for the purpose of drainage.

On January 28, 1898, Thomas J. Watkins, of Chicago, performed a transposition operation precisely as it is done today, bringing the fundus of the uterus below the bladder, fastening it there and suturing the vaginal flaps anterior to the fundus. This operation was reported in the *American Gynecological and Obstetric Journal* for 1899 (xv, 420).

On January 10, 1899 (this is one year later than Dr. Watkin's operation) Wertheim, who said he had in mind Freund's technic, when

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operating to cure a large vesicovaginal fistula, brought the uterus into the vagina by an anterior incision and fastened it under the bladder and *anterior to the vaginal flaps,* so that it lay uncovered in the vaginal canal. On January 18, 1899, Wertheim employed the same technic for a large cystocele associated with prolapse. This operation Wertheim reported in the *Zentralblatt für Gynäkologie* in April, 1899.

Some time after this Dr. Josef Halban (who was then assistant to Schauta, at that time chief of the Gynecologic and Obstetric clinic) when operating upon a patient according to Wertheim's technic, and at the suggestion of Schauta who was present in the operating room, fastened the vaginal flaps anterior to the fundus of the uterus, as Watkins had done in his first operation. (This was a personal communication from Dr. Halban to me while I was working in the clinic.) The credit therefore for this operation belongs neither to Schauta nor to Wertheim, but belongs rightfully to Watkins who antedates them both in the transposition of the bladder and the attachment of the vaginal flaps; and the operation should be known as the Watkins' transposition operation.

Löwit in 1909 reported a transperitoneal vaginal supravaginal resection or amputation of the body of the uterus and utilized the cervix, (by sewing it into the vesicovaginal septum), to support the cystocele after the manner of a Watkins operation.

In 1915 Vineberg amputated high up the body of a chronically fibrosed uterus, and, after amputating the lower portion of the cervix, utilized the midcervical portion or stump by suturing it to the subpubic fascia and to the anterior vaginal wall, thus forcing the bladder "to take a position within the abdomen."

In 1902 Alexandroff described the technic, now known by his name, of placing a stitch through the base of the broad ligaments on either side of the cervix drawing them forward and fastening low down on the anterior wall of the cervix, thus making a buttress of them and elevating and forcing the cervix back in the pelvis, a method described later by Tweedy.

In 1901 Reynolds laid down the "principles underlying the repair of cystocele or governing repair of hernia elsewhere," viz.:

1. To ascertain and utilize the natural supports.

2. To avoid using any part of the overstretched wall. Excision of the thinned-out portion of the anterior wall was done by Noble in this same year, 1901, and Dudley, 1903.

In 1904 Goffe more thoroughly applied the principles employed in repair of hernia and freed the bladder completely from its cervical attachment, overcorrecting the prolapse of this organ by elevating the

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bladder base and reattached it high up on the anterior wall of the uterus, and broad ligaments, excising the thinned-out portion of the vaginal sac with the intent to

1. Provide good support for the bladder below.
2. Restore suspensory supports above.
3. Do away with redundant folds of bladder wall at its base.

This spreading out of the trigone of the bladder and its attachment to the face of the uterus and broad ligaments insures, not only a firm supporting surface, but prevents infolding of the bladder wall, as kinking of the ureters with stagnation of urine and consequent irritation of bladder mucosa or cystitis.

In 1907 Noble advocated this same technic and by sutures placed in

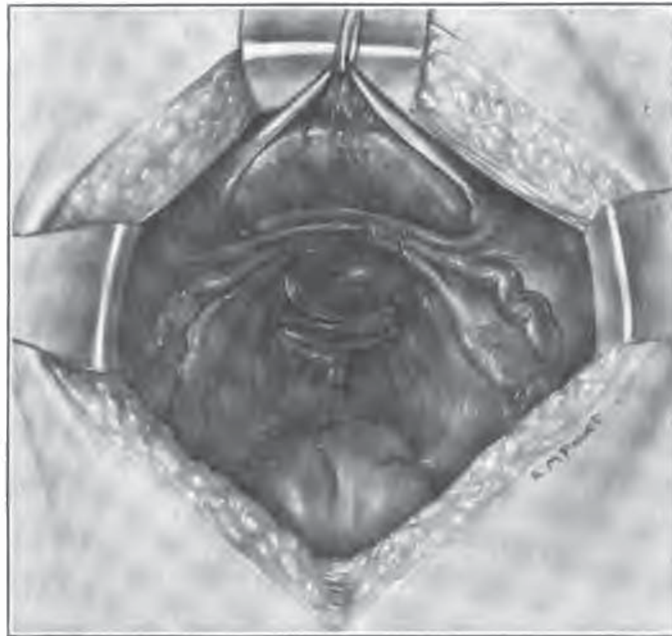

Fig. 5.—Supravaginal hysterectomy has been done and the round ligaments (and the tubes and ovaries if not removed) fastened anteriorly to the stump of the cervix *at the same level* and to the uterosacral ligaments posteriorly to *form a platform* upon which to spread out the bladder.

the cervix directly below the bladder gave more firm support the base of the bladder wall, a method reported in 1913 by Lockyer.

Edouard Martin in 1912 in an anatomic study of the genitalia demonstrated the pubocervical ligament (bladder pillars), the importance of which have been confirmed by Frank in 1917 and Rawls in 1918 in their work on cystocele. The reattachment of the vaginal wall together with this ligament restores the invagination of the cervix to normal or to an overcorrection, as in hernial repair elsewhere.

The overlapping of the fascia below the bladder was first reported

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by Rawls and Bissell and to the latter and to Mayo should be accredited the operation of uniting the broad ligaments and placing the bladder above after the complete removal of the prolapsed uterus.

The recognition of the supporting and elevating power of the uterosacral ligaments somewhat antedates the above as attention was called to this factor in restoring prolapse or displacement of the uterus by Wertheim and Mandl, Bovée and Noble.

So far mention has only been made of the repair of the cystocele from the vagina, but as early as 1890 the cure of the cystocele was sought by the abdominal method. Byford at this time operated

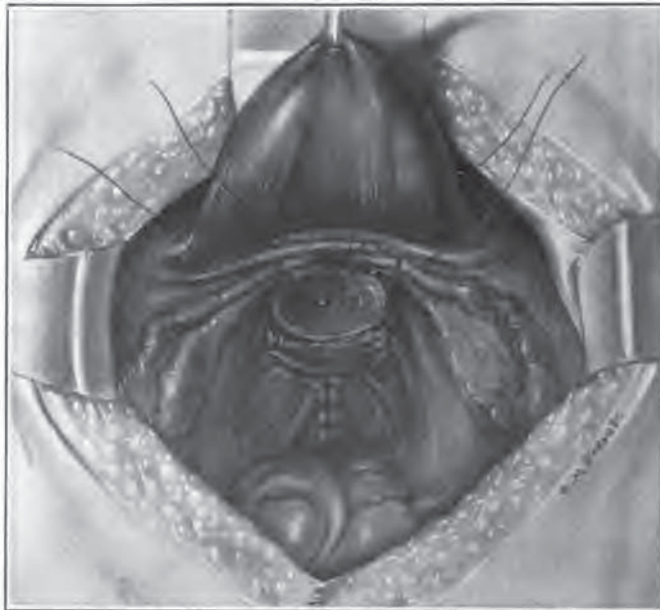

Fig. 6.—Two stitches tack the bladder to the anterior part of the platform.

through the inguinal canals, fastening the tissue on either side of the bladder to the incision.

Lawson in 1898 by suprapubic incision freed the bladder and sutured it to the sheath of the rectus.

In 1903 Dickinson suspended both bladder and uterus to the parietal peritoneum or by actual "fixation of bladder and uterus directly to naked muscle and fascia."

Polk in 1909 presented a technic for restoration from within the abdominal cavity of the prolapse of the uterus when associated with cystocele. The anterior wall of the vagina was plicated from above, and the uterus, if retained in situ, fastened well forward. If supravaginal hysterectomy was done the round and broad ligaments on either side were sutured to the stump of the cervix and the uterosacral

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ligaments cut and after crossing them over the stump were sutured to its anterior surface.

In 1919 Ward in the "Problem of the Cystocele" gave a complete résumé of the salient points in the etiology of the occurrence of hernia of the bladder and the technic for its repair, emphasizing the composite nature of the injury and the necessity to correct all the lesions in order that there "should be no weak link."

The technic of the operation I am about to present, so far as it pertains to the vaginal work, follows closely the method laid down by Ward and in the freeing and elevating of the bladder from within the abdominal cavity and the suturing of round and uterosacral ligaments to the stump of the cervix, is very similar to the technic of Polk, although I was not acquainted with the latter's work until I had done four cases.

Case 1.—Mrs. Q., W. H. 22949. Op. June 27, 1919; one hour and forty-five minutes. Alexandroff; combined vaginal and abdominal cystopexy; rectopexy; hysterectomy, supravaginal (platform); salpingo-ooprorectomy; shortening of uterosacral ligaments; appendectomy.

Case 2.—Mrs. I., W. H. 23676. Op. October 4, 1919; Alexandroff; combined vaginal and abdominal cystopexy; hysterectomy, supravaginal (platform); shortening of uterosacral ligaments; appendectomy.

Case 3.—Mrs. C., W. H. 25231; Op. February 20, 1920; 1 hr. 15 min.; Alexandroff; combined vaginal and abdominal cystopexy; op. for incontinence of urine (Kelly); rectopexy; hysterectomy, supravaginal, (platform); salpingo-oophorectomy, (bilateral); shortening of uterosacral ligaments.

Case 4.—Mrs. R., W. H. 27274; Op. Feb. 11, 1921; 2 hrs. 9 min., amputated cervix; Alexandroff; combined vaginal and abdominal cystopexy; rectopexy; hysterectomy, supravaginal, (platform); shortening of uterosacral; appendix previously removed.

INDICATIONS FOR OPERATION

Occasionally one meets with a case of large cystocele associated with a very much hypertrophied, badly torn cervix necessitating removal, and in the fundus large myomata, the removal of which by the vaginal route would be an impossible or difficult operation attended with great loss of blood and danger of infection. If in addition to this one finds on examination that there is no prolapse associated with the condition, it becomes impossible to reef the broad ligaments below and place the bladder above as in vaginal hysterectomy, or after complete hysterectomy from above to leave the bladder so supported that recurrence of the cystocele is not probable.

The following technic is therefore presented as having been satisfactory in four cases where an enlarged fundus and diseased cervix necessitated their removal, but the large cystocele associated required

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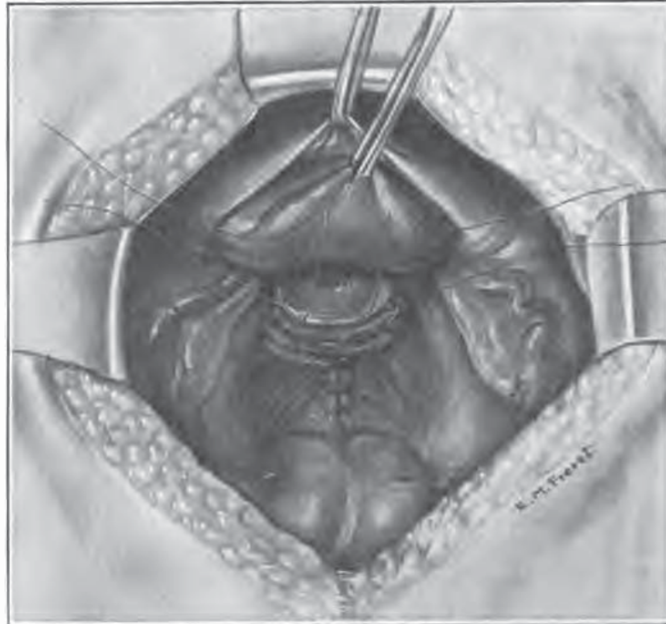

Fig. 7.—Two other stitches complete the attachment of the bladder to the platform posteriorly.

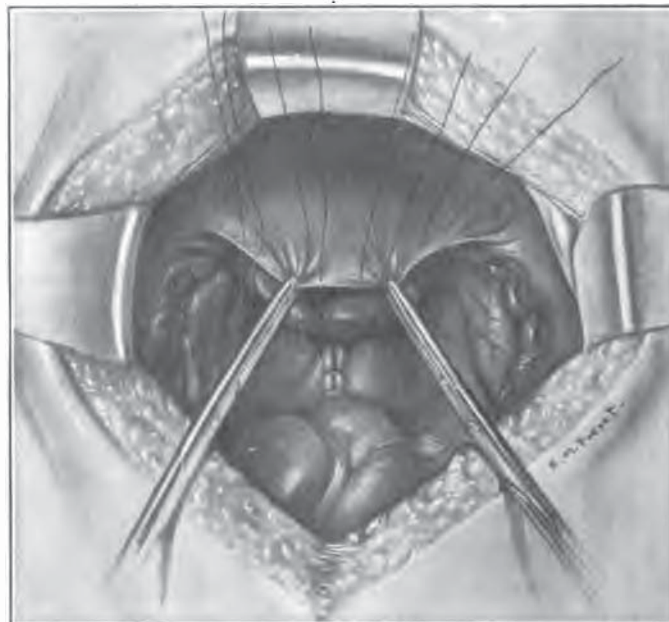

Fig. 8.—The free edge of bladder peritoneum (vesico-uterine fold) is sutured to the peritoneum to more firmly anchor the bladder in position.

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a good support for its cure. A repair of the pelvic floor is an essential part of the technic although not shown in the accompanying illustrations.

CONCLUSIONS

1. This technic provides a good support for a cystocele when both fundus and cervix of the uterus must be removed.

2. The firm cervical attachments of the broad ligaments are maintained and the base of the broad ligaments, uterosacral and round ligaments are all utilized to secure pelvic support for the bladder.

3. Bladder is spread out over a platform which prevents any considerable degree of infolding of the bladder wall or kinking of the uterus.

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