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Posterior Culdeplasty

Surgical correction of enterocele during vaginal hysterectomy; a preliminary report

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HERNIA of the cul-de-sac of Douglas was first described in 1736 by Garengeot (according to T. Gaillard Thomas). Except for a few sporadic attempts to cure this condition by the abdominal route, its treatment was essentially neglected until the present century. In 1909 Marion described abdominal obliteration of the cul-de-sac for this condition, and in 1912 Moschcowitz introduced his operation for rectal prolapse which also was found to be useful for enterocele.

In 1922 Ward popularized the vaginal approach for the cure of posterior vaginal hernia. Since then there have been a number of modifications[2, 10, 13] of this operation described, but the fundamentals remain the same. These points of technic are high dissection of the posterior vaginal wall to expose the enterocele, dissection of the hernial sac followed by its opening, reduction of its contents, ligature of its base, and excision of excess peritoneum. This is usually followed by the plication of the uterosacral ligaments or other adjacent tissues over the sutured peritoneum of the cul-de-sac.

Over a period of several years the author has utilized a technic for the cure of enterocele which, so far as he knows, has not been described in the literature. This operation is performed from below following vaginal hysterectomy and takes place within the lower portion of the peritoneal cavity. It is a posterior culdeplasty whereby the relaxed cul-de-sac of Douglas is suspended and obliterated between the uterosacral ligaments

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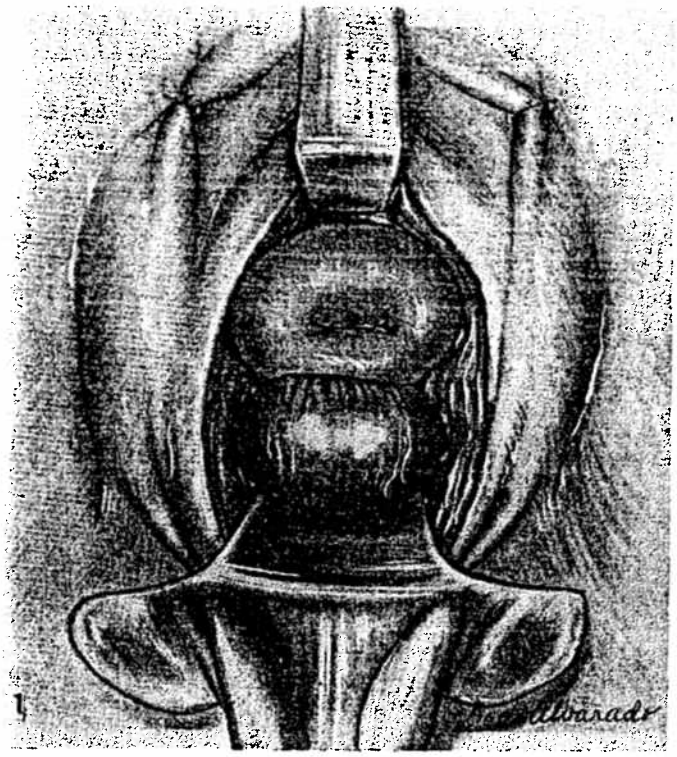


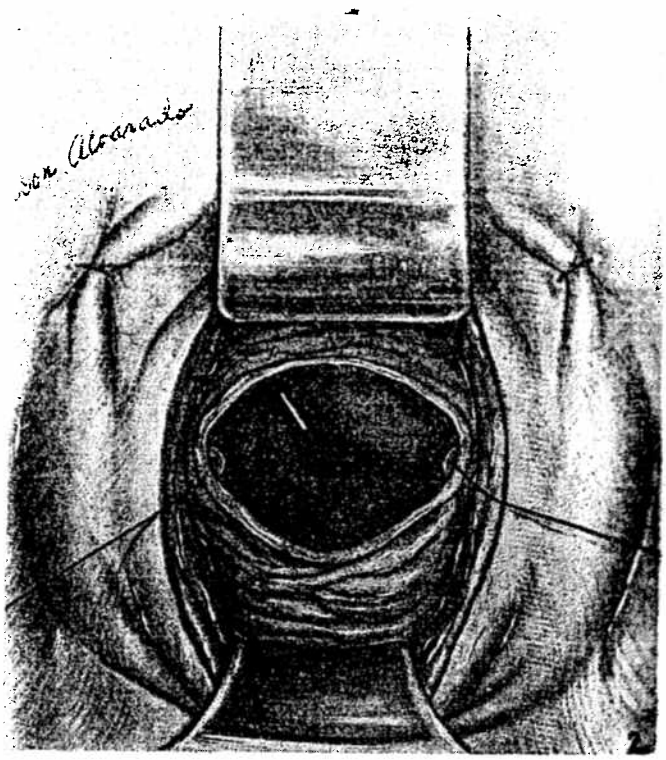


Fig. 1. Acquired enterocele. **Fig. 2.** Vaginal hysterectomy has been accomplished. The ligatures on cut uterosacral ligaments are held long.

without dissection of or excision of the hernial sac.

There has been some argument in the literature concerning the exact nature of enterocele (Fig. 1), which is also called "posterior vaginal hernia," "hernia of the cul-de-sac of Douglas," or "elytrocele." In general there are two main types, one a long peritoneal process extending from a narrow ring posterior to the cervix, anterior to the rectum, and bounded on either side by the uterosacral ligaments. The process may extend downward as far as the perineal body between the posterior vaginal and anterior rectal walls. This type is uncommon and is believed to be a congenital defect.

The second or acquired type is a relaxation of the cul-de-sac of Douglas usually caused by the trauma of delivery. The defect so caused may be of any degree from a small outpouching immediately behind the cervix and between the uterosacral ligaments to a huge sac which dissects downward in the rectovaginal septum to the perineum. The acquired type is quite commonly associated with uterine prolapse and is frequently overlooked in its early development. In this presentation the term "enterocele" is used to include both congenital and acquired types whether they be large or small. This view is in accordance with that taken by Ward, Phaneuf,[6, 7] Read, and most modern gynecologists.

Ward was among the first to point out that small cul-de-sac relaxations are common. Read and Novak both emphasize that unrepaired high posterior laxity is probably the most common cause of late complications following vaginal hysterectomy. This relaxation may lead not only to enlarging enterocele formation, but also to complete prolapse of the vaginal vault.

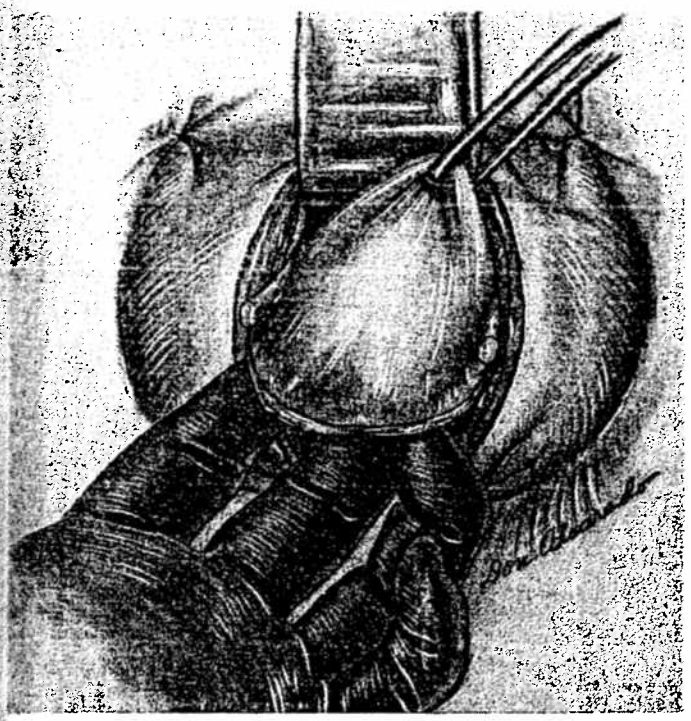


Fig. 3. The enterocele sac is inverted. This helps the surgeon delineate more exactly where the sutures must be placed in order to obliterate completely the relaxation present.

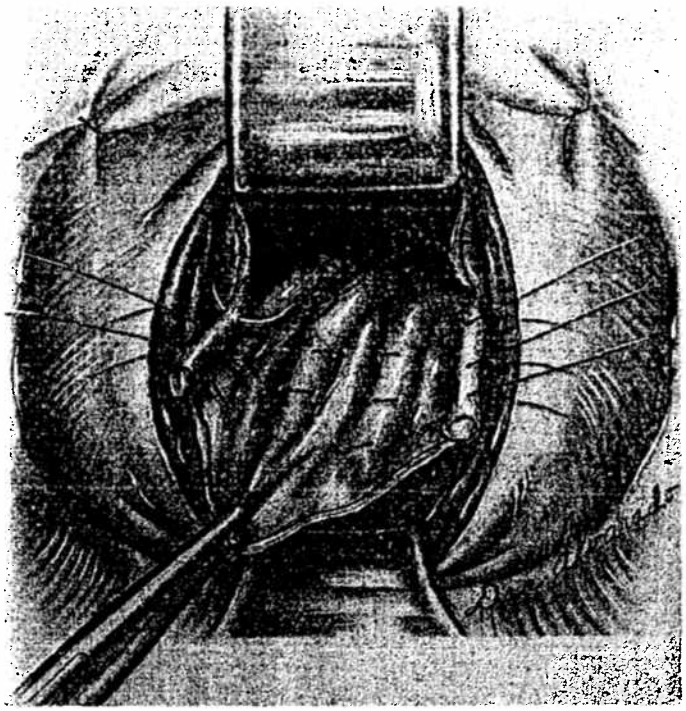


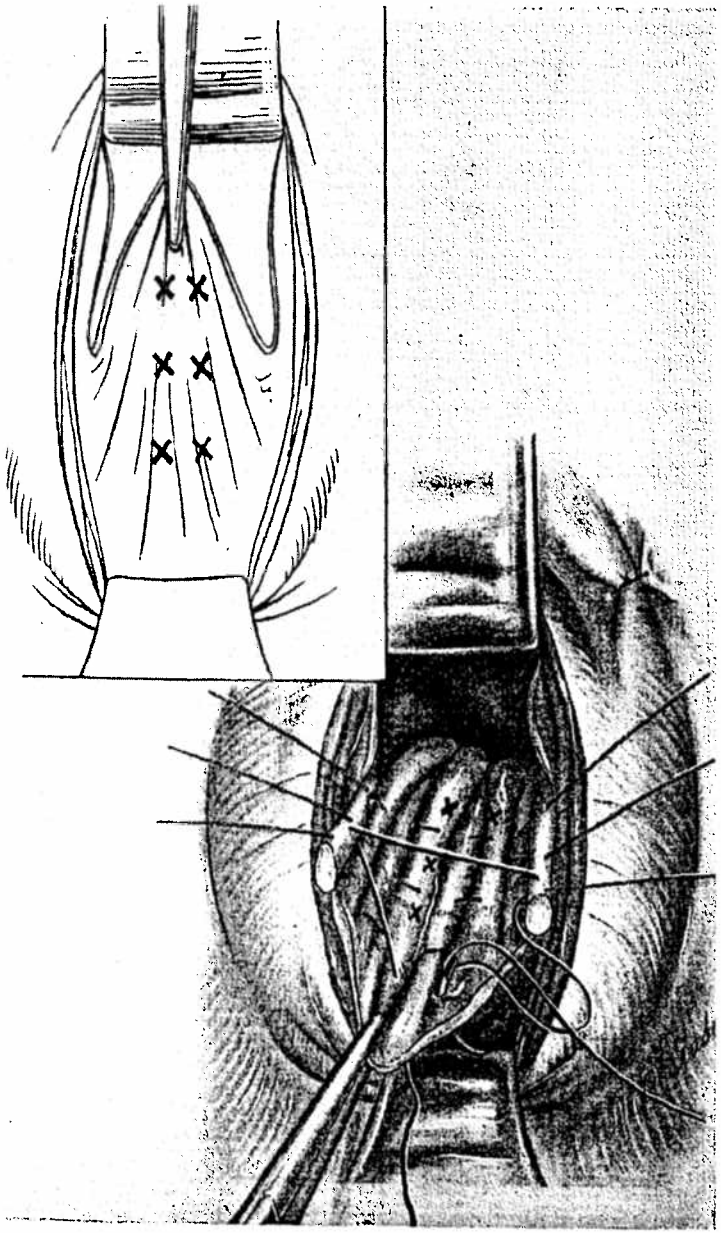
Fig. 4. At least three sutures of nonabsorbable material are placed within the lower peritoneal cavity and are called the internal sutures. The first stitch picks up the left uterosacral ligament about 2 cm. from its cut edge and is terminated after picking up the right uterosacral ligament at the same level. Several bites of redundant cul-de-sac are incorporated in the suture at regular intervals so as not to allow defects through which the pelvic viscera may become herniated. Each individual internal suture is placed at a higher level until the entire enterocele has been picked up.

There has been a tremendous increase recently in the number of vaginal hysterectomies performed in this country. This fact makes the problem of enterocele more significant than ever, since this operation is done frequently without giving adequate support to the cul-de-sac area. In keeping with modern emphasis upon early diagnosis and treatment in medicine, the author believes that it is of great importance to ferret out and treat the early enterocele. It is with this in mind that a new technic is described although large enteroceles have been treated successfully with this method.

METHOD

The posterior culdeplasty is a simple procedure which obliterates the redundant cul-de-sac of Douglas by a series of continuous sutures so as to suspend it by the uterosacral ligaments, which then are brought together in the midline.

In order to accomplish this at least three sutures of nonabsorbable material (silk, cotton, linen) are utilized. After vaginal hysterectomy is completed (Fig. 2) the patient is placed in Trendelenburg position and the lower portion of the peritoneal cavity exposed by retraction upward of its usual contents. After the depth of the sac has been ascertained it is everted (Fig. 3). The first suture picks up the left uterosacral ligament about 2 cm. above its cut edge. Several bites of redundant sac are then taken at 1-2 cm. intervals until the right uterosacral ligament is reached and picked up.



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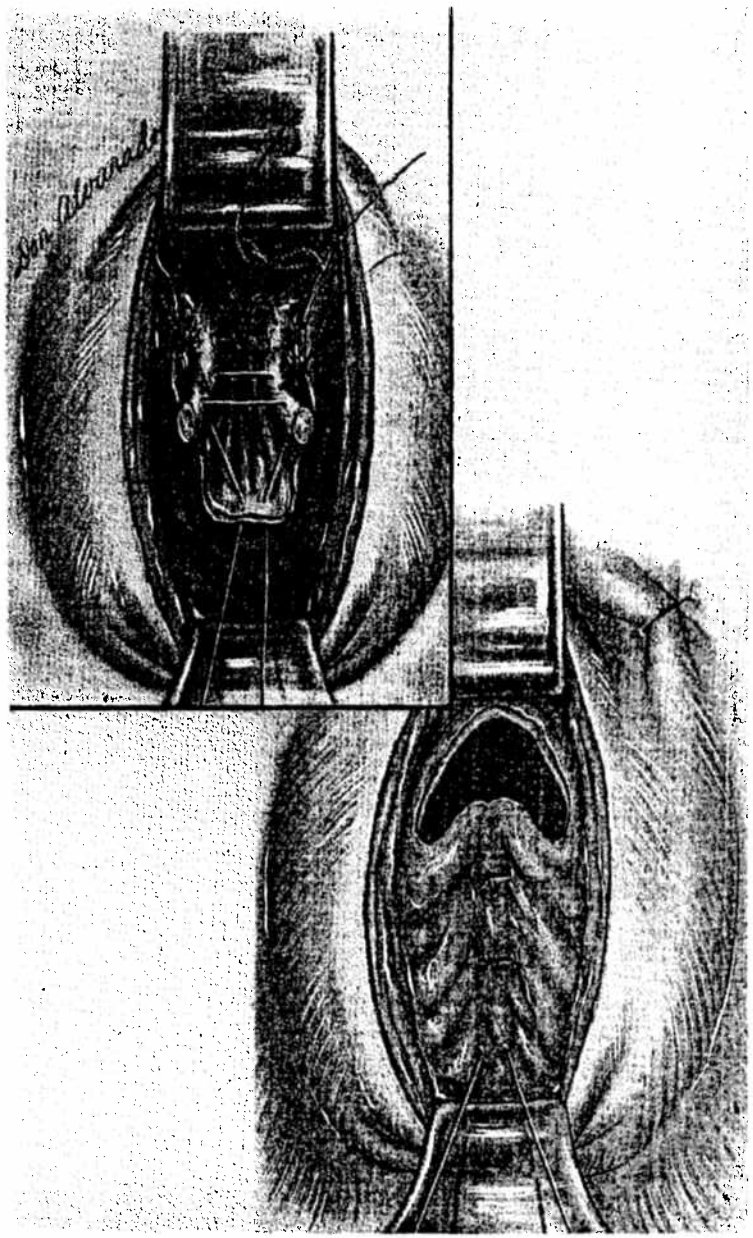

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While the ends of the first suture are held long the second and third stitches are taken in a similar manner above the first. In this way the entire dependent portion of the cul-de-sac is picked up so that there is no longer a hernia present (Fig. 4). The number of internal sutures placed depends upon the size of the enterocele. The average is three. It is important that multiple bites be taken as the suture is carried across from the patient's left to her right side so that no defect remains through which bowel or omentum may become incarcerated. With each succeeding suture the relaxed cul-de-sac is rolled outward until the original defect no longer exists.

After all of the necessary internal sutures have been placed and their ends held laterally without tying, a series of through-and-through sutures of chromic No. 1 gut are added (Fig. 5). These are inserted from the vaginal side and the first is just to the right of the midline of the vagina about 2 cm. above its posterior cut edge. This penetrates directly through the cul-de-sac tissues and the needle is picked up within the lower peritoneal cavity. The right uterosacral ligament and then the left are penetrated by the needle and suture without picking up any intervening tissue before being brought out through the vaginal wall at a point just to the left of the midline and at the same level as it entered.

Three external through-and-through sutures of this type are usually inserted, each one higher than the last, so as to be placed through the uterosacral ligaments at intervals between the internal sutures. The highest of these is placed just at the top of the newly supported vagina. This point must be carefully delineated by palpation before the final suture is placed. It is this suture which brings the new vaginal vault to the highest possible level thus insuring that the vagina will be as long as possible in each instance. The internal sutures are now tied and the previously herniated cul-de-sac obliterated into a firm, shelflike structure (Fig. 6). The external sutures are then tied and the vaginal mucosa snugged against this shelf. In this way a new vaginal vault is made (Figs. 7 and 8).

The once redundant cul-de-sac has been gathered together into a sturdy shelf of tissue. The peritoneum is closed and the procedure completed with the performance of anterior and posterior colporrhaphy as indicated. The author uses a modified Heaney technic placing the stumps of the cardinal ligaments into the lateral aspects of the vaginal vault and the uterosacral stumps just medial to these. This widens the upper vagina in its transverse diameter.

RESULTS

All authorities agree that adequate enterocele repair tends to shorten the vagina and narrow its upper portion. Posterior culdeplasty tends to lengthen the vagina and since no mucosa or other tissue is removed from the upper vagina the narrowing is not as marked as with other technics. Table 1 compares vaginal length before and after operation in 9 patients with significant prolapse and shortening of the vagina. The length of the normal vagina is 8.5 cm., according to

Fig. 5. Through-and-through sutures of absorbable material are inserted after the internal sutures have been placed. The upper drawing delineates the points of entrance of each suture. The first is closest to the cut edge of the vagina and to the patient's right (to the left of the illustration). The exit of each suture is at the point X to the left of the patient on the right side of the drawing. As seen below, the through-and-through sutures are passed directly through the vaginal mucosa and the enterocele. They pick up the right then the left uterosacral ligaments before being brought into the vagina again. These are interdigitated with the internal sutures so that the top stitch not only delineates the apex of the reconstructed vagina, but also incorporates the highest point of cul-de-sac relaxation. **Fig. 6.** The internal sutures are tied first on the peritoneal side. Following this the through-and-through sutures are tied on the vaginal side. The previously herniated cul-de-sac is obliterated into a shelflike structure.

TABLE 1. VAGINAL LENGTH BEFORE AND AFTER POSTERIOR CULDEPLASTY

Patient	Length (cm.) Pre-op.	Post-op.	Follow-up (no. mo.)
M. M.	5.0	10.2	17
S. B.	4.8	8.1	9
V. B.	4.5	8.5	19
C. D.	5.0	8.0	16
B. C.	4.0	7.7	16
V. V.	5.0	8.0	13
L. G.	4.5	8.2	12
J. S.	2.5	9.2	6
J. L.	6.0	11.8	8
AVG.	4.6 cm.	8.9 cm.	

Schumann. *Gray's Anatomy of the Human Body*[2] states that the anterior wall may be as long as 7.5 cm. and the posterior wall 9 cm. Our measurements were made from the vaginal vault to the posterior fourchette with the patient in lithotomy position without straining. The average length of 8.9 cm. attained by posterior culdeplasty, therefore, represents a restitution of the vagina to normal length.

Forty-five posterior culdeplasty operations have been performed to date.* Forty-three of these were done immediately after vaginal hysterectomy and 2 were carried out upon patients who developed complete prolapse of the vaginal vault after previous total hysterectomy (one vaginal and one abdominal). The addition of posterior culdeplasty to careful anterior and posterior colporrhaphy affords an excellent method

* Thirty-one additional patients had been operated upon by this technic on the Louisiana State University Services as of June 15, 1957.

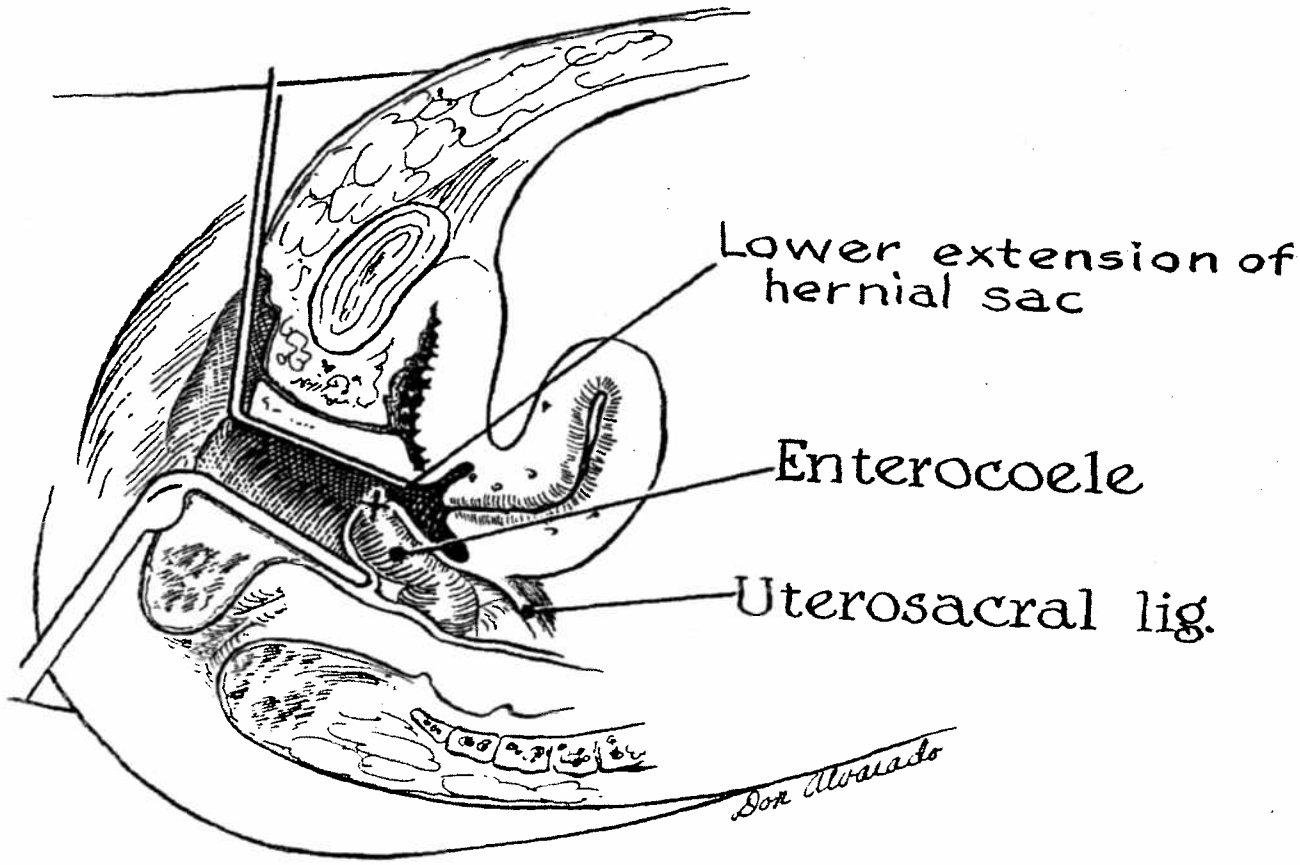

Fig. 7. Diagrammatic sagittal section shows enterocele before repair. Point X delineates its lowest extension.

of surgical rehabilitation with preservation of a deep vagina for these patients.

Twenty-five procedures have been performed by the author, the first in 1943 and the majority of the rest within the past 4 years. The remaining operations have been done during the last year and a half by the resident staff on the Louisiana State University Service of the New Orleans and Lafayette Charity Hospitals. Three private patients of Dr. Joseph Brocato are also included.

The longest follow-up of any of these patients has been 3 years. Most patients have been rechecked from 3 to 19 months postoperatively. So far as is known no enterocele has recurred. No doubt this will happen as the time of follow-up is lengthened. One patient who had a previous classical vaginal repair of an enterocele which recurred within 2 months has apparently been cured by posterior culdeplasty.

This is a preliminary report of a surgical procedure which seems to have great merit and therefore should be widely evaluated by gynecologists. Many more such operations must be done and carefully followed over a significant period of time so that the exact place for this procedure in relation to the other standard technics for enterocele may be determined.

SUMMARY

1. The importance of posterior vaginal hernia has been emphasized, and a plea made for the early recognition and treat-

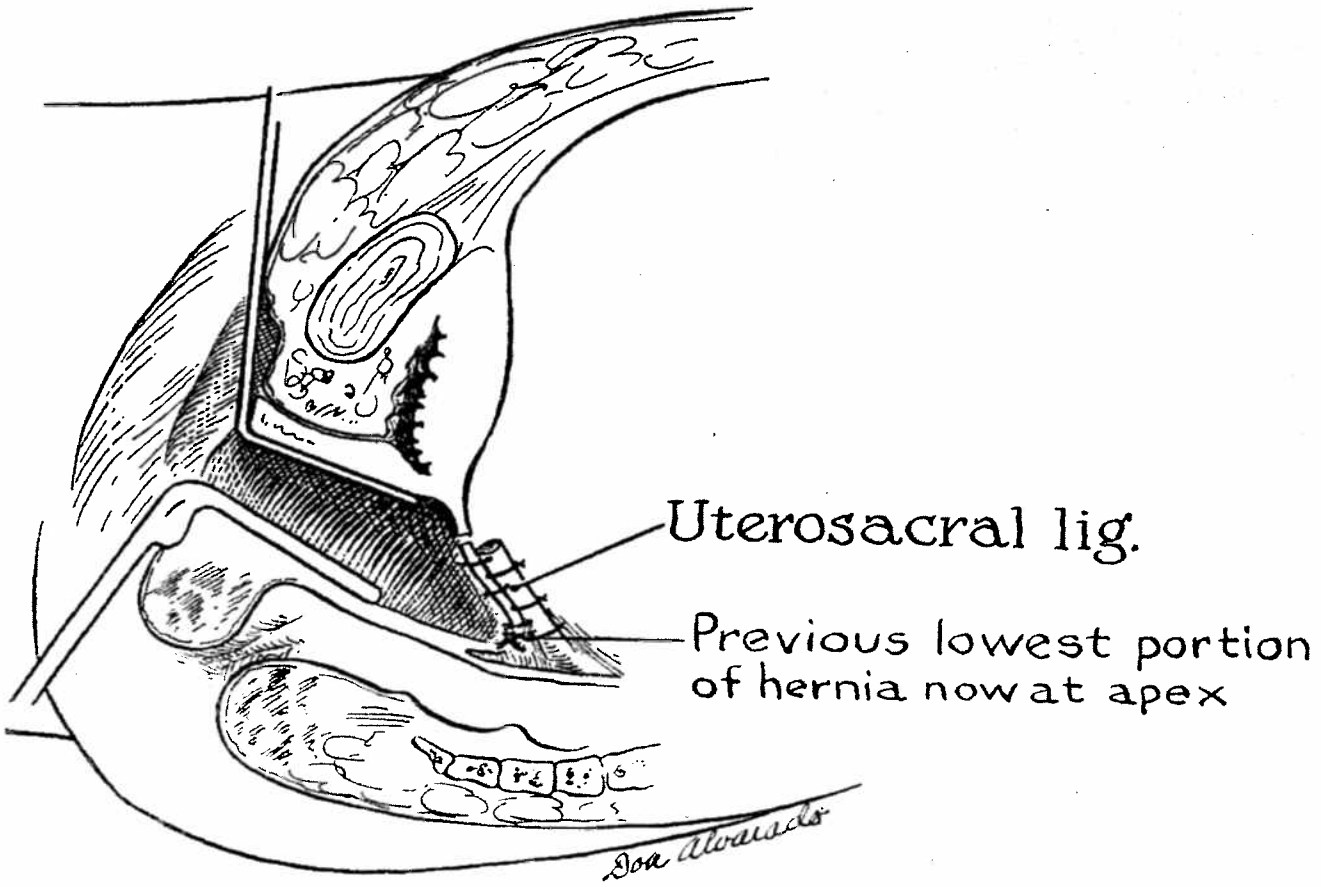

Fig. 8. Diagrammatic sagittal section following posterior culdeplasty showing supported cul-de-sac. Note that point X depicted in Fig. 7 has been drawn up to the apex of the vagina.

ment of minor degrees of posterior cul-de-sac relaxations.

2. Posterior cudeplasty, a surgical procedure which obliterates and suspends the redundant posterior cul-de-sac following vaginal hysterectomy, has been described.

3. This operation tends to lengthen the vagina without bringing about as much narrowing of the upper vagina as do most of the older technics.

4. Continued performance and evaluation of this technic appears to be merited.

REFERENCES

1. Goss, C. M. (Ed.) *Gray's Anatomy of the Human Body* (ed. 26). Philadelphia, Lea, 1954.
2. Hiller, R. I. Repair of enterocele with preservation of the vagina. *Am. J. Obst. & Gynec. 64*:409, 1952.
3. Marion. De l'obliteration du cul-de-sac de Douglas dans de traitement de certains prolapsus uterine. *Rev. de gynec. et de chir. abdom. 13,* 3:435, 1909.
4. Moschowitz, A. V. The pathogenesis, anatomy, and cure of prolapse of the rectum *Surg. Gynec. & Obst. 15*:7, 1912.
5. Novak, E. Editorial comment on Hiller, R. I.: Repair of enterocele with preservation of the vagina. *Obst. & Gynec. Surv. 8*:287, 1953.
6. Phaneuf, L. E. Posterior vaginal enterocele (hernia of the cul-de-sac of Douglas). *Am. J. Obst. & Gynec. 45*:490, 1943.
7. Phaneuf, L. E. Posterior vaginal enterocele: Hernia of the cul-de-sac of Douglas; a study based on 91 private patients. *Obst. & Gynec. 1*:257, 1953.
8. Read, C. D. Enterocele. *Am. J. Obst. & Gynec. 62*:743, 1951.
9. Schumann, E. A. *Textbook of Obstetrics,* Philadelphia, Saunders, 1936.
10. Shaw, W., and O'Sullivan, J. J. F. A perineorraphy operation and its use in the treatment of enterocele and rectocele. *J. Obst. & Gynaec. Brit. Emp. 58*:920, 1951.
11. Thomas, T. G. Vulvar and vaginal enterocele. *New York Med. J. 42*:705, 1885.
12. Ward, G. G. Technic of repair of enterocele (posterior vaginal hernia) and rectocele: As an entity and when associated with prolapse of the uterus. *J.A.M.A. 79*:709, 1922.
13. Waters, E. G., and Glasser, J. W. H. Prolapse of the vagina following hysterectomy. *Bull. Margaret Hague Hosp. 8*:58, 1955.

American Board of Obstetrics and Gynecology

The Part I Examinations of the American Board of Obstetrics and Gynecology are to be held in various parts of the United States and Canada on Thursday, January 2, 1958, at 2:00 P.M.

Candidates notified of their eligibility to participate in Part I must submit their case abstracts within 30 days of notification of eligibility. No candidate may take the written examination unless the case abstracts have been received in the office of the Secretary.

Current bulletins outlining present requirements may be obtained by writing to the Secretary's office.

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