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Sacral Suspension of the Uterus—A New Technic.

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SACRAL SUSPENSION OF THE UTERUS—A NEW TECHNIC.

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In an article read before the New York Obstetrical Society in May, 1903, and published in the *Medical Record*, October 24, 1903, I called attention to the importance of the utero-sacral ligaments in the support of the uterus. Experience since that time has served to strengthen my opinion as to their value as factors in the general scheme of uterine support. To comprehend the importance of these ligaments you must appreciate that they come into play when the body is in the upright position, and also remember the anatomical relation between the sacral vertebrae and the posterior surface of the uterine body; bearing these points in mind it is easy to realize that in the standing position, the utero-sacral ligaments are practically the only ligaments supporting, or, perhaps, better, hanging the uterus in its normal position. It is also well to remember that in the standing position the patient most needs uterine support. The utero-sacral ligaments may be compared to the ropes of an ordinary swing. These ligaments are attached to the under surface of the sacrum and, spreading fan-like, are adherent to the outer portion of the anterior surface of the first and second sacral vertebrae. The segment of the uterus at the corporo-cervical junction forms the board or seat of the swing. Be-

tween the ropes of this swing the rectum passes. If this mental picture carries any comprehension to the reader's mind of the conditions existing, he will notice that the balance between the weight above and below, or better, in front and behind of the utero-sacral swing, is very much in favor of the fundus. Added to the forward tilt of the fundus,

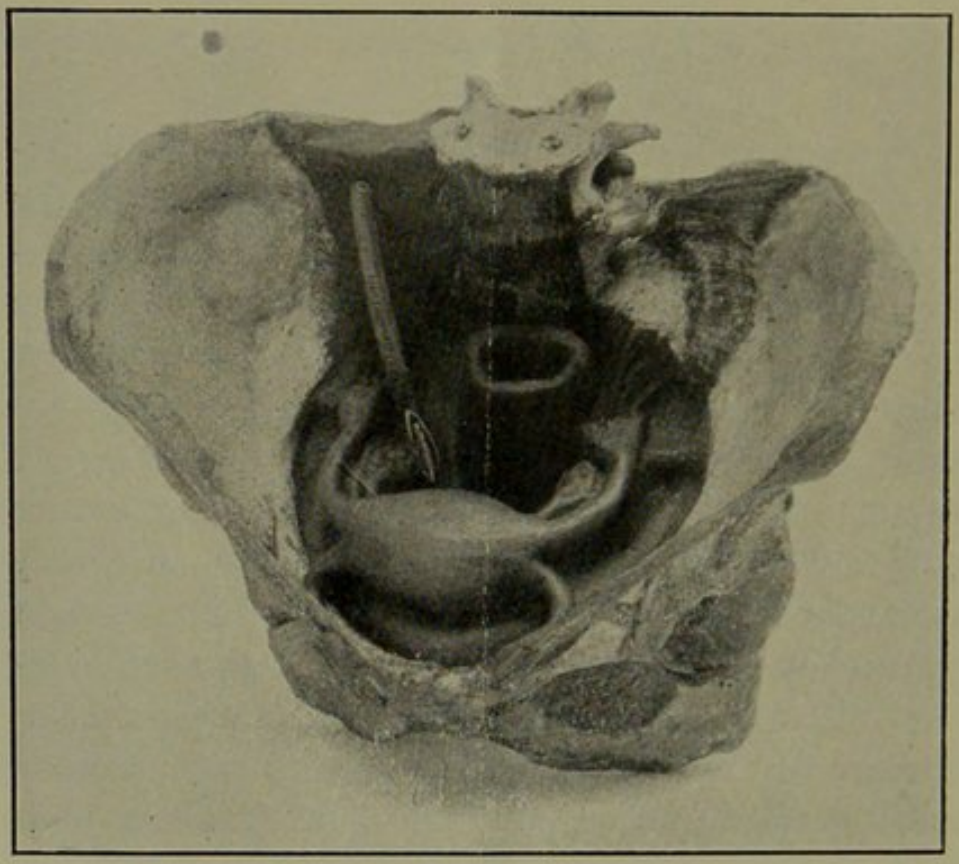

Figure 1.—Showing Normal Relations of Utero-sacral Ligaments and Relation of Ureter. Uterus Pulled Well Forward and Upward.

are the guy ropes in the form of the round ligaments, the chief action of which is to keep the fundus forward at all times.

Analyzing the action of the various ligaments which attach the uterus to the bony pelvis, we may briefly summarize as follows: The broad ligaments on either side prevent lateral displacement and aid in uterine support. I believe that the broad ligaments are only secondarily supportive in their ac-

tion in the erect position. The round ligaments act as guy ropes to the fundus when the bladder is full, when the patient is in the recumbent position and also in the early months of pregnancy. They cannot be considered from their normal course or position as at all supportive in the upright position.

When the utero-sacral ligaments are taken into consideration, their function, when the body is in the upright position, is particularly supportive; in other words, as outlined above, they extend from the uterine body at its junction with the cervix, to the under surface of the only bony structure that is above the uterus when the patient stands. If you will think for a moment of the relation of the symphysis you will remember that it is below the uterus in this position. The attachment of these utero-sacral ligaments is particularly a point of vantage, namely: the second and third sacral vertebræ and the surface which is immediately adjacent thereto. The realization of this anatomical condition was first brought to my mind some ten years ago by a patient whom I saw who had been operated upon for retroversion and prolapse by the late Dr. P. F. Mundé, whose surgical ability was second to none, and whose large experience in this class of cases would certainly have qualified him in the choice of operation. He had performed a ventral fixation. When I saw the patient the fundus was firmly fixed to the anterior abdominal wall about an inch and a half above the symphysis. When the patient stood, the cervix traveled downwards in the arc of a circle, and allowed the rectum and bladder together with it to protrude en masse through the ostium vaginae, showing that while the fixation of the fundus held it firmly to the anterior abdominal wall, the stretching of the utero-sacral ligaments

allowed the prolapse of the lower segment of the uterus, together with the cystocele and rectocele; the deformity thereby practically reproducing itself except that the fundus remained adherent in an abnormal position; and the anterior surface of the uterine body, through the intra-abdominal pressure, compressed the bladder against the superior surface of the symphysis. I have verified this observation many times since.

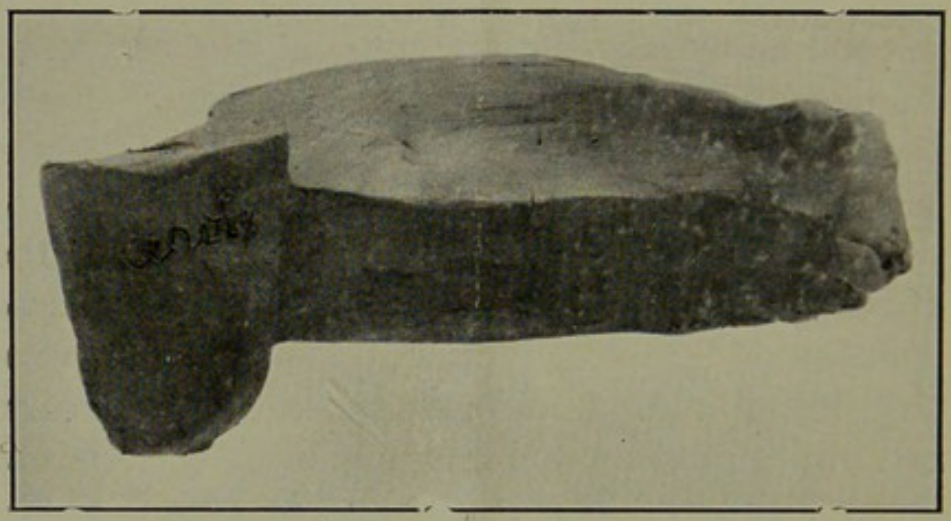

Figure 2.—Showing Relaxed Utero-sacral Ligament.

For the above stated reasons, it is my opinion that any operation looking to the relief of retroversion, retroflexion or either of these combined with prolapse, will fall short of giving the desired relief unless the elasticity and strength of the utero-sacral ligaments are taken into consideration; and I believe also that the reason that almost every anterior operation, that is, every operation on the fundus by fixation or suspension or some form of round ligament operation or broad ligament operation, has had its strong supporters, is the fact that in a large percentage of these cases, the utero-sacral ligaments are not stretched beyond their elastic limit and, therefore, any operation which holds the fundus

forward will relieve the condition. Where, however, these ligaments are stretched beyond their elastic limit, any operation which only holds the fundus forward, will fail.

The next logical question that comes to my mind is, are these ligaments anatomically strong enough to fulfill their function, or is the term ligament not a true one, and are they merely bands of fascia covered by folds of the peritoneum? There can be no doubt that they are true ligaments, except where they have been stretched for years by prolapse, but in this condition all the ligaments surrounding the uterus become degenerated in the same way.

The utero-sacral ligaments are composed of fibro-elastic bands with some muscular structure, which are covered in turn by two thicknesses of the peritoneum. They may be easily seen when the abdomen is open, extending from their origin to their insertion; in the recumbent position, as usually seen, they are, of course, relaxed and extend laterally in a semi-circular manner, resembling the web between the thumb and forefinger when these digits are separated.

In making a vaginal examination, if the forefinger is used to lift the cervix well forward, the middle finger passed laterally will distinctly feel these strong fibro-elastic bands on either side of the rectum.

In following out any method of treatment for the relief of retroversion with prolapse, all indicated surgical procedures, such as curettage, repair of the cervix, perineorrhaphy, anterior colporrhaphy, and removal of hemorrhoids, must be performed as adjuncts to the operation prior to any intraabdominal work, and it is my experience that

this work does not add greatly to the shock, and may be performed at the same time in most cases. The abdominal incision may be the usual median or the semilunar suprapubic. When the abdomen is opened, it is first wise to investigate the condition of the tubes and ovaries, and to do whatever work is necessary to these organs, at the same time breaking up all adhesions which bind the omentum, gut or adnexa to the uterine body. At this point

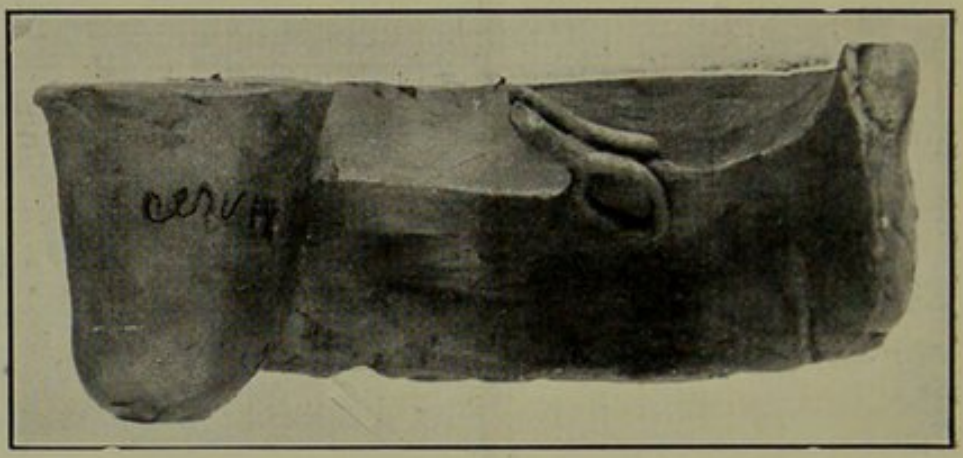

Figure 3.—The Same as Model No. 2 With Ligament Pulled Forward by Sponge Holder.

of the operation, in order to facilitate the further procedure, the patient is raised to an extreme Trendelenburg position and the gut is carefully taken out of the pelvis and held above the brim of the true pelvis by pads soaked in normal saline solution. Too great importance cannot be laid upon this step of the operation as coils of gut dropping over the field of operation impede the work very materially.

The contents of the pelvis are then brought fully into view. The fundus is grasped by a double tooth volsellum and held well under the symphysis so as to rotate the uterus on its midtransverse axis, thereby lifting the lower segment. The utero-sacral ligaments will then be seen at their inser-

tion into the uterus at the corporo-cervical junction, and may be easily traced as bands extending in a semilunar manner on the sides of the pelvis. One ligament should be grasped in its mid-portion by a long abdominal sponge-holder and drawn well into view, its length and condition inspected, and the amount of shortening necessary determined. A stitch is then introduced through the uterine wall at the point of juncture of the ligament, this stitch giving a point of traction. Care should be taken to make this stich embody enough tissue to allow it to be drawn firmly without fear of tearing. By drawing upon this stitch and upon the sponge-holder already in place, the ligament will be brought well into view. It should then be grasped between the finger and thumb, and if the ureter is felt between the folds, it should be pushed aside laterally to avoid being included in the stitch. This accident is not at all liable to occur except in cases where adhesions have distorted the anatomical relations, or where there is very marked relaxation of the ligaments. Having identified the ligament and located the ureter, the next step is the determination of the point at which the ligament should be sewn to the uterine body. To do this, the sponge-holder should be drawn downwards, inward and forward, thereby putting on tension the outer or upper section of the ligament; then, by drawing upon the stitch already in place, a point may easily be determined at which the tension of the ligament will meet the requirement. This point is held by the sponge-holder and the stitch already in place is passed through the ligament, to include all three layers,—the ligament near its insertion and both layers of the folded end. This brings the fold of the ligament on the inner side of its uterine inser-

tion. The middle of that portion of the ligament is grasped between its origin and the stitch above described by a long thin-jawed French clamp. This is placed on the stretch by moving the point of the clamp backward, upward, and slightly outward. The three folds of the ligament will then be clearly seen. The reduplicated fold should be outward to the shortened ligament. A stitch is then placed running through the three layers, beginning at the outer, through the middle and then the inner fold,

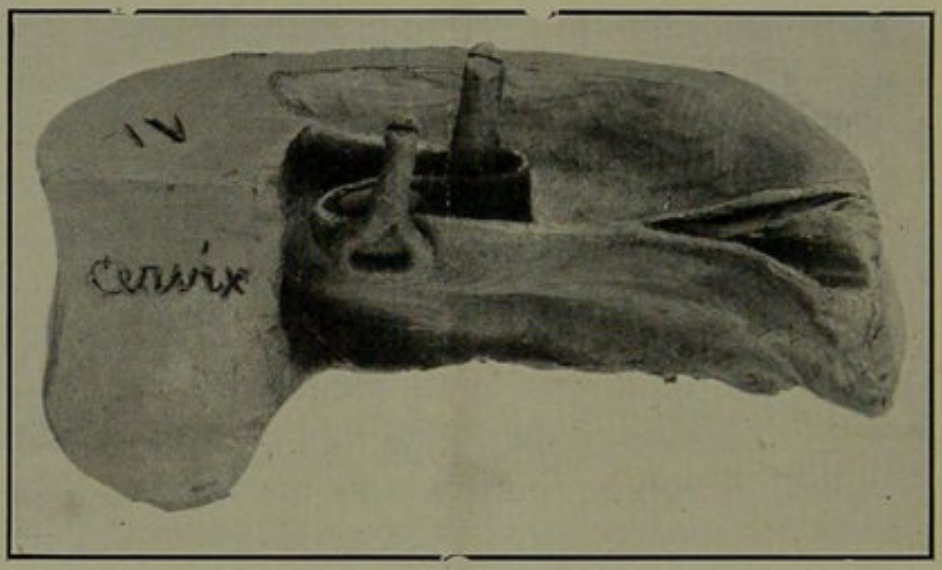

Figure 4.—Ligament Bent on Itself and Held in Position by Sponge Holder and French Clamp.

at the point farthest from the uterine body. The same procedure is gone through with by a center stitch, midway between one at the junction of the uterine end, and the stitch nearest the sacrum. In placing these stitches too great importance cannot be laid upon the necessity of including all three of the folds of the ligament. A sharp knife is then taken, and the peritoneum covering the three folds is sacrificed. The next step is the taking of a fine catgut suture on a small needle and overhanding these three layers from end to end of the redupli-

cation. This procedure is followed on the opposite side and the operation is completed.

For convenience of description the ligaments may be divided into three parts: First, the sacral or fan-like part—is fibrous and does not stretch, and forms the sacral attachment.

Second, the middle third—is the weakest portion and does stretch.

Third, the uterine third, where most of the fibro-elastic and muscular tissue is found, is strong and well developed.

In this operation the stretched middle third is eliminated, and the uterine portion is attached to the sacral portion. The weak middle third is used to strengthen the uterine portion and make its union to the sacral third more complete.

If the fundus is heavy and the round ligaments relaxed, one of the operations to shorten these ligaments may be done at the same time, either the operation of Gilliam or that of Gill Wylie.

Before the development of my present technic, I had some trouble with retrodisplacement of the uterus. I have had no difficulty of that sort since I have followed my present method of shortening the ligaments. The amount of shortening must be governed by the judgment of the operator; the uterus should be suspended but not fixed to the sacrum, allowing sufficient room for the rectum, and at the same time lifting the uterus up to its normal position. As the amount of stretching varies greatly in individual cases, no fixed rule can be laid down as to the length of the fold in the ligament. There is undoubtedly, difficulty in the performance of this operation in stout people, or where there has been much mutilation due to the presence of growths or peritonitis. I do not feel that there

can be any question as to the logic of this method, but I admit that it was an operation which I attempted to perform many times without ability to complete it, abandoning it for some one of the other procedures for the relief of the condition.

I have found that a No. 2 chromic acid catgut is sufficient to hold the ligaments in place; its slow absorption rendering union very perfect. For the running stitch I have usually used plain No. 1 catgut. The needle should be round, full-curved or

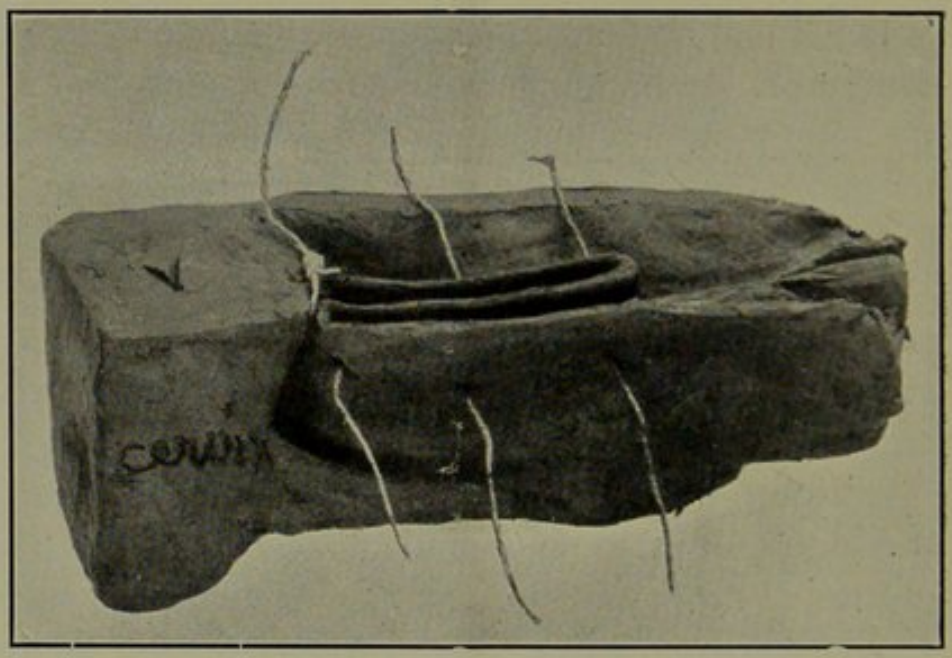

Figure 5.—Stitches in Place. Note Special Placing of the First Stitch.

fish-hook. Spear-point or Hagedorn needles are to be avoided. The needle-holder that has given me the best service is an extension-point long instrument. (Fig. 7.) The advantage of this is the point grasp which enables one to grasp the needle as it is passed through the layers of the ligaments.

This operation is contraindicated in very stout people, on account of the difficulty of its performance, and where there is retroflexion of the body of the uterus with little or no prolapse. It is of

particular value in retroversion with prolapse and cystocele. I shall not burden you with a repetition of cases except to briefly report the following eight:

E. W., single; age 20. Five years ago I operated for retroversion and mycrocystic ovary, and performed a ventral suspension with temporary relief. In about a year the deformity reproduced itself with return of all the symptoms. One year and a half ago I performed the sacral suspension with perfect anatomical result and relief of all symptoms. Menstruation has been regular and painless since. Relief of the neurasthenia has been very marked.

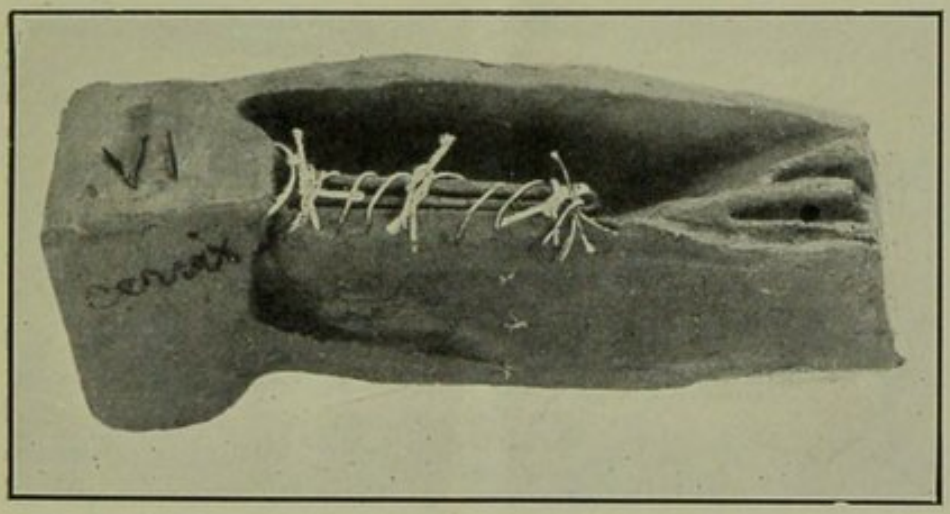

Figure 6.—Stitches Tied and Running Stitch in Place.

A. J., married; age 27; one child. This patient was referred to me by my friend, Dr. Douglas H. Stewart, who had performed trachelorrhaphy and posterior colporrhaphy. In this case the most marked symptom was a mechanical constipation of the most exaggerated type. At the operation, one year ago, the ligaments found were the longest I have ever seen, well marked but absolutely useless as supportive ligaments. On account of a very great laxity in the round ligaments a Gilliam operation was performed in addition to the sacral suspension. The patient has remained in perfect health since; she has normal evacuations without laxative.

E. W. N., single; age 30. The most marked symptom in this case was neurasthenia, with attacks of true melancholia at the time of her menstrual periods, which had lasted for about ten years. Operation: sacral suspension one year ago. The patient has been anatomically normal, with absolute relief from neurasthenia and headache; menstruation normal.

T. K., married; age 28. Three children. Curettage, double trachelorrhaphy, perineorrhaphy, appendectomy, sacral suspension. This operation was performed three months ago and is too recent to judge of the permanency of the cure, but it is reported simply to show that the addition of sacral

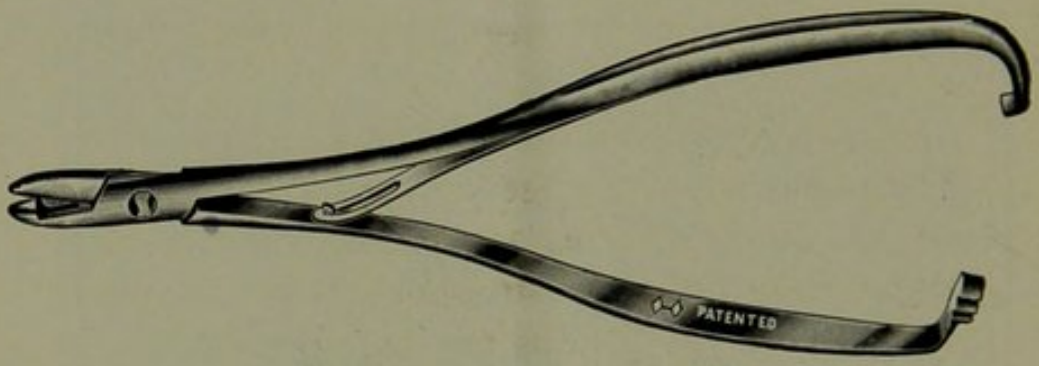

Figure 7.—The Extension-joint Needle Holder Used by the Author.

suspension to the repair and other intraabdominal work is not too much for a patient even in poor general condition. The present anatomical condition is normal.

A. McC., widow; age 35; one child. The most marked symptom neurasthenia, verging on melancholia, severest about the time of her periods. Condition: retroversion with prolapse, laceration of the cervix and perineum. Operation, June, 1908: repair, with sacral suspension, together with Gill Wylie operation. The anatomical result was perfect. The mental condition remained the same for some months after, but is at present greatly improved.

B. C., single; age 19. Most marked symptoms, dysmenorrhea, continuous backache and neurasthenia. Operation in July, 1908, curettage with sacral

suspension. The result has been relief of all symptoms and examination shows normal anatomical position of uterus.

A. E., single; age 27. Prolapse with retroversion. Symptoms, dysmenorrhea and backache. Operation, April, 1908; sacral suspension. The anatomical result was satisfactory and there was accompanying relief of symptoms.

A. P. A., married; age 31. One child three years ago. Operation, April 27, 1908. Uneventful recovery and perfect result. No pain in the back, no dragging of any kind, uterus in normal position. This patient was referred to me by my friend Dr. F. O. Virgin.

I have no case of pregnancy to report after operating.

This paper is based on one hundred operations.

The points of advantage in the operation are as follows: The supporting of the uterus in its normal position from the bony structure above; the body and especially the fundus are freely movable for all the functions of the body; it does not distort but reproduces the curve of Carus. There are no artificial bands through which intraabdominal hernia may occur. In the event of pregnancy there is no possibility of dystocia. It relieves the patient anatomically and symptomatically.

It is particularly indicated in retroversion of the fundus with antrosession of the lower segment of the uterus, or the condition of beginning prolapse.

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