Original Articles.

INJURIES TO THE ANTERIOR VAGINAL WALL.
IN LABOR.
THAT PRIMARY, INTERMEDIATE AND SECONDARY REPAIR.*
B. C. HIRST, M.D.
PHILADELPHIA.

There is no dispute as to the desirability of repairing the pelvic floor, posterior vaginal wall and perineum in the puerperium, although there is ample room for improvement in the manner of doing it in general practice. The old custom of immediate repair, even before the placenta is expressed, as one authority recommends, must be unlearned. The necessity for a careful preliminary vaginal examination as any expert gynecic surgeon would make before attempting a secondary repair must be appreciated and the operation itself must be conducted like any other vaginal operation with a good table, proper implements and sufficient assistance if women are to be spared the secondary operations to which thousands of them are now subjected.

It has been demonstrated by ample clinical experience that the cervix may be repaired with perfect success and with entire safety to the patient during puerperal convalescence, not only in well-appointed hospitals, but in the homes of both the rich and the poor. It must soon be generally acknowledged that no woman should suffer the disadvantages and risks of cervical injuries in her after-life from which she can be saved by proper attention during the lying-in period.

The nature of the common injuries to the anterior vaginal wall in labor resulting later in urethrocele, cystocele, partial incontinence of urine, decomposition of residual urine, cystitis, and contributing to the causes of prolapsus uteri; the recognition of these injuries; the methods of repairing them during puerperal convalescence are not yet understood even by many of the masters of our principal maternities and of the leading specialists in obstetrics and diseases of women, not to mention the general practitioner. And yet, as I hope to demonstrate, these injuries, as common and often more serious than those of the pelvic floor and cervix, are easily recognized soon after their occurrence, and may be securely repaired by a simple operative technic during puerperal convalescence.

It is necessary, first, to understand the anatomy of the region; second, to comprehend the nature of the injuries of the anterior vaginal wall in labor; third, to be able to recognize these injuries when they occur, and fourth, to devise an operation that will repair them by restoring the original anatomic condition.

We are indebted mainly to Waldeyer for our knowledge of the support and attachments of the anterior vaginal wall.

The pelvic outlet is closed anteriorly, in the triangle under the symphysis pubis by the diaphragm of the urogenital trigonum, consisting of the aponeurosis, the muscle and the fascia of the urogenital trigonum. The muscle constitutes the greater part of the diaphragm. It arises from the periosteum over the ischiopubic junctions, and from the tendinous extensions of the sheaths of the obturator internus. It is inserted in the pubovesical ligament, encircles the urethra and is actually inserted in the anterior and lateral vaginal walls. As half the length of the vaginal canal lies below the level of the pelvic outlet, the greater part of the anterior vaginal wall finds its only support in its attachment to the structures of the diaphragm of the urogenital trigonum. The older view that the anterior vaginal wall is supported by the muscles, particularly the levator ani, encircling the posterior vaginal wall, is not correct. These muscles may be destroyed as a pelvic support without the development of a cystocele; they may be intact or perfectly repaired and yet a cystocele appears.

The injuries experienced by the anterior vaginal wall in labor are two-fold. Transverse rugges are nipped between the child's head and the symphysis; the fold of the vaginal wall is pushed down in front of the head and is separated from its subjacent attachments to the loose connective and elastic tissue between its upper third and the bladder. This injury, however, is of subordinate importance. The more serious damage is a laceration of the musculotendinous diaphragm of the urogenital trigonum running across the anterior vaginal sulci. As the head at the pelvic outlet is oblique, and as it almost always lies with its longest diameter in the right oblique diameter of the pelvis, the structures in the left anterior sulcus are most extensively torn. Frequently the injury is confined to this side alone.

Of the two injuries the first may be ignored in diagnosis and treatment. No one ever saw such a complete detachment of the anterior vaginal wall that a cystocele appeared at the end of puerperal convalescence. It takes years to develop. What one does see very frequently is a bulging downward and outward of the lower half of the anterior vaginal wall. As years elapse the constant pull of this prolapse drags the upper half of the vagina and the bladder after it, pulls the cervix forward, tilts the uterus backward, and is one of the most important contributory causes of prolapsus uteri. The cause of this dropping of the anterior vaginal wall

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Obstetrics and Diseases of Women, and approved for publication by the Executive Committee: Drs. J. H. Carsteins, A. Palmer Dudley and L. H. Dunning.
can easily be recognized by inserting the forefinger in the vagina, palmar surface upward, and making pressure upward and outward in the anterior vaginal sulcus toward the pubic bone. On the sound side the elastic and resistant cushion of the urogenital trigonum diaphragm is plainly felt; on the injured side the finger comes immediately in contact with the sharp edge of the bone, nothing intervening but the vaginal mucosa. Usually this injury is submucous, but frequently the vaginal wall itself is also torn through, as I have demonstrated in scores of cases to my students. In such instances one gets a most convincing demonstration of the true nature of this injury, and sees a raw surface strikingly like the denudation to be discussed later.

If the anatomy of this region is understood as Waldeyer enables us to understand it in his admirable work "Das Becken"; if the nature of the injury to the anterior wall is comprehended, as it can be by a close observation of a sufficiently large clinical material, the remedy is easy enough to devise. It is obviously to reunite the torn fibers of the anterior pelvic diaphragm, restoring the normal anatomic support of the lower half of the anterior vaginal wall and, in the case of an old, neglected, well-developed cystocoele, to remove the redundant thinned-out vaginal wall in the middle line, rejoining the stronger connective tissue fibers which have been crowded to either side by a tier suture.

It is almost unnecessary to dilate on the technic of accomplishing these purposes. Any one well trained in plastic vaginal surgery will devise a method to suit himself. Some practical points, however, suggested by a large experience,\(^1\) may be of interest.

In the primary repair of this injury, if it is submucous, the sutures should be inserted so as not to crowd the vaginal mucosa between the ends of the lateral muscle and connective tissue fibers. This is done by making one deep insertion of the needle, a returning shallow insertion under the mucosa, and the junction of the suture to one side of the injured area.

If the repair is postponed for five to seven days, as it should be if the cervix must also be repaired, a denudation of the anterior sulcus must often be made, and as in all plastic operations on the vagina, the whole thickness of the vaginal wall should be removed so as to expose the muscles and fascia beneath. The most convenient way to expose the anterior vaginal sulcus is to fasten an Allis forceps alongside the urethra and another opposite it, to the lateral vaginal wall at the introitus. By making traction upward and laterally the triangular cleft, if the anterior sulcus is injured, comes plainly into view. The quickest way to make the denudation is to mark out its boundaries with a sharp knife and to excise the triangular piece of vaginal wall with scissors. In inserting the sutures the needle is deeply inserted with the same turn of the wrist that is used to catch the muscle and fascia in the Emmet operation on the posterior vaginal wall.

If there is a very well-marked cystocoele of long standing with thinned-out and redundant tissue in the middle line of the vaginal wall, the cystocoele is pushed back; the anterior sulci are denuded, the stitches are inserted but not united; the cervix is pulled out of the vault, a Martin anterior colporrhaphy is performed; then the stitches on the anterior sulci are shocked or tied, as the operator prefers.

In cases of injury to the muscles and fascia of the sulci with incipient cystocoele, or with that partial incontinence of urine so common in middle-aged women who have borne children, the operation need only include the denudation of the sulci and suturing. If, in addition, there is also a repair of the posterior sulci, one can not fail to be impressed with the normal and nulliparous appearance of the lower vaginal canal.

Attempts have been made before by Simon, Velpeau, Emmet, Feilinger and Skene\(^2\) to perform lateroanterior colporrhaphies for urethrocele, cystocoele and prolapse, but a study of the methods described by these authors shows, I think, that they are not based on accurate anatomic knowledge, and that they could not accomplish their purpose so well as the method I advocate and have attempted to describe.

THE ETIOLOGY AND PATHOLOGY OF CYSTOCOELE AND A NEW OPERATION FOR ITS RELIEF.*

J. RIDDLE GOFFE, M.D.
NEW YORK.

The early procedures for the relief of cystocoele consisted simply in building up a strong perineal body that should retain the prolapsed tissue within the vault. Simon practiced this for many years, but his experience developed the fact that this method was only a temporary expedient; the weight of the sustained mass and intra-abdominal pressure gradually absorbed the artificially constructed dam and allowed the former condition to be reproduced. Marion Sims brought his batteries to bear directly on the offending tissues, and devised the procedure known as anterior colporrhaphy. Emmet followed the suggestion of Sims, and improved on it, modifying in various ways the denuded surfaces, with the idea of building up a resisting line of tissue that should act as a lever in holding the cervix high in the hollow of the sacrum. E. C. Dudley shifted the seat of operation to the lateral sulci of the vagina in the operation that he denominates "lateral elytorrhaphy." Stob's operation, the purse-string suture about an elliptically denuded surface in the center of the protruding mass, has had considerable popularity. This is due more to its simplicity than its efficiency. In addition to its temporary character, it introduces the most objectionable element of shortening the anterior vaginal wall, the baneful consequences of which are universally recognized.

All of these procedures utterly fail in grasping the true cause of the difficulty and attacking it on rational principles. Granting that a cystocoele is a hernia, it would seem quite as rational a procedure and give promise of quite as satisfactory results to denude the skin over an inguinal hernia and bring its edges together with stitches as to expect to cure a cystocoele by simply denuding the vaginal mucous membrane, tucking in the prolapsed bladder and stitching together the freshened edges of mucous membrane. The fascia is the sustaining tissue, and if there has been a pocket or hernia produced in it by overdistension until it has lost its power of recovery, the only permanent relief consists in cutting out the overdistended and atrophied area of

---

1. Of a total of more than 2,000 gynecologic cases yearly in the hospital services under my direct control, exclusive of private and consulting practice, more than 700 are women recently delivered. More than 200 of these anterior wall operations have been performed in the last two and a half years.