

fairly well. Why did the ascites remain absent for such a long time following the three tappings? It is well-known that ascites sometimes disappears following the reduction in size of an enlarged and congested liver; but such can scarcely have been the case here, for the condition was one of a markedly contracted liver. It is also known that adhesions occasionally take place after tapping. The most probable explanation, therefore, is that the extensive adhesions which were found at the operation between the omentum, liver and abdominal parietes, and which were evidently of long standing, formed at the time of the first tappings, and the collateral circulation which resulted was sufficient to prevent the reaccumulation of the fluid for some time. If this explanation be correct, the case furnishes an excellent illustration of the benefits which might be expected at times to follow Talma's operation under favorable conditions.

The case also shows, as does that of Mrs. E. C. S., that, notwithstanding the most extensive adhesions, the time comes, sooner or later, when even a free collateral circulation is insufficient to prevent the development of ascites and the progress of the case to a fatal issue.

These cases also tend to confirm the statement of the writer in the article above mentioned on this subject to the effect that the congestion of the portal radicles was not the sole cause of the ascites, but that the changes in the peritoneum of a chronic inflammatory nature were instrumental in its production, particularly during the terminal stage. The fact that the fluid taken from the abdomen was hypertonic in the two cases, as shown by its crenating effect on freshly drawn blood cells from the same patient, is another evidence of the inflammatory character of the fluid.

In conclusion, the writer is of the opinion that the benefits to be derived from Talma's operation in alcoholic cirrhosis, even under favorable conditions, are but temporary. (In 105 cases collected by Greenough, but 9 showed improvement after two years.) In order to obtain the full benefit of the operation, it should be performed early, at the first appearance of ascites or even to anticipate the ascites, if possible. In cases showing jaundice or symptoms of cholemia, cholecystostomy should be performed at the same time.

THE RESTORATION OF THE PERINEUM.*

HENRY O. MARCY, A.M., M.D., LL.D.

BOSTON.

Recent publications show that, notwithstanding the study of the subject by many of our best surgeons during the present generation, there is by no means a general acceptance of any well-settled method for the repair of the injuries of the perineum. On this account I add this contribution, although I have several times published monographs on this subject.

As a primary premise, it may be accepted that the repair of any injured organ should be undertaken to restore it, as far as possible, to its original normal condition. In order to accomplish this, it must be first ascertained just what the normal condition has been. In other words, it must consist of an accurate knowledge of the anatomy and function of the component parts.

The injuries to the perineal structures vary widely. In the minor degree, the hymen, or the vaginal fourchette, may be the only part involved, but such lesion

is, of course, excluded, except in the rarest instances, from surgical consideration.

The union of the transversi, interdigitating with the levator ani muscle, making the so-called perineal body, with their connective tissue sheaths, is the more common part to suffer injury. The lesion of these muscles may be central or lateral, a factor of some importance to determine before attempting restoration.

The lack of the central support due to such injury causes the transversi to contract toward their point of origin, resulting in a more or less marked patency of the vulvar opening. Where the injury is within this limit, the sphincter ani muscle, although itself uninjured, is in a measure disabled from the proper performance of its function by being no longer supported anteriorly. On this account the curve of the rectum is lost and the anal aperture falls posteriorly, inducing a saccation or pouching forward of the rectum, resulting in a more or less marked rectocele. *Pari passu*, the cervix is no longer held backward, and varying degrees of uterine displacement follow.

When the lesion has destroyed the entire septum between the vagina and rectum, the laceration is called complete. Of course, the saccation of the rectum does not take place, and more commonly the uterus remains in its normal position.

Since the dissections of Wm. Hunter, undertaken to demonstrate the anatomy and the physiologic function of the reproductive organs during pregnancy, the most valuable contribution to the proper understanding of the anatomy of the pelvic structures in the female are those of Dr. Henry Savage of London. These studies, supplemented by the important teachings derived from the study of frozen sections, greatly modify the previous views of the physiologic relationship of the pelvic organs. The depth of the perineum is less than usually described. The axis of the anus, cutting that of the vagina at nearly right angles, leaves in the external angle an irregular flattened position of tissue rarely, when examined on the living subject, more than one-half an inch in thickness. In the nulliparous woman this is clearly defined as a firm portion of the pelvic floor, and is composed of skin, fat, elastic and connective tissue, transverse muscles, sustaining fascia and the anterior portion of the sphincter ani muscle.

The vaginal side is usually concave and the rectal side convex, owing to the interblending of the sphincter ani. If the finger is carried just within the perineum proper, and a little to one side, there can be felt the firm encircling band of the levator pubococcygeus, attached to each ramus of the pubes above and descending to join with the posterior fibers of the sphincter ani and the coccyx. In the perineum, posteriorly, this is firmly interblended on either side with the transverse perineal muscles. These muscles are under the control of volition, in considerable degree, and, acting conjointly, serve to draw the vagina forward toward the pubes.

The parturient and fecal canals are supported in the pelvic basin in close apposition, and the functional relationship is often such that the one may encroach on the other, in a way so as to occupy nearly all the space accorded to both. This is especially true in parturition, when the rectal space is reduced to a thin, folded, flattened tube; and often in elderly women, with old perineal lacerations, the rectum becomes saccated, pushing forward the posterior vaginal wall, forming a considerable-sized external tumor. The pelvic floor is so formed and blended about these openings that it not only sup-

* Read at the Fifty-fourth 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. A. Palmer Dudley, H. P. Newman and J. H. Carstens.

ports these canals, but also materially aids them in their physiologic function. In intimate relation to both are the bladder and uterus in their ever-varying functional activity, and each is surrounded by a delicate plexus of nerves and vessels.

The sacral prominence throws a large proportion of the abdominal weight on the symphysis pubis and the recti muscles in the support of the body, and thus relieves the pelvic basin and takes off undue strain on the pelvic floor. The rectum is rarely entirely empty, is circular in shape, serves the digestive apparatus, in a measure, as a constantly receiving reservoir, and, when not distended, may be felt from the vagina as a flattened tube curving posteriorly. It is suspended and supported, so to speak hung, by the levator ani muscles which hold the vagina in their encircling loops. On the contrary, the vagina, entirely unlike the earlier diagrams, is flattened anteroposteriorly on itself, and, normally, its walls are, when at rest, ever in close apposition.

The vagina joins with the vulva at right angles to its lateral opening at the entrance of its passage through the pelvic floor.

The vulvar organs are all intimately blended with and go to form a part of the perineum proper. On each side of the vaginal orifice are the erector clitoridis, the bulbocavernosus and the transversus perinei muscles, and these with the levator ani make up, in large measure, the pelvic floor. The bulbi vaginæ and bartolinian glands are covered by these muscles with their erectile plexus of vessels and abundant distribution of lymphatics and nerves.

The erector clitoridis and bulbocavernosus muscles, with the transversus perinei, join on each side to constitute the ovate muscular vaginal orifice, and in their conjoint action perform a very important physiologic function in sexual congress, often underestimated or ignored. Their impaired function frequently underlies certain reflexive nervous conditions, distinctly pathologic, which are easily overlooked, but are the causes of much suffering and unhappiness.

The much-discussed, so-called perineal body has, in my opinion, misled some of our prominent authors into false positions, and caused great confusion and misunderstanding among physicians.

I have been criticised in emphasizing the muscular floor of the pelvis, and that I underestimate the importance of the variously distributed connective tissue fascia. This is not by any means my intention. The superficial perineal fascia, in its deep layer in the male, as well as in the female, covers and encloses the transversus perinei muscles, forming strong ligamentous transverse bands, uniting in the perineum, designated by Savage as ischio-perineal ligaments. The pubococcygei, acting in unison with the other muscles of the pelvic floor, draw forward and thus aid, not only in closing the rectum, but in holding both it and the vagina in the anterior curve, so important to be retained for the preservation of normal function.

A horizontal section made through the floor, just above the sphincter vaginæ, and posterior to the junction of the transversus perinei, shows the deeper fibers of the pubococcygeus, united in a loop behind the lower border of the rectum, holding it from its fixed point at the pubes, as in a sling. This loop is connected with the transversus perinei, bulbocavernosus, erector clitoridis, sphincter vaginæ and sphincter ani muscles by strong layers of connective tissue, the importance of

which, for union and support, can not be readily overestimated.

On the posterior wall of the vagina, in its lower third, longitudinal muscular fibers are found external to the circular layer, and these intimately blend with the pubococcygeus, giving a firm support to the vaginal outlet, quite as the outer longitudinal fibers of the rectum unite with the deep layers of the sphincter ani. The physiologic action of the muscles, thus grouped, serve to draw the rectum forward toward the pubic arch, and this explains, in large degree, why the circular fibers of the vagina, left free to act in other directions, are intrafolded laterally, making in cross section an imperfect letter H, first pointed out by Freund in 1883. The intrafolding of the vagina at right angles to the vulvar outlet is very important in its relationship of support to the uterus and its appendages.

The surgical procedures which have been devised for the restoration of these structures are manifold, and many of them are in the highest degree ingenious, but too often confusing and unsatisfactory.

The study of their history is instructive and profitable, but the field is to me more tempting for review than it is to the junior practitioner, since these various procedures have been elaborated, for the most part, within the period of my surgical experience. I purpose, however, to limit myself to those only which have a bearing on the methods which I have especially commended.

My earlier masters, Marion Sims and Thomas A. Emmet, most ingeniously devised scissors with various curves and dextrously used them to denude the posterior V-shaped portion of the vagina which was thought advisable for coaptation. So exceedingly dextrous were these men that I have seen them pare back and forth a narrow ribbon from this portion of the vagina, leaving the dainty piece unbroken.

My late friend, Dr. Edward Jenks of Detroit, separated this portion of the posterior wall of the vagina as a flap instead of denuding with the scissors and then cut it away and sutured as Sims and Emmet had done. Not long prior to this I had begun the use of buried animal sutures in a considerable variety of wounds, and it occurred to me that, by adopting the method of Dr. Jenks, I could preserve the flap thus separated and coapt the deep structures by sutures buried beneath it.

I soon found that the line of division was not the mucous membrane from the vagina, as these authors had supposed, but the attenuated posterior vaginal muscle, often so thinned out as to be hardly recognizable. For obvious reasons the posterior vaginal fascia holds the vagina loosely to the subjacent structures and the separation is not difficult except when united by bands of cicatricial repair. By this division, it is not difficult to differentiate the levator loop and bring it with the ends of the separated transversi into easy inspection. A further dissection externally on either side of the sphincter ani makes the wound of sufficient size for easy manipulation. This permits the reconstruction of the perineal structures in a simple and easy manner.

With various unimportant modifications, this is the method which I have practiced and taught for more than a quarter of a century.

Finding that the catgut sutures did not always hold the parts in coaptation sufficiently long, I devised a lateral support by means of two or more disjointed pins, which united after their introduction, held the parts in juxtaposition after the manner of an ordinary safety pin. I had the good fortune to obtain tendon sutures

from the tail of the kangaroo which proved reliable and rendered the use of fixation supports unnecessary. Since this period I have used only chromicized tendon sutures with entire satisfaction. These have been, and may be, applied in a variety of manners.

The first step in the operation is to dilate the sphincter. The index and middle fingers of the left hand are introduced into the rectum and retained there until the end of the operation.

The septum is made tense by the retained fingers and a button-hole incision is made on the median line by either knife or scissors. I prefer a double-edged, pointed knife.

Through this opening I introduce a knife of special design. I am sure additions to our armamentarium should not be made without good reason, but this instrument adds materially to both ease and safety of dissection. The cutting part is something the size and shape of the little finger nail and is placed at an angle with the handle, so that when pushed in a direct line the edge is at an angle of about forty-five degrees to the part to be divided. The parts are made tense by the fingers in the rectum and the knife is guided so that neither rectum nor vagina is injured. The lateral dimpled depressions in the vagina mark the site of the separated retracted transversi. Even with a sharp knife these are divided with some difficulty. Elsewhere the separation is easy and is often made almost entirely with the fingers, dividing an occasional cicatricial band by scissors. The Emmet scissors serve admirably for the separation of the vagina from the vulva. The little lateral fold of mucous membrane on either side shows the inception of the original lesion. To these points the dissection is carried anteriorly. Thus the posterior third or more of the vagina is separated from its attachments quite to the crest of the rectocele.

This flap is held anteriorly by an assistant. A large curved needle, firmly set in a handle, with the eye near the point, carries the suture. The fingers in the rectum materially aid in guiding the needle. It is carried through the left side penetrating the transversus and levator unthreaded and withdrawn. Rethreaded, the needle is made to penetrate just above the vaginal junction with the rectum and then is carried through the right transversus, unthreaded and withdrawn. This makes the upper border of the upper stitch. The suture is centered at this point of fixation and held by an assistant. The suture is again carried by the needle parallel to the first introduction—about one-third of an inch below it; unthreaded, rethreaded with the opposite end and withdrawn. This makes a double stitch exactly like that of the cobbler, the needle serving as carrier of the suture from opposite sides. In this way three stitches are usually taken. When drawn on moderately tight, the widely separated structures are evenly coapted on the median line and are held in fixation.

The remaining tissues are united by a light, continuous running suture, best effected by a rather large-sized, full-curved Hagedorn needle. The distal end is fixed by a loop knot and the needle, carried deeply from side to side, places the suture at right angles to the long axis of the wound. Where drawn on, the tissues are evenly coapted in the median line, with no suture material in the line of union save where it crosses at a right angle to it.

I have called this stitch the parallel suture, since the needle is inserted parallel to the long axis of the wound. In this way the entire wound is easily and rapidly

closed, the reconstruction being made so complete that the vulvar opening is entirely restored, even to the reformation of the hymen if desired.

When the laceration has been so extensive as to include the sphincter ani muscle and a portion of the rectum we have quite another problem.

The posterior vaginal wall is not thinned out as in rectocele. Quite the contrary, the vaginal muscle is contracted, often the vagina thick-walled. The rectum and vagina are separated quite as freely as in the incomplete form of the injury. This permits the reconstruction of both rectum and vagina by separately reuniting them with continuous sutures, care being taken not to penetrate the bowel or vagina by inserting the stitches from side to side from the dissected surfaces only. The rectal suture must penetrate the connective tissue of the bowel, here much thicker than in the free portion of the large intestine. The vaginal suture is given to an assistant and held forward. The rectal suture is held by the weight of a pair of forceps. The wound is now restored to conditions not unlike those of the incomplete rupture when ready to introduce the parallel double fixation sutures for the reunion of the transversi, and the operation is completed, as above described, only the separated retracted fibers of the sphincter ani muscle must be freed and sutured. The short wound in the median line is closed by a light-running buried suture, the wound dried and sealed with iodoform collodion.

IN RESUME.

By free dissection and the use of buried absorbable sutures, the parts are entirely restored to their former normal anatomic condition and physiologic function. Aseptically maintained, the repair is rapid and painless.

The urine should be drawn for the first days. The bowel is never allowed to become distended with hard fecal masses. In complete laceration, a large rectal tube of soft pure rubber should be used.

RESULTS.

I have within a few days seen a lady on whom I operated thirty years ago by the methods as above outlined. I since have operated several hundred times.

Recently a visiting surgeon, seeing the operation, asked our matron: "How large a percentage of Dr. Marcy's cases have failed of good results?" She looked surprised, but replied: "I do not know of a single case." "How long have you been in charge of the hospital?" "Over sixteen years." So seeming an unimportant operation has it become with us that a careful statistical table could be made only by an amount of research work not deemed necessary, but I am sure the reply of our matron is essentially correct.

DISCUSSION.

DR. A. H. GOELET, New York—I doubt whether the deep through-and-through suture would succeed in the hands of all who should attempt this operation. The objection is that it constricts the parts, cuts off the circulation and nutrition and often results in failure. I have tried every operation on the perineum, except the Tait flap-splitting operation, which I do not approve, and have abandoned them all for the Hegar-Martin operation in which the denuded surfaces are united by means of buried layer sutures of chromicized catgut. That has given me far better results than any other operation on the perineum and I now never have a failure. It seems to me a valuable point to avoid as much as possible handling the denuded area, and instead of sponging to keep a continuous stream of normal salt solution playing on the wound to keep the field clean. This will aid materially in securing primary wound healing.

DR. F. A. DUNSMOOR, Minneapolis, Minn.—One of the essential things brought out in the paper is that the reason for so many failures in repair of the perineum is that the sutures are not introduced properly; not that they fail to close up the denudation, but the result is not what we should wish it to be. If we are to get any real benefit from this operation in the vagina we must increase the depth of the vagina from the vulva to the region of the cervix, and narrow it from side to side, thus tightening up the relaxed walls. This can be done whether the freshening is made by the flap-splitting method or by any other plan, but it is extremely important that the sutures are passed horizontally and are not to be introduced from the margin of the vulva, then carried to an apex near the emergence of the cervix, returning by a corresponding oblique line to a point opposite that starting. In the latter case, when we tighten the sutures, we bring the upper part of the vagina down toward the lower, and the vagina is widened and shortened. As time goes on the posterior wall relaxes more and more, forming a rectocele. There is a way of overcoming the objection made by Dr. Goelet. If we introduce the sutures in two layers, beginning one-third of an inch inside the margin of the denuded wall on the right side and depress the middle of the denuded septum, emerge for half an inch, and then pick up the opposite side, to within one-third of an inch of left margin, repeating every one-third inch, we will make all the way down a backbone or thick septum. Then while passing the second layer of sutures, pass the needle in the first instance horizontally across to accurately adjust the wound margin. Next through the new body made by the first tier of sutures and include fascia and supporting muscles of each side. Alternate these two styles of sutures until the vulva is reached. The circulation is not cut off. Further, we get a more lengthened perineal body then by any other method, and a support for the rectum, thus correcting the rectocele and assisting the expulsion of fecal matter from the rectum; narrowing the vagina from side to side and increasing its depth. This operation on the perineum should have for its object the restoration of the normal supports of the perineal body and holding it up in a definite position. Dr. Marcy's method of reuniting the divided muscles by suturing at right angles to axis of vagina accomplishes the desired result.

DR. A. M. HAYDEN, Evansville, Ind.—I have made it a point to absolutely coaptate the parts without any wrinkling. I denude and take out the flaps as much as I want so as not to narrow the caliber of the vagina, and then use interrupted or continued catgut sutures, commencing at the lower border and putting them in back and forth. After I get the muscle all coapted nicely, I suture the vaginal mucous membrane from the upper part down to the skin without catching the muscle at all. The skin of the perineum I suture in the same way with superficial sutures. I use two or three layers of sutures to coaptate all the parts and bring them together nicely.

DR. HANNAH GRAHAM, Indianapolis—I have used a method of repairing the perineum for the last four years, but have not published it. I insert a Kelley tenaculum on each side and with the scissors cut straight across. I slip the finger into the rectum and with an ordinary scalpel I make a sort of bib-shaped denudation. Instead of cutting down and making a Y-shaped denudation, I denude perfectly straight. Then I pull down the center point of the upper edge of the denuded area to about the site of the fossa navicularis, where I unite it on each side with a continuous catgut suture, after having united the edges of the transversus perinei with a buried suture. I have used this method in cases of prolapsed uterus and it has held the uterus up very well. The perineum does not stretch out as I have seen it do with other methods, and I have examined patients who have had as strong a perineum after four years' standing as immediately after the work.

DR. R. H. GIBBONS, Scranton, Pa.—If Dr. Marcy's stitch is properly introduced and fixed it can not cause choking of the muscular structures or vessels; nothing but good can happen. I tried it on many occasions and it was the fault of the absorbable material that I gave it up and also because I went back to my first love, Dr. Emmet's method. I can do this operation better than any other and I believe it meets every

indication. Those who talk of the operation of exposing the muscle where it is torn, Reed, Harris and others, claim that Emmet's operation will not do what he claims for it. If the denudation is properly made all the separated fibers of the muscle are exposed, and if the stitches are properly applied all the parts must be brought into apposition. If you pass the suture downward from the very apex of the denudation and bring it down into the muscle, you catch the principal fibers of the muscle, and passing it down, the lower fibers are caught, thus bringing all the fibers in apposition. There is no operation that can improve on the Emmet method if it is learned from Emmet or his students. Dr. Marcy's operation is the first of what are termed modern operations and he is entitled to credit for having formulated a method of introducing a buried absorbable suture that fixes the parts and keeps them fixed without strangulation. Dr. Graham has introduced a very practical point, the idea that the first stitch usually throws the apex of the rectocele high up where it should be after the method of Andrews of Chicago.

DR. A. H. GOELET, New York—I overlooked a point in my previous remarks which is very important in obtaining primary wound healing, and that is to keep the wound dry. Many practitioners who are compelled to do this operation are obliged to practice without the aid of a nurse and who must care for the patient after the operation, can avoid the necessity of coming back a number of times a day to catheterize. I have had made a rubber perineal shield which has a little tongue that is inserted into the vagina and catches under the urethra forming a gutter for the urine. It is strapped with adhesive plaster to the thighs, so that when the patient urinates the urine passes down the gutter into a bedpan beneath without soiling the perineum. The perineal wound can then be dressed with gauze beneath this shield and can be kept dry just as any other wound. This shield is not, of course, necessary when the services of a skilled nurse is obtainable, but it adds greatly to the comfort of the patient if repeated introduction of the catheter can be avoided, and I regard it important to prevent contamination of the wound by the urine.

DR. WALTER B. DORSETT, St. Louis—I object to the word denudation. It implies very little. Usually when we speak of denudation we mean that we take off the mucous membrane. If we are going to make a perineum that is going to be of any service, whether for rectocele or simply for a relaxed outlet, we have in the first place a stretching of the mucous membrane, together with a stretching of the vagina, a stretching of the circular muscle fibers of the vagina; therefore, in order to repair that properly we must do something more than a simple denudation; we must take out sections from the vagina. I commence on one side and cut deeply until I get beneath the vagina, then I take hold of it with a pair of forceps, pass my fingers up and dissect the vagina from the rectum. Then I begin at the upper angle and introduce the sutures. (Dr. Dorsett illustrated his technic.) When I draw on the upper suture I lift up the whole perineal body. If we simply denude, as I have seen many surgeons do, we fold the connective tissue together, and if we get any union at all it is only by slight adhesions, and it is of absolutely no benefit. The operation I do is essentially that given us by Emmet.

DR. J. H. CARSTENS, Detroit—Concerning the denuded surface, what is there in the first place? A ruptured perineum, torn fascia everywhere and a muscle that is torn completely through. If there is an Emmet suture put in, I do not care which way it is pulled, on being drawn together it puckers up. One can not do anything different with a large suture. One can not get the parts accurately together. (Dr. Carstens then illustrated his method on the blackboard.) I put in thirty or forty stitches and build up a perineum that is as near like the original perineum as I can make it. Ideal surgery is to use the buried suture, and not the big *en masse* suture, which is a catch-as-catch-can suture. If you hit it, all right; if not, then you don't.

DR. A. PALMER DUDLEY, New York—What is the pelvic floor? The levator ani muscle; the transverse perineal muscle from the ramus around to coccyx and to anus. What is split? The perineum. What is the perineum? The two halves of the

levator ani muscle. You get them together to have a returned sphincter action. I am going to reverse the order of operation on the perineum entirely. The muscle is surrounding the vagina; it is ruptured. If you make Emmet's operation where is the fixed point, and from where are you drawing tissue? You are drawing movable vaginal tissue. If you will do a proper operation you must denude and use some suture which will unite the muscle end to end and not to cellular tissue or mucous tissue. (Dr. Dudley demonstrated his points on the blackboard.)

DR. H. O. MARCY—The premises I took at the opening are verified. There is as yet an entirely unsettled idea as to what we should do in restoration of the perineum. Two or three things should be settled on here and now, and the discussion aids in elucidating this matter. I omitted much in the reading of my paper in order to save time. The whole idea is that we must reunite the ruptured muscles in the median line, where the interdigitation of the transversi with the levatores make the so-called perineal body. How this can best be effected is the problem. That which I claim to be of advantage is, that in dissecting up the posterior two-thirds of the vagina we are enabled to reach and reunite the separated structures. Into the vulvar opening, thus restored, we suture the thinned-out vaginal muscle sheath, much as the tailor the sleeve into the arm hole of a coat. In this reconstruction, all the tissues are utilized. Nothing is dissected away. The process of restoring the soft parts is simple and easy. The operation is really done in half the time I am discussing it. Dr. Goelet's criticism is well taken if too much force is applied in the constriction of the sutures. Retention at rest of the reconstructed tissues without constriction is of vital importance in the application of all buried sutures. Continuous suturing is safer than interrupted stitches, since the force must act equally on every stitch. The wound must be protected from the urine. With the assistance of trained nurses I have operated on several hundred cases without a single failure.

THE REPAIR OF CYSTOCELE

BY UTILIZATION OF THE ANATOMICALLY FIXED POINTS
IN THE ANTERIOR VAGINAL WALL.*

E. REYNOLDS, M.D.
BOSTON.

A year ago I read before the American Gynecological Association a paper on this same subject, setting forth what I believed to be somewhat new and important points in the repair of cystocele. My object in this present paper is to restate the facts and conclusions then brought forward, with the developments which have been obtained in another year of work, and supported by the ultimate results of the cases then reported.

We hear nothing nowadays of new methods of operation in the repair of the lacerated cervix, and for several years have heard nothing of new methods in the repair of the perineum. These operations are satisfactory. The anatomic principles on which they were founded are well worked out, and there is little more to say about them, hence the silence. The third great plastic—the operation for the repair of cystocele—stands on very different ground. New operations are still proposed almost as frequently as in the early days of plastic operating, and we should most of us agree at once that no one of all these many operations and no group of operations has overcome the others and become accepted. I believe that this uncertainty and unsatisfactory state of the cystocele operation has been due to our failure to comprehend until recently the anatomic conditions, an observance of which must necessarily underlie all successful repair, i. e., I believe we have been in the habit

of puckering up the loose tissues by merely empirical methods, and have not searched intelligently for the anatomic supports of the wall and sutured them directly to each other. If the operation is ever to be put on a rational basis, the first step in the process must be an inquiry into the anatomy of the anterior vaginal wall; and to state the results of such an inquiry is the first purpose of this paper.

The structure usually spoken of as the anterior vaginal wall is really two structures and is composed of the loose, elastic, non-resistant posterior wall of the bladder in combination with the strong sheet of muscular and connective tissue which forms the true anterior vaginal wall, but which may be here called for distinction the vaginal plate of the anterior wall. The vaginal plate is but loosely attached to the bladder, is normally firm, non-distensible, and strongly fastened to supporting tissues on all sides. It is attached at its lower end to the tissues immediately behind the pubic bone. At its upper end it is inserted by its central portion into the cervix and, which is of more moment, by its lateral corners into the important masses of connective tissue and unstriated muscular fiber which extend through the lower portions of the broad and uterosacral ligaments to find their attachments in this vaginal plate and in the supravaginal cervix. By its lateral edges throughout it is attached to the pubococcygeal and the allied group of transverse muscles which here find their only insertion into the vagina. To recapitulate: In the normal state these strong supporting structures are inserted into the four edges of the strong sheet of muscular and connective tissue which we know as the anterior vaginal wall, and are by it bound together into a firm floor which supports the bladder, the whole being in its turn reinforced, but only reinforced, by the support of the posterior vaginal wall below it.

This being the normal anatomy of the anterior vaginal wall, we should next inquire into the anatomic conditions which prevail in cystocele, and this is perhaps best reached by considering the conditions which are found during and at the close of labor.

It must be remembered that the posterior vaginal wall is mainly, and the anterior wall is wholly, supported by structures springing from the anterior half of the pelvic bones, hence it happens that while the walls themselves are exposed during labor to almost equal distending forces, the supports of the anterior wall are subjected to but little strain, and may even be relaxed by its forward distension during labor, while the supports of the posterior wall are subjected to great strain during its backward and downward distension, and in the concluding stage of labor the posterior wall and its attachments receive almost the whole strain of the advancing head.

The result is that the distended posterior wall is exposed to laceration, while the anterior wall, though always distended, is seldom lacerated. At the conclusion of labor, then, the attachments of the anterior wall are intact, but the wall itself between the attachments is greatly distended and therefore sags forward and downward under the influence of gravity. The natural result is that when the support of the posterior wall has been lost the vaginal plate often fails to recontract during involution, loses resiliency, and no longer supports the bladder, though its edges are still inserted into the intact supporting structures. This is, then, the anatomy of cystocele, and the condition is, in effect, a hernia of the bladder through the foramen formed by the attachments of the anterior vaginal wall, carrying before it as its

* Read at the Fifty-fourth 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. A. Palmer Dudley, H. P. Newman and J. H. Carstens.