THE MASTER CLASS

Surgeons Respond to Pelvic Reconstruction Column

As editor of the Master Class columns on gynecology, I was very proud to have C.Y. Liu, M.D., present an excellent two-part discourse on pelvic floor prolapse in the October 1, 2004, and November 1, 2004, issues of OB.GYN. NEWS.

I subsequently received a letter to the editor from Marvin H. Terry Grody, M.D. In my mind, Dr. Grody has raised compelling issues, especially in regard to the importance of the perineal body in pelvic floor prolapse. Because of this, I have asked Dr. Liu and a panel of experts to discuss Dr. Grody's concerns.

I trust you will find this discussion both interesting and informative.

CHARLES E. MILLER, M.D.

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Dear Editors:

In the Oct. 1, 2004, issue of Ob.Gyn. News, there appeared Part 1 of a two-part series entitled "Laparoscopic Pelvic Reconstructive Surgery." The author, C.Y. Liu, M.D., who is a well-reputed and skilled laparoscopic surgeon, acceptably covered the issues of defects of the pelvic supportive and suspensory mechanisms and their effects on associated organs. But from the viewpoint of a vaginal and pelvic reconstructive surgeon, he embodied a major misconception in his statement, "The perineal membrane and perineal body are not very crucial for pelvic organ support."

He is not only dead wrong, but he is giving misinformation that could be seriously destructive to surgery performed by a myriad of minimally experienced young surgeons whom experts in the field are trying tenaciously to convince otherwise.

Before I go further into this matter, I must first suppress my emotionally charged conviction (shared by many others) that the average gynecologic surgeon will not achieve anywhere near the degree of success working through a telescope that has been thrust through the abdominal wall as she or he could attain much more directly with less time and expense—and probably less risk—by using alternative approaches.

Contrary to Dr. Liu's disregard of any contributive importance of the perineal body (PB), pelvic reconstructive surgeons universally consider a disrupted PB to be a critical obstacle to the achievement of durably effective success in pelvic anatomical and functional restoration. Over a period of 4 decades starting in the 1960s, David H. Nichols, M.D.—whom most of us view as one of the most renowned vaginal surgeons—firmly and repeatedly established the mandatory requirements of restitution of the normal vaginal axis in the correction of the anatomically defective pelvic floor.

For reference, a full description of the normal vaginal axis and its vital role in good pelvic support can be found in my chapter on colpoperineorrhaphy in the ninth edition of TeLinde's Operative Gynecology (Philadelphia: Lippincott Williams & Wilkins, 2003, p. 966-85).

The PB is a key element in the structural composition of the normal vaginal axis. If significant defects in the PB are ignored and not completely repaired to natural configuration in this commonly coexistent lesion in pelvic floor anatomical failure, then no matter how wonderful the surgeon feels about his or her effort in correcting the other defects, the operation is almost certainly doomed to fail in time. Such inevitability relates to the interdependence of all the elements of the connective tissue network running through the pelvis. An ignored, significantly defective PB can become the weak link that will blow the entire chain of support.

Even if we uncover the rare gynecologic surgeon possessed of laparoscopic skill equivalent to that of Dr. Liu, if the patient does not undergo a full perineorrhaphy from the vaginal approach as the last part of the total operation, then that surgeon must be considered stupid.

Finally, I must question the wisdom of publishing this laparoscopy series that focuses on a surgical approach that will unquestionably be within the province of only a highly-specialized, well-trained, innately gifted few when other easier, safer, very effective, and far less costly and time-consuming procedures can be ably pursued by a significantly larger segment of qualified operating practitioners.

Given today's world of astounding technological feats, will such a truly perverse printed exposure stimulate adventurous young gynecologic surgeons who think they are much better than they really are into imprudent undertakings beyond their true capabilities, leading to serious injury to their patients? Goodness knows what difficulties we already find in our cluttered residency programs in getting basic maneuvers (like vaginal hysterectomy) across, let alone highly sophisticated, industry-driven, potentially dangerous operative challenges performed through a spyglass.

If there are critics abroad who think I am wrong, let them please tell me.

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Rather than repudiating Dr. Grody's opinion about laparoscopic surgery, I will only respond to his point about the importance of the perineal membrane and PB to pelvic organ support.

All defects should be repaired at the time of pelvic floor reconstructive surgery. Any tear or defect in the area of the perineal membrane or PB should be repaired concurrently with pelvic floor reconstruction. This point was emphasized in the final step outlined in Part 2 of my series: "Repair the rectocele and perform perineorrhaphy vaginally if necessary."

Based upon my understanding of the functional pelvic support anatomy as well as clinical observation, I maintain my position that "the perineal membrane and perineal body are not very crucial for pelvic organ support."

The perineal membrane is a single layer of fibromuscular tissue that spans the anterior triangle of the pelvic outlet. Laterally, it attaches to the ischiopubic ramus; medially, it fuses with the sidewalls of the vagina and perineal body. The anterior portion of the perineal membrane is fused with the muscles of the distal urethra. Rather than forming a supportive sheet as it does in the male, the perineal membrane in the female—because of the large opening of the vagina—provides only lateral attachment for the PB and some support for the lower urethra.

The PB is an ill-defined, bordered mass of dense connective tissue lying between the vagina and anus. Fused anteriorly to the posterior vaginal wall and attached laterally to the perineal membrane and bulbocavernosus and superficial transverse perineal muscles, a significant portion of what is clinically called the perineal body is actually the muscle of the external anal sphincter. The strong upward traction of the levator ani muscles is much more important in maintaining vaginal outlet support than are the bulbocavernosus and superficial transverse perineal muscle.

Contrary to Dr. Grody's assertion that the PB makes a substantial contribution to pelvic support, in actuality the support is minimal. Rather, restoration of the PB is important for sexual function and anal/fecal continence. I have examined several patients with no PB as the result of chronic unrepaired fourth-degree obstetric lacerations, yet none of them had prolapse. Similarly, women who have had a radical resection of the anus and rectum for cancer, including the entire removal of the PB, suffered no significant prolapse.

Because considerable descent (up to 1 inch) of the PB is possible during voluntary straining, the perineal membrane and PB cannot be the main supportive layer of the genital outlet. The fact that the PB can move backward 3-4 cm toward the sacrum when a weighted speculum is placed in the posterior vagina likewise indicates that the position of the PB is determined by the levator ani muscle rather than by any inherent importance of its own.

Advances in technology afford greater magnification, visualization, and accuracy—leading to a level of surgical precision heretofore impossible with the relatively "blind" vaginal approach. We must train young surgeons for these state-of-the-art advances.

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Although I have the utmost respect for both Dr. Grody and Dr. Liu and I believe that everyone is entitled to his or her own opinion, Dr Liu's article is certainly not worthy of such admonishment.

Dr. Liu not only correctly addresses normal vaginal anatomy, clinical assessment, and one surgeon's approach to the anatomical correction of symptomatic prolapse, he does so in a concise, informative manner.

Dr. Grody's belief that the perineal membrane and PB are crucial for pelvic organ support is indeed just that: his belief. Using the PubMed search term "perineal body surgery," I found no scientific literature written in the past 40 years that supports the concept that either the perineal membrane or the PB is crucial in the support of any organs of the pelvis. I have yet to read or find an article that suggests that the cure rates of sacrospinous ligament suspension; sacral colpopexy; paravaginal repair; uterosacral ligament suspension; enterocele repair; or Burch, sling, or any other prolapse corrective surgery—including colpocleisis or Lefort procedures—are improved by repairing the PB.

Furthermore, there is no scientific literature that supports the concept that poor perineal support increases the incidence of prolapse. If this were a fact, patients with traumatic or congenital cloaca would also suffer a greater incidence of vaginal prolapse. I have not seen or read of any scientific literature or text that can directly show a cause-and-effect relationship between a damaged PB and vaginal prolapse.

Dr. Grody is a purist in his pursuit of vaginal anatomic correction, but this fine trait does not constitute scientific proof for his allegation. He has the right to theorize that the anatomical correction is essential to improve long-term cure rates of prolapse surgery. But a theory is belief unsupported by substantial fact, and will thus remain just a theory.

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After reading Dr. Liu's article on laparoscopic pelvic reconstructive surgery and Dr. Grody's response, I found myself perplexed. How is it that two experienced and respected surgeons can underappreciate each other's perspective on pelvic reconstructive surgery?

For the most part, I agree with most of what each has stated but disagree on the finer points. I must confess that being predominately a laparoscopic or minimally invasive surgeon, I too did not completely comprehend the complexity and functional anatomy of the PB and membrane as an important element in pelvic floor support until more recently.

Thanks to cadaver sections and MRI studies reported by John O.L. Delancey, M.D., at the joint annual meeting of the American Urogynecologic Society and the Society of Gynecologic Surgeons in 2004, we realize that the perineal membrane is a complex 3-D structure composed of a dorsal and ventral portion rather than a trilaminar sheet as previously thought. His description of the anatomical relationship to the compressor urethra, urethra vaginal sphincter, arcus

tendineus, pubic bone, and levator muscles underscores the importance of this structure in pelvic support.

We now have level 1 evidence of the laparoscope's benefit in sacral colpopexies compared with an open procedure, as well as its inferiority in treating stress urinary incontinence when comparing a laparoscopic Burch with a transvaginal tape procedure. But the laparoscope is a tool that requires proper training to master. Thanks to the pioneering efforts of Dr. Liu and Dr. Miklos, the development of training centers, and the support of organizations like the American Association of Gynecologic Laparoscopists, it is no longer the gifted few who use this valuable instrument.

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The recent articles by Dr. C.Y. Liu in OB.GYN.NEWS on laparoscopic pelvic reconstructive surgery, Parts 1 and 2, are a must-read for any gynecologic surgeon performing reconstructive vaginal surgery. Although the article presents Dr. Liu's laparoscopic approach to problems of vaginal suspension and support, the anatomy presented and the surgical steps discussed are clearly applicable to the repair of any vaginal prolapse via any surgical approach, including vaginal and abdominal.

The anatomy of genital prolapse is up to date, well written, and clearly explained. Part 1 contains many pearls of insight from a master of this anatomy, and it summarizes our current concepts of vaginal suspension and support. The section on clinical assessment of prolapse is practical and very helpful.

The surgical techniques presented are anatomical and readily applicable. Dr. Liu explains how to safely dissect out and investigate the suspensory anatomy to clearly define the anatomical defects that caused the vaginal prolapse. Not only does Dr. Liu address and repair the specific breaks in the continuity of the visceral connective tissue suspensory network, but he presents an excellent dissection technique for safeguarding the ureters.

One point that should have been emphasized is the requirement for cystoscopic confirmation of bilateral ureteral functioning at the end of the case.

The article explains that one of the three supporting layers of the female pelvic organs is "the perineal membrane/external anal sphincter." What is not said is that the anal sphincter is an important component of the posterior part of the PB.

The lower third of the vagina and the anal canal/anal sphincter are fused with the PB. The PB is shaped roughly like a pyramid, with the base between the vaginal introitus and the anal sphincter. The apex is found at the junction of the lower third and the middle third of the vagina, and at the rectoanal junction. At the apex of the perineal body, the vagina slopes to a more horizontal orientation in the standing patient, whereas the anal canal forms a right angle with the lower rectum.

Portions of the pubococcygeus and puborectalis muscles insert into the apex of the PB. The rectovaginal fascia also inserts into the apex of the PB and helps in its proper anatomical orientation. The intact PB positions itself and the anus just above the level of the ischial tuberosities. The fusion of the anus and anal canal with the PB is important for their anatomical positioning and physiologic functioning in fecal continence. The fusion of the lower third of the vagina with the PB is important for its anatomical positioning and physiologic functioning in pelvic organ support. The PB assists in closing off the genital hiatus at times of increased intrapelvic pressures, supporting the pelvic organs. Another support mechanism is the flap-valve action of the levator plate.

Many women with vaginal prolapse demonstrate abnormal descent of the perineum. Dr. Liu states, "The active support of the pelvic floor comes from the levator ani muscles (the iliococcygeus and pubococcygeus muscles). These muscles close off the pelvic floor so the pelvic organs can rest upon them without tension." This statement is true.

Dr. Liu does not mention the important action of the levator plate or the action of the PB in this vaginal support mechanism. In fact, with a poorly supportive levator plate, as is frequently seen in vaginal prolapse patients, a well-reconstructed PB will substitute as a backstop against which the resuspended vagina can be compressed for support.

The reconstructed PB will help close off the genital hiatus at times of mechanical pelvic stress. The PB must be reconstructed in shape and bulk to support and orient the anal canal and lower third of the vagina, but also to position itself and the anal canal at or above the level of the ischial tuberosities.

As Dr. Liu implies, we cannot repair or completely rehabilitate damaged and weakened pelvic floor muscles and their innervations. We should surgically reconstruct a disrupted PB. I do feel that Dr. Liu does indeed perform perineoplasty on many of his prolapse patients. He simply emphasized the reconstruction and proper placement of the pericervical ring in his excellent article. ■

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