

# HOSPITAL PHYSICIAN®

## OBSTETRICS AND GYNECOLOGY BOARD REVIEW MANUAL

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## Diagnosis and Treatment of Vaginal Apical Prolapse

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# Diagnosis and Treatment of Vaginal Apical Prolapse

Scott W. Smilen, MD, and B. Star Hampton, MD

## INTRODUCTION

As the average life span of the population increases, problems related to pelvic support defects are seen with increasing frequency in women. The associated symptoms, although not a cause of mortality, have a significant impact on the quality of a patient's everyday life and sexual activity. This review focuses specifically on vaginal apical defects and the most appropriate correction of these defects. Two case patients are presented to highlight the approach to the diagnosis of pelvic support defects and the range of treatment options for management of vaginal apical prolapse.

## ANATOMY OF THE PELVIC SUPPORT SYSTEM

### Nomenclature

Knowledge of the endopelvic fascia support system and the 3 support axes is essential for understanding defects in vaginal wall support. The endopelvic fascia—a network of connective tissue and smooth muscle—is a continuous system that provides structural support and maintains the bladder, urethra, uterus, vagina, and rectum in their respective anatomic relationships. All forms of vaginal prolapse—anterior, apical, or posterior—are caused by a breakdown in the continuity of the endopelvic fascia system.

Traditionally, pelvic support defects have been described based on the organ that is prolapsed. *Cystocele* denoted a herniation of the bladder as evidenced by an anterior vaginal wall bulge. Similarly, *rectocele* signified a protrusion produced by the rectum abutting the posterior vaginal wall. However, what appears to be a cystocele or rectocele on physical examination often is later found to be a peritoneum-lined sac sometimes containing omentum or small intestine, which is more appropriately termed an *enterocele*. Conversely, a large apparently apical protrusion clinically consistent with an enterocele in a posthysterectomy patient will sometimes be found to contain bladder or rectum (or sigmoid colon).

As the anatomy and histology of the pelvis has become better understood, convention has shifted toward

nomenclature describing the affected site, and presumably then, the structures lacking in provision of support (Table).

### Levels of Pelvic Support

DeLancey has described 3 levels of pelvic support (Figure 1).<sup>1</sup> The clinical and anatomic correlates of this support mechanism are summarized in the Table.

Level I consists of the upper 2 to 3 cm of the vagina, with supporting fibers of the paracolpium spanning broadly from the lateral pelvic walls to the centrally located pelvic organs. Level I structures are primarily responsible for maintaining the upper vagina, cervix, and uterus in place over an intact levator ani muscle (Figure 2). At the lateral aspect of the vagina, the connective tissue fibers diverge to surround the anterior and posterior vaginal walls. The upper vagina in vivo is situated in a horizontal fashion over the posterior half of the levator ani muscle plexus.<sup>2</sup> When intra-abdominal pressure is increased, the upper vagina is forced against this levator plate and prolapse is prevented. This valve mechanism, along with intact level I fibers, is responsible for prevention of apical defects.<sup>3</sup> Anatomically, level I fibers correspond to the cardinal-uterosacral ligament complex. Deficiencies in the level I support complex (ie, connective tissue attachments and valve mechanism) may lead to uterine and/or vaginal apical prolapse.

Level II fibers (Figure 3) envelop the mid-vagina anteriorly and posteriorly and attach the lateral aspects of the vagina to the pelvic sidewall. No true fascia directly envelops the bladder.<sup>4</sup> Instead, the bladder muscularis rests on the connective tissue comprising anterior level II support, attaching the vagina to the arcus tendineus fasciae pelvis. Anatomically, this supportive layer is termed the *pubocervical fascia*. Similarly, the connective tissue posteriorly attaches to the fascia of the levator ani muscle and is termed *rectovaginal fascia*. Defects in this connective tissue layer may lead to cystoceles (pubocervical connective tissue defects) or rectoceles (rectovaginal connective tissue defects).

Level III (Figure 3) is the distal portion of the vagina, from the introitus to 2 to 3 cm above the hymenal