Pelvic Organ Prolapse: Introduction

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Pelvic organ prolapse (POP) represents a significant health as well as economic problem worldwide and may have a deleterious impact on a woman’s quality of life; however, it rarely has significant morbidity or mortality. It is estimated that 25% of women older than 60 years suffer from some degree of POP, and more than 300,000 operations for POP are performed annually in the US alone [1, 2].

Pelvic organ prolapse among women, which is manifested by protrusion of the vagina or uterus out of the introitus, is caused by damage of the muscles, fascias, and ligaments that stabilize organs located in the pelvis [3]. Current understanding of this disorder is based on the assumption that support to the pelvic organs (urethra, bladder, uterus, and rectum) is provided directly by the vagina and indirectly by the structures involved in vaginal support [4, 5]. Therefore, it is generally accepted that any damage to components involved in the support mechanism can result in loss of vaginal stability and prolapse of the pelvic organs. The unique structure of the pelvic floor could be considered in terms of the complex interaction between the vagina and its supportive ligaments and fascias that are designed to withstand the downward descent of the pelvic organs in response to an increase in abdominal pressure. The etiology of POP is complex, involving a potential injury to the ligaments, muscles, connective tissue, and innervation of the pelvis. The incidence of POP is associated with several other factors including age, parity, abdominal circumference, and body mass index. Vaginal support defects may include a cystocele (a weakening of the vesicovaginal musculo-connective tissue), a rectocele (a weakening of the rectovaginal musculo-connective tissue), a paravaginal defect (a defect in the level II support of the vagina at the level of the arcus tendinous fascia pelvis), or a defect in the level I apical support of the vagina (the cardinal-uterosacral ligament complex). Evaluation is typically performed with the patient in the dorsal lithotomy position. Clinical manifestation of these abnormalities, besides a subjective feeling of fullness in the introitus, is often accompanied by several functional disturbances such as stress and mixed urinary incontinence, difficulties in bladder emptying (especially in advanced prolapse), and various problems with bowel emptying. Stool incontinence, which occurs among 7% of patients with POP and as often as 31% among women with stress urinary incontinence (SUI), is usually not dependent on posterior vaginal wall prolapse [6, 7]. It is mainly a result of external anal sphincter damage caused by obstetric trauma; however, estrogen deprivation after menopause as well as aging itself are also considered causative factors [8, 9]. Advanced POP among sexually active women may cause avoidance behavior due to decreased self-esteem [10]. The most advanced prolapse could be even a causative factor for hydronephrosis and hydroureter; both of these anomalies almost always disappear after surgical correction of POP [11, 12].

The most common symptom which accompanies POP is the feeling of “something coming down” out of vagina [13]. Vaginal and low back pains are also symptoms that are relatively often reported by affected women, and the intensity of complaints parallels the clinical advancement of disease [14]. It has been shown that the number of patients suffering from common symptoms associated with POP increases rapidly with the advancement of the leading point below 1 cm of
the hymenal ring (Pelvic Organ Prolapse Quantification (POPQ) stage 2 and 3) [15]. In another study, investigators found that only 18% of patients reported symptoms of a vaginal bulge, and this increased up to 78% among women with stage 3 prolapse [16].

Epidemiological data concerning POP are relatively scarce and very often inconclusive, mainly due to the various definitions used by investigators. Few studies have attempted to describe and document the distribution of genital tract support abnormalities in female populations [17–19]. The main clinical message from all these studies is that a very large percentage of females had some relaxation of the pelvic floor, with 5–6% demonstrating prolapse beyond the introitus, which usually increased with the patient’s age. Moreover, it is clear that racial and occupational factors are also important when studying the prevalence of POP [9, 20]. Estimated life risk for being operated due to POP is as high as 11%, and this risk is strictly age dependent [17]. The number of operations due to POP is 0.4 per 10,000 among the age group 20–29 years, and rises to 34 per 10,000 among women in their 70s. Brubaker et al reported that the risk for clinically important POP is 4% for the whole population, but of course numbers are much higher among patients seeking gynecological help [9].

According to the Oxford Family Planning Association, the most important risk factor for POP is vaginal delivery [21]. However, it should be stressed that fetal body weight > 4500 g, prolongation of the second stage of delivery, and use of forceps and vacuum extractor, which are established risk factors for SUI occurrence, do not markedly influence the progression of the disease [22]. Additional commonly cited risk factors for prolapse occurrence are obesity, stool impaction, occupational status, and lung diseases with protracted coughing [21–25]. Moreover, it has been suggested by Nguyen et al that anatomical abnormalities of the bony pelvis, as well as abnormalities in the lumbosacral part of the vertebral column could also cause POP [26]. Menopause as a single risk factor for POP occurrence was reported by Swift [27]. However, other researchers have not confirmed this finding [28, 29].

Some congenital anomalies which predispose to POP are a decreased amount of type I collagen accompanied by an increased amount of type III collagen and fragmentation of elastin fibers, which causes increased elasticity of the extracellular matrix (ECM) components stabilizing the urogenital organs within the bony pelvis [4, 30, 31]. There is strong evidence that the quantity and quality of collagen in the pelvic support tissues of women with pelvic static disorders is inferior to that in women with normal support [32, 33]. Moreover, women affected by congenital connective tissue diseases such as Ehlers–Danlos syndrome and Marfan’s syndrome have a higher risk of pelvic floor disorders, including pelvic organ prolapse and urinary incontinence, compared with unaffected individuals [34, 35]. It has also been shown that in genetically modified mice with a lack of elastin gene, POP was a normal occurrence due to interruption of the metabolic pathway of elastin synthesis and repair [36].

Therefore, Carley and Schaffer propose that POP should be considered a genetically caused disease [37]. Recently, Norton et al, using a linkage analysis, have presented significant evidence that a predisposition gene for pelvic floor disorders is located on chromosome 9 [38].

On the other hand, in a previously published study investigating the biomechanical properties of vaginal and systemic skin in women affected by POP, it was found that POP is a disease of vaginal, rather than systemic, supportive tissue [39].

Taking all these facts into account, we should consider POP as a multifactorial disease, with obstetric trauma as a main risk-predisposing factor [30].

From a clinical point of view, a proper classification system which enables physicians to objectively assess POP severity is of critical importance [40]. Lack of standardized terminology has meant that none of the previously used classification systems proposed by Porges (1963), Baden and Walker (1972), and Beecham (1980) were commonly used or accepted by various medical societies [3, 41–43] (Fig. VI.1).

There is currently only one genital tract prolapse classification system that has attained international acceptance and recognition: the POPQ, which has been developed by an international committee made up of members from the International Continence Society (ICS), the American Urogynecologic Society (AUGS), and the Society of Gynecologic Surgeons (SGS). This system has been formally recognized and adopted by these three societies [44]. It is a very precise system, which has shown good intra- as well as interexaminer reliability. This classification has been confirmed in recent IUGA/ISC joint report from 2010 [45]: