

Updated Definition of Female Pelvic Organ Prolapse

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ABSTRACT

Pelvic floor dysfunction may include pelvic organ prolapse (POP) and incontinence. Their symptoms can be classified into micturition, defecation, prolapse, sex and pain. Causes and risk factors of POP are likely to be multifactorial, varying from patient to patient, such as pregnancy, vaginal childbirth, increasing body mass index, ageing, congenital pelvic floor defects, lifestyle (high-impact activities) and chronic disease. Currently, there are three grading systems most commonly used worldwide. In this article, we add a new classification system that was proposed by the International Urogynecology Association in 2006 to the summarized table for comparison. Hopefully, this work can update our readers of the new knowledge and help primary care provider and researchers to facilitate effective communication.

Key words: prolapse, anterior vaginal wall, posterior vaginal wall, vaginal cuff, pelvic organ prolapse

INTRODUCTION

Pelvic organ prolapse (POP) is an anatomic support defect of the pelvic viscera. It may result from a series of long-term failure of the supporting and suspension mechanisms of the uterus and vaginal wall.

The etiologies of POP are a combination of denervation in the pelvic floor musculature [1], direct injury to the pelvic floor musculature, or defects in the endopelvic fascia and supporting ligaments [2-5]. These preexisting muscle and nerve damage or fascia breaks of the pelvic floor from trauma or childbirth may be exacerbated by menopausal estrogen deficiency, ageing, chronic constipation, chronic cough, heavy lifting, or obesity [6-8]. Put together, these kinds of mechanical trauma may result in pelvic floor dysfunction and prolapse consequently. We consider that these risks may contribute to the deterioration of the pre-existing defect of the pelvic floor supporting mechanism. However, when considering the occurrence or the severity of POP, it is an add-on, summative, or so-called carry-over effect of the above predisposing factors.

CLINICAL PRESENTATIONS OF POP

Women with POP can present either independently or in combination with other symptoms such as uterovaginal bulging or protrusion, seeing or feeling a bulge or protruding mass through the vagina, pelvic pressure or heaviness, or associated urinary and/or bowel symptoms [9]. In the 2002 ICS report, section 1.5 symptoms associated with POP, it states that women with a prolapse may describe symp-

toms including feeling of a lump (something coming down), lower back pain, heaviness, dragging sensation, or the need to digitally replace the prolapse in order to defecate or micturate [10]. However, except for the vaginal bulge or protrusion, none of the symptoms are specific to prolapse. Many women with POP are asymptomatic and do not need treatment. Women with mild and moderate pelvic relaxation often complain of stress urinary incontinence, whereas women with severe uterovaginal prolapse rarely complain of incontinence [11]. A large posterior vaginal prolapse can also cause mechanical obstruction by direct urethral compression [12]. Some women with POP frequently complain of symptoms related to bowel dysfunction, including a feeling of incomplete emptying, straining, need to apply digital pressure to the vagina or perineum to start or complete defecation, urgency, and incontinence [9]. However, in studies of the relation between bowel dysfunction and presence and severity of prolapse, researchers have reported either a weak correlation between posterior vaginal wall support and specific anorectal symptoms or no link at all [13]. Symptoms alone do not correlate with the degree of prolapse as determined by pelvic examination and can not be used to make a definitive diagnosis. Therefore, women with symptoms suggestive of prolapse need to undergo a complete pelvic examination and a thorough medical history must be completed [9].

CLASSIFICATION OF PELVIC ORGAN PROLAPSE

In the past three decades, in order to compare the results of pelvic investigations regarding uterovaginal prolapse, many schemes for evaluating POP have been proposed. In this article, we have collected the three most commonly used pelvic grading systems for comparison of the diversities among them. These three grading systems are summarized in Fig. 1.

CURRENT POP GRADING SYSTEM EXCEPT POP-Q

Baden and Walker thought that terms used for describing vaginal relaxation in clinical records were too general and nonspecific to allow comparison of the patient's preoperative and postoperative states [14]. They reported a specific anatomical finding before and after reconstructive surgery. A six-digit classification system from 0 (the best possible) to 4 (the worst possible) was proposed to correlate the six potential lesions of vaginal relaxation: anterior vaginal segment (1) urethrocele, (2) cystocele; superior vaginal segment (3) prolapse, (4) enterocele; posterior vaginal segment (5) rectocele, (6) chronic perineal laceration. In this system, a normal vagina with adequate support of all six components has a vaginal profile that can be described as "0-0 --- 0-0 ---0-0". When an urethrocele protrudes outside the hymen, a cystocele descends to the hymen, and components of the superior and posterior segments are without defects, the vaginal profile is recorded as "3-2---0-0---0-0". Each component is graded from 0 to 4. The hymen

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ring (remnants) is used as a reference point (Fig. 1). It is called the "half-way system".

Another widely used grading system published by Beecham is also currently in use [15]. Beecham thought that an urethrocele cannot be considered as a single entity. It can be part of a primary cystocele. Most supporting defects of the anterior vaginal segment should be considered as a cystourethrocele. Using the introitus as a reference point, he classified the severities of vaginal supporting defect from first to third degree including: rectocele, cystocele, uterine prolapse, enterocele and prolapse of the vaginal apex (Fig. 1).

The above two systems define the supporting or suspension anatomical defects as a site-specific. The patient is evaluated during maximal straining by using a bidigital method or inserting the speculum or tenaculum into the vagina. However, these two systems were not validated. Most clinical practitioners feel frustrated using these non-standardized invalidated systems for communication [10]. Therefore, the Standardization Sub-committee of the ICS collaborated with the American Urogynecologic Society (AUGS) and Society of Gynecologic Surgeons (SGS) to propose a validated quantitative POP (POP-Q) system in 1996 [16]. The new system is easy to reproduce between and within examiners [18,19].

CURRENT POP GRADING SYSTEM IN USE

The POP-Q system shows that the clinical description of pelvic floor anatomy should be determined during physical examination of the external genital and vaginal canal. In order to avoid the misunderstanding of prior terms, which may imply an unrealistic certainty as to the structures on the other side of the vaginal bulge, the POP-Q system uses segments of the lower reproductive tract to replace prior terms of the above two systems such as cystocele, rectocele, enterocele, or urethrovascular junction. The POP-Q system emphasizes that criteria for the end point of the examination and the full development of the prolapse should be specified. The criteria for indicating a maximum prolapse should include one or all of the following: (1) any protruding of the vaginal wall has become tight during straining by the

patient, (2) traction on the prolapse causes no further descent, (3) the size of the prolapse and the extent of the protrusion seen by the examiner are as extensive as the most severe protrusion that she has ever witnessed, and/or (4) a standing, straining examination confirms that the full extent of the prolapse was observed in other positions used [16]. The degree of pelvic organ prolapse can be assessed adequately in the dorsal lithotomy position with the patient performing maximal Valsalva. It is not necessary to routinely repeat the examination in the standing position [17]. Nine measurements of the defined points including two anteriorly, two posteriorly, two externally, two apically, and the total vaginal length should be recorded during pelvic examination. A rigid measuring device such as ruler may be used for assessing the length of the protrusion. A convenient three-by-three grid is suggested for recording the nine points (Fig. 2). The defined points that are measured in the POP-Q examination and the staging system of the POP-Q are summarized in Table I. and Figure II. Ideally, the POP-q system is a tandem profile in that it will contain a series of component measurements grouped together in combination, but listed separately in tandem, without being fused into a distinctive new expression or grade [16].

SIMPLIFIED POP CLASSIFICATION SYSTEM IN THE FUTURE

Initially, the POP-Q system was considered to be easily learned and rapidly performed [8]. There are several expected potential benefits of the POP-Q system being used worldwide. First, this system allows for the precise description of an individual women's pelvic support without assigning a severity value. Second, it allows accurate site-specific observations of the stability or progression of prolapse over time by the same or different observers. Third, it allows similar judgments regarding the outcome of surgical repair of prolapse [16]. However, a chasm exists between expert perceptions and a clinical practical use. It seems to be too complicated for primary care providers to use this system in daily practice.

A new simplified POP classification system, it was initiated in the annual meeting of IUGA in Melbourne, was proposed by IUGA at the end of 2006 [20]. In the new system, only four vaginal segments are

Vaginal profile (Baden & Walker, 1972)	Grading system (Beecham, 1980)	Quantitative POP (ICS, AUGS, SGS; 1996)	Simplified POP (IUGA 2006)
↓ Grade 1	↓ ↓ ↓	↓ ↓ ↓	↓ ↓ ↓
Midplane of vagina	↓ 1 st degree	↓ Stage I	↓ Stage I
↓ Grade 2	↓ ↓ ↓	↓ 1 cm above hymen	↓ 1 cm above hymen
Hymenal ring	↓ Introitus	↓ Stage II	↓ Stage II
↓ Grade 3	↓ 2 nd degree	↓ 1 cm through hymen	↓ 1 cm through hymen
↓ Grade 4	↓ 3 rd degree	↓ Stage III	↓ Stage III
		↓ Stage IV	↓ Stage IV

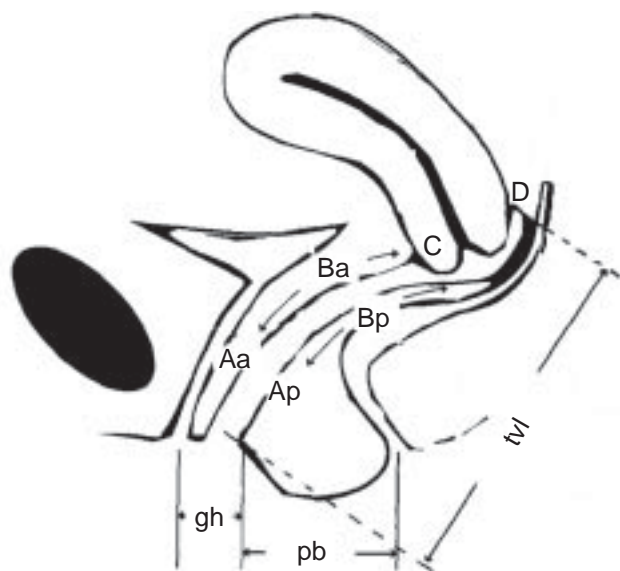
Simplified POP system proposed by the IUGA has yet to be validated.

ICS: International Continence Society; AUGS: American Urogynecologic Society; SGS: Society of Gynecologic Surgeons

Fig. 1. Comparison of the three most commonly used pelvic organ prolapse (POP) grading system and a new simplified POP classification system proposed by Standardization & Terminology and Research & Development Committees of the International Urogynecology Association (IUGA) in 2006.

referred to be evaluated: the anterior vaginal wall, the apex or posterior fornix, the cervix (if present), and posterior vaginal wall. The staging system for each segment is similar to that of POP-Q of 1996 but no measuring devices will be required for quantitatively measuring the prolapse segments. The simplified POP-Q points for each segment in contrast to that of the standard POP-Q system are as follow: (1) The anterior vaginal segment is staged using point Ba, (2) The posterior vaginal segment is staged using point Bp, (3) The cervix is staged using point C, and (4) The apex/posterior fornix is staged by using point C in the non-hysterectomized patient and point D in the hysterectomized patient.

This new system has been validated by an inter-system associa-



A point on the anterior vaginal wall, 3 cm proximal to the external urethral meatus Aa	The most dependent point of the upper anterior vaginal wall; from vaginal fornix to Point Aa Ba	Most distal edge of cervix or the leading edge of vaginal cuff C
A point at posterior vaginal wall, 3 cm proximal to the hymen Ap	The most dependent point of the upper posterior vaginal wall; from vaginal fornix to point Ap Bp	A point represent the location of the posterior fornix D
Middle of the external urethral meatus to the posterior midline hymen gh	Posterior margin of the genital hiatus to the midanal opening pb	The greatest depth of the vagina TVL

Fig. 2. The convenient scheme using a three-by three grid is better for recording the nine points [10]. (Modified from Am J Obstet Gynecol 1996; 175: 10-17. Fig. 1 and 2)

Table 1. The Staging System of Quantitative Pelvic Organ Prolapse (POP-Q) System

Stage	Descriptions
0	No prolapse is demonstrated during maximal straining
I	The most distal portion (leading surface) of the prolapse is > 1 cm above the level of the hymen (< -1 cm)
II	The most distal portion (leading edge) of the prolapse is ≤ 1 cm proximal to or extends 1 cm through the plane of hymen (≥ -1 cm, but $\leq +1$ cm)
III	The most distal portion of the prolapse is > 1 cm below hymen but no further than 2 cm less than the TVL (there is not complete vaginal eversion). ($> +1$ cm, but $< + [TVL - 2]$ cm)
IV	Complete eversion of the vagina ($\geq + [TVL - 2]$ cm)

TVL: Total vaginal length; Negative number: centimeters above or proximal to the hymen; Positive number: centimeters below or distal to the hymen

tion and an inter-examiner agreement in a small scale study by Swift et al in 2006. For the inter-examiner reliability of the POP-Q examination, the kappa statistics for the inter-examiner reliability of the simplified POP-Q classification system were 0.86 for the overall stage, 0.89 and 0.86 for the anterior and posterior vaginal walls, respectively, 0.82 for the apex/cuff, and 0.72 for the cervix. All demonstrate a significant agreement among the inter-examiners. For the inter-system association between the simplified POP-Q and standard POP-Q, the Kendall's tau-b value for overall stage was 0.90; 0.83, 0.87 for the anterior and posterior vaginal walls respectively; and 0.78 for the cuff/apex; and 0.98 for the cervix. There is good inter-examiner agreement of the simplified POP-Q classification system and it also appears to have good inter-system association with the standard POP-Q [21].

Before this new system is recommended, a large scale study needs to be conducted to be validated by an inter-system association and an inter-examiner agreement. In order to get widespread acceptance and use by practicing clinicians, it should undergo further testing to determine its ease of use, correlation with standard POP-Q. Regarding terminology, the simplified POP-Q used both the descriptive terminology of anterior, posterior and apical segments as well as the anatomic terminology including cystocele, rectocele, enterocele, and cervix.

CONCLUSION

POP is also called uterovaginal prolapse or urogenital prolapse. Several current grading systems are still in use. This means that a worldwide consensus has not yet been reached or accepted for daily practical use. The ideal grading system seems not only to provide quantitative data for comparison but also needs to provide symptomatic information for correlation.

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