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Utilizing preoperative 20-minute pad testing with vaginal gauze packing for indicating concomitant midurethral sling during cystocele repair

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ABSTRACT

Objective: To investigate the feasibility of using preoperative 20-minute pad testing with vaginal gauze packing for cystocele reduction to indicate a concomitant midurethral sling during cystocele repair.
Study design: Retrospective review of the records of consecutive women with pelvic organ prolapse quantification ≥ stage II symptomatic cystocele who visited the urogynecologic outpatient clinics and underwent cystocele repair between July 2005 and December 2010. Only patients who underwent preoperative urodynamic studies and 20-minute pad testing with vaginal gauze packing for cystocele reduction were enrolled.
Results: Twenty-one patients did not demonstrate any stress urinary incontinence. For evident stress urinary incontinence (>1 g pad weight before reduction), the criterion of ≥8 g pad weight before reduction was chosen for concomitant midurethral sling. For patients with occult stress urinary incontinence (≤1 g pad weight before reduction), the criterion of ≥8 g pad weight after reduction was chosen as an indication for concomitant midurethral sling. Among 22 patients with evident stress urinary incontinence (<8 g) without concomitant midurethral sling, only one patient (4.5%) received a midurethral sling during the follow-up period (median follow-up interval: 30.5 months). Among 21 patients with occult stress incontinence but <8 g after reduction without concomitant midurethral sling, only one patient (4.8%) received midurethral sling during the follow-up period (median follow-up interval: 38 months).
Conclusions: A preoperative 20-minute pad test with vaginal gauze packing for cystocele reduction is a feasible and practical method to decide for a concomitant midurethral sling.

1. Introduction

Pelvic organ prolapse and stress urinary incontinence (SUI) frequently occur together [1]. Anti-incontinence surgery is indicated for patients with concomitant occult SUI [2]. Concomitant anti-incontinence and pelvic organ prolapse surgeries have the advantage of being associated with a reduced percentage of *de novo* postoperative SUI after surgery, but may lead to additional complications such as bladder outlet obstruction [3]. Besides, concomitant anti-incontinence surgery may be unnecessary because pelvic organ prolapse repair itself may improve or cure SUI [3–5]. Nonetheless, the suitability of patients to receive concomitant anti-incontinence and pelvic organ prolapse surgical procedures is still to be determined [3,6,7]. Wei et al. reported that a prophylactic midurethral sling (MUS) inserted during vaginal prolapse surgery resulted in a lower rate of urinary incontinence and a higher rate of adverse events [6].

Various prolapse reduction devices, including vaginal pessary, speculum and vaginal packing, have been used, which actually unmask occult SUI [8–11]. Various devices with similar clinical effects have been reported [11], but the incidence of occult SUI still ranges from 6% to 69% with the use of different prolapse reduction devices [8–11].

The pad test is frequently used to determine the degree of urinary incontinence that occurs in daily life [12], but we did not find any published articles about combining a 20-minute pad test [13–15] and vaginal gauze packing as a tool to decide on

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concomitant MUS. In this study, therefore, we aimed at evaluating the feasibility of combining a 20-minute pad test and vaginal gauze packing to reduce cystocele preoperatively for determining the indication of concomitant MUS during cystocele repair.

2. Materials and methods

All women with pelvic organ prolapse quantification (POP-Q) ≥ stage II symptomatic cystocele who underwent surgical reduction treatment at a University Hospital between July 2005 and December 2010 were included by reviewing medical records of urodynamic studies retrospectively in this study. Patients with cystocele who did not undergo preoperative urodynamic studies and 20-minute pad testing with vaginal gauze packing for cystocele reduction were excluded. Approval for this study was obtained from the research ethics committee of this hospital.

The urodynamic assessment included uroflowmetry, both filling (with a rate of 60 ml/min) and voiding cystometry with infusion of distilled water at 35 °C, and stress urethral pressure profile with the bladder full of distilled water. After the patient's bladder had been emptied with a catheter, the 20-minute pad test by infusion of the strong-desire amount of distilled water in the bladder was performed after the urodynamic study [13–15]. We adopted the method provided by Sand and Ostergard [16]. Each patient returned to a standing position with a pre-weighed perineal pad placed inside her underwear. Each patient was asked to cough 10 times, bear down 10 times, do 10 deep knee bends, jump up and down in place 10 times, wash her hands under cold water for 1 min, walk up and down five stairs 10 times, walk in the hall for 10 min, and then return for removal of the pad. The pad was then weighed, and the net weight was calculated by subtracting the original dry weight to achieve a measure of the total urine lost during the 20-minute exercise. A positive pad weight result was defined as >1 g leakage [13–16]. All enrolled patients were asked to undergo a 20-minute pad test before and after cystocele reduction with a vaginal gauze roll (10 cm in length) formed of one piece of ordinary 40 cm × 20 cm gauze. The vaginal gauze roll seldom fell out during the 20-minute pad test due to the experience of our technician. There were, however, about 5% of patients who could not complete all the exercises of the 20-minute pad test, mostly owing to health problems (such as osteoarthritis). Those without a pad weight result were excluded in this study.

Table 1
Clinical characteristics of women with cystocele ($n = 92$).

Variable	Median (25–75 IQR) or number (%)
Age (years)	66 (59–72)
Parity	3 (3–5)
Stage of cystocele	
2	31 (34)
3	50 (54)
4	11 (12)
Diabetes	8 (9)
Previous hysterectomy	18 (20)

IQR: interquartile range.

The cutoff value of 10 ml in the 1-hour pad test has been used to define mild SUI [17]. It has been reported that the pad weight results in the 1-hour pad test had significantly larger amounts than those in the 20-minute pad test [13]. Based on the data of Wu et al. [13], the cutoff value of 10 g in the 1-hour pad test can be extrapolated to about 8 g in the 20-minute pad test. We therefore defined the cutoff point of <8 g of pad weight as the definition of mild SUI in the 20-minute pad test.

Urodynamic studies were performed with a Life-Tech six-channel monitor and Urolab/Urovision System V (Houston, TX, USA). All procedures (including insertion of the vaginal gauze roll) were performed by an experienced technician, and the data were interpreted by a single observer to avoid inter-observer variability.

All terminology used in this paper conforms to the standards recommended by the International Urogynecological Association

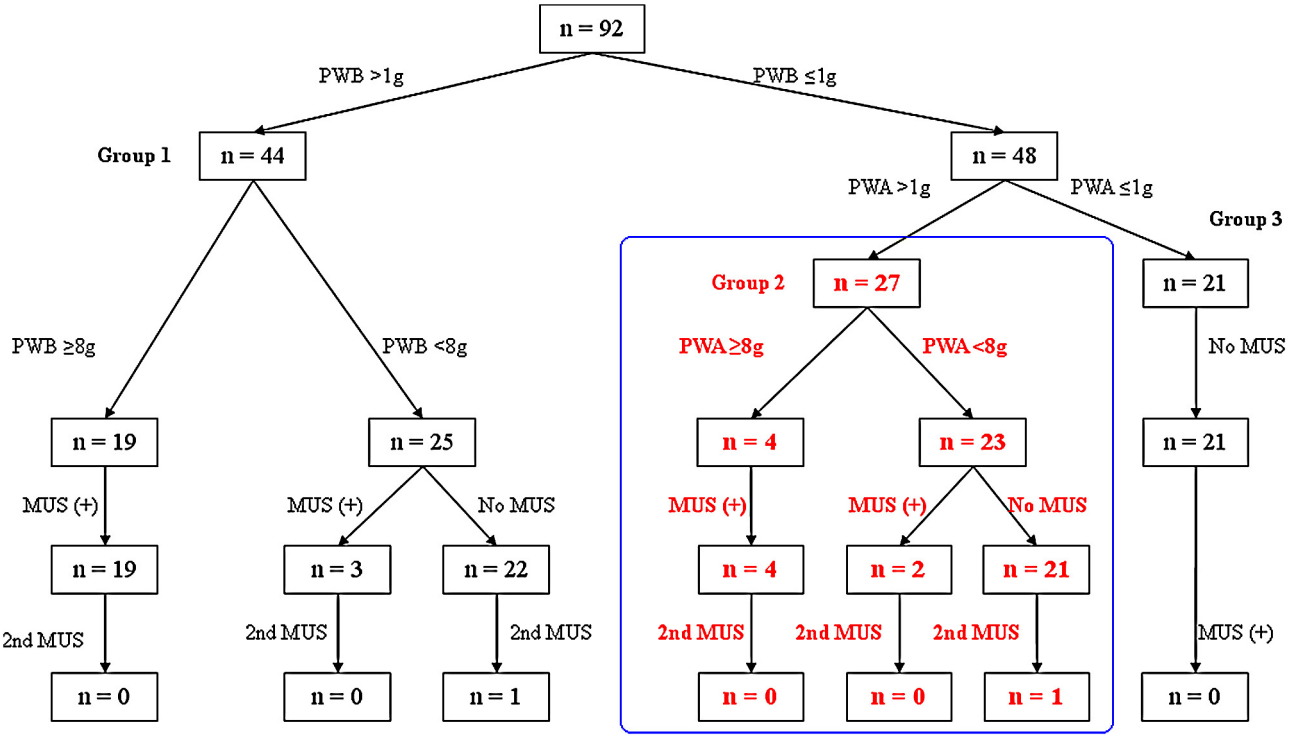

Fig. 1. Outcome of patients ($n = 92$) who underwent cystocele repair with/without midurethral sling (MUS) with regard to preoperative pad weights before (PWB) and after (PWA) cystocele reduction by vaginal gauze packing.