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URODYNAMIC EFFECTS OF HIGH-GRADE PELVIC ORGAN PROLAPSE REDUCTION

Aims of Study

Pelvic organ prolapse (POP) is a common pathology that may at times be associated with lower urinary tract symptoms (LUTS). The aim of the study was to assess changes in different urodynamic variables under two conditions (i.e. with and without vaginal prolapse reduction) in a female population with symptomatic prolapse associated with LUTS.

Methods

From October 2001 to March 2002, 17 women with symptomatic pelvic organ prolapse underwent urodynamic study consecutively. The mean age of the patients was 64.5 years (Standard deviation-SD-: 7.12; Standard Error Mean-SEM-: 1.72), with a range of 54-75 yrs. All patients had a grade ≥ 3 prolapse involving at least one segment of the lower genital tract (Half Way System classification)(1). In all cases, one or more LUTS were associated (Table 1).

Urge Incontinence	***Stress Incontinence***	***Mixed Incontinence***	***Urgency***	***Voiding dysfunction***
3/17 (17.6%)	1/17 (5.8%)	7/17 (41.1%)	15/17 (88.2%)	10/17 (58.8%)

Table 1: LUTS in patient population.

All subjects underwent two consecutive urodynamic studies in the same session, including an initial evaluation with no POP reduction, and a second one with POP reduction. Each urodynamic evaluation included a cystometry and a Valsalva leak point pressure (VLPP) measurement in both conditions. POP reduction was performed by vaginal packaging. Methods, definitions and units conform to the standards recommended by the International Incontinence Society, except where specifically noted. The results were statistically evaluated using the McNemar Test and the Wilcoxon Signed Rank Test.

Results

No differences in bladder sensitivity were noted from the first to the second study (normal sensation in 16/17 pts; increased in 1/17 pts). Bladder compliance was also normal, and did not change significantly from study to study in any of the cases. The mean maximum cystometric capacity was comparable in the first and the second study. Phasic detrusor overactivity (PDO) was detected in 9/17 subjects (52.9%) in the first examination, and in 10/17 subjects (58.8%) in the second one, with only one patient (5.9%) showing no concordance in detrusor overactivity detection in either of the two examinations. The second cystometry showed a statistically significant decrease (-88 ± SD 63 ml) in the mean threshold volume of the first PDO contraction, while no difference in the mean amplitude of the maximal PDO contraction was found between the two studies. In the pressure flow study, 2 pts voided only with POP reduction, one patient did not void at all, and only 14 pts were able to void in both examinations. In these 14 pts, the mean Maximum Flow (Qmax) value increased statistically (+5 ± SD 5 ml/s) with POP reduction, while there was no significant change in detrusor pressure at Qmax (PdetQmax). The mean post-void residual volume (PVR) similarly did not change significantly under vaginal prolapse reduction. Stress urinary incontinence (SUI) was detected in 4/17 pts (23.5%) during VLPP with no POP reduction, while two other pts showed SUI with POP reduction (35.2%). This difference was statistically significant ($p=0.041$). All data are listed in Table 2.

Conclusions

No statistically significant differences were noted in sensitivity, compliance, or maximum cystometric capacity from the first to the second investigation. One patient showed a lack of concordance in phasic detrusor overactivity (PDO) detection in both examinations, whereas in all other cases, PDO demonstrated at the first evaluation was confirmed in the second study. However, in the second study, PDO was recorded at lower volumes ($p<0.02$) while amplitude was comparable to the first examination. In the voiding phase, Qmax was increased ($p<0.02$) after POP reduction. PdetQmax and PVR did not statistically differ between the two examinations. SUI was demonstrated in a statistically higher number of patients after POP reduction ($p=0.041$).

In conclusion, patients with significant POP undergoing urodynamic evaluation should always do so also with

intrapelvic reduction of vaginal POP. This manoeuvre facilitates the diagnosis of "occult" urinary stress incontinence while more accurately predicting voiding function following surgical repair
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URODYNAMIC VARIABLES	***FIRST CYSTOMETRY Mean (SD)***	***SECOND CYSTOMETRY Mean (SD)***	***P***
Cystometric capacity	384 ml (115.4)	341 ml (146.6)	n.s.
Volume at first IDC	257 ml (135.5)	169 ml (128.1)	**<0.02***
Amplitude of max IDC	30.4 cm H_2O (15)	24.8 cm H_2O (12.8)	n.s.
PdetQmax	19.2 cm H_2O (11.8)	16.4 cm H_2O (11.3)	n.s.
Qmax	9.9 ml/sec (4.2)	14.9 ml/sec (7.1)	**<0.02***
PVR/CC$^{\Psi}$	37.9% (37.8)	24.5% (33.5)	n.s.

Table 2: urodynamic variables at the first (no POP reduction) and the second (with POP reduction) cystometric evaluation.
$^{\Psi}$ Post-voiding residual calculated as percentage of bladder volume
* statistical significance: p <0.05

References:
1. Baden W, Walker T: Surgical Repair of Vaginal Defects (1992). Philadelphia: Lippincott; pp 1-7, 51-62.