

ASSOCIATION BETWEEN VALSALVA AND COUGH LEAK POINT PRESSURE WITH PELVIC ORGAN PROLAPSE IN FEMALE STRESS INCONTINENCE

Aims of Study

The Valsalva (VLPP) and cough leak-point-pressure (CLPP) obtained during urodynamics have proven invaluable in evaluating stress urinary incontinence (SUI). McGuire suggested initially measuring VLPP and then measuring CLPP when VLPP is negative [1]. Valsalva and coughing appear to result in different pelvic floor biomechanical responses [2]. During Valsalva there is adequate time for pelvic floor/periurethral muscle recruitment, and incontinence would most likely not be due to urethral hypermobility, but rather intrinsic sphincter deficiency (ISD). Conversely, during cough (200 milliseconds) there is inadequate time for such muscle recruitment, and incontinence would most likely be due to urethral hypermobility. One could hypothesize that patients with negative(-)VLPP and positive(+)CLPP would have a greater degree of urethral hypermobility i.e., higher pelvic organ prolapse-quantification (POP-Q) stage. Study aims are to determine if POP-Q score components (anterior wall-Aa/Ba, cervix/cuff-C, genital hiatus-gh, perineal body-pb, total vaginal length-tvl, posterior wall-Ap/Bp, and posterior fornix-D) and/or POP-Q stage correlates with VLPP and CLPP. The relationship between VLPP, CLPP, POP-Q score components and stage in stress incontinent women are evaluated in an effort to identify those with ISD versus urethral hypermobility.

Methods

All women(n=1511) who presented to Urology at a single institution between 1997-2003 who underwent video urodynamics were identified. POP-Q scores were determined during initial clinical evaluation prior to urodynamics, in addition to various clinical parameters. During standard video urodynamics, VLPP and CLPP were measured in the upright position at 200mL bladder volume and at cystometric capacity. Intraabdominal pressure was recorded using an 8French rectal catheter. Of the 1511 women, 88 with urodynamic evidence of stress urinary incontinence with -VLPP and +CLPP were selected for study. Women with urodynamic evidence of SUI with +VLPP and +CLPP, and women with urodynamic evidence of detrusor instability were excluded.

Results

Average patient age: 58.6years (range 32-89). Presenting clinical symptoms/signs included: frequency 36/88(40.91%), urgency 44/88(50%), stress incontinence 65/88(73.86%), sense of incomplete emptying 32/88(36.36%), nocturia 52/88(59.09%), and urine infection 19/88(21.59%). 26/88(29.55%) were taking hormonal replacement therapy.

82/88 women had complete POP-Q exams, grouped by POP-Q stage: stage 0 - 21/82(25.61%), stage 1 - 20/82(24.39%), stage 2 - 40/82(48.78%) and stage 3 - 1/82(1.22%). (Note: For the comparison involving POP-Q stage, the analysis did not include the single patient with POP-Q stage 3.) None had +VLPP and -CLPP.

Association between POP-Q stage/score components and +CLPP:

The one-way ANOVA was used to test the association between POP-Q stage/score components and +CLPP. This was done by comparing mean CLPP among patients grouped by POP-Q stage (stage 0, 1 or 2) and score components (for example: Aa=0 to +3, -1 to -2, or -3). This showed no significant difference in mean CLPP among the three POP-Q stage groups (p=0.178) or among any score component group (p= 0.42 to 0.97). The test for linear trend, which tests if there is an increasing or decreasing linear trend in mean values with increasing POP-Q stage, was also not significant (p=0.636). The test for linear trend was not significant for any score component group (p= 0.40 to 0.93).

Association between POP-Q stage/score components and volume at which +CLPP occurred:

The Kruskal-Wallis test was used to compare the volume at which the +CLPP occurred among the three POP-Q stage groups and multiple score component groups. No significant difference in volume was observed among the three stage groups ($p=0.283$) or any score component group ($p=0.13$ to 0.75).

Association between POP-Q stage/score components and urine leak at 200mL:

The proportion of patients that leaked at 200mL did not differ significantly among the three POP-Q stage groups ($p=0.119$) or any score component group ($p= 0.15$ to 0.60).

Association between POP-Q stage/score components and -VLLP:

The one-way ANOVA was used to test the association between POP-Q stage/score components and -VLPP at 200 cc. This was done by comparing mean VLPP among patients grouped by POP-Q stage/score components. This showed no significant difference in mean VLPP among the three POP-Q stage groups ($p=0.367$) or any score component group ($p= 0.24$ to 0.79).

Conclusions

Analysis of women with urodynamic evidence of stress urinary incontinence with -VLPP and +CLPP did not show any significant association with components of the POP-Q score or with POP-Q stage. This data suggests that leak point pressures cannot adequately discriminate which patients may benefit from a procedure designed to treat urethral hypermobility alone (i.e. Burch procedure) versus one designed to treat combined urethral hypermobility and ISD (i.e. pubovaginal sling procedure).

References

- McGuire EJ, Cespedes RD, O'Connell HE. Leak-point pressures. Urol Clin North Am 1996;23:253-262.
- Peschers UM, Jundt K and Dimpfl T. Differences between cough and valsalva leak-point pressure in stress incontinent women. Neurourol and Urodynam 2000;19:677-681.