431

Khayyami Y[1], Lose G[1], Klarskov N[1]
1. *Department of Gynaecology & Obstetrics, Herlev Gentofte hospital, University of Copenhagen, Denmark*

PROLAPSE REDUCTION DETERIORATES THE URETHRAL CLOSURE MECHANISM.

Hypothesis / aims of study

The fear of postoperative de novo stress urinary incontinence (SUI) after pelvic organ prolapse (POP) surgery has led to many clinicians performing POP reduction (for instance using a speculum or pessary) in their preoperative assessment of patients. POP reduction is thought to mimic the postoperative anatomical and functional outcome, and therefore, a positive stress test during reduction is perceived as occult SUI. The woman is then thought to be in risk of postoperative de novo SUI and is counselled accordingly, and maybe even treated with concomitant incontinence surgery during POP surgery. We sought to examine women with POP in the anterior or posterior compartment with urethral pressure reflectometry (UPR), before and after POP reduction. We hypothesized that UPR may reveal changes in urethral parameters during POP reduction and facilitate the understanding of how POP reduction affects vaginal support.

Study design, materials and methods

We conducted a prospective, observational study and approached women with an anterior or a posterior POP seen in our outpatient clinic from November 2013 to March 2016. We recruited women with an anterior or posterior POP ≥grade two, measured with the Pelvic Organ Prolapse Quantification (POP-Q) system, regardless of their continence status. Women were excluded if they had a history of POP or SUI surgery, hysterectomy, neurological diseases, if they used medicine for urinary incontinence, or if they were pregnant. The women gave their written consent before participating in the study.
Examinations were done with the woman in the supine position. First, we performed POP staging according to the POP-Q system. Afterwards we emptied the bladder with a SpeediCath Ch 10 catheter. We performed UPR measurements at rest and during straining and repeated the measurements after inserting a speculum in the vagina. The speculum was placed in the vagina in exactly the same way, regardless of POP location. Finally, we emptied the bladder again and performed a standardized stress test with 300 ml saline or up to maximum bladder capacity, and repeated the stress test after inserting the speculum in the vagina.

Principles of UPR (1): UPR allows for simultaneous measurements of pressure and cross-sectional area along the entire length of the urethra, using a polyurethane bag, connected to a 45 cm long tube, inserted into the urethra. Thus, the opening pressure, which is the pressure needed to open the collapsed urethra, is measured.

Results

We recruited 38 women for this study: 22 with anterior POP and 16 with posterior POP. The women had a mean age of 62 years; 32 were postmenopausal and 21 used local estrogen therapy. Median parity was two. The results of the UPR measurements are presented in table 1.

Table 1. Resting and squeezing opening pressure with and without POP reduction.

Parameter	Without speculum	With speculum	Difference (p-value)	Anterior vs. posterior POP (p-value)
Resting urethral opening pressure				
All women, cmH_2O	51.4	48.9	2.5 (0.007)	
Anterior POP, cmH_2O	48.3	45.7	2.6 (0.03)	0.4 (0.8)
Posterior POP, cmH_2O	55.7	53.4	2.2 (0.1)	
Squeezing urethral opening pressure				
All women, cmH_2O	64.5	59.3	5.1 (<0.0001)	
Anterior POP, cmH_2O	58.8	54.1	4.7 (0.006)	1.0 (0.7)
Posterior POP, cmH_2O	72.3	66.6	5.7 (0.006)	

The numbers are reported as means. POP: pelvic organ prolapse.

Stress tests were positive in four (18%) women with anterior POP, after POP reduction this was increased to eight (36%). In the women with posterior POP, one (6%) stress test was positive, and after POP reduction this went up to nine (56%).

Interpretation of results

Resting and squeezing urethral pressures decreased significantly after POP reduction, with no differences between women with anterior and posterior POP. The stress tests confirmed these results. The introduction of a speculum in the vagina has been shown to reduce the vaginal support in women without POP (2) and the predictive values of POP are disappointing (3). We believe that POP reduction artificially opens the vagina, reducing the natural support from the posterior vaginal wall, which could explain these findings. Under normal circumstances, the pressure in the upper part of the vagina is equal to the abdominal pressure. And

the abdominal pressure is of great importance when examining the urethra: once the vagina is opened and introduced to atmospheric pressure, the pressure in the vagina decreases and the otherwise natural influence of the abdominal pressure is abolished. We believe this is the explanation to why POP reduction may alter urethral parameters, resulting in positive stress tests.

Concluding message

POP reduction deteriorates the urethral closure mechanism by reducing the support of the posterior vaginal wall and decreasing the vaginal pressure.

References

1. Klarskov N, Saaby M-L, Lose G. A faster urethral pressure reflectometry technique for evaluating the squeezing function. Scand J Urol. 2013 Dec;47(6):529–33.
2. Zivkovic F, Tamussino K, Haas J. Contribution of the posterior compartment to the urinary continence mechanism. Obstet Gynecol. 1998 Feb;91(2):229–33.
3. Svenningsen R, Borstad E, Spydslaug AE, Sandvik L, Staff AC. Occult incontinence as predictor for postoperative stress urinary incontinence following pelvic organ prolapse surgery. Int Urogynecology J. 2012 Jul;23(7):843–9.

Disclosures

Funding: The study was conducted as part of Yasmine Khayyami's PhD programme, which is fully funded by the Faculty of Health and Medical Sciences, University of Copenhagen as a PhD scholarship. **Clinical Trial:** Yes **Registration Number:** ClinicalTrials.gov NCT02050568 **RCT:** No **Subjects:** HUMAN **Ethics Committee:** The National Committee on Health Research Ethics **Helsinki:** Yes **Informed Consent:** Yes