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Simultaneous cystometry and urethral pressure reflectometry (UPR) provides information of function and dysfunction of the lower urinary tract

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Background and Aim: Interaction of bladder and urethra is of great importance in understanding the patho-physiology behind different types of incontinence. Simultaneous filling cystometry and urethral measurements has earlier been conducted only by segmental measurement in the urethra. UPR is a new method measuring pressure and cross-sectional area (CA) in the entire length of the urethra at a given time. A thin polyurethane bag is placed in the urethra. A pressure is applied to the bag and the opening of the urethra is measured with reflectometry (sound waves). The method is accurate and reproducible.
The aim was to test the feasibility of simultaneous cystometry and UPR to make it possible to describe the complex interaction of bladder and urethra.
Method: This study includes five continent women, ten women with stress urinary incontinence (SUI) and three women with urgency urinary incontinence (UUI) and detrusor over-activity. Cystometry and UPR were performed in the supine position. A preselected pressure was applied to the UPR bag that kept the urethra half-open allowing observation of any changes in urethral CA, at any level of the urethra during bladder filling.
Results: The continent women revealed a steady urethral CA during bladder filling. Coughs were reflected as positive pressure spikes in 'Vesical Pressure', and as simultaneous compression of the urethra. Immediately after the cough, the urethral CA went back to the pre-cough level. Strong desire to void was not reflected as changes in CA. The SUI women showed the same pattern. In two of the UUI women, the CA varied considerably during bladder filling. In the third, the CA only varied considerably during detrusor over activity.
Conclusions: Simultaneous cystometry and UPR is feasible to perform and provides detailed information of interaction of bladder and urethra which give a new prospect for understanding function and dysfunction of the lower urinary tract in women.