Urethral sleeve sensor: a non-withdrawal method to measure maximum urethral pressure

Jasmine Tan-Kim · Milena M. Weinstein · Charles W. Nager

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Abstract

Introduction and hypothesis This study seeks to evaluate axial variation, comparisons with current technology, performance during dynamic conditions, and patient tolerability of the urethral sleeve sensor (USS) for maximal urethral closure pressure (MUCP) measurements. Aferhods Eighteen continent and seven stress incontinent women underwent assessments with USS and urethral pressure profilometry (UPP) in random order. Intravesical, (pvm) and urethral (pvm) pressure signals were collected and urethral closure pressure (pcto) was calculated. A visual analog scale (VAS) was used to evaluate subject discomfort. Results The correlation coefficient between MUCP obtained by UPP and USS techniques was 0.86 (p<0.001). Higher USS pressures were obtained with catheter oriented to 12 o'clock. Continent subjects demonstrated higher values of p_{clin} MUCP became <0 cm H₂O in subjects with clinical leakage during Valsalva, but not in continent subjects. Subjects tolerated the USS technique better than the UPP technique on VAS (p<0.001).

Conchesions USS technology can be used to evaluate the urethra in both static and dynamic conditions and is better tolerated than withdrawal techniques.

Keywords Profilometry - Sleeve sensor - Urethral pressure -Uredynamics

Introduction

Whenever bladder pressure exceeds urethral pressure, urinary incontinence or bladder emptying occurs. Activities that increase intra-abdominal pressure (such as coughing, straining, or exercising) result in a corresponding increase in bladder pressure and if that bladder pressure exceeds urethral pressure, stress urinary incontinence (SUI) results. Urethral pressure is typically measured as a profile using a small microtip transducer, a perfused side-hole, or a small air balloon on a semi-rigid catheter which is withdrawn through the length of the urethra with a puller device at a determined rate. These techniques collect pressure measurements at discrete sites along the urethra and a graph indicating the pressure at each of these sites along the length of the urethra is known as the urethral pressure peofile (UPP) [1]. Only a small portion of the wrethra can be measured at any given instant and these techniques often take 30 s or more to obtain and therefore do not allow reliable measurements of the maximum urethral pressure during Valsalva maneuvers or pelvic floor muscle contractions which cannot be maintained for that time period without fatigue. Some investigators place the catheter in a stationary position when maximum urethral pressure is reached and attempt to measure maximum urethral pressure during dynamic conditions such as Valsalva, cough, or during a pelvic floor muscle contraction (PFMC). However,

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The Non Withdrawal Method 3

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