

CORRELATION OF FEMALE URINARY INCONTINENCE SYMPTOMS WITH THE FUNCTIONAL (URODYNAMIC) AND ANATOMIC (PERINEAL SONOGRAPHIC) URETHRAL LENGTH

Hypothesis / aims of study

In this present study we looked at the correlation of urethral length as shown on perineal sonography and its correlation with the type and degree of urinary incontinence in females. We compared anatomical results with the measured functional urethral length as found in standard urodynamic investigations.

We expect the perineal sonography to be a good tool for the evaluation of incontinence.

Study design, materials and methods

117 incontinent female patients and 32 healthy controls were studied. Diagnostic evaluation included perineal ultrasonography and the urethral pressure measurement as part of the urodynamics. Measurements were performed by independent specialists. ICIQ continence questionnaires, functional and anatomical urethral length were looked at. Data analysis and comparisons for correlation were performed with Mann-Whitney-U-test, t-Test and Spearman's rank correlation coefficient r_s . Visualization of results was done with Bland-Altman scatter plots.

Results

The shortest average functional urethral length was observed in stress urinary incontinent patients and comes to 2 cm. In comparison, the urethral length of urge incontinent patients averages around 2.2 cm. The average urethral length of continent patients was around 2.5 cm.

No statistical difference of functional urethral length is found between the different types of incontinent patient groups.

The sonographically measured urethral length is longer in all urinary incontinence groups compared to the controls. The longest average sonographically measured urethral length at rest was observed in stress urinary incontinent patients (3.85 cm \pm 0.68 cm) compared to the shortest urethral length in urge incontinent patients with 3.63 cm \pm 0.72 cm. The average urethral length of continent patients was 2.87 cm \pm 0.38 cm. The difference is best seen in the examinations at rest and under pressure, and is least during contraction.

A difference of urethral length within the three types of incontinence was not observed.

Interpretation of results

This study demonstrates the difference of the functional and anatomical urethral length between continent and incontinent females. Incontinent females have a reduced functional urethral length, whereas the anatomical is lengthened. Neither the functional urethral length nor the perineal sonographically measured urethral length correlates with the degree of urinary incontinence. Furthermore they can not differentiate between the types of incontinence.

Concluding message

This study supports the use of perineal sonography in addition to the invasive measurement of the urethral length to diagnose urinary incontinence. Future larger scale studies have to evaluate the reliability of only non-invasive sonographic measurements as precise indicators of incontinence.

Disclosures

Funding: NONE **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** RWTH Aachen **Helsinki:** Yes **Informed Consent:** Yes