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## **URETHRAL CLOSURE PRESSURE (MUCP) AT REST AND DURING VALSALVA MANEUVER IN PATIENTS WITH GENUINE STRESS INCONTINENCE (GSI)**

### **Hypothesis / aims of study**

The aims of the present study were to analyze the changes of value and position of MUCP at rest and during Valsalva maneuver with different volumes of the bladder in patients with GSI.

### **Study design, materials and methods**

Cross-sectional clinical study

Fifty-two women with proven and previously untreated GSI were recruited to participate in this clinical study. Women with mixed incontinence or with larger cystocele were excluded. Their mean age was 57.2 years, mean body mass index (BMI) 28, and mean parity 1.8. A urine culture and sensitivity was performed prior to urodynamic examinations in all patients. The multi-channel urodynamic studies at 300 ml and 500 ml bladder volume in the supine position were performed at rest and during maximal Valsalva maneuver. As part of the urethral pressure profile, we determined MUCP and functional length (FUL) of the urethra and the position of the MUCP. Data were summarized as means and standard deviation (SD). Comparisons between different measurements such as MUCP were carried out using paired t-test. A p-value less than 0.05 was considered statistically significant.

### **Results, interpretation of results**

The mean values of MUCP at rest were 42.8 cm H<sub>2</sub>O (SD = 23.4) with 500 ml and 44.0 cm H<sub>2</sub>O (SD = 22.8) with 300 ml of sterile saline. The differences are not statistically significant. The mean value of MUCP during maximal Valsalva maneuver were 36.8 cm H<sub>2</sub>O (SD = 18.4) with 500 ml and 37.2 cm H<sub>2</sub>O (SD = 21.8) with 300 ml of sterile saline in the bladder. The differences are not statistically significant, so we conclude MUCP at rest and at maximal Valsalva maneuver does not depend on the contents of the bladder.

We also examined the differences in MUCP values measured at rest and at maximal Valsalva maneuver, with the bladder volume of 300ml and 500 ml. In both cases MUCP significantly decreased during maximal Valsalva maneuver, namely by 6.8 cm of H<sub>2</sub>O at the volume of 300 ml and by 6.0 cm of H<sub>2</sub>O at the volume of 500 ml (p-values = 0.0455 and 0.0129 respectively).

The mean values of FUL at rest were 26.9 mm (SD = 4.7) at bladder volume of 300 ml and 25.7 mm (SD = 5.9) at bladder volume of 500 ml. During maximal Valsalva maneuver, these values were 22.4 mm (SD = 6.3) and 23.7 mm (SD = 6.4) for 300 ml and 500 ml respectively. There was a statistically significant shortening in FUL with larger bladder volume at rest (by 1.2 mm, p = 0.0258). The functional length of the urethra was also significantly shortened by Valsalva maneuver; by 4.3 mm (p < 0.0001) for bladder volume of 300 ml and by 1.8 (p = 0.0417) for bladder volume of 500 ml.

The mean position of MUCP at rest was 11.4 mm from the internal orifice of the urethra (median ratio 43 percent of the length of the urethra) with 300 ml of sterile saline and 10.6 mm (median ratio 43 percent of the length of the urethra) with 500 ml of sterile saline in the bladder. The mean position of MUCP during Valsalva maneuver was 11.6 mm from the internal orifice of the urethra (median ratio 39 percent of the length of the urethra at rest) with 300 ml of sterile saline and 11.7 mm (median ratio 43 percent of the length of the urethra at rest) with 500 ml of sterile saline in the bladder. Note that the ratio of the MUCP position with respect to FUL at rest was computed for each patient separately, expressed in % of FUL at rest and then summarized as median. We have not found statistically significant differences in the position of MUCP, neither at rest or during Valsalva maneuver nor with different volumes of the bladder.

### **Concluding message**

From our results we can conclude that no statistically significant differences exist between the mean values of MUCP at a bladder volume of 300 ml and 500 ml either at rest or during

Valsalva maneuver. The values of MUCP during Valsalva maneuver significantly decrease, which can be explained by insufficient transmission of intraabdominal pressure on the urethra and also by intrinsic sphincter defect in the part of patients. We did not find statistically significant differences in the position of MUCP neither at rest or during Valsalva maneuver, nor with different volume of the bladder contents.

We observed a statistically significant decrease in the functional length of urethra at rest with larger bladder volume. We can also observe the shortening of the FUL during Valsalva maneuver.

### **References**

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