

## EVALUATION OF THE URETHRAL POSITION IN PELVIC FLOOR ULTRASOUND EXAMINATION IN OBESE WOMEN PRE AND POST BARIATRIC SURGERY. PRELIMINARY REPORT.

### Hypothesis / aims of study

Obesity is a significant social and health problem that is associated with a wide spectrum of metabolic diseases. According to the results of epidemiologic studies, obese women suffer from urogynecologic disorders, such as urinary incontinence and pelvic organ prolapse (POP), more often than lean controls.

Urethral position relative to the bladder neck and symphysis pubis, both at rest and on exertion, depends on age, parity and weight. The aim of the study was to investigate the impact of weight loss in obese women who underwent bariatric surgery on the urethral position at rest and during functional tests (muscle contraction and Valsalva maneuver), evaluated with pelvic floor ultrasound.

### Study design, materials and methods

17 women were qualified for preliminary analysis. All patients underwent bariatric surgery (laparoscopic SLEEVE gastrectomy) and were examined twice: before the procedure and one year post surgery. Introital ultrasonography was performed with the patient in the semi-sitting position (with bladder-filling volume of 300 mL). 3.6–8.3- MHz vaginal transducer with a beam angle of 160° was placed at the level of the external urethral orifice, aligning the axis of the probe with the patient's body axis. The urinary bladder, urethra, suburethral vagina and the pubic symphysis with the interpubic disc were visualized in the median sagittal plane and the length of the hypoechoic core of the urethra was measured.

The study measures included: urethral length, its position (measured as the distance between the bladder neck and the horizontal line connecting with the lower edge of symphysis pubis [H]) at rest, during contraction of pelvic floor muscles (Fig. 1), and during Valsalva maneuver (lasting min. 5 seconds) (Fig. 2).

Figure 1. Urethral position at rest and during contraction of the levator ani.

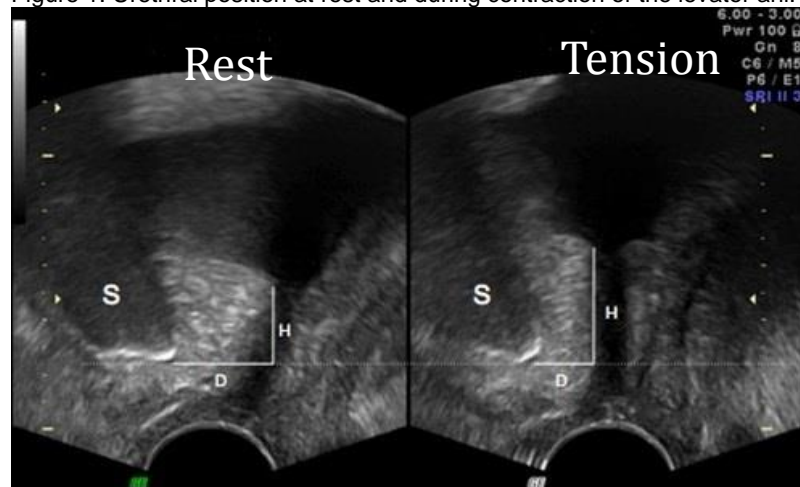
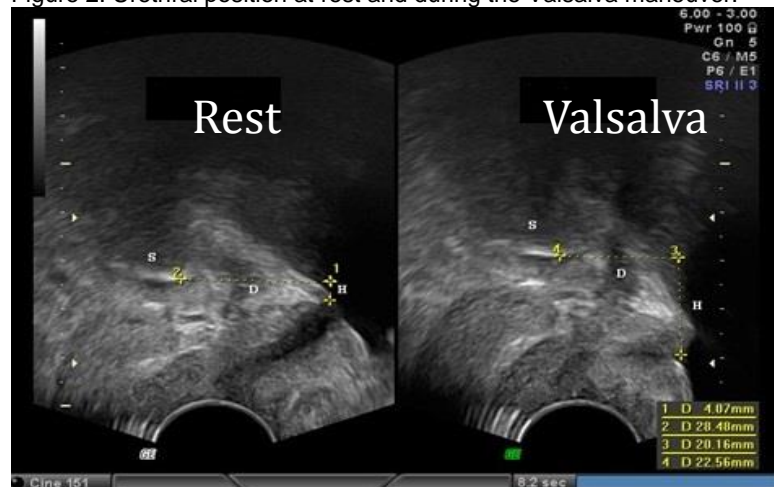


Figure 2. Urethral position at rest and during the Valsalva maneuver.



## Results

The mean age of patients in the analyzed group was 40,47 years (SD 9,67). The mean parity was 1,18 (SD 1,19). The average BMI before surgery was 44,04 (SD 4,69), post surgery: 29,39 (SD 5,5) ( $p<0,001$ ).

In 64,7% of women stress urinary incontinence (SUI) was diagnosed before surgery, whereas after the procedure the SUI rate was 11,7% ( $p<0,05$ ).

The mean urethral position at rest was 16,06 mm (SD 4,86) before and 19,61 mm (SD 3,22) after the surgery,  $p<0,01$ .

The average urethral position during muscle contraction was 21,49 mm (SD 4,54) before and 25,59 mm (SD 4,18) after the procedure,  $p<0,001$ . The mean pre surgery urethral position during Valsalva maneuver was 4,21 mm (SD 7,92), post surgery: 6,31 (SD 8,21) ( $p>0,05$ ). T-Test for mean in paired samples and Wilcoxon sign rank test for paired observations were used for statistical analysis.

## Interpretation of results

Urethral position in relation to the bladder neck at rest is dependent on the tonus of pelvic floor muscles and the potential damage to muscular and fascial structures. In obese women, SUI and POP occur more often. It may be associated with the increased intra-abdominal pressure acting on the pelvic floor and chronically weakening the musculofascial apparatus. The results indicate that weight loss causes reduced descent of the urethra relative to the bladder neck at rest, which may be caused by lower weight and diminished pressure exerted on the pelvic floor. Urethral position in obese women after weight loss is also higher during the contraction of pelvic floor muscles. This may be indicative of improved sufficiency of the levator ani, probably due to diminished static pressure exerted on the pelvic floor.

## Concluding message

Preliminary results show a reduction in SUI rate in patients who underwent bariatric surgery. The most probable mechanism that could explain this effect is the decrease in basal pressure exerted on the pelvic floor muscles and improved sufficiency of those muscles. The outcomes, however, need to be confirmed in a more extensive research.

Currently, over 80 patients are being observed by the authors. They will also be included in the final analysis, one year post surgery.

## Disclosures

**Funding:** none **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee of Medical University of Warsaw **Helsinki:** Yes **Informed Consent:** Yes