

COMPARISON OF THE EFFECT OF TVT AND BURCH OPERATION ON THE LOWER UROGENITAL TRACT – ULTRASOUND STUDY

Hypothesis / aims of study

In 1961 Burch described a modification of colpopexis. For years this operation was gold standard for the treatment of the stress urinary incontinence. In 1996 tension free vaginal tape (TVT) was introduced, and now this is a widely-used method for the treatment of stress urinary incontinence. In comparison to Burch, this procedure has a very similar long term effect. To date there are no relevant data about comparison of anatomical changes after these two effective procedures.

The aim of our study was to compare complex changes of the lower urinary tract after successful TVT operation and Burch colpopexis (especially changes in the mobility of the whole urethra), to evaluate the changes of the proximal urethra (funneling) and of the thickness of the urinary bladder.

Study design, materials and methods

This prospective study included 145 women with urodynamically proved stress urinary incontinence. Their mean age was 55.37 years (SD=10.56), mean BMI was 27.43 (SD=4.77), and mean parity was 1.97 (SD=0.61). 103 women underwent TVT and 42 Burch colposuspension (for this operation patients with ISD, minimal urethral descent and mobility, low MUSC and VLPP were excluded). The final evaluation only included women for whom the procedure was successful: 90 patients in the TVT group and 41 in the Burch group. 10 women who missed postoperative control were also excluded. An ultrasound examination was performed before TVT procedure and approximately 3-6 months after surgery. For the perineal examination a curved array probe 5 (3.5) MHz was used, and the introital examination was performed with sector probe 7 (5) MHz (Acuson 128 XP 10). Before the ultrasound examination the urinary bladder was filled to 300 ml with sterile saline. The measurements were taken in supine position at rest and during maximal Valsalva. Because the anatomical length of the urethra varies, measurements of the urethra were taken at 4 defined points: at urethrovesical junction (UVJ), 17 mm below UVJ (middle of the urethra) and one centimeter above and below this point (upper and lower third). For evaluation of the proximal urethra the distance between the inner edges and depth of visible opening (funneling) was measured at rest and at maximal Valsalva. Thickness of the bladder was measured after emptying at three points (anterior, trigone and dome).

For all women we examined changes in position and mobility of the whole urethra during maximal Valsalva maneuver and changes induced by the surgery. The mobility was expressed as vector and direction of the movement from rest to the maximal Valsalva maneuver.

Data were summarized as means and medians, with standard deviation (SD) and quantile range for measures of variability. Depending on the character of the data, either matched pairs t-test or Wilcoxon test was used to evaluate the changes occurring between Valsalva maneuver or induced by the operation. For comparisons between TVT and Burch, ANOVA F-test or Kruskal-Wallis test was used where appropriate. The level of significance was set to 0.05. All analyses were performed using statistical software R, version 1.7.1.

Results

Mobility of the urethra before surgery did not differ from values common in incontinent patients as published in previous studies (Fig. 1). For patients before Burch colpopexis there is significantly higher mobility of the urethra (excluded patient with ISD), but there is no differences in opening of the proximal urethra and thickness of the urinary bladder. After TVT the position of the urethra at rest is not influenced by the surgery (Fig 2a). TVT significantly decreased the mobility of all parts of the urethra during Valsalva (average decrease is 5 mm), but there is no significant differences in the direction of the movement (Fig. 2b). The operation did not influence the proximal urethra at rest and significantly decreased funneling during

