

IS THE EFFECT OF TRANSOBTURATOR TENSION FREE VAGINAL TAPE (TVT-O) ON THE LOWER URINARY TRACT THE SAME AS TENSION FREE VAGINAL TAPE (TVT) – AN ULTRASOUND STUDY?

Hypothesis / aims of study

Tension free vaginal tape (TVT) is a widely-used method for the treatment of stress urinary incontinence. Although this method is simply and relatively safe, serious complications of this procedure have been described, such as the injury to the big vessels or bowel perforation. That was one of the reasons why transobturator approach was introduced. In 2001 Delorme described the placement via transobturator route (outside in), one year later de Leval described inside – out placement of the tape. Randomised studies comparing transobturator tape to TVT found no statistical difference in term in continence outcomes. To date there are no relevant data comparing the complex changes of the lower urinary tract after those procedures. The questions of whether both procedures are suitable for all patients is still under discussion.

The aim of our study was to evaluate and compare changes of the lower urinary tract after successful TVT and TVT – o operation (especially changes in the mobility of the whole urethra), changes of the proximal urethra (funneling) and of the thickness of the urinary bladder, and to evaluate the relationship between the position and mobility of tape and the mobility of the urethra.

Study design, materials and methods

This prospective study included 154 women with urodynamically proved stress urinary incontinence. The patients were included consecutively, 101 women underwent TVT, and afterwards 53 TVT-o. Their mean age was 56.9 years (SD=10.9), mean BMI was 27.7 (SD=4.8), and mean parity was 1.9 (SD=0.74), so there was no differences between both groups. 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). After the surgery the position and mobility of the tape was also assessed. 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 the 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. Position and mobility of the urethra in both groups were compared before and after surgery.

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 were used to evaluate the changes occurring between Valsalva maneuver or induced by the operation. 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 in both groups was the same and did not differ from values common in incontinent patients as published in previous studies (Fig 1). The position of the urethra at rest is not influenced by the surgery (it is in the same position as before - Fig. 2). Changes of the urethral mobility induced by surgery are the same in both groups (Fig 2). Both operations significantly decreased the mobility of all parts of the urethra during Valsalva - Fig. 2. The rest position of the tape with respect to the lower urethral segment is the same for both procedures (Fig. 2), but after TVT-o the tape is approximately for 1.5 mm narrower (this is likely to be due to the different passage and higher deformation during the procedures). At maximal Valsalva the position of the tapes is different, after TVT-o the tape is slightly higher and has the same inclination to the lower urethral segment as at rest, while after TVT the inclination of tape changes). Neither operation influenced the proximal urethra at rest and they both significantly decreased funneling during maximal Valsalva (width and depth), but TVT – o did so to a greater extent. After the surgery there was no difference in the thickness of the bladder wall in both groups.

Fig. 1
Position
of the
urethra
before
the
surgery

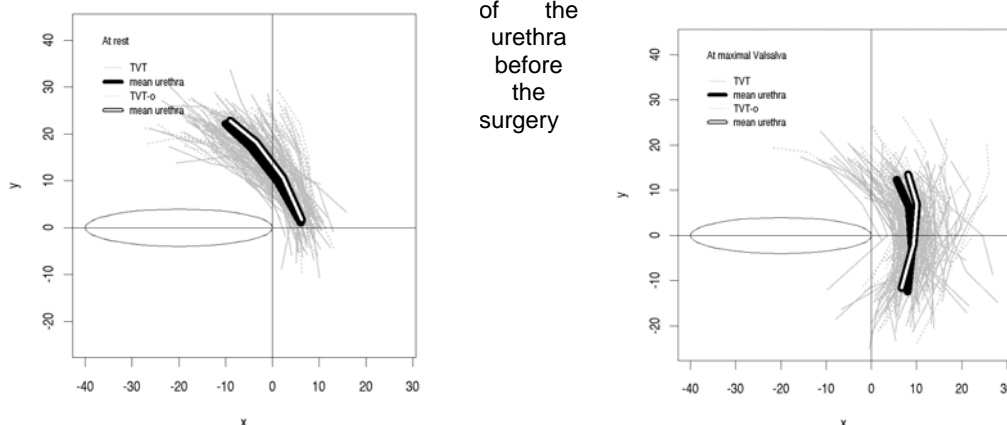
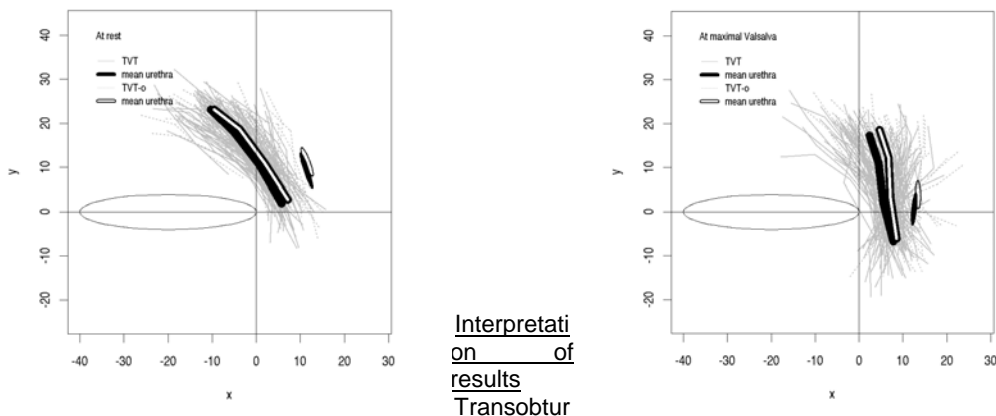


Fig. 2. Position of the urethra after the surgery



Interpretation of results
Transobtur

ator tape (TVT-o) has a similar effect on the lower urogenital tract as TVT. Neither operation influenced the urethra at rest and they both significantly decreased the mobility of the urethra during Valsalva in the same manner. TVT-o caused a significantly greater decrease the opening of the proximal urethra during Valsalva and may be more effective as suggested for patient with ISD with low urethral mobility.

Concluding message

TVT-o should be used in the same indication as TVT with the same success rate.

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HUMAN SUBJECTS: This study was approved by the local ethics committee and followed the Declaration of Helsinki Informed consent was obtained from the patients.