

TAPE POSITION UNDER THE URETHRA AND SUBJECTIVE OUTCOME OF THE OUTSIDE-IN TRANSOBTURATOR SLING

Hypothesis / aims of study

Data regarding the relationship between the position of a tape under the urethra and sling outcome are inconsistent. It has been shown that the best TVT results are achieved when a tape lays between the 50th and 80th percentile of the urethral length (measured from the bladder neck). In case of TVT-O the position of a tape under the proximal half of the urethra increases sixfold the risk of procedure failure. On the other hand, some studies showed that the treatment results do not depend on the position of tape.

Aim of the current study was to check whether there is a relationship between the place where a transobturator tape was positioned and subjective outcome of the outside-in sling.

Study design, materials and methods

Subjects of the study were 75 women aged from 32 to 78 (mean 58.5± 10.2) years, who underwent outside-in transobturator suburethral sling for stress urinary incontinence using IVS 04M device (Covidien, Mansfield, USA). The procedure performed according to the manufacturer's manual was modified by additional 2 point tape fixation. Two additional absorbable sutures, parallel to the urethra, were added in order to fix the tape and prevent its displacement during tape tensioning. Additionally, 19 (25.3%) women had anterior mesh repair for vaginal wall prolapse.

The position of tapes under the urethra was evaluated by endovaginal ultrasound, which was accomplished before discharging of the patients from the hospital. The ultrasound scanning was performed with a linear array of a biplane type 8849 endovaginal transducer, frequency range 9-12 MHz, using ultrasound scanner ProFocus 2202 (B-K Medical, Herlev, Denmark). During examination the patient was recommended to have a comfortably full bladder and was placed in a dorsal lithotomy position. The transducer was inserted into vagina in a neutral position with no compression on the urethral complex and surrounding structures. Three-dimensional acquisition was performed by rotation of the transducer from the right side (9 o'clock position) to the left side (3 o'clock position) of the patient. Obtained 3D volumes were used for data analysis. The position of the tapes relative to the urethra was evaluated on the midsagittal view. The midsagittal plane was assumed when the lumen of the urethra was visualized along the entire length of the urethra, from the bladder neck to external urethral meatus. The reference point was set at the midpoint on the tape. The length of the urethra was measured from the bladder neck to the external urethral meatus following the urethral lumen, taking into account its curve. The position of the tapes relative to the percent of the urethral length was calculated considering the bladder neck as the proximal end of the urethra.

The treatment outcome was evaluated subjectively as reported by the patients 12 months after surgery. The operation was considered as a failure if the patient still reported urine leakage during increases of intra-abdominal pressure, an improvement when occasional urine leakage occurred, whereas the completely cured patients were free of all subjective SUI symptoms.

Statistical analysis was performed with Mann-Whitney U and χ^2 testing. A p less than 0.05 was considered as statistically significant. Data are expressed as the mean ± SD.

The study was approved by the Ethical Committee of Medical University of Lublin (KE-0245/29/2008).

Results

The procedure outcomes were as follows: 48 (64%) patients completely cured, 21 (28%) improved and 6 (8%) failed.

The position of tapes varied from 8.0th up to 89.9th (mean 62.0±17.9th) percentile of the urethral length. The mean position of a tape was more distal in cured patients than in improved and failed patients (65.3±17.9th; 57.7±20.9th and 65.3±17.9th percentile of the urethral length, respectively), but the differences were statistically significant only between cured and failed patients ($p=0.029$). Most of the completely cured women had tapes located under the distal one-third of the urethra, whereas in the improved and failed groups most tapes were positioned under the middle one-third of the urethra (Table 1). Statistical analysis showed that there is a significant relationship between the tape position and procedure outcome ($\chi^2 = 10.22$, $p=0.037$). From the other point of view, the complete cure rate was 79.5% when a tape was positioned under the distal one-third, 50% when under the middle one-third and 25% when under the proximal one-third of the urethra. The differences were statistically significant between the distal one-third and the middle one-third ($\chi^2 = 6.83$, $p=0.009$) as well as the distal one-third and the proximal one-third ($\chi^2 = 7.91$, $p=0.0049$) of the urethra.

Table 1

SLING OUTCOME	TAPE POSITION		
	Distal one-third of the urethral length	Middle one-third of the urethral length	Proximal one-third of the urethral length
Completely cured (n=48)	31 (64.6%)	16 (33.3%)	2 (2.1%)
Improved (n=21)	7 (33.3%)	12 (57.4%)	2 (9.5%)
Failed (n=6)	1 (16.7%)	4 (66.7%)	1 (16.7%)

Interpretation of results

Results of our study indicate that there is a relationship between the place where a transobturator tape was positioned and subjective treatment results of the outside-in sling. Surprisingly, tape location under the distal one-third of the urethra seems to be the most favourable regarding the procedure effectiveness. This observation suggest that anti-incontinence mechanism of transobturator tape action may be related to the position it takes after the procedure.

Concluding message

Positioning of the outside-in transobturator sling under the distal one-third of the urethra is associated with the best treatment results.

<i>Specify source of funding or grant</i>	Medical University of Lublin grant 410/10
<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Ethical Committee of Medical University of Lublin
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes