

**ASSESSMENT OF THE TAPE USED IN TVT-O SURGERY USING TRANSPERINEAL 3D ULTRASONOGRAPHY**Hypothesis / aims of study

The TVT-O surgery is an effective anti-incontinence procedure. But how the tape to prevent urinary incontinence is controversial, this study was designed to investigate the position and mobility of the tape used in TVT-O surgery at rest, on maximal Valsalva and on maximal pelvic floor contraction using three dimension ultrasonography.

Study design, materials and methods

32 patients with stress urinary incontinence underwent TVT-O surgery were included in the study from March 2007 to October 2008, GE Kretz Voluson 730 expert were utilised to acquire volume imaging data at rest, on maximal Valsalva and on maximal pelvic floor contraction after postoperative 3 months. Imaging was scanned transperineally using 4–8 MHz abdominal volume transducers with the patient in the lithotomy position with a slightly filled bladder. We measured the length of the urethra between the neck of bladder and the proximal tape in sagittal view. we made a horizontal line and a perpendicular line through the inferior edge of the pubic system and measured the horizontal and perpendicular distances between the midpoint of the tape and the inferior of the pubic system at rest, on maximal Valsalva and on maximal pelvic floor contraction. we also measured the angle and described the figure of the tape beneath the pubic system in the cross section.

Results

28 patients participated in the study. 4 patients were excluded because they had not been successfully cured after TVT-O. But there were not intra-operative and postoperative complication, The mean age of 28 patients was 46(range 43-56), parity was 1(range 1-4), the figure of the tape were like "V". the parameters measured in the study were shown in the table 1.

Table 1: measurements of the parameters at rest, on maximal Valsalva and on maximal pelvic floor contraction for the study 28 patients<sup>a</sup>.

parameters (n=28)	at rest	on Valsalva		on pelvic floor contraction	
	Mean±SD	Mean±SD	p value <sup>b</sup>	Mean±SD	p value <sup>b</sup>
The horizontal distance between the midpoint of the tape and the inferior of the pubic system (cm)	2.10±0.49	2.05±0.43	0.770	1.98±0.49	0.494
The perpendicular distance between the midpoint of the tape and the inferior of the pubic system (cm)	-0.24±0.70	-0.04±0.95	0.472	-0.48±0.65	0.436
the length of the urethra between the neck of bladder and the proximal tape (cm)	1.70±0.66	1.75±0.41	0.843	2.14±0.65	0.152
the angle of the tape (°)	110.05±10.02	105.99±14.70	0.480	106.46±8.93	0.409

<sup>a</sup> Values are given as mean ± SD. <sup>b</sup> By the paired t test.

Interpretation of results

The TVT-O procedure is an effective, the cured rate was 87.5%(28/32). It slings the distal urethra through the tape. But the mobility of the tape was not statistical significance on maximal Valsalva and on maximal pelvic floor contraction,  $p > 0.05$ . The length of the urethra between the neck of bladder and the proximal tape was not influenced by the tape,  $p > 0.05$ . But the figure of the urethra between the neck of bladder and the proximal tape was changed on Valsalva in some patients. Some showed kinking. the tape like "V" in the cross section after three dimension reconstruction. The mean angle was 110.05 at rest, it changed a little on maximal Valsalva and on maximal pelvic floor contraction,  $p > 0.05$ .

Concluding message

The three-dimension ultrasonography was successfully used to investigate the position and mobility of the tape used in TVT-O procedure. The position of the tape is relatively stable, it changed a little on maximal Valsalva and on maximal pelvic floor contraction, it reinforced the function of the pubourethral ligament to enhance the intraurethral pressure in the distal urethra, so it is reasonable to suppose the pubourethral ligament in the distal urethra is important structure to prevent stress urinary incontinence. Thus, the tape placed to treat stress incontinence would be placed under the urethra with some tension, not simply to provide a firm backdrop for the urethra to rest on and possible to increase the outlet resistance when intra-abdominal pressure increases.

<b>Specify source of funding or grant</b>	<b>no</b>
<b>Is this a clinical trial?</b>	<b>Yes</b>
<b>Is this study registered in a public clinical trials registry?</b>	<b>No</b>
<b>What were the subjects in the study?</b>	<b>HUMAN</b>
<b>Was this study approved by an ethics committee?</b>	<b>Yes</b>
<b>Specify Name of Ethics Committee</b>	<b>The review board of the Health Sciences Center of Fujian Medical University</b>
<b>Was the Declaration of Helsinki followed?</b>	<b>Yes</b>
<b>Was informed consent obtained from the patients?</b>	<b>Yes</b>