

TENSION-FREE VAGINAL TAPE (TVT), SUPRAPUBIC ARC (SPARC) SLING AND TRANSOBTURATOR TAPE (TOT) IN THE TREATMENT OF MIXED URINARY INCONTINENCE IN WOMEN

Hypothesis / aims of study

To date, most studies have shown findings exclusively in select groups of women who underwent surgery as the primary procedure for genuine stress urinary incontinence (UI). We evaluated the outcome at least 6 months after TVT, SPARC or TOT procedure in women with mixed UI, and identified factors predicting persistent urge UI after the surgery in these patients.

Study design, materials and methods

A total of 144 women 29 to 77 years old (mean age 57.3) were included in the study. TVT ($n = 72$), SPARC ($n = 22$) and TOT ($n = 50$) procedures were performed by the same surgeon. The mean follow-up time was 10.9 months (range 6 to 52). Cure of stress-induced UI after the procedure was defined as the absence of a subjective complaint of leakage and the absence of objective leakage on stress testing, and all other cases were considered failures. Cure of urgency-induced UI was defined as the absence of a subjective complaint of leakage.

Results

There were no significant differences in the three groups in terms of the cure rate for stress-induced UI and the rate of persistent urge UI (Table). In the multivariate model, there is no influencing factor for persistent stress UI, while maximum urethral closure pressure (MUCP) and the diagnosis of uninhibited detrusor contraction during cystometry were independent risk factors for persistent urge UI. Decreasing MUCP was associated with an increased likelihood (odds ratio [OR], 0.974; 95% confidence interval [CI], 0.950-0.998; $P = 0.034$). In the same model, uninhibited detrusor contraction was associated with 3.4-fold risk of persistent urge UI (OR, 3.351; 95% CI, 1.031-10.887; $P = 0.044$). The cure rates in women with mixed UI are similar after three procedures.

Interpretation of results

In the multivariate model used, there was no independent risk factor of persistent stress UI. However, MUCP was one of independent risk factors for persistent urge UI. This finding represents that the more MUCP decreases, the more risk of persistent urge UI increases. In addition, we found the presence of uninhibited detrusor contraction as another risk factor of persistent urge UI. A recent study of Duckett and Tamilselvi [1] had a worse cure rate (47% objective cure and 63% subjective cure) after TVT than ours. The reason could be that they did include only patients with a urodynamic diagnosis of detrusor overactivity and stress UI.

It is unknown what effect the midurethral slings such as TVT, SPARC and TOT have on the urge component of patients with mixed UI. Several theories have been hypothesized to explain why urge UI may improve after anti-incontinence surgery. One theory is that detrusor overactivity is caused by a weak urethral sphincter mechanism, resulting in funneling of the proximal urethra. It is also possible that patients with mixed UI symptoms do not really have two separate pathologic conditions of both urodynamic stress UI and detrusor overactivity. Rather mixed symptoms may be due to a more severe form of stress predominant UI [2]. This may be another explanation of why mixed symptoms may resolve after successful anti-incontinence procedures.

Concluding message

The cure rates in women with mixed UI are similar after TVT, SPARC and TOT procedures. Our findings suggest that low MUCP and the present of uninhibited detrusor contraction during cystometry should be considered to be at high risk of persistent urge UI in these patients because these procedures may be limited to control urethral instability. This has important clinical relevance because patients should be informed of its possibility.

References

1. BJOG (2006) 113; 30-33.
2. Obstet Gynecol (2003) 102; 76-83.

Table. Urethral mobility, pad test loss, uroflowmetry, urinary retention rate and cure rate after treatment

	TVT	SPARC	TOT	p
No.	72	22	50	
Q-tip test (°)	15.0 (12.5-18.8)	16.5 (10.0-23.8)	20.0 (15.0-30.0)	0.305 [*]
One-hour pad test (g)	6.0 (0.4-9.5) ^a	0.4 (0.0-2.2) ^b	0.1 (0.0-0.8) ^b	0.018 [*]
Maximum flow rate (ml/s)	20.0 (15.8-25.0)	26.9 (13.6-35.3)	24.3 (16.9-31.3)	0.177 [*]
Post-void residual (ml)	20.0 (0.0-60.0)	12.5 (4.5-41.0)	0.0 (0.0-41.5)	0.096 [*]
Urinary retention	11 (15.3%)	1 (4.5%)	2 (4.0%)	0.034 [†]
Cure of stress incontinence	69 (95.8%)	20 (90.9%)	47 (94.0%)	0.625 [†]
Cure of urge incontinence	59 (81.9%)	19 (86.4%)	41 (82.0%)	0.965 [†]

TVT: tension-free vaginal tape, SPARC: suprapubic arc, TOT: transobturator tape.

^{*}Kruskal-Wallis test, [†]Armitage test.

Superscript letters indicate values significantly different from each other.

Data presented are median (25th–75th percentiles) or number (%).

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CLINICAL TRIAL REGISTRATION:

This clinical trial has not yet been registered in a public clinical trials registry.

HUMAN SUBJECTS: This study did not need ethical approval because this study is a retrospective one but followed the Declaration of Helsinki Informed consent was obtained from the patients.