

reproducibility of the test, and the effect of different bladder volumes [via retrograde catheter or natural/diuresis fill] on the amount of Pad test loss but numbers were small ($n=19$)², ($N=18$)³, and simple correlation coefficients were used, rather than more discriminating methods⁴. The 1998 Standardization Committee³ report recommends that the bladder volume at pad testing should be kept constant, but whether this practice does improve the test-retest reliability has not been assessed under natural (diuresis-fill) conditions.

We wished to assess the repeatability of the pad test result, using the 'natural fill' method to produce bladder volumes >200mls. We questioned the practicality of such a goal. We also investigated patients 'willingness to leak' at the two tests, because test-retest reliability might be affected by patient's attitudes.

Patients and Methods

A standard one hour pad test was performed ($N=65$). Patients were asked to attend with a comfortably full bladder, then drank 500ml. A natural-fill bladder volume of >200mls was confirmed on a Bard bladder scanner prior to the test. After provocative exercises, pad loss was weighed, urine volume was measured by Dantec Uroflowmeter. Residual volume was checked by Bladderscan. Total bladder volume comprised urine loss on the pad, urine volume voided and the ultrasound residual.

Prior to treatment, the women underwent a second pad test (3 to 10 days later). The natural-fill bladder volume was repeatedly checked by Bladderscan until a similar ($\pm 15\%$) volume to that of their first pad test was achieved. The provocation exercises were reproduced identically. All pad tests were performed by the same specialist research nurse.

Following the second test, the women were sent a questionnaire about their feelings and attitudes towards the two tests, to be returned anonymously.

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HOW DOES THE TVT PRODUCE CONTINENCE? A COMPARISON OF BLADDER NECK ELEVATION AND MOBILITY AFTER TVT AND COLPOSUSPENSION

Aims of Study.

Tension-free Vaginal Tape (TVT) is a new surgical procedure for genuine stress incontinence (GSI) that theoretically acts by supporting the pubo-urethral ligaments at their mid-urethral insertion, without fixation and without elevation of the urethra/bladder neck complex (1). This theory implies the TVT procedure should not elevate the bladder neck, change its angle in relation to the symphysis or reduce its movement on increased intra-abdominal pressure. Whilst it has been shown that colposuspension significantly elevates the bladder neck and reduces its movement, (2) the action of TVT has yet to be assessed.

Transperineal ultrasound is a reproducible and technically simple means of describing bladder neck position and movement (2). This study aims to compare bladder neck angles, bladder neck elevation and movement after TVT and colposuspension, using transperineal ultrasound.

Methods.

Sixteen women recruited from the Urogynaecology clinic were prospectively studied; 9 undergoing TVT and 7 undergoing open Burch colposuspension, without any other surgical procedure. All patients had urodynamically proven primary GSI and had not undergone any prior procedure for prolapse. Mixed incontinence, voiding difficulty (peak flow rate <15mls/sec or maximum voiding pressure >50cm water) or significant prolapse were excluded.

Transperineal ultrasound was performed pre-operatively and 3-4 weeks after surgery according to Creighton et al (2), using a Siemens Sonoline SL-1 machine with a 3.5MHz linear array probe with the patient in the sitting position and a bladder volume of 250ml. Three images at rest and three at maximum valsalva were taken. All patients were sufficiently comfortable at the post-operative visit to perform the test adequately. X and Y co-ordinates were plotted on a grid with the (0,0) co-ordinate at the anterior inferior border of the symphysis and the Y-axis parallel to the inferior border of the symphysis. From each set of resting and valsalva images, average bladder neck co-ordinates and angles in relation to the symphysis were calculated. Linear bladder neck excursion on valsalva and post-operative elevation toward the symphysis were calculated using mathematical formulae described by Creighton et al (2).

Results were analyzed by nonparametric statistical methods; the Mann-Whitney-U-Wilcoxon Rank Sum W test for analyses between TVT and colposuspension groups and the Wilcoxon Matched Pairs test for analysis between pre-operative and post-operative values. Statistical significance was regarded as a P value < 0.05.

Results.

The average age at surgery was 50 years (SD 10.2), and weight 74.7Kg (SD 22.2); with no difference between groups; $P=0.76$, and 0.46 respectively. All 7 in the colposuspension group and 8 of the 9 in the TVT group were symptomatically cured of their stress

incontinence. One woman in the TVT group was substantially improved. One of the TVT and 3 of the colposuspension group had persistent urge incontinence post-operatively, however there were no cases of de-novo urge incontinence.

There were no differences in pre-operative bladder neck angles or movement on valsalva between groups.

Post-operative bladder neck angles and movement were significantly less in the colposuspension than the TVT group.

When comparing pre-operative to post-operative variables in the TVT group there was a significant post-operative reduction in bladder neck angle at rest and valsalva, however the reduction in angle change (rotational movement) and bladder neck excursion (linear movement) on valsalva was not significant. For the colposuspension group there was a significant post-operative reduction in all parameters.

PRE-OP	ANGLE REST (±SD)	ANGLE VALSALVA (±SD)	ANGLE CHANGE ON VALSALVA (±SD)	BLADDER NECK EXCURSION mm (±SD)
TVT	124 (±13.7)	161 (±20.7)	37 (±29.7)	16.5 (± 7.4)
COLPO	111 (±13.8)	162 (±24.1)	51 (±18.5)	17.6 (±6.9)
POST-OP				
TVT	108 (±12.5) *	140 (±11.1) *	32 (±13.8)	14.5 (±4.9)
COLPO	80 (±9.4) *	86 (±19.6) *	6 (±12.2) *	7.2 (±6.5) *
P VALUE	0.001	0.001	0.004	0.030

* Significant difference compared to pre-op; P <0.03

The resting bladder neck position was elevated more by the colposuspension than the TVT, however the difference was not significant; ie: TVT elevation of 9.2mm (SD 5.7) versus colposuspension elevation of 16.2mm (SD 9.8); P=0.153.

Conclusions.

The data shows the TVT significantly elevates the bladder neck. The elevation is less than that of colposuspension but the difference is not statistically significant. TVT also significantly decreases the bladder neck angle in relation to the symphysis at rest and maximum valsalva, but this is significantly less than that for colposuspension. The TVT does not significantly decrease rotational or linear movement on valsalva whereas colposuspension does.

Our results show the TVT significantly affects bladder neck elevation but not movement. The preliminary data suggests the mechanism of continence may be similar to the colposuspension ie: bladder neck elevation. More data, (e.g.: urethral pressure profiles) are required to support this and elucidate the mechanism by which TVT produces continence.

References.

- (1) An Ambulatory Surgical Procedure Under Local Anaesthesia for Treatment of Female Urinary Incontinence. Ultrasound Obstet Gynecol. 1994; 4: 428-433
- (2) Perineal Bladder Neck Ultrasound: appearances before and after continence. Int Urogynecol J. 1996; 7: 81-86

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DOES THE AMOUNT AND TYPE OF FLUID INTAKE EFFECT URINARY SYMPTOMS IN WOMEN?

Aims of the study:

Urinary symptoms including incontinence are recognised as being both common and troublesome among women (1). Conservative measures involving fluid manipulation are often tried by patients in an attempt to alleviate their symptoms (2). Although these practices are common, and indeed often advised by health professionals, little research has been performed to determine their efficacy. A previous descriptive study of fluid intake found only modest correlation between fluid intake and incontinence (3). We are not aware of any prospective studies that measure the effect of fluid manipulation on urinary symptoms. This study was instigated to assess the influence of fluid intake on urinary symptoms, and to establish the role of fluid manipulation in their management.