

W4: Dealing with tape failures
Workshop Chair: David Waltregny, Belgium
26 August 2013 14:00 - 17:00

Start	End	Topic	Speakers
14:00	14:10	Introduction: the burden of persistent SUI after sling surgery	<ul style="list-style-type: none"> • Carl Gustav Nilsson • David Waltregny
14:10	15:30	Case presentations and discussion	<ul style="list-style-type: none"> • Fiona Burkhard • David Waltregny
15:30	16:00	Break	None
16:00	16:30	Sling failure: Why ?	All
16:30	17:00	Sling failure: What to do ?	All

Aims of course/workshop

Sub-urethral sling procedures have become the gold standard surgical treatment of female stress urinary incontinence (SUI). However, as many as 20 percent of patients (\pm 15000 patients per year worldwide) will experience persistent SUI after their sling surgery. This workshop focusing on sling failures (persistent SUI) is intended to be interactive with case discussions. Factors associated with sling failure will be reviewed, investigations to be conducted and potential additional therapies will be discussed under the light of the currently available literature.

Dealing with tape failures

Section: Surgery for stress incontinence

Level: Advanced

Target audience: urologists, urogynecologists,
gynecologists, physiotherapists

Start	End	Topic	Speakers
14:00-14:10		Introduction: the burden of persistent SUI after sling surgery	<ul style="list-style-type: none">Karl Gustav Nilsson, FinlandDavid Waltregny, Belgium
14:10-15:30		Case presentations and discussion	<ul style="list-style-type: none">Fiona Burkhard, SwitzerlandDavid Waltregny, Belgium
15:30-16:00		Break	None
16:00-16:30		Sling failure: Why ?	All
16:30-17:00		Sling failure: What to do ?	All



Workshop #4, ICS 2013, Barcelona, August 26

The Problem

• Definition of tape failure ?

- Persistent SUI:
 - failure < 12 mths
 - recurrence \geq 12 mths postoperatively ?
- De novo (or persistent) storage and/or voiding LUTS
- Persistent SUI and de novo/persistent storage and/or voiding LUTS
- Other de novo symptoms, e.g. erosion, pain, infection..
-> Proportion of SUI failure *versus* other: not well defined

Walsh CA. Curr Opin Obstet Gynecol 23:355-61, 2011
Smith ARB et al. NeuroUrol Urodyn 30:771-74, 2010
ICS Research Society meeting Bristol June 2010

The Problem

- Since the late 90's, > 1,500,000 tapes inserted
- \pm 120,000 tape procedures each year (RP & TO, + recently available SIS)
- Estimated persistence or recurrence of SUI after suburethral tape insertion: between 5% and 20%



\pm 15,000 failed tapes each year !

The Problem

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- Other de novo symptoms, e.g. erosion, pain, infection..
-> Proportion of SUI failure *versus* other: not well defined

We shall focus on non-absorbable tapes and 'persistent SUI'

Walsh CA. Curr Opin Obstet Gynecol 23:355-61, 2011
Smith ARB et al. NeuroUrol Urodyn 30:771-74, 2010
ICS Research Society meeting Bristol June 2010

The Problem

• Definition of persistent SUI ?

- Subjective, objective, both ? How ?
- e.g. UK and Eire trial comparing Burch colposuspension with TVT: cure rates ranging from 26% to 83% when using different outcome measures

Walsh CA. Curr Opin Obstet Gynecol 23:355-61, 2011
Smith ARB et al. NeuroUrol Urodyn 30:771-74, 2010
ICS Research Society meeting Bristol June 2010

Assessment of tape failure



Managing Unsatisfactory Outcome After Mid-Urethral Tape Insertion

Anthony R.B. Smith,¹ Walter Artibani,² and Marcus J. Drake^{3,*}

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²University of Verona, Verona, Italy

³University of Bristol, Bristol Urological Institute, Bristol, BS10 5NB, UK

This article reviews the literature on the assessment and management of women whose previous mid-urethral tape surgery to manage stress urinary incontinence symptoms has failed to produce a satisfactory outcome. In many areas the literature is deficient and the article includes consensus statements drawn from the International Continence Society Research Society meeting in Bristol in June 2010. The need for a structured approach to assessment and management is highlighted, so that further research into areas of uncertainty can be prioritized. The article concludes with a number of research recommendations. NeuroUrol. Urodynam. 30:771-774, 2011. © 2011 Wiley-Liss, Inc.

Plan of the course

1. Case presentations
2. How to evaluate a patient with persistent SUI after sling surgery ?
3. What are the risk factors for persistent SUI after sling surgery ?
4. How can we deal with persistent SUI after sling surgery ?

Assessment of tape failure

Repeat all investigations !!!



The goal is to understand what has gone wrong... and fix it...

Assessment of tape failure

1. History:

- SUI *versus* UUI
- other symptoms: pain, ...

2. Bladder diary, Σ and QoL questionnaires

3. Physical examination:

- cough test, stress test & Bonney test
- exclude fistula, POP, erosion...

4. Endoscopy: LUT injury ? Other pathology ?

5. Urodynamics: DOA ? ISD (MUCP / VLPP) ? Flow ? PVR ?

6. Imaging:

- cystography (videourodynamics): bladder neck...
- vaginal/perineal US: tape location, tape conformation...

Manoeuvres for incontinence correction



Cough test



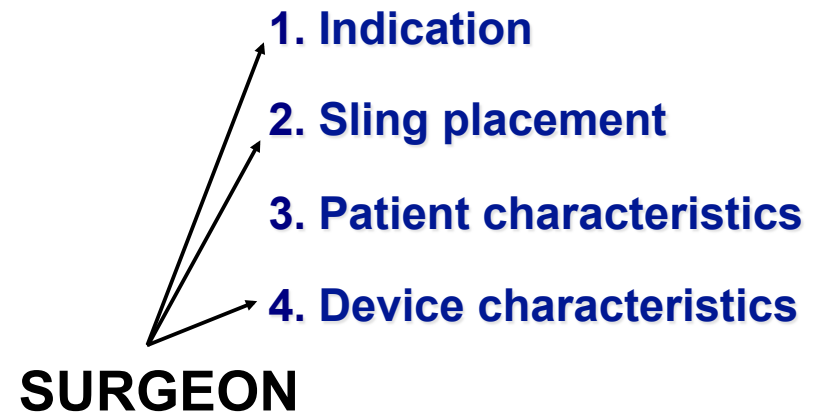
Stress test*



Bonney test

* Also called "pinch test" (or "Ulmsten test")

Tape failures : Why ?



Tape failures : Why ?

1. Indication

1. Urge / UUI

- OAB Σ without SUI \neq indication for tape insertion
- > 1/3 of pts with SUI have urge/UUI
- Urodynamics to exclude DO, urine analysis to exclude infection, and endoscopy to exclude bladder pathology...
- Implications:
 - If DO + : often UUI more bothersome than SUI, anticholinergics (tape afterwards if SUI still bothersome & informed consent)
 - If DO - : tape (disappearance of urge/UUI in 2/3 of the patients !)

Tape failures : Why ?

1. Indication

2. Fixed urethra

- **Likely cause of SUI = ISD**
- The tape is at risk of causing LUT obstruction & urethra / vagina erosion (informed consent & teaching of ISC)
- Mainly patients with previous SUI surgery and/or pelvic irradiation
- Implications:
 - If bladder neck not mobile: AUS or bulking agent
 - If bladder neck mobile or opened (Bonney test +): Burch or pubovaginal sling (teaching of ISC)

Tape failures : Why ?

1. Indication

3. Fistula

- Vesico- or uretero-vaginal fistula
- After hysterectomy...
- Implications:
methylene blue test, imaging... if fistula suspected

Tape failures : Why ?

2. Tape placement:

1. Tape too loose:

- Intraoperative cough test ?

2. Tape too proximal or too distal:

- Dissection:
 - size & location of initial vaginal dissection:
 - junction between mid and distal third urethra
- Migration ?
 - Difference between retropubic and transob tapes ?
 - Concomitant POP surg (separate incisions)
- Usefulness of ultrasound to locate and evaluate tape

3. Tape through the urethra or bladder neck

4. Surgeon...

1. Tape too loose ?

65

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IS THE COUGH TEST NECESSARY? A CASE CONTROL SERIES OF TWO TECHNIQUES OF TVT ADJUSTMENT

Parameter	Group A (n=54)	Group B (n= 52)	P
Age	57.8 (12.3)	58.2 (13.3)	n.s.
Preexisting Urge Incontinence	38/ 53	40/ 52	n.s.
Preoperative MFR Centile	25.6 (23.6)	36.2 (31.2)	n.s.
Concomitant Anterior Repair	17/54	13/52	n.s.
Length of followup	0.74 (0.32)	0.65 (0.23)	n.s.

Table 1: Results of matching

Parameter	Group A (n=54)	Group B (n= 52)	P
Hesitancy	6/54	13/52	0.062
Poor Stream	13/54	32/52	0.028
Stop- start voiding	8/54	18/52	0.018
Straining to void	3/54	4/52	n.s.
Incomplete emptying	11/54	20/52	0.041

Table 2: Symptoms of voiding dysfunction, X2 test.

54 women in Group A (no cough test) were compared to 52 women in Group B (cough test). Matching resulted in well balanced groups.

There were no significant differences between groups for subjective cure (77% in Group A vs. 83% in Group B), satisfaction rate (83% vs. 84%), subjective symptoms of stress (20% vs. 19%) or urge incontinence (63% vs. 64%), frequency and nocturia. There were less symptoms of voiding dysfunction overall in Group A (46% vs. 69%, $p=0.019$) (see Table 2 for a breakdown of symptoms). The incidence of recurrent urinary tract infection was similar in both groups.

ICS/IUGA Paris 2004



ORIGINAL ARTICLE

Randomized controlled trial of cough test versus no cough test in the tension-free vaginal tape procedure: effect upon voiding dysfunction and 12-month efficacy

Kate H. Moore, Rihan B. Shahab, Colin A. Walsh, William M. A.

Kuteesa, Susmita Sarma, Monique Cebola, Wendy Allen, Yueping A. Wang and Emmanuel Karantanis

Abstract

Introduction and hypothesis This is a prospective randomized controlled trial of cough versus no cough test in the tension-free vaginal tape (TVT) procedure to determine its effect upon voiding dysfunction and 12-month efficacy.

Methods The trial was conducted in a single tertiary urogynecology unit. Women ≥ 21 years old with primary urodynamic stress incontinence without voiding dysfunction were considered eligible. Participants were randomized to undergo the TVT procedure using either an intraoperative cough test or using no intraoperative cough test. Our hypothesis was that postoperative voiding dysfunction would be more common in the "no cough test" arm. The primary outcome was proportion of patients successfully completing a trial of void (TOV) within 24 h of catheter removal. Efficacy at 12 months comprised the secondary outcome. Participants were randomized using a computer-generated randomization sequence by an independent party who was not the operating surgeon. Due to the nature of the intervention to be tested, neither the patients nor the operating surgeons were blinded to the randomization process during the procedure.

Results This trial is reported according to the recommendations of the 2010 CONSORT statement. In total, 94 women were recruited over a 4-year study period. Of these, 92 women were randomized (47 in the "cough" group and 45 in the "no cough" group). In one case, the TVT procedure was abandoned intraoperatively, leaving 91 women who underwent analysis. There was no significant difference in the proportion of women with a successful TOV within 24 h between the two arms (79% in the "cough" group versus 71% in the "no cough" group; $p=0.47$). Efficacy data at 12 months were not significantly different between groups.

Conclusion Our data suggest that the performance of the intraoperative cough test during the TVT procedure does not reduce the incidence of postoperative voiding dysfunction (as determined by successful TOV within 24 h) nor affect efficacy. The removal of the cough test from the standard TVT technique may be appropriate.

Published in partnership with the



INTERNATIONAL UROGYNECOLOGY JOURNAL
Volume 23, Number 4, 435-441, DOI: 10.1007/s00192-011-1594-x

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	Cough (n=47)	No cough (n=44)	p value
Immediate postoperative period			
Time to void < 24 h	37 (78.7%)	31 (70.5%)	0.47
Time to void ≥ 24 h	10 (21.3%)	13 (29.5%)	
Discharged with SPC	2 (4.3%)	2 (4.5%)	0.946
TVT cut	0 (0%)	1 (2.3%)	0.299
6 weeks post-surgery			
PVR ≥ 100 ml	7 (14.9%)	5 (11.4%)	0.713
Q_{max} (ml)	20 (15.9-29)	23 (18-28.5)	0.33
$Q_{max} < 15$ ml	11/45 (24%)	4/39 (10%)	0.152
Q_{ave} (ml)	9.5 (6.1-13.8)	11 (6.5-13)	0.53
12 months post-surgery			
PVR ≥ 100 ml, n (%)	3/47 (6%)	3/41 (7%)	0.99
Q_{max} (ml)	27.4 (18.7-38)	27.3 (19.6-33.8)	0.81
$Q_{max} < 15$ ml, n (%)	4/33 (12%)	4/30 (13%)	1.00
Q_{ave} (ml)	13.8 (9.3-17.5)	12.5 (8-15)	0.54

1. Tape too loose ?

1. Most surgeons do not use the cough test anymore

2. Specific indications ?

1. Tape redo for persistent SUI ?
2. Associated ISD ?
3. Concomitant POP treatment ?

**No EBM-based recommendation
can be made at this time**

2. Tape too proximal or too distal ?

Tape Functionality: Sonographic Tape Characteristics and Outcome After TVT Incontinence Surgery

Jacek Kociszewski,¹ Oliver Rautenberg,² Daniele Perucchini,³ Jakob Eberhard,² Verena Geissbühler,² Reinhard Hilgers,⁴ and Volker Viereck^{2,5*}
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²Department of Gynecology and Obstetrics, Cantonal Hospital Frauenfeld, Frauenfeld, Switzerland
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⁵Department of Gynecology and Obstetrics, Georg August University, Goettingen, Germany

Aim: To investigate tension-free vaginal tape (TVT) position and findings to outcome. **Material and Methods:** The results of TVT urodynamic stress urinary incontinence. The main outcome parameter was the distance of the tape from the urethral lumen at rest and during straining. The distance of the tape from the urethral lumen at rest and during straining was significantly improved, and the operation failed in 66% of the urethral length measured by US. The median tape-ur placement in the upper or lower quarter of the urethra was associated with a poorer outcome. The distance of the tape from the urethral lumen at rest and during straining was significantly increased postoperatively in 44 (61%) patients; 98% (43/44) patients with a permanent cure relative to the patient's urethra seems to play a role in treatment outcome. An unchanged tape shape was associated with a poorer outcome. The distance of the tape from the urethral lumen at rest and during straining was significantly increased postoperatively in 44 (61%) patients; 98% (43/44) patients with a permanent cure relative to the patient's urethra seems to play a role in treatment outcome. The distance of the tape from the urethral lumen at rest and during straining was significantly increased postoperatively in 44 (61%) patients; 98% (43/44) patients with a permanent cure relative to the patient's urethra seems to play a role in treatment outcome.

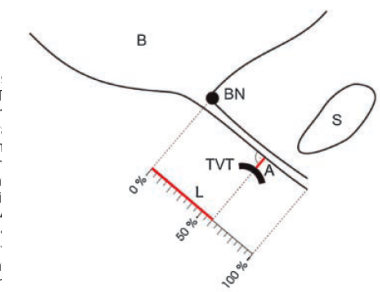


Fig. 1. Diagram of the tension-free vaginal tape (TVT) position relative to the percent urethral length and distance of the tape from the urethral lumen. B, bladder; BN, bladder neck; S, symphysis pubis; A, shortest distance of the tape from the urethral lumen; L, percent urethral length relative to the midpoint of the tape. For details, see Patients and Methods Section.

2. Tape too proximal or too distal ?

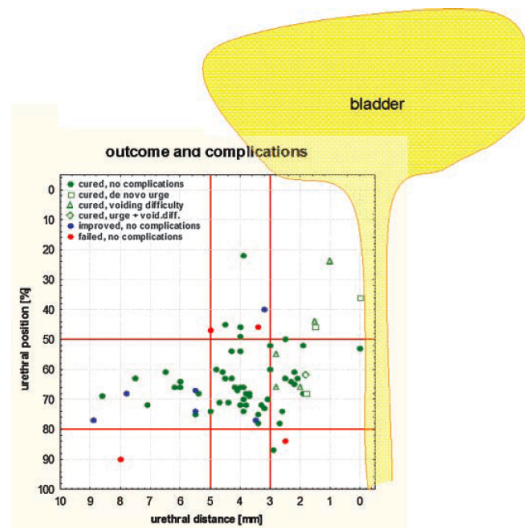


Fig. 4. The scattergram summarizes the association of the tape position at rest in relation to the urethra and different outcome measurements.

Neurourology and Urodynamics 27:485–490 (2008)

2. Tape too proximal or too distal ?

In our study, both de novo urge symptoms and voiding difficulties were associated with a short distance (<3 mm) between the tape and the urethral lumen.

We analyzed tape position in relation to the sonographically measured urethral length (median 34 mm; 18–44).

Our results suggest that the relative and not the absolute tape position along the urethra affects outcome and the occurrence of complications.

According to our results, the tape should be located at 50–80% of the urethral length for optimal results and minimal complications.



Fig. 4. The scattergram summarizes the association of the tape position at rest in relation to the urethra and different outcome measurements.

Neurourology and Urodynamics 27:485–490 (2008)

2. Tape too proximal or too distal ?

Correlation of Morphological Alterations and Functional Impairment of the Tension-Free Vaginal Tape Obturator Procedure

Jenn-Ming Yang, Shwu-Huey Yang and Wen-Chen Huang*

From the Division of Urogynecology, Department of Obstetrics and Gynecology, Mackay Memorial Hospital (JMY), Schools of Medicine (JMY, WCH) and Nutrition and Health Sciences (SHY), Taipei Medical University, Department of Obstetrics and Gynecology, Cathay General Hospital (WCH) and School of Medicine, Fu Jen Catholic University (WCH), Taipei, Taiwan, Republic of China

Purpose: We explored the morphological features associated with functional impairment in patients undergoing the tension-free vaginal tape obturator procedure. **Materials and Methods:** We retrospectively reviewed the records of 98 women who underwent the tension-free vaginal tape obturator procedure alone or with concomitant pelvic surgery. Postoperative assessment included a symptom questionnaire, ultrasound cystourethrography and a cough stress test. During follow-up the measures of postoperative functional impairment included a positive cough stress test, new onset voiding dysfunction and the worsening or progression of urge symptoms.

Results: Median followup was 22 months. During followup 11 women had a positive cough stress test, 22 had voiding dysfunction and 12 had worsening or new onset urge symptoms. Failure was associated with 4 variables on multiple logistic regression analysis, including absent urethral encroachment at rest (OR 16.63, 95% CI 1.87–147.85, $p = 0.01$), bladder neck funneling (OR 8.27, 95% CI 1.99–34.26, $p < 0.01$), a urethral location of less than the 50th percentile (OR 6.01, 95% CI 1.43–25.25, $p = 0.01$) and a resting tape angle of less than 165 degrees (OR 5.21, 95% CI 1.15–23.54, $p = 0.03$). A resting tape distance of less than 12.0 mm (OR 3.00, 95% CI 1.44–6.26, $p < 0.01$) and urethral encroachment at rest (OR 2.86, 95% CI 1.30–6.30, $p < 0.01$) were the variables predictive of postoperative voiding dysfunction. Bladder neck funneling was the only risk factor for postoperative urge symptoms ($p < 0.01$).

Conclusions: The tension-free vaginal tape obturator procedure achieves its effectiveness in a process of biological reaction and mechanical interaction between the tape and urethra. When this mechanical interaction is too great or too little, there is functional impairment after the procedure.

Table 2. Morphological differences in patients with TVTO success vs failure; postoperatively within 3 months

	Failure	Success	p Value
No. ultrasound observation	34*	336	
TVTO tape morphology			
Mean \pm SD resting tape angle (degrees)	159 \pm 22	175 \pm 27	<0.01
Mean \pm SD resting tape distance (mm)	17.9 \pm 4.0	15.0 \pm 3.3	<0.01
Mean \pm SD straining tape angle (degrees)	173 \pm 58	183 \pm 53	0.39
Mean \pm SD straining tape distance (mm)	16.8 \pm 5.3	15.3 \pm 4.7	0.31
Mean \pm SD urethral tape location (percentile)	52 \pm 15	62 \pm 8	<0.01
No. urethral encroachment at rest (%)	5 (15)	209 (62)	<0.01
No. rotation-type urethral descent (%)	5 (15)	84 (25)	0.18
Bladder neck morphology			
Mean \pm SD resting neck angle (degrees)	79 \pm 25	90 \pm 20	<0.01
Mean \pm SD resting neck distance (mm)	21.6 \pm 5.4	22.2 \pm 4.3	0.55
Mean \pm SD straining neck angle (degrees)	119 \pm 38	123 \pm 31	0.43
Mean \pm SD straining neck distance (mm)	20.0 \pm 14.6	19.8 \pm 10.5	0.07
Mean \pm SD rotational neck angle (degrees)†	38 \pm 34	33 \pm 23	0.93
No. funneling (%)	16 (47)	39 (12)	<0.01

* Including 4 observations in 2 patients with type IV urethral descent and positive cough stress test in the early postoperative periods, although urethral descent was converted to type V and cough stress test was negative at the 3-month followup.
† Straining bladder neck angle minus resting bladder neck angle.

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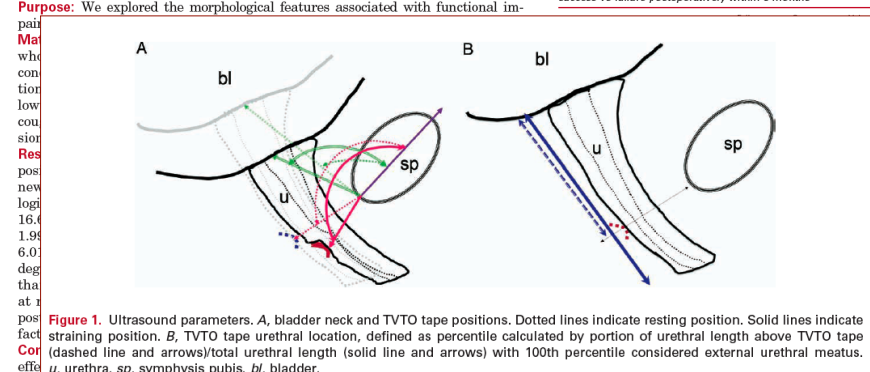


Figure 1. Ultrasound parameters. A, bladder neck and TVTO tape positions. Dotted lines indicate resting position. Solid lines indicate straining position. B, TVTO tape urethral location, defined as percentile calculated by portion of urethral length above TVTO tape (dashed line and arrows)/total urethral length (solid line and arrows) with 100th percentile considered external urethral meatus. u, urethra; sp, symphysis pubis; bl, bladder.

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0022-5347/09/1811-0211/0
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Vol. 181, 211–218, January 2009
Printed in U.S.A.
DOI:10.1016/j.juro.2008.09.033

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Mean \pm SD straining neck angle (degrees)	119 \pm 39	123 \pm 31	0.43
Mean \pm SD straining neck distance (mm)	20.0 \pm 14.6	19.8 \pm 10.5	0.07
Mean \pm SD rotational neck angle (degrees)†	38 \pm 34	33 \pm 23	0.93
No. funneling (%)	16 (47)	39 (12)	<0.01

* Including 4 observations in 2 patients with type IV urethral descent and positive cough stress test in the early postoperative periods, although urethral descent was converted to type V and cough stress test was negative at the 3-month followup.
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2. Tape too proximal or too distal ?

Tape Fixation: An Important Surgical Step to Improve Success Rate of Anti-Incontinence Surgery

Tomasz Rechberger, Konrad Futyma,* Katarzyna Jankiewicz, Aneta Adamiak, Michał Bogusiewicz, Aleksandra Bartuzi, Paweł Miotła, Paweł Skorupski and Jacek Tomaszewski

From the Second Department of Gynecology, Medical University of Lublin, Lublin, Poland

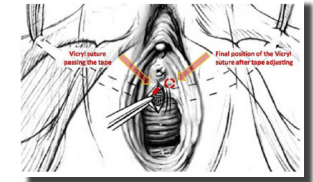
Purpose: Mid urethral slings are effective surgical treatment for stress urinary incontinence. However, 5% to 20% of patients still experience surgical failure with clinically significant recurrent or persistent stress urinary incontinence. Since a subset of these failures may be caused by improper tape position, we elucidated whether additional paraurethral fixation of a tape to prevent displacement during tensioning could improve the transobturator sling outcome.

Materials and Methods: The study was done in 463 patients with stress urinary incontinence who were randomly allocated to treatment with a standard transobturator intravaginal monofilament sling procedure (232) or to an intravaginal transobturator monofilament sling with additional 2-point tape fixation (231). Another 2 absorbable sutures parallel to the urethra were added to fix the tape and prevent displacement during tape tensioning. Outcome was assessed by a cough test and a 1-hour pad test at 12 months.

Results: Clinical efficacy of the procedure with fixation was significantly higher with 195 women (95.12%) cured or improved compared to the 199 (88.73%) cured or improved with the standard sling (chi-square 5.71, $p=0.0169$). There was no increase in intraoperative or postoperative complications. Also, among patients with intrinsic sphincter deficiency we noted a significantly better outcome in the fixation group than in the control group, that is 39 of 41 patients (95.1%) cured or improved vs 31 of 42 (73.8%) (chi-square 10.65, $p=0.0011$).

Conclusions: Tape fixation significantly increases the clinical efficacy of the transobturator sling, especially in patients with intrinsic sphincter deficiency.

Rechberger T, Bogusiewicz M, Monist M et al: Tape position in patients with recurrent urinary incontinence after failed suburethral slings. Presented at meeting of International Continence Society and International Urogynecological Association, August 23–27, 2010, Toronto, Ontario, Canada, abstract 7851997; 89: 501.



IVS-04 (Covidien®)

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Tomasz Rechberger, Konrad Futyma,* Katarzyna Jankiewicz, Aneta Adamiak, Michał Bogusiewicz, Aleksandra Bartuzi, Paweł Miotła, Paweł Skorupski and Jacek Tomaszewski

From the Second Department of Gynecology, Medical University of Lublin, Lublin, Poland

Purpose: Mid urethral slings are effective surgical treatment for stress urinary incontinence. However, 5% to 20% of patients still experience surgical failure with clinically significant recurrent or persistent stress urinary incontinence. Since a subset of these failures may be caused by improper tape position, we elucidated whether additional paraurethral fixation of a tape to prevent displacement during tensioning could improve the transobturator sling outcome.

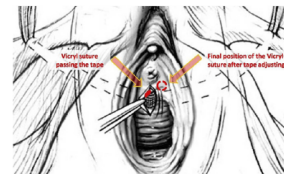
Materials and Methods: The study was done in 463 patients with stress urinary incontinence who were randomly allocated to treatment with a standard transobturator intravaginal monofilament sling procedure (232) or to an intravaginal transobturator monofilament sling with additional 2-point tape fixation (231).

In more than 70% of patients with recurrent SUI after receiving a mid-urethral sling who were treated at our department the tape was located under the proximal part of the urethra.

improved vs 31 of 42 (73.8%) (chi-square 10.65, $p=0.0011$).

Conclusions: Tape fixation significantly increases the clinical efficacy of the transobturator sling, especially in patients with intrinsic sphincter deficiency.

Rechberger T, Bogusiewicz M, Monist M et al: Tape position in patients with recurrent urinary incontinence after failed suburethral slings. Presented at meeting of International Continence Society and International Urogynecological Association, August 23–27, 2010, Toronto, Ontario, Canada, abstract 7851997; 89: 501.



2. Tape too proximal or too distal ?

Sling Location in Women With Recurrent Stress Urinary Incontinence Following Midurethral Sling

Alienor S. Gilchrist and Eric S. Rovner

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OBJECTIVE

Persistent or recurrent stress urinary incontinence (SUI) after a midurethral sling (MUS) may result from incorrect location of the sling relative to the midurethra. This study's objective was to evaluate the incidence of bladder neck (BN) or more proximal MUS in women undergoing reoperation for SUI after synthetic MUS.

MATERIAL AND METHODS

A retrospective review was performed of patients referred and treated for isolated recurrent SUI after synthetic MUS (transobturator or retropubic approach). Patients undergoing sling excision for other indications (eg, outlet obstruction, urinary tract erosion) were excluded. Preoperative video urodynamic (VUDS) parameters were examined. Operative reports at re-exploration provided the anatomic location of the sling.

RESULTS

Fifteen women with SUI after MUS underwent VUDS and subsequent reoperation. The MUS was found proximal to or at the BN in 8 (53%) women and suburethral in 7 (47%). Women with BN or proximal sling location were equally likely to have an open (4/8 patients) or closed BN (4/8 patients) at rest on filling cystography. VUDS parameters, including the radiographic finding of an open BN preoperatively, were not predictive of BN or more proximal sling location intraoperatively. MUSs found at the BN or proximal were more likely to be retropubic slings (7/8 patients). Rates of concomitant anterior prolapse repair did not differ according to sling location.

CONCLUSION

Recurrent SUI as a result of proximal MUS location cannot be predicted on preoperative VUDS parameters. Surgical exploration is the primary method for identifying this phenomenon as the etiology of failure in these patients. UROLOGY 79: 76–79, 2012. © 2012 Elsevier Inc.

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15 women with SUI after MUS underwent VUDS and subsequent reoperation. The MUS was found proximal to or at the bladder neck (BN) in 8 (53%) women and suburethral in 7 (47%). Slings found at the BN or proximal were more likely to be retropubic slings (7/8 pts).

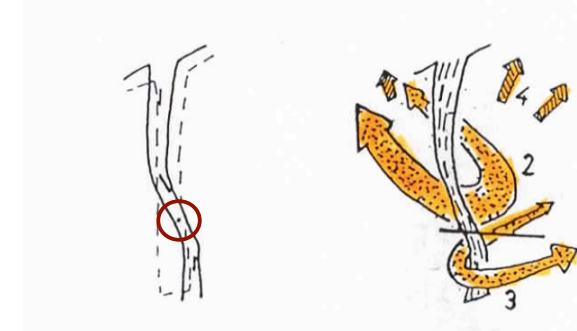
Table 1. Preoperative demographics

	MUS Location (Identified Intraoperatively)	
	BN or Proximal	Midurethra
N	8	7
Mean age, y (range)	57.7 (32-68)	60.6 (42-78)
Median gravidity (range)	3 (1-4)	2 (0-5)
Median parity (range)	2.5 (1-4)	2 (0-5)
Urodynamic SUI	7/8	7/7
Retropubic sling	7/8	3/7
Transobturator sling	1/8	4/7
Concomitant anterior prolapse repair	2/8	1/7
Prior pelvic surgery	2/8	2/7

etiology of failure in these patients. UROLOGY 79: 76-79, 2012. © 2012 Elsevier Inc.

2. Tape too proximal or too distal ?

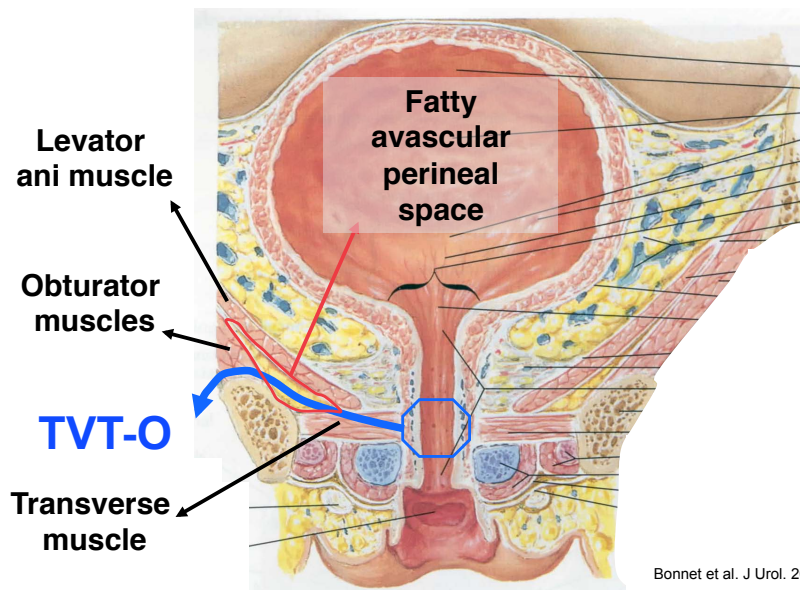
Identification of a **FIXED POINT**, pivot of contraction, corresponding to the median perineal aponeurosis



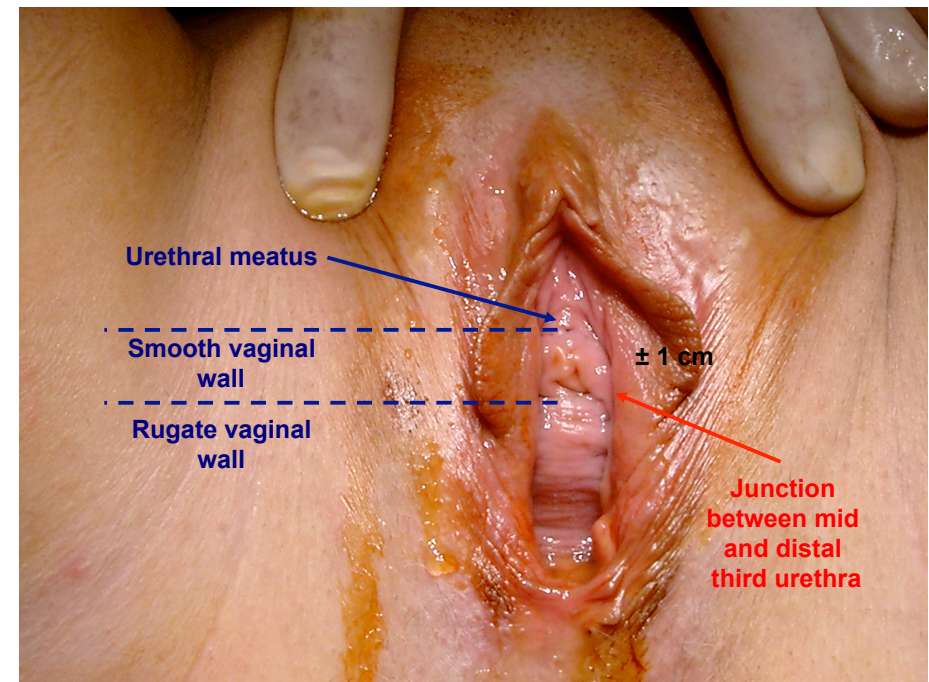
Junction between mid and distal third urethra

de Leval. Acta Urol Belg. 1984

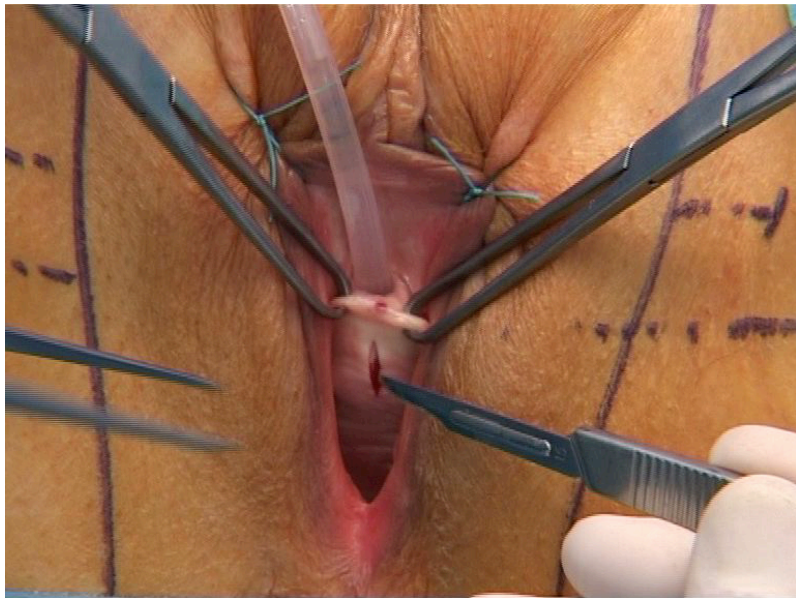
2. Tape too proximal or too distal ?



Bonnet et al. J Urol. 2005



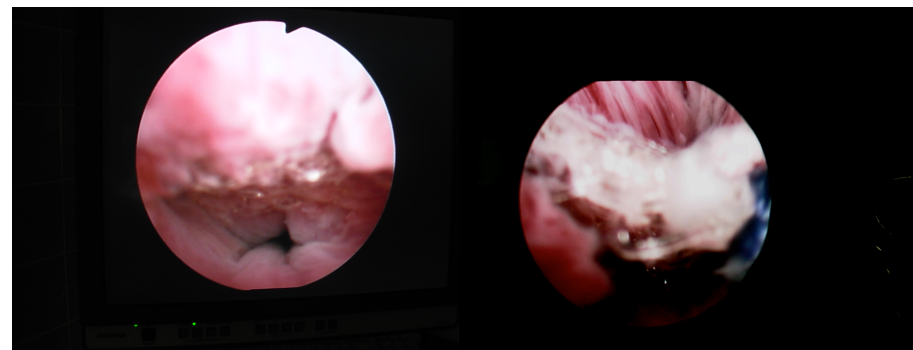
2. Tape too proximal or too distal ?



Tape failures : Why ?

2. Tape placement:

3. Tape through the urethra or bladder neck



Tape failures : Why ?

2. Tape placement:

4. Surgeon

NICE has recommended that the TVT should only be performed by surgeons who are performing at least 20 cases/year. Whether this number of is appropriate, or whether the guidance is influencing practice, is not known.

Implications:

- Appropriate surgical training, follow the cookbook
- In case of persistent SUI with mobile urethra and stress test + :
 - No EBM recommendation can be made on which type of tape redo should be performed (retropubic or transobturator ?)
 - No EBM recommendation can be made on the effectiveness and safety of tape plication/shortening on the long term

Tape failures : Why ?

2. Tape placement: Focus on technique

- Choose the right type of tape
(type I, monofilament polypropylene with a pore size >75 µm)
- Get trained
(stay with one procedure to increase your experience)
- Choose your patients carefully
(assure you have the right indication)
- Do not deviate from standardized procedure
- Do not combine with other surgery
- Follow-up your patients

Tape failures : Why ?

2. Tape placement:

- Patient's position on operating table
- Type of anesthesia
- Minimal dissection
- Catheter or winged guide
- Cystoscopy
- Sling adjustment
- Restrictions during recovery

Tape failures : Why ?

2. Tape placement: focus on technique

Benefits of local anesthesia:

- Hydro-dissective effect of the LA (75-100 ml)
- Adrenaline causes vasoconstriction - less risk of bleeding
- Precisely placed anaesthetics do not allow passing of needles outside safe area without causing pain (built in safety)
- No need for catheter and allows same day discharge

Tape failures : Why ?

2. Tape placement: focus on technique

Safety measures:

- Identify safe sector for passing trocar (especially with retropubic procedures)
- Identify the mid-urethra
- Use local anaesthesia
- Do not sedate too heavily
- Counsel the patient well

Tape failures : Why ?

2. Tape placement: focus on technique

Drawbacks with local anesthesia:

- Has to be placed carefully and precisely
- Might cause slight discomfort
- Concomitant surgery difficult
- Needs careful patient counselling

Tape failures : Why ?

2. Tape placement: focus on technique

Proper sling insertion:

- Use landmarks for proper placement of incisions
- Create more space for passing the trocars by using rigid catheter or wing guides
- Perform cystoscopy after trocar passage
- Use a 70° optic

Tape failures : Why ?

2. Tape placement: focus on technique

The vaginal incision:

- Identify the border between the mucosa of the outer meatus of the urethra and the mucosa of the vaginal wall
- A midline max. 1.5 cm incision
- Blunt dissection of the vaginal mucosa from the fascia 2 cm para-urethrally on either side
- SAME FOR TRANSOBTURATOR !!!

Tape failures : Why ?

2. Tape placement: focus on technique

Landmarks for the vaginal incision:

- The outer urethral meatus
- The bladder neck
- Functional urethral length normally 2.5 - 3.5 cm
- Tape circa 11 mm wide

Tape failures : Why ?

2. Tape placement: focus on technique

Landmarks for the abdominal incisions:

- The abdominal midline
- The upper rim of the symphysis
- The inguinal flexures
- Attention to the position of the patient

Tape failures : Why ?

2. Tape placement: focus on technique

The abdominal incisions:

- To be placed on the symphysis
- 0.5 - 1.0 cm wide
- 4 - 6 cm apart
- Serves as a point of aim

Tape failures : Why ?

3. Patient characteristics

1. **ISD ("poor urethral occlusive forces"):**
Definition ? MUCP ? VLPP ? threshold ?
2. **Low urethral mobility** (e.g. max Q-tip excursion <30°)
3. **Severe SUI** (questionnaires and/or pad testing)
4. **Previous urinary incontinence surgery**
5. **Concomitant POP surgery:** controversial ++
6. **Obesity, old patient**
7. **Strong repeated coughing immediately after surgery,**
resuming of heavy physical activities too early

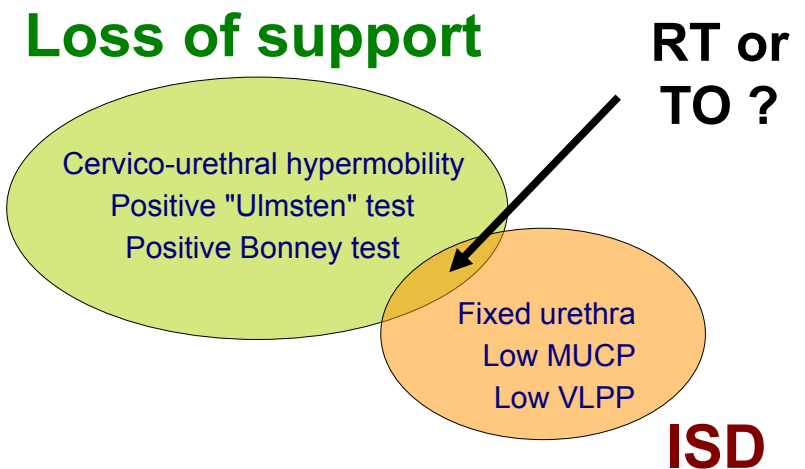
Tape failures : Why ?

2. Tape placement: focus on technique

SUMMARY

- Outside scientific clinical trials, use only well documented techniques
- Get trained and assure your self an appropriate volume of operations
- Concentrate on the main indication for treatment

1. ISD



1. ISD

RT better than TO

1. Miller JJ et al: Is transobturator tape as effective as tension-free vaginal tape in patients with borderline maximum urethral closure pressure? Am J Obstet Gynecol 2006; 195: 1799.

2. Hsiao SM et al: Risk factors affecting cure after mid-urethral tape procedure for female USI: comparison of retropubic and transobturator routes. Urology 2009; 73: 981.

3. Rechberger T et al: The clinical effectiveness of retropubic (IVS-02) and transobturator (IVS-04) midurethral slings: randomized trial. Eur Urol 2009; 56: 24.

4. Jeon MJ et al: Surgical therapeutic index of tension-free vaginal tape and transobturator tape for stress urinary incontinence. Gynecol Obstet Invest 2008; 65: 41.

5. Gungorduk K et al: Which type of mid-urethral sling procedure should be chosen for treatment of stress urinary incontinence with intrinsic sphincter deficiency? Tension-free vaginal tape or trans-obturator tape. Acta Obstet Gynecol Scand 2009; 88: 920.

6. Schierlitz L et al: Effectiveness of tension-free vaginal tape compared with transobturator tape in women with stress urinary incontinence and intrinsic sphincter deficiency: a randomized controlled trial. Obstet Gynecol 2008; 112: 1253.

7. Houwert RM et al: Predictive value of urodynamics on outcome after midurethral sling surgery for female stress urinary incontinence. Am J Obstet Gynecol 2009; 200: 649.

RT equal to TO

1. Barber MD et al: Risk factors associated with failure 1 year after retropubic or transobturator midurethral slings. Am J Obstet Gynecol 2008; 199: 666.

2. Costantini E et al: Preoperative Valsava Leak Point Pressure May Not Predict Outcome of Mid-Urethral Slings. Analysis from a Randomized Controlled Trial of Retropubic versus Transobturator Mid-Urethral Slings. Int Braz J Urol 2008; 34: 73.

3. Porena M et al: Tension-free vaginal tape versus transobturator tape as surgery for stress urinary incontinence: results of a multicentre randomised trial. Eur Urol 2007; 52:1481.

4. Nager CW et al: Baseline urodynamic predictors of treatment failure 1 year after mid urethral sling surgery. J Urol 2011; 186:597.

± 50% of studies were retrospective, with small cohorts of patients
Use of different cutoffs for MUCP and VLPP, different inclusion criteria, and urethra mobility often not reported
...

1. ISD

Table 3. Urodynamic Results, 24-hour Pad Weight, and Quality of Life Questionnaires Preoperatively and at 6-Month Follow-up

	TVT (n= 82)				Transobturator Tape (n= 82)			
	n*	Preoperative	Postoperative	P†	n*	Preoperative	Postoperative	P†
Urodynamic testing								
MFR (uroflowmetry, mL/sec)	57	22 [11–32]	13 [8–26]	.007	59	21 [14–34]	16 [9–25]	.001
Postvoid residual volume (mL)	69	5 [2–20]	19 [5–50]	.001	71	10 [5–20]	10 [5–50]	.32
Volume at first desire to void (mL)	54	245 [144–340]	270 [178–376]	.38	59	216 [150–304]	285 [196–336]	.04
Volume at first sensation of urgency (mL)	44	358 [263–411]	360 [231–426]	.60	46	328 [200–400]	382 [306–436]	.05
MFR (pressure flow study) (mL/sec)	65	26 [15–35]	18 [16–24]	.007	70	23 [16–34]	22 [15–27]	.003
MUCP empty	64	27 [20–38]	31 [21–49]	.46	69	30 [18–40]	28 [21–38]	.94
MUCP capacity	60	20 [11–32]	23 [16–39]	.38	65	23 [11–31]	21 [14–32]	.46
Primary and secondary endpoints								
USI asymptomatic	67		13		71		19	.32
USI symptomatic, not bothersome	67		1		71		4	.37
USI symptomatic, repeat surgery	67		0		71		9	.003
24-h pad weight (g/24 h)	47	25 [15–65]	0 [0–9]	.001	50	45 [17–100]	0 [0–10]	.001
QOL questionnaires								
UDI6	66	10 [7–12]	3 [1–5]	.001	70	10 [8–12]	3 [1–5]	.001
IIQ7	63	8 [4–12]	0 [0–1]	.001	68	10 [5–15]	0 [0–3]	.001

Intrinsic sphincter deficiency was defined as either a maximum urethral closure pressure (measured both with the bladder empty and at capacity) of 20 cm H2O or less10 and/or a pressure rise from baseline required to cause incontinence (Δ valsalva or cough leak point pressure) of 60 cm H2O or less.

1. ISD

Effectiveness of Tension-Free Vaginal Tape Compared With Transobturator Tape in Women With Stress Urinary Incontinence and Intrinsic Sphincter Deficiency

A Randomized Controlled Trial

Lore Schierlitz, FRANZCOG, Peter L. Dwyer, FRANZCOG, Anna Rosamilia, FRANZCOG, Christine Murray, CNC, Elizabeth Thomas, CNC, Alison De Souza, FRANZCOG, Yik N. Lim, FRANZCOG, and Richard Hiscock, FANZCA

OBJECTIVE: To compare efficacy of transobturator tape with tension-free vaginal tape (TVT) in the treatment of stress urinary incontinence in women with intrinsic sphincter deficiency.

METHODS: One hundred sixty-four women diagnosed with urodynamic stress incontinence and intrinsic sphincter deficiency with or without concomitant pelvic organ prolapse repair were randomized to receive TVT or transobturator tape. The primary outcome was the presence or absence of urodynamic stress incontinence at 6 months postoperatively. Secondary outcomes were the rate of operative complications, symptomatic stress incontinence requiring further surgery, and quality-of-life questionnaires.

RESULTS: Of 180 women eligible to participate, 164 were enrolled and underwent surgery. Of the 138 patients assessed at 6 months with urodynamic studies, 14 of 67 (21%) had urodynamic stress incontinence in the TVT group compared with 32 of 71 (45%) in the transobturator tape group (P = .004), with nine women in the transobturator tape group having repeat sling surgery compared with none in the TVT group. In the intention-to-

treat analysis, the incident rate difference for request of repeat surgery was 9.7% (95% confidence interval [CI] 0–19.9); repeat surgery would be requested in one of every six transobturator tape procedures compared with 1 of every 16 TVT procedures. The risk ratio of repeat surgery was 2.6 (95% CI 0.9–9.3) times higher in the transobturator tape group.

CONCLUSION: Retropubic TVT is a more effective operation than the transobturator tape sling in women with urodynamic stress incontinence and intrinsic sphincter deficiency.

CLINICAL TRIAL REGISTRATION: www.actr.org.au, Australian New Zealand Clinical Trials Registry, ACTRN12608000093381 (Obstet Gynecol 2008;112:1253–61)

LEVEL OF EVIDENCE: I

The diagnosis of ISD was based on the measurements of the resting MUP profile and/or the ALPP with Valsalva maneuver and/or cough. ISD was defined as either a MUCP (measured both with the bladder empty and at capacity) of 20 cm H2O or less10 and/or a pressure rise from baseline required to cause incontinence (Valsalva or cough leak point pressure) of 60 cm H2O or less. In our institutions, these measurements normally are taken at 500 mL bladder fill or at maximum bladder capacity if less than 500 mL.

1. ISD

Baseline Urodynamic Predictors of Treatment Failure 1 Year After Mid Urethral Sling Surgery

Charles W. Nager,*,† Larry Sirls,† Heather J. Litman,† Holly Richter,† Ingrid Nygaard,† Toby Chai,§ Stephen Kraus,|| Halina Zyczynski,¶ Kim Kenton,** Liyuan Huang,† John Kusek† and Gary Lemack†† for the Urinary Incontinence Treatment Network

TOMUS: Trial of Mid Urethral Sling

Purpose: We determined whether baseline urodynamic study variables predict failure after mid urethral sling surgery.

Materials and Methods: Preoperative urodynamic study variables and postoperative continence status were analyzed in women participating in a randomized trial comparing retropubic to transobturator mid urethral sling. Objective failure was defined by positive standardized stress test, 15 ml or greater on 24-hour pad test, or re-treatment for stress urinary incontinence. Subjective failure criteria were self-reported stress symptoms, leakage on 3-day diary or re-treatment for stress urinary incontinence. Logistic regression was used to assess associations between covariates and failure controlling for treatment group and clinical variables. Receiver operator curves were constructed for relationships between objective failure and measures of urethral function.

Results: Objective continence outcomes were available at 12 months for 565 of 597 (95%) women. Treatment failed in 260 women (245 by subjective criteria, 124 by objective criteria). No urodynamic variable was significantly associated with subjective failure on multivariate analysis. Valsalva leak point pressure, maximum urethral closure pressure and urodynamic stress incontinence were the only urodynamic variables consistently associated with objective failure on multivariate analysis. No specific cut point was determined for predicting failure for Valsalva leak point pressure or maximum urethral closure pressure by ROC. The lowest quartile (Valsalva leak point pressure less than 86 cm H2O, maximum urethral closure pressure less than 45 cm H2O) conferred an almost 2-fold increased odds of objective failure regardless of sling route (OR 2.23, 1.20–4.14 for Valsalva leak point pressure and OR 1.88, 1.04–3.41 for maximum urethral closure pressure).

Conclusions: Women with a Valsalva leak point pressure or maximum urethral closure pressure in the lowest quartile are nearly 2-fold more likely to experience stress urinary incontinence 1 year after transobturator or retropubic mid urethral sling.

1. ISD

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Results: (245 by sling route) multivariate analysis showed that only urodynamic variables determined postoperative failure. For every 10 cm H₂O increase in VLPP there was a 7% reduction in the objective failure rate, and for every 10 cm H₂O increase in MUCP there was a 12% reduction in the objective failure rate.

Women with a Valsalva leak point pressure in the lowest quartile had a 2-fold increased odds of objective failure regardless of sling route (OR 2.23, 1.20–4.14 for Valsalva leak point pressure and OR 1.88, 1.04–3.41 for maximum urethral closure pressure).

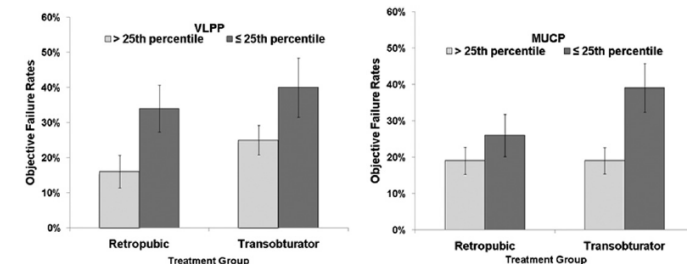
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TOMUS: Trial of Mid Urethral Sling



Failure rates between 20% and 40%

Figure 2. Objective failure rates of retropubic and transobturator mid urethral sling procedures. In each part failure rates are stratified by urethral function measures in upper 3 quartiles (light gray) or lower quartile (dark gray). Error bars represent ± 1 standard error. Low VLPP is associated with higher objective failure rates ($p = 0.003$), which holds for both treatment groups (interaction between treatment and VLPP not significant, $p = 0.64$). Low MUCP is associated with higher objective failure rates ($p = 0.003$), which holds for both treatment groups (interaction between treatment and MUCP not significant, $p = 0.19$).

Eligible women had pure or predominant SUI symptoms for at least 3 months, a positive urinary stress test at a bladder volume of 300 ml or less and were planning surgery.

Urethral mobility ?

1. ISD

Baseline Urodynamic Predictors of Treatment Failure 1 Year After Mid Urethral Sling Surgery

Charles W. Nager,*† Larry Sirls,† Heather J. Litman,† Holly Richter,† Ingrid Nygaard,† Toby Chai,§ Stephen Kraus,|| Halina Zyczynski,|| Kim Kenton,** Liyuan Huang,† John Kusek† and Gary Lemack†† for the Urinary Incontinence Treatment Network

TOMUS: Trial of Mid Urethral Sling

Table 2. Odds ratios of objective failure in VLPP and MUCP multivariable models

	VLPP		MUCP	
	OR (95% CI)	p Value	OR (95% CI)	p Value
VLPP 25th percentile or less vs greater than 25th percentile	2.23 (1.20–4.14)	0.011	—	—
MUCP 25th percentile or less vs greater than 25th percentile	—	—	1.87 (1.02–3.41)	0.04
Delta PabdQmax	1.09 (0.98–1.21)	0.10	1.10 (0.99–1.22)	0.08
Delta PdetQmax	0.82 (0.63–1.08)	0.15	0.79 (0.61–1.02)	0.07
USI yes did leak vs no did not leak	—	—	5.20 (1.16–23.44)	0.03
Treatment transobturator MUS vs retropubic MUS	1.27 (0.71–2.28)	0.43	1.19 (0.69–2.04)	0.54
Concomitant surgery no vs yes	1.11 (0.55–2.23)	0.78	1.48 (0.75–2.92)	0.26
Age (/10 yrs)	1.31 (1.01–1.71)	0.04	1.37 (1.07–2.92)	0.01

The VLPP model is unadjusted by MUCP and the MUCP model is unadjusted by VLPP. Both models control for delta PabdQmax, delta PdetQmax, USI, treatment group, and the clinical variables of concomitant surgery and age, except that the VLPP model does not adjust for USI since all subjects with VLPPs by definition have USI.

1. ISD

Bandelettes sous-urétrales transobturatrices de dedans en dehors (TVT-O®) et insuffisance sphinctérienne

G. Triopon^{1,2}, B. Fatton², T. Mura³, J. Amblard², P. Mares¹, B. Jacquetin²

Résumé : L'objectif de cette étude était de comparer l'efficacité de la bandelette de soutien sous-urétrale TVT-O® chez des patientes qui présentaient une incontinence urinaire d'effort (IUE) avec et sans insuffisance sphinctérienne (IS).

Méthode : Cette étude, rétrospective et comparative, incluait 49 patientes de 68,2 ans en moyenne (± 10 ans), présentant une IS définie par une pression de clôture urétrale maximale (PCUM) inférieure à 30 cmH₂O associée à une Valsalva leak point pressure (VLPP) inférieure à 60 cmH₂O, avec un recul moyen de 16,1 mois ($\pm 3,5$ mois) et un groupe de patientes témoins d'effectif similaire opérées sur la même période qui ne souffraient pas d'IS. Toutes avaient une manœuvre de repositionnement de l'urètre positive en préopératoire.

Résultats : En postopératoire, 67,4 % ($n = 33/49$) se disaient sèches en toutes circonstances contre 79,4 % ($n = 39/49$) chez les patientes non IS ($p = 0,45$), et 85,9 % guéries de leur IUE à l'interrogatoire ($n = 44/49$) contre 93,9 % ($n = 46/49$) dans le groupe témoin ($p = 0,71$). Le taux de guérison objective de l'IUE chez les patientes présentant une IS était de 83,7 % ($n = 41/49$). Les paramètres urodynamiques chez les patientes IS montraient un léger effet obstructif de la bandelette en postopératoire (diminution du débit urinaire maximal et du volume uriné, augmentation du résidu post-mictionnel). La qualité de vie globale moyenne évaluée à l'aide du questionnaire CONTILIFE® était de 8,15 et huit sur dix respectivement dans les deux populations ($p = 0,64$). Les bandelettes de soutien sous-urétral par voie obturatrice de dedans en dehors paraissent donc adaptées à la prise en charge de l'IUE avec IS et manœuvre de repositionnement urétral positive.

Pelv Perineol (2008) 3: 1–7
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DOI 10.1007/s11608-008-0209-6

49 pts with SUI and MUCP < 30 cm H₂O and VLPP < 60 cm H₂O

versus

49 pts with SUI and MUCP ≥ 30 cm H₂O and VLPP ≥ 60 cm H₂O

All patients had a positive "Ulmsten" test before surgery

Case control study

1. ISD

Bandelettes sous-urétrales transobturatrices de dedans en dehors (TVT-O®) et insuffisance sphinctérienne

G. Tripon^{1,2}, B. Fatton², T. Mura³, J. Amblard², P. Mares¹, B. Jacquetin²

Résumé : *Objet :* L'objectif de cette étude était de comparer l'efficacité de la bandelette de soutien sous-urétral TVT-O® chez des patientes qui présentaient une incontinence urinaire d'effort (IUE) avec et sans insuffisance sphinctérienne (IS).

Méthode : Cette étude, rétrospective et comparative, incluait 49 patientes de 68,2 ans en moyenne (± 10 ans), présentant une IS définie par une pression de clôture urétrale maximale (PCUM) inférieure à 30 cmH₂O associée à une *Valsalva leak point pressure* (VLPP) inférieure à 60 cmH₂O, avec un recul moyen de 16,1 mois ($\pm 3,5$ mois) et un groupe de patientes témoins d'effectif similaire opérées sur la même période qui ne souffraient pas d'IS. Toutes avaient une manœuvre de repositionnement de

Pelv Perineol (2008) 3: 1-7
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DOI 10.1007/s11608-008-0209-6

Importance of urethral hypermobility > MUCP & VLPP

Tableau 3. Données comparatives en postopératoire entre patientes avec et sans insuffisance sphinctérienne

	IS (PCUM < 30 cmH ₂ O, VLPP < 60 cmH ₂ O)	Pas d'IS (PCUM > 30 cmH ₂ O, VLPP > 60 cmH ₂ O)	Valeur de p
Disparition IUE à l'interrogatoire	89,9 % 44/49	93,9 % 46/49	0,71

en postopératoire (diminution du débit urinaire maximal et du volume uriné, augmentation du résidu post-mictionnel). La qualité de vie globale moyenne évaluée à l'aide du questionnaire CONTILIFE® était de 8,15 et huit sur dix respectivement dans les deux populations ($p = 0,64$). Les bandelettes de soutien sous-urétral par voie obturatrice de dedans en dehors paraissent donc adaptées à la prise en charge de l'IUE avec IS et manœuvre de repositionnement urétral positive.

Tape failures : Why ?

3. Patient characteristics

Implications:

No EBM-based recommendation can be made on retropubic versus transobturator in case of persistent SUI and

- associated ISD
- low urethral mobility
- severe SUI
- previous surgery for SUI
- old age, high BMI, ...

Counseling is of utmost importance !

Tape failures : Why ?

4. Device / procedure characteristics

1. Several meta-analyses on **traditional** tapes:
 - retropubic = transobturator (similar subjective cure rates)
2. Meta-analysis on **single incision slings** (SIS):
 - results inferior to those of traditional slings so far
 - should be performed in the context of clinical trials

Tape failures : What to do ?

1. Conservative management

- Some clinicians believe that it would be inappropriate to ask women to try physiotherapy again after it failed on a previous occasion...
- Others believe that there may be sufficient anatomical change produced by the first surgery to result in the physiotherapy being more effective.

Tape failures : What to do ?

2. Surgical treatment

- Several options: second tape or tape plication, Burch, bulking agent, pubovaginal sling, AUS
- There are no RCTs reported which compare different surgical approaches for the treatment of the patient whose primary suburethral tape has failed. Only small number of cases were studied in most of the reports on the treatment of failed tapes, with a few retrospective comparative trials
- Whether all patients should be treated in the same way after a failed tape or should be divided according to urethral mobility and the presence of ISD is a matter of debate...

International Continence Society Research
Society meeting (Bristol, June 2010)

Smith ARB et al. *Neurourol & Urodyn.* 2011, 30:771

Treatment for Unsuccessful Tension-Free Vaginal Tape Operation by Shortening Pre-Implanted Tape

Vol. 175, 2196-2200, June 2006
Printed in U.S.A.

Tsia-Shu Lo, Alex C. Wang,* Ching-Chung Liang, Cheng-Yu Long and Shu-Jane Lee

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Purpose: We studied the efficacy of shortening the pre-implanted suburethral tape in patients with recurrent urodynamic stress incontinence after a TVT operation.

Materials and Methods: A total of 14 women, including 6 with ISD, were treated for recurrent urodynamic stress incontinence after the initial TVT operation by performing the shortening procedure under local anesthesia. Urodynamics, a 1-hour pad test, introital ultrasonography of the urethra and a cotton swab test were done before the procedure and 1 year postoperatively.

Results: All 14 patients completed the shortening procedure. Mean patient age was 47.2 years (range 43 to 66). Mean time between initial TVT and the shortening procedure was 4 months (range 3 to 14). Ten patients (71.4%) were objectively cured and treatment failed in 4 (2 with ISD and 2 with a fixed urethra). Mean operative time was 17 minutes (range 10 to 25). No intraoperative surgical complications were observed. The 1-hour pad test showed a decrease from a median of 9.0 gm to 1.0. Median postoperative hospital stay was 1 day (range 1 to 4). Spontaneous voiding with adequate post-void residual urine was noted in all patients before discharge home.

Conclusions: Shortening a pre-implanted TVT tape for the treatment of recurrent urodynamic stress incontinence is a safe, effective and minimally invasive option requiring only a short hospital stay. However, ISD and an immobile urethra seem to be risk factors for failure. Long-term followup is needed to determine if this surgery achieves long-lasting results.

Fixed urethra
ISD
Proximal tape

Variable	No. Cure	No. Failure
Overall	10	4
Cotton swab test greater than 30 degrees:		
Before shortening	8	2
After shortening	8	2
Ultrasound tape urethral location:		
Proximal	3	2
Mid	7	2
Distal	0	0
Ultrasound urethral knee angle	8	0
Pre-shortening urodynamic ISD diagnosis	4	2

Tape failures : What to do ?

2. Surgical treatment

- Second tape or tape plication ? No RCT

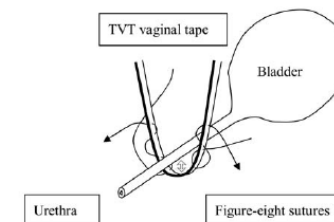
Treatment for Unsuccessful Tension-Free Vaginal Tape Operation by Shortening Pre-Implanted Tape

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The method described in this study involves folding the vaginal mesh bilaterally. We believe that in theory it has the benefits of manipulating the urethra less, preventing suturing on the urethral tissue, avoiding the nodular compression effect of a foreign body on the urethra and providing a larger distance for shortening. However, a case of permanent suture protrusion required a minor excision procedure and, therefore, small caliber permanent sutures may be considered in future practice.



폐쇄공을 통한 요실금 수술 후 재발한 환자에서 이차적 시도로서 테이프 단축술과 Tension-free Vaginal Tape 재시술의 비교

Comparison of Secondary Procedures for Recurrent Stress Urinary Incontinence after a Transobturator Tape Procedure: Shortening of the Tape versus Tension-free Vaginal Tape Redo

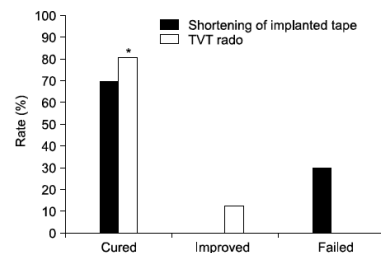
Jun Sung Koh, Hyo Sin Kim, Hyun Woo Kim, Yong Seok Lee, Suk Il Kim¹, Kyu Sung Lee², Myung Soo Choo³, Ji Youl Lee

Purpose: Although the reported failure rate of the transobturator tape procedure (TOT) is low, recurrence after this procedure have been reported, and no standard treatment has yet been established for the recurrence. We compared a shortening of the previously implanted tape with a repeat tension-free vaginal tape (TVT) procedure after a failed TOT procedure.

Materials and Methods: We enrolled eighteen women (mean age: 54.38±9.15 years, range: 38-72) who underwent shortening of the previously implanted tape or they underwent a repeated TVT procedure due to persistent or recurrent SUI. Of the 18 women, 10 patients underwent shortening of implanted tape and the others underwent repeat TVT. All the patients were evaluated preoperatively with a detailed history, pelvic examination, urinalysis, voiding diary and urodynamic study that included the Valsalva leak point pressure (VLPP). The postoperative outcomes were assessed by a review of admissions and the medical charts.

Results: The mean interval from first surgery to recurrence was 6.88±2.61 months for Monarc, 12 months for TVT-O and 4.71±2.42 months for T-sling. Of the 10 patients who underwent shortening of the implanted tape, 7 (70%) patients were cured and the others failed. Of the 8 patients who underwent repeat TVT, 7 (87.5%) patients were cured and one was significantly improved. The success rate is significantly higher in the repeated TVT group ($p < 0.05$).

Conclusions: Both a shortening of the previously implanted tape and a repeated TVT procedure are safe, effective, viable options in the event of initial TOT sling failure. However, the success rate of the repeated TVT group is higher than that of the shortening of implanted tape group, especially for patients with an internal sphincteric deficiency. Therefore, a repeated TVT procedure is a first option in the event of initial TOT sling failure. (Korean J Urol 2007;48:1149-1154)



Tape Shortening for Recurrent Stress Urinary Incontinence After Transobturator Tape Sling: 3-Year Follow-up Results

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Purpose: Recently, as the number of transobturator tape (TOT) procedures has increased, recurrence after this procedure has been frequently reported. However, there are no standard guidelines for treatment. We describe our experience with shortening of the previously implanted tape in patients with recurrent stress urinary incontinence after the TOT procedure.

Materials and Methods: We enrolled 10 women who underwent shortening of the previously implanted tape and were followed up for 3 years. Shortening of the previously implanted tape was done by a figure-eight suture with 1-0 Prolene. One year after TOT shortening, we investigated continence status, patient satisfaction by means of a questionnaire, maximal flow rate (Qmax), and postvoid residual urine volume. Three years after TOT shortening, we evaluated continence status and patient satisfaction.

Results: The mean period of TOT shortening was 4.2 months (range, 1-12 months) after the TOT procedure. One year after TOT shortening, 7 patients showed complete dryness, 2 patients showed improvement, and 1 patient reported failure. Eight patients were very satisfied or satisfied with the 1-year result after TOT shortening. The mean preoperative and postoperative Qmax were 23.8 and 26.7 ml/s, respectively, and there was no significant difference. Three years after TOT shortening, 6 patients showed complete dryness, 2 patients showed improvement, and 2 patients reported failure. Among them, 1 had failed from 1 year after TOT shortening and the other had shown 1 year of complete dryness. Eight patients were very satisfied or satisfied and 2 patients were dissatisfied with the 3-year result after TOT shortening.

Conclusion: Most of the patients who underwent TOT shortening reported satisfaction as well as improvement of incontinence after a 3-year follow up. Therefore, we suggest that TOT shortening may be recommended primarily in patients with recurrent stress urinary incontinence after the TOT sling procedure. Int Neurourol J 2010;14:164-9.

DOI:10.5213/inj.2010.14.3.164

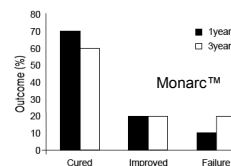


Figure 1. Clinical outcome of tape shortening after one and three years.

The 2 failed patients had ISD, not the others

Int Urogynecol J
DOI 10.1007/s00192-010-1200-7

ORIGINAL ARTICLE

Management of recurrent or persistent stress urinary incontinence after TVT-O by mesh readjustment

Laurent de Landsheere & Jean Philippe Lucot & Jean Michel Foidart & Michel Cosson

Abstract

Introduction and hypothesis The aim of this study was to evaluate, retrospectively, the place of sub-urethral mesh readjustment when treating recurrent stress urinary incontinence (SUI) after TVT-O.

Methods Between August 2006 and August 2008, eight patients had recurrent or persistent SUI. They were treated surgically by tightening the pre-implanted sling.

Results Medium delay between first surgery and mesh adjustment was 6 months. One patient needed a second TVT-O for rupture of the pre-implanted mesh during adjustment. Among the seven patients who underwent a mesh readjustment, three were cured, three improved, there was one failure. Mean follow-up was 25 months.

Conclusions The sub-urethral mesh readjustment is a simple and safe procedure for patients with recurrent SUI after TVT-O procedure. Success rates are high, surgery minimally invasive but long-term follow-up is needed to evaluate efficiency.

IUJPF. 21;1347-51, 2010

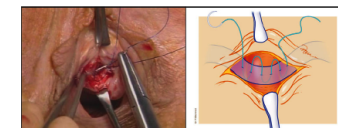


Fig. 1 Intraoperative view of the TVT-O by an in-out running suture

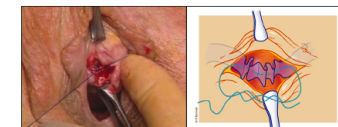


Fig. 2 Mesh tightening with nonabsorbable sutures

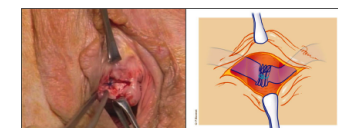


Fig. 3 Final view of the mesh adjustment before closing the vaginal incision

Int Urogynecol J
DOI 10.1007/s00192-012-1737-8

Management of recurrent stress urinary incontinence after failed midurethral sling: tape tightening or repeat sling?

Ji-Yeon Han · Kyung Hyun Moon · Chang Myeon Park · Myung-Soo Choo

Received: 9 October 2011 / Accepted: 4 March 2012
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Abstract

Introduction and hypothesis This study was performed to compare surgical outcomes of repeat midurethral sling (MUS) with those of tape shortening in patients who underwent failed initial MUS.

Methods We assessed 66 patients who underwent failed initial MUS and a second surgical procedure because of recurrent or persistent stress urinary incontinence (SUI), including 36 who underwent repeat MUS and 30 who underwent tape shortening. All patients were followed up for at least 12 months after second surgery. Efficacy was measured by cure rates on the Sandvik questionnaire. Safety was evaluated by assessing maximal urine flow rate, postvoid residual urine volume, and procedure-related complications.

Results The cure rate was significantly higher in patients who underwent repeat MUS (72.2 % vs. 46.7 %, $p = 0.034$). Among patients with a Valsalva leak point pressure (VLPP) of <60 cmH₂O or SUI severity of at least moderate, the cure rate was significantly higher in those who underwent repeat MUS than in those who underwent tape shortening (76.5 % vs. 40.0 % and 79.2 % vs. 43.8 %, respectively). Univariate analysis of preoperative factors demonstrated that there were no risk factors associated with the cure rates in either group. One patient who underwent repeat MUS required tape cutting, and one who underwent tape shortening experienced mesh erosion. A limitation of this study is that it was not a randomized, controlled study.

Conclusions Repeat MUS has a higher cure rate than does tape shortening in surgical treatment of patient with persistent or recurrent SUI, especially those with low VLPP or high SUI grade.

Repeat MUS has a higher cure rate than does tape shortening in surgical treatment of patients with persistent or recurrent SUI, especially those with low VLPP and high SUI grade.

Tape failures : What to do ?

2. Surgical treatment

- Second tape or tape plication ? No RCT
- Retropubic or Transobturator ? No RCT
(Redo tape: results inferior to primary tape)

Haab

Repeat Synthetic Mid Urethral Sling Procedure for Women With Recurrent Stress Urinary Incontinence

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Purpose: We reported and compared the outcomes of repeat mid urethral sling with primary mid urethral sling in women with stress urinary incontinence.

Materials and Methods: A total of 1,225 consecutive women with urodynamic stress incontinence underwent a synthetic mid urethral sling procedure (955 retropubic, 270 transobturator) at our institution between 1999 and 2007. Of the patients 91% (1,112) were interviewed via telephone call with a structured questionnaire and were included in the analysis. Mean \pm SD followup was 50 \pm 24 months (range 12 to 114). A comparison between repeat (77, mean age 62 \pm 12 years) and primary (1,035, mean age 60 \pm 13 years) mid urethral sling groups was performed. Repeat sling was placed without removal of the previous sling.

Results: The preoperative incidence of intrinsic sphincter deficiency was higher in patients who had a repeat mid urethral sling (31% vs 13%, $p < 0.001$). The subjective stress incontinence cure rate was 86% and 62% in the primary and repeat group, respectively ($p < 0.001$). The repeat retropubic approach was significantly more successful than the repeat transobturator approach (71% vs 48%, $p = 0.04$). The rates of sling related and general postoperative complications were similar between the primary and the repeat groups. However, de novo urgency (30% vs 14%, $p < 0.001$) and de novo urge urinary incontinence (22% vs 5%, $p < 0.001$) were more frequent in the repeat group compared with the primary group.

Conclusions: A repeat synthetic mid urethral sling procedure has a significantly lower cure rate than a primary mid urethral sling procedure. The repeat retropubic approach has a higher success rate than the repeat transobturator approach. The incidence of de novo urgency and urge incontinence are significantly higher in repeat procedures.

Table 2. Comparison of retropubic and transobturator approach in the repeat group

	Retropubic	Transobturator	p Value
No.	48	29	
Mean \pm SD age	62 \pm 12	61 \pm 13	0.98
Mean \pm SD BMI	29.7 \pm 5.5	28.4 \pm 5.0	0.29
No. postmenopausal (%)	43 (90)	21 (72)	0.06
No. urodynamics diagnosis (%):			
SUI	34 (71)	26 (90)	0.07
Mixed type incontinence	14 (29)	3 (10)	
Mean \pm SD cm H ₂ O MUCP	29 \pm 15	35 \pm 15	0.12
Mean \pm SD cm H ₂ O VLP	57 \pm 30	64 \pm 19	0.006
No. with ISD (%)	18 (38)	8 (27)	0.12
No. experienced surgeon (%)	33 (69)	15 (52)	0.13
No. concomitant prolapse surgery (%)	7 (14)	6 (21)	0.34
No. failed TOV (%)*	5 (10)	2 (7)	0.26
Mean \pm SD mos followup	35 \pm 20	42 \pm 17	0.11
No. subjective cure rate (%)	34 (71)	14 (48)	0.04
No. de novo UUI (%)	13 (27)	4 (14)	0.17

* In patients who had isolated sling procedure.

0022-5347/10/1831-0241\$10.00
THE JOURNAL OF UROLOGY®
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Vol. 183, 241-246, January 2010
Printed in U.S.A.
DOI:10.1016/j.juro.2009.08.111

Urethral mobility ?

Tape failures : What to do ?

2. Surgical treatment

- Second tape or tape plication ? No RCT
- Retropubic or Transobturator ? No RCT
(Redo tape: results inferior to primary tape)
- Burch ? No RCT (1 abstract ICS 2004: TVT = lap Burch)

25

Maher C¹, Qatawneh A², Baessler K¹, Cropper M³, Schluter P⁴

1. Mater & Royal Women's Urogynaecology, 2. Mater and Royal Women's, 3. Royal Women's Urogynaecology, 4. University QLD

LAPAROSCOPIC COLPOSUSPENSION OR TENSION-FREE VAGINAL TAPE FOR RECURRENT STRESS URINARY INCONTINENCE AND/OR INTRINSIC SPHINCTER DEFICIENCY - A RANDOMISED CONTROLLED TRIAL

Hypothesis / aims of study

Over the past decade there has been a significant shift towards less invasive continence surgeries including the Tension-free Vaginal Tape (TVT) and laparoscopic colposuspension (LC). The outcomes of these surgeries in high-risk incontinence groups including recurrent stress urinary incontinence and Intrinsic Sphincter Deficiency (ISD) remain unproven.

The aim of the paper is to compare the LC and TVT in women with recurrent stress urinary incontinence (previous retropubic surgery) and/or ISD.

Study design, materials and methods

Between 2001 and 2002, 82 women with recurrent SUI and/or ISD (MUCPS 20cmH₂O) were randomly allocated to the laparoscopic colposuspension (42) or TVT (40). A computer generated randomisation list was held by the non-surgical coauthor. Lists were stratified for ISD and concomitant prolapse surgery to ensure equal distribution. Women presenting primarily with pelvic organ prolapse, rigid urethra and those unfit for general anaesthesia were excluded.

Prior to enrolment, all women completed standardised pelvic floor proforma, including vaginal staging using the Pelvic Organ Prolapse Quantification (POP-Q), multichannel subtracted urodynamics, transperineal ultrasound to record bladder neck mobility, Short Urinary Distress Inventory (SUDI), short Incontinence Impact Questionnaire (SIQ) and SF-36 Health Survey (SF-36).

Postoperative reviews were conducted by the non-surgical co-authors at 6 weeks, 6 months and at 6 monthly intervals. At 6 months the complete pre-operative evaluation was repeated. All women were treated on an intention to treat basis and the study conducted according to Consort guidelines.

Using a significance level of 5%, the study had an 80% power to detect a difference in success rates previously reported (1) between the groups in women with primary SUI.

Results

No eligible women refused participation in the trial and 1 failed to complete meaningful review. Preoperative details including age, parity, BMI, smoking, menopausal status, previous hysterectomy, previous continence or prolapse surgery, bladder overactivity, voiding dysfunction, MUCP, pelvic organ prolapse, dyspareunia and scores on quality of life and validated pelvic floor questionnaires were similar between the groups except women in the LC group were significantly older and women in the TVT group had a higher SIQ score.

In the LC group 65% and in the TVT group 61% had recurrent SUI (p= 1.00). Table 1 reports important perioperative details and outcomes.

On logistic regression analysis no single factor was independently associated with outcome. In the LC arm 9 women underwent open procedures due to BMI ≥ 35. In the TVT group one woman had her procedure converted to open colposuspension due to inability to traverse retropubic space without bladder perforation and 1 had an incidental grade 1 transitional cell carcinoma of the bladder identified. Complications and re-operation rates were similar in each group.

Interpretation of results

In the medium term the LC and TVT are equally effective in women with recurrent SUI and or ISD. The TVT is associated with a statistically significant reduced operating time, catheter days, inpatient days and a quicker return to activities of daily living.

Concluding message

The LC and TVT are equally effective in women with recurrent SUI and or ISD.

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1. Mater & Royal Women's Urogynaecology, 2. Mater and Royal Women's, 3. Royal Women's Urogynaecology, 4. University QLD

LAPAROSCOPIC COLPOSUSPENSION OR TENSION-FREE VAGINAL TAPE FOR RECURRENT STRESS URINARY INCONTINENCE AND/OR INTRINSIC SPHINCTER DEFICIENCY - A RANDOMISED CONTROLLED TRIAL

	Lap. colposuspension			TVT			P
	n	X	(%)	N	x	(%)	
Subjective success rate	42	34	(81)	40	35	(85)	0.77
Objective success rate	40	31	(78)	40	34	(85)	0.56
De novo OAB	40	4	(10)	0	0	(0)	0.09
De novo voiding dysfunction	40	2	(5)	0	0	(0)	0.43
Aware of prolapse	42	3	(7)	40	2	(5)	1.00
Sexually active	41	18	(44)	40	21	(53)	0.51
Dyspareunia	18	1	(6)	21	3	(14)	0.61
Concomitant prolapse surgery	42	7	(17)	40	6	(15)	0.77
	n	mean	SD	N	mean	SD	P
Operating time (mins)	42	44	17	40	30	16	<0.001
Blood loss (mls)	42	105	79	40	96.9	92	0.2
Days in hospital	42	3.4	1.2	40	2.4	1.2	<0.001*
Catheter days	41	2.7	2.6	40	1.4	2.1	<0.001*
Return normal activity (day)	29	25.0	9.7	33	17.9	9.7	0.002*
Review length (months)	42	19.1	10.1	39	18.0	8.4	0.79*
Cost Aus \$	42	3,388	718	40	3,633	684	0.11
Patient Satisfaction (0-10)	42	9.0	1.1	40	8.6	1.9	0.45
Postop. increase MUCP	37	7.9	25	38	4.6	19.6	0.69*
Change in SUDI	41	40	31	40	43	25	0.97*
Change in SIQ	41	48	39	40	62	32	0.85*
Change SF-36	25	4.0	11.9	31	4.3	9.8	0.37*

P-values calculated using Fishers exact test unless specified otherwise.

* Wilcoxon's two-sample test

1. NeuroUrol Urolyn 2003;22(5): 487-8.

ICS 2004

Tape failures : What to do ?

2. Surgical treatment

- Second tape or tape plication ? No RCT
- Retropubic or Transobturator ? No RCT
(Redo tape: results inferior to primary tape)
- Burch: No RCT (1 abstract ICS 2004: TVT = lap Burch)
- Bulking agent ? No RCT

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RESEARCH RECOMMENDATIONS. (1) Professional consensus is needed to standardize definitions of treatment failure or recurrence. (2) Multi-center trials are required to recruit an adequate number of patients whose tape surgery has failed. This may provide sufficient power to study which variables influence outcome, and to assess the role of all interventions, including additional regimes of pelvic floor muscle exercises. (3) **Many clinicians assess urethral support and choose surgical treatment according to whether the urethra is well or poorly supported. The value of this approach needs to be evaluated by trials and further research to determine the optimal method of assessing urethral support is required.** (4) There is some evidence that women with ISD have a poorer outcome from surgery (primary or secondary). Research is required to determine whether this evidence is robust. (5) It is suggested that the retropubic approach produces a better outcome than the obturator approach for failed tapes. Randomized controlled trials are required to explore the optimal approach for surgery for the patient whose primary mid-urethral tape has failed. (6) Prediction of voiding dysfunction after tape placement is currently difficult, and its management needs to be studied in depth. Further research is required to determine whether the instance of voiding problems can be reduced by modification of the surgical procedure or using alternative approaches. (7) Studies reporting the outcome of surgery for stress incontinence need to have the outcome measures clearly defined, and consensus on the minimum evaluation dataset is needed. This should include both subjective and objective outcome measures, including quality-of-life scores. (8) Development trials are needed to ascertain the role of specific treatment options. For example, the concept may appear attractive being able to adjust a tape post operatively, either by its intrinsic design, or by plication. However, long-term consequences, such as periurethral fibrosis or erosion, need to be evaluated. Likewise, injectable bulking agents need further assessment. (9) Professional consensus is still needed on the role of urodynamics and the technical approach to studying these challenging cases.

*International Continence Society Research
Society meeting (Bristol, June 2010)*

Smith ARB et al. *Neurourol & Urodyn.* 2011, 30:771

Repeat surgery after failed tape

Sling failed: What now ?

• Urethra still mobile:

- **Tape redo** (TVT versus TO) (or **plication**)
- **Burch** or **pubovaginal sling** (BN mobile)

• Urethra fixed:

- **Bladder neck fixed:** **bulking agent** or **AUS**
- **Bladder neck mobile or open:** **Burch** or **pubovaginal sling**

