Dealing with tape failures

W13, 15 October 2012 14:00 - 15:30

Start	End	Topic	Speakers
14:00	14:05	Introduction: the burden of persistent SUI after sling surgery	• David Waltregny
14:05	14:45	Case presentations and discussion	• Fiona Burkhard • David Waltregny
14:45	15:15	Sling failure: Why ?	• Fiona Burkhard • Carl Gustav Nilsson • David Waltregny
15:15	15:30	Sling failure: What to do ?	• Fiona Burkhard • Carl Gustav Nilsson • David Waltregny

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 of the patients (± 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.

Educational Objectives

Nowadays, the vast majority of urologists and gynaecologists insert a sub-urethral sling as first line surgical treatment of female stress urinary incontinence. Most of these surgeries have a favourable outcome; nevertheless, a substantial number of patients will experience failure. Worldwide, there may be more than 15000 failed sling surgeries per year. We therefore feel it is of prime importance to include a workshop dedicated to the management of persistent SUI after female sling surgery, notwithstanding the fact that slings have become available in a number of so-called emerging countries where urogynaecology is still in its infancy.

Dealing with tape failures

Section: Surgery for stress incontinence

Level: Advanced

Target audience: urologists, urogynecologists, gynecologists, physiotherapists

Start	End	Topic	Speakers
14:00	14:05	Introduction: the burden of persistent SUI after sling surgery	• David Waltregny, Belgium
14:05	14:45	Case presentations and discussion	• Fiona Burkhard, Switzerland • David Waltregny, Belgium
14:45	15:15	Sling failure: Why ?	• Fiona Burkhard, Switzerland • Carl Gustav Nilsson, Finland • David Waltregny, Belgium
15:15	15:30	Sling failure: What to do ?	• Fiona Burkhard, Switzerland • Carl Gustav Nilsson, Finland • David Waltregny, Belgium

Workshop #13, ICS 2012, Beijing, October 15

The Problem

- Since the late 90's, > 1,500,000 sub-urethral tapes inserted
- ± 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%

→ **± 15,000 failed tapes each year !**

The Problem

- **Definition of tape failure ?**
  - Persistent SUI (failure failure < 12 mths vs recurrence > 12 mths postoperatively ?)
  - De novo (or persistent) storage and/or voiding LUTS
  - Persistent SUI and de novo (or persistent) storage and/or voiding LUTS
  - Other de novo symptoms, e.g. erosion, pain, infection..

    -> Proportion of SUI *versus* other: not well defined
- **Definition of SUI failure ?**
  - 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 oucome measures

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

Plan of the course

1. **Case presentations: 5 illustrative cases**
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 ?**

5 cases presented and discussed:

1. Persistent SUI after tape insertion -> tape in the urethra -> endoscopic resection -> persistent SUI -> second tape
2. Persistent SUI with tape too proximal and eroding in vaginal sulci -> tape excision -> second tape
3. 2 tapes, persistent SUI with fixed urethra and ISD -> bulking agent
4. 3 tapes, last eroded, persistent SUI with cervico-urethral mobility -> laparoscopic Burch colposuspension
5. 3 tapes, last obstructing, tape section -> persistent SUI with fixed urethra and ISD -> failed stem cells injection -> AUS

Neurourology Urodynamics

Managing Unsatisfactory Outcome After Mid-Urethral Tape Insertion

Anthony R.B. Smith,[1] Walter Artibani,[2] and Marcus J. Drake[3,*]
[1]Central Manchester University Hospitals, Manchester M13 9WL, UK
[2]University of Verona, Verona, Italy
[3]University 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.

Assessment of tape failure

Repeat all investigations !!!

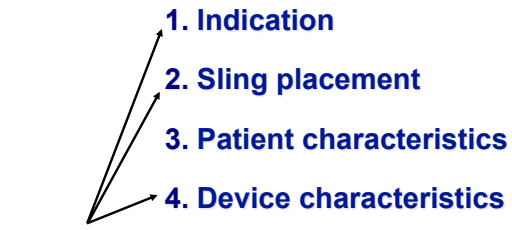
⇩

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

Assessment of tape failure

1. History:
   - SUI *versus* UUI
   - other symptoms: pain, ...
2. Bladder diary, ∑ and QoL questionnaires
3. Physical examination:
   - cough test, stress test & Bonney test
   - exclude fistula, POP, erosion...
4. Endoscopy: LUT injury ? Other pathology ?
5. Urodynamics: DO ? ISD (MUCP / VLPP) ? Flow ? PVR ?
6. Imaging:
   - cystography (videourodynamics): bladder neck...
   - vaginal/perineal US: tape location, tape conformation...

Tape failures : Why ?



Tape failures : Why ?

1. Indication

1. Urge / UUI

- OAB ∑ without SUI ≠ 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 surgery (separate incisions)
   - Usefulness of ultrasound to locate and evaluate tape
3. **Tape through the urethra or bladder neck**

1. Tape too loose ?

65

Barry C L[1], Dietz H P[2], Rane A[1], Wilson P D[3]
1. James Cook University, Australia, 2. Royal Prince Alfred Hospital, Sydney, Australia, 3. Dunedin Medical School, University of Otago, New Zealand

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

Int Urogynecol J (2012) 23:435–441
DOI 10.1007/s00192-011-1594-x

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 · Sunnita Sarma · Monique Cebola · Wendy Allen · Yueqing A. Wang · 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.

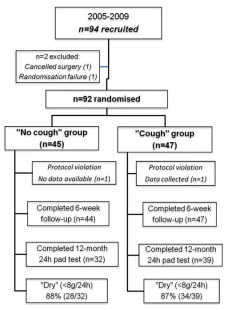


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Table 5 Efficacy measures at 12 months follow-up

	"Cough test" group		"No cough test" group		*p* value
	Baseline	12 months	Baseline	12 months	
24-h pad test (g)	27.1 (7.1–94)	3.6 (1.6–6)	56.4 (13.4–93)	2.7 (1.1–4.1)	
Pad test difference	31.4 (6.1–76.7)		33.2 (3.4–71.2)		0.96
"Dry", traditional <8 g/24 h	87% (34/39)		88% (28/32)		>0.99
"Dry", strict <2 g/24 h	36% (14/39)		47% (15/32)		0.47
ICIQ (0–21)	13 (11–17)	3 (0–6)	14 (11–16.5)	1 (0–4)	
ICIQ difference	9 (7–13)		13 (8–15)		0.06
UDI (0–100)	42.8 (29–67)	0 (0–9.5)	41.6 (31–63.5)	0 (0–11)	
UDI difference	33.3 (16.7–49.9)		38.8 (27.5–58.3)		0.12
IIQ (0–100)	44.4 (28–50)	2 (0–11)	52.3 (38–69)	0 (0–2)	
IIQ difference	33.3 (23.8–61.8)		52.3 (22.5–66.6)		0.20

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Table 4 Voiding parameters at 6 weeks and 12 months (data expressed as *n* (%) or median (IQR), as appropriate)

	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. **Persistent SUI and tape redo**
   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]*
[1]Department of Gynecology and Obstetrics, Lutheran Hospital Hagen-Huspe, Hagen, Germany
[2]Department of Gynecology and Obstetrics, Cantonal Hospital Frauenfeld, Frauenfeld, Switzerland
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Aim: To investigate tension-free vaginal tape (TVT) position and shape using ultrasound (US) and correlate the findings to outcome. Material and Methods: The results of TVT surgery were investigated in 72 women with urodynamic stress urinary incontinence. The main outcome parameters were US tape position in relation to the urethra and dynamic changes in TVT shape at rest and during straining. Results: Sixty-two patients (86%) were continent, 6 (8%) significantly improved, and the operation failed in four cases (6%). The median tape position was at 66% of the urethral length measured by US. The median tape-urethra-lumen distance was 3.8 mm at rest. Tape placement in the upper or lower quarter of the urethra was associated with a higher failure rate. Tapes positioned less than 3 mm from the urethra significantly increased postoperative complications (P < 0.0001). The tape was flat at rest and curved during straining in 44 (61%) patients; 98% (43/44) of these women were continent after surgery. An unchanged tape shape was associated with a poorer outcome (P • 0.00038). Patients with a flat tape at rest and during straining failed in 25% and patients with a permanent curved shape in 10%. Conclusions: TVT position relative to the patient's urethra seems to play a role in treatment outcome. Outcome was best in patients with dynamic change in tape shape during straining and location of the tape at the junction between the lower and middle urethra and at least 3 mm from the urethral lumen. Neurourol. Urodynam. 27:485–490, 2008.

Neurourology and Urodynamics 27:485–490 (2008)

2. Tape too proximal or too distal ?

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[2]Department of Gynecology and Obstetrics, Cantonal Hospital Frauenfeld, Frauenfeld, Switzerland
[3]Department of Gynecology, University Hospital Zürich, Zürich, Switzerland
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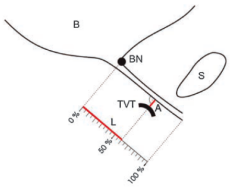


Fig. 1. Diagram of the tension-free vaginal tape (TVT) position relative to the percent urethral length and distance of the tape from the urethral lumen. B, bladder; BN, bladder neck; S, symphysis pubis; A, shortest distance of the tape from the urethral lumen; L, percent urethral length relative to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

Neurourology and Urodynamics 27:485–490 (2008)

2. Tape too proximal or too distal ?

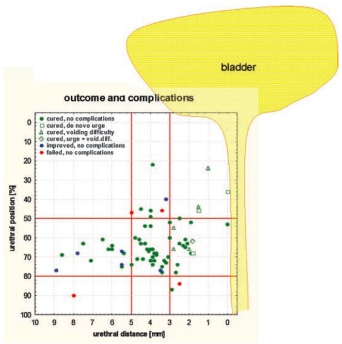
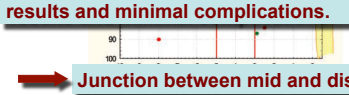


Fig. 4. The scattergram summarizes the association of the tape position at rest in relation to the urethra and different outcome measurements.

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 TVT tape ideally should be located at 50–80% of the urethral length for optimal results and minimal complications.



Junction between mid and distal third urethra

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.

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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 ± SD resting tape angle (degrees)	159 ± 22	175 ± 27	<0.01
Mean ± SD resting tape distance (mm)	17.9 ± 4.0	15.0 ± 3.3	<0.01
Mean ± SD straining tape angle (degrees)	173 ± 58	183 ± 53	0.39
Mean ± SD straining tape distance (mm)	16.8 ± 5.3	15.3 ± 4.7	0.31
Mean ± SD urethral tape location (percentile)	52 ± 15	62 ± 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 ± SD resting neck angle (degrees)	79 ± 25	90 ± 20	<0.01
Mean ± SD resting neck distance (mm)	21.6 ± 5.4	22.2 ± 4.3	0.55
Mean ± SD straining neck angle (degrees)	119 ± 36	123 ± 31	0.43
Mean ± SD straining neck distance (mm)	20.0 ± 14.6	19.8 ± 10.5	0.07
Mean ± SD rotational neck angle (degrees)†	38 ± 34	33 ± 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.

2. Tape too proximal or too distal ?

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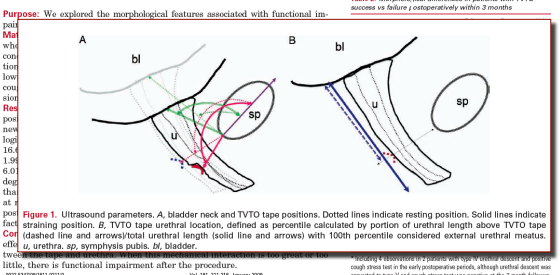

Figure 1. Ultrasound parameters. *A*, bladder neck and TVTO tape positions. Dotted lines indicate resting position. Solid lines indicate straining position. *B*, TVTO tape urethral location, defined as percentile calculated by portion of urethral length above TVTO tape (dashed line and arrows)/total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

2. Tape too proximal or too distal ?

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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 con…
Res… …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.

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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 ± SD resting tape angle	159 ± 22	175 ± 27	<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 ± SD resting neck angle (degrees)	79 ± 25	90 ± 20	<0.01
Mean ± SD resting neck distance (mm)	21.6 ± 5.4	22.2 ± 4.3	0.55
Mean ± SD straining neck angle (degrees)	119 ± 38	123 ± 31	0.43
Mean ± SD straining neck distance (mm)	20.0 ± 14.6	19.8 ± 10.5	0.07
Mean ± SD rotational neck angle (degrees)†	38 ± 34	33 ± 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.

Failure was associated with **absent urethral encroachment at rest** (OR 16.63, 95% CI 1.87–147.85, p=0.01) and **a urethral location of < 50th percentile** (OR 6.01, 95% CI 1.43–25.25, p=0.01).

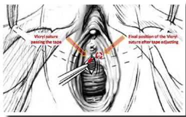
2. Tape too proximal or too distal ?

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.



IVS-04 (Covidien®)

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.

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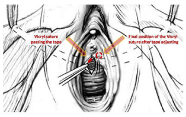

In more than 70% of patients with recurrent SUI after receiving a mid-urethral sling who were treated at our department the tape was located under the proximal part of the urethra.

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

From the Department of Urology, Medical University of South Carolina, Charleston

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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.

2. Tape too proximal or too distal ?

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

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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).

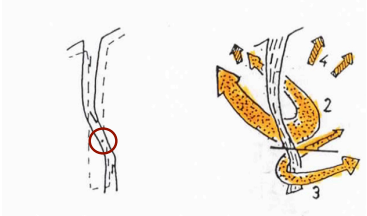
Table 1. Preoperative demographics

	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

UROLOGY 79: 76–79, 2012.

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

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 per year. Whether this number of procedures is appropriate, or whether the guidance is influencing practice, is not known.

Implications:

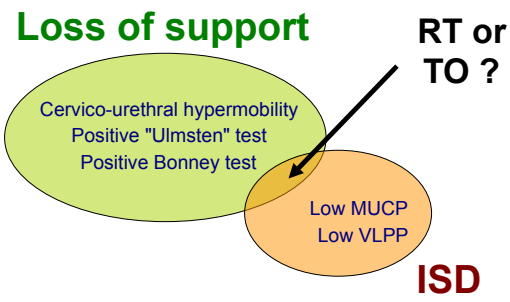
- Appropriate surgical training, follow the cookbook
- In case of persistent SUI with mobile urethra and stress test + :
  - No EBM recommendation can be made on which type of tape redo should be performed (retropubic or transobturator ?)
  - No EBM recommendation can be made on the effectiveness and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

Tape failures : Why ?

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, age**
7. **Strong repeated coughing immediately after surgery, resuming of heavy physical activities too early**

1. ISD



Int Urogynecol J
DOI 10.1007/s00192-012-1693-3

REVIEW ARTICLE

Do urodynamic parameters predict persistent postoperative stress incontinence after midurethral sling? A systematic review

Amie Kawasaki · Jennifer M. Wu · Cindy L. Amundsen · Alison C. Weidner · John P. Judd · Ethan M. Balk · Nazema Y. Siddiqui

Abstract

Introduction and hypothesis It is unclear whether preoperative urodynamic study (UDS) values are predictive of outcomes after midurethral sling.

Materials and methods We systematically reviewed multiple databases from January 1989 to October 2011 for English-language studies correlating UDS data with postoperative outcomes after midurethral slings. We performed random effects model meta-analyses, as indicated. Relative risk (RR) ratios for the outcome of stress urinary incontinence (SUI) cure were calculated using high maximum urethral closure pressure (MUCP) and Valsalva leak point pressure (VLPP) values as the reference group.

Results High preoperative MUCP was associated with cure after retropubic [RR 0.67; 95% confidence interval (CI) 0.47–0.97)] and transobturator slings (RR 0.65; 95% CI 0.49–0.90). High preoperative VLPP was also associated with cure after retropubic sling (RR 0.89; 95% CI 0.82–0.96), but this relationship did not achieve statistical significance for cure after transobturator sling (RR 0.86; 95% CI 0.74–1.00).

Conclusions Preoperative MUCP and VLPP values may add insight into postoperative outcomes after surgical treatment for SUI.

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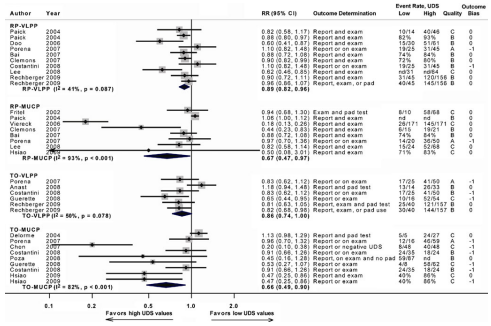

1. ISD

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.
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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.
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RT equal to TO

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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

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, ACTRN 12608000093381

(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 H_2O or less10 and/or a pressure rise from baseline required to cause incontinence (valsalva or cough leak point pressure) of 60 cm H_2O 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

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†	P‡
Urodynamic testing									
MFR (uroflowmetry, mL/sec)	57	22 [11–32]	13 [8–26]	.007	59	21 [14–34]	16 [9–25]	.001	.74
Postvoid residual volume (mL)	69	5 [2–20]	19 [5–50]	< .001	71	10 [5–20]	10 [5–50]	.32	.003
Volume at first desire to void (mL)	54	245 [144–340]	270 [178–376]	.38	59	216 [150–304]	285 [196–336]	.04	.51
Volume at first sensation of urgency (mL)	44	358 [263–411]	360 [231–426]	.60	46	328 [200–400]	382 [306–436]	.05	.06
MFR (pressure flow study) (mL/sec)	65	26 [15–35]	18 [16–24]	.007	70	23 [16–34]	22 [15–27]	.003	.23
MUCP empty	64	27 [20–38]	31 [21–49]	.46	69	30 [18–40]	28 [21–38]	.94	.49
MUCP capacity	60	20 [11–32]	23 [16–38]	.38	65	23 [11–31]	21 [14–32]	.46	.26
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	.76
QOL questionnaires									
UDI6	66	10 [7–12]	3 [1–5]	< .001	70	10 [8–12]	3 [1–5]	< .001	.43
IIQ7	63	8 [4–12]	0 [0–1]	< .001	68	10 [5–15]	0 [0–3]	< .001	.46

MFR, maximum flow rate; MUCP, maximum urethral closure pressure; USI, urodynamic stress incontinence; QOL, quality of life; UDI6, short form Urogenital Distress Inventory; IIQ7, short form Incontinence Impact Questionnaire.
Data are median [25th–75th percentile] or n.
* Number for postoperative and difference scores.
† Within-group analysis: McNemar's test for n and Wilcoxon signed rank test for continuous data.
‡ Between-group analysis: Fisher exact test for n and Wilcoxon rank sum test.

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 H_2O, maximum urethral closure pressure less than 45 cm H_2O) 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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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.

On unadjusted analysis we found that for every 10 cm H_2O increase in VLPP there was a 7% reduction in the objective failure rate, and for every 10 cm H_2O increase in MUCP there was a 12% reduction in the objective failure rate.

1. ISD

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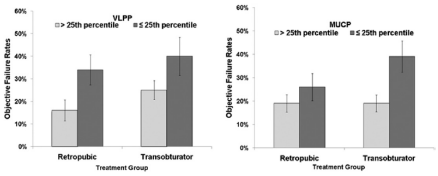

Failure rates between 20% and 40%

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 definiton have USI.

1. ISD

Minimally invasive synthetic suburethral sling operations for stress urinary incontinence in women (Review)

Ogah J, Cody JD, Rogerson L

[Intervention Review]

Minimally invasive synthetic suburethral sling operations for stress urinary incontinence in women

Joseph Ogah[1], June D Cody[2], Lynne Rogerson[3]

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Selection criteria

Randomised or quasi-randomised controlled trials amongst women with SUI, USI or symptoms of stress or mixed urinary incontinence, in which at least one trial arm involved a minimally invasive synthetic suburethral sling operations.

62 trials
7101 patients

Main results

Sixty two trials involving 7101 women were included. The quality of evidence was moderate for most trials. Minimally invasive synthetic suburethral sling operations appeared to be as effective as traditional suburethral slings (trials, n = 599, Risk Ratio (RR) 1.03, 95% Confidence Interval (CI) 0.94 to 1.13) but with shorter operating time and less post-operative voiding dysfunction and de novo urgency

The obturator route was less favourable than the retropubic route in objective cure (84% versus 88%; RR 0.96, 95% CI 0.93 to 0.99; 17 trials, n = 2434), although there was no difference in subjective cure rates.

However, there was less voiding dysfunction, blood loss, bladder perforation (0.3% versus 5.5%, RR 0.14, 95% CI 0.07 to 0.26) and shorter operating time with the obturator route.

Similar incidence of post-operative groin pain between out-in and in-out transobturator procedures: ± 9%.

Authors' conclusions

The current evidence base suggests that minimally invasive synthetic suburethral sling operations are as effective as traditional suburethral slings, open retropubic colposuspension and laparoscopic colposuspension in the short term but with less postoperative complications. Women were less likely to be continent after operations performed via the obturator (rather than retropubic) route, but they had fewer complications. Most of the trials had short term follow up and the quality of the evidence was variable.

1. ISD

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

G. Trioonon[1,2], B. Fatton[2], T. Mura[3], J. Amblard[2], P. Mares[1], B. Jacquetin[2]

Résumé : *Objet :* L'objectif de cette étude était de comparer l'efficacité de la bandelette de soutènement 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 cmH_2O associée à une *Valsalva leak point pressure* (VLPP) inférieure à 60 cmH_2O, avec un recul moyen de 16,1 mois (± 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 = 0,23), et 89,9 % guéries de leur IUE à l'interrogatoire (n = 44/49) contre 93,9 % (n = 46/49) dans le groupe témoin (p = 0,70). 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 soutènement 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 with MUCP < 30 cm H_2O and VLPP < 60 cm H_2O

versus

49 pts with SUI and MUCP ≥ 30 cm H_2O and VLPP ≥ 60 cm H_2O

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. Trioponᵀ·², B. Fattonᵃ, T. Muraᵀ, J. Amblardᵃ, P. Maresᵀ, B. Jacquetinᵃ

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Importance of urethral hypermobility
> MUCP & VLPP

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

	IS (PCUM < 30 cmH₂O, VLPP < 60 cmH₂O)	*Pas d'IS (PCUM > 30 cmH₂O, VLPP > 60 cmH₂O)*	*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 soutènement 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 only in the context of clinical trials

Review – Female Urology – Incontinence

Single-Incision Mini-Slings Versus Standard Midurethral Slings in Surgical Management of Female Stress Urinary Incontinence: A Meta-Analysis of Effectiveness and Complications

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[b] Obstetrics & Gynaecology Department, Grampian NHS, Aberdeen, UK
[c] Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK

Context: Single-incision mini-slings (SIMS) have been introduced for the treatment of female stress urinary incontinence (SUI); however, concerns have been raised regarding their efficacy. No systematic reviews or meta-analyses have previously assessed these relatively new procedures.
Objective: To assess the current evidence of effectiveness and safety of SIMS compared with standard midurethral slings (SMUS) (retropubic and transobturator tension-free vaginal tapes) in the management of female SUI.
Evidence acquisition: We conducted a literature search from 1996 to January 2011. Meta-analysis of all randomised controlled trials (RCTs) comparing SIMS versus SMUS was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. Data were analyzed using Rev Man 5. Primary outcomes were patient-reported and objective cure rates. Secondary outcomes included perioperative complications, quality of life (QoL) changes, and costs to health services.
Evidence synthesis: A total of 768 women in nine RCTs with a mean follow-up of 9.5 mo were included. The mean age (52.3 vs 52.1 yr), body mass index (27.4 vs 27.7), and parity (2.4 and 2.4) were comparable for both groups. SIMS were associated with significantly lower patient-reported and objective cure rates at 6–12 mo compared with SMUS (risk ratio [RR]: 0.63; 95% confidence interval [CI], 0.70–0.96; and RR: 0.65; 95% CI, 0.74–0.97, respectively). SIMS were associated with significantly shorter operative time (weighted mean difference [WMD]: 8.67 min; 95% CI, 17.32 to −0.02), lower day 1 pain scores (WMD: 1.74; 95% CI, −2.58 to −0.90), and less postoperative groin pain (RR: 0.18; 95% CI, 0.04–0.72). Repeat continence surgery (RR: 6.72; 95% CI, 2.39–18.89) and de novo urgency incontinence (RR: 2.08; 95% CI, 1.01–4.28) were significantly higher in the SIMS group. There was no significant difference in the QoL scores between the groups (WMD: 33.46; 95% CI, −20.62 to 87.51). No studies compared cost to health services.
Conclusions: SIMS are associated with inferior patient-reported and objective cure rates on the short-term follow-up, as well as higher reoperation rates for SUI when compared with SMUS.

SIS are associated with

- lower groin pain scores at day 1 (/2)
- higher rate of repeat surgery (x7)
- higher rate of *de novo* UUI (x2)
- higher rate of vaginal erosion (x4)
- inferior patient-reported & objective cure rates

Table 1a – Summary of characteristics of included randomised studies*

Study	Design	Participants	Intervention (SIMS)	Comparison (SMUS)	Outcomes
Abdelwahab et al. [36]	Randomised single-centre study; Egypt	60 women with USI (lost to follow-up: 1)	SIMS (n = 30) TVT-Secur	RT-TVT (n = 30)	Patient-reported cure at 6 mo, operation time, length of stay, safety, and other postoperative complications
Basu and Duckett [37]	Randomised single-centre study; UK; equivalency design	70 women with USI and failed conservative management (lost to follow-up: 0)	SIMS (n = 37) MiniArc	RT-TVT (n = 33)	Patient-reported cure at 6 mo, objective cure at 6 mo, safety and other postoperative complications
Djehdian et al. [38]	Randomised single-centre study; Brazil	60 women with SUI and without prolapsed of more than POP-Q stage 1 (lost to follow-up: 6)	SIMS (n = 29) Ophira	TO-TVT (n = 15)	Objective cure at 6 mo, subjective cure, operation time, postoperative stay, day 1 VAS pain score, and perioperative complications
Enzelsberger et al. [19]	Quasi-randomised single-centre study; Austria	90 women with USI 3–4 wk before surgery and positive stress test (lost to follow-up: 0)	SIMS (n = 45) MiniArc	TO-TVT (n = 45)	Objective cure at 6 and 24 mo, operation time, and safety.
Friedman [39]	Randomised single-centre study; Israel	84 women with USI and positive stress test (lost to follow-up: 0)	SIMS (n = 42) TVT-Secur	TO-TVT (n = 42)	Patient-reported cure at 12 mo, postoperative pain, length of hospital stay, and safety
Hinoul et al. [40]	Randomised multicentre study; Netherlands and Belgium; noninferiority design	194 women with USI and positive stress test (lost to follow-up: 33)	SIMS (n = 96) TVT-Secur	TO-TVT (n = 98)	Objective cure at 12 mo, patient-reported cure, operation time, postoperative hospital stay, day 1 VAS pain score, QoL, and safety
Hota et al. [43]	Randomised single-centre study; USA; noninferiority design	86 women with USI and positive stress test (lost to follow-up: 44)	SIMS (n = 42) TVT-Secur	TO-TVT (n = 44)	Objective failure at 12 mo, QoL questionnaires, postoperative pain, operation time, operative complications, and safety
Kim et al. [41]	Randomised single-centre study; Korea	40 women with USI (lost to follow-up: 0)	SIMS (n = 20) TVT-Secur	TO-TVT (n = 20)	Subjective cure at 6 mo, QoL questionnaires, postoperative urodynamics, and safety
Tommaselli et al. [42]	Randomised single-centre study; Italy; equivalency design	84 women > 40 yr of age with SUI lasting at least 2 yr and USI (lost to follow-up: 9)	SIMS (n = 42) TVT Secur	TO-TVT (n = 42)	Objective cure at 12 mo, patient-reported cure, operation time, day 1 VAS pain score, and safety

SIMS = single-incision mini-slings; SMUS = standard midurethral slings; USI = urinary stress incontinence; f/u = follow-up; RT-TVT = retropubic tension-free vaginal tape; SUI = stress urinary incontinence; POP-Q = pelvic organ prolapse quantification; TO-TVT = transobturator tension-free vaginal tape; VAS = visual analogue scale; QoL = quality of life.
* An extended version of Table 1a is available online.

9 RCTs, TVT-Secur, MiniArc, Ophira

Prospective multi-centre study of adjustable single-incision mini-sling (Ajust®) in the management of stress urinary incontinence in women: 1-year follow-up study

BJUI INTERNATIONAL

Mohamed Abdel-Fattah, Wael Agur*, Mohamed Abdel-All†, Karen Guerrero‡, Mohamed Allam§, Alison Mackintosh, Alyaa Mostafa and Mohamed Yousef‡

Study Type – Therapy (individual cohort)
Level of Evidence 2b

What's known on the subject? and What does the study add?
A number of SIMS have been introduced into clinical practice in 2006 and has been so far shown to be inferior to standard mid urethral-slings. Adjustable SIMS (Ajust) have been recently introduced into clinical practice however with little evidence on its safety and efficacy in surgical treatment of female SUI.

SIMS- Ajust® is associated with low rates of postoperative pain and peri-operative morbidity and is both feasible and acceptable under local anaesthesia. The patient reported success rate at 1-year is 80%.

OBJECTIVES

- To determine whether an adjustable single-incision mini-sling (SIMS, Ajust®) is safe and effective in the management of female stress urinary incontinence (SUI) at 12 months follow-up.
- To determine whether it is feasible to be performed under local anesthesia (LA).

MATERIALS AND METHODS

- The present study is a multicentre prospective cohort study in which 90 female patients underwent SIMS-Ajust® using a standardized insertion technique.
- The last 45 women were offered the procedure under LA.
- All patients completed their 12-month follow-up.

RESULTS

- The patient-reported success rate, using Patient Global Impression of Improvement (PGI-I), was 80% at 12 months follow-up and a further 6% (n = 5) reported themselves to be 'improved'.
- In all, 32/45 (71%) patients agreed to undergo the procedure under LA while one patient required conversion to general anaesthetic.
- There was no organ damage or requirement for blood transfusion.
- Significantly lower rates of blood loss (P = 0.025) and postoperative voiding difficulties (P = 0.026) were seen in the LA group.
- The re-operation rate for SUI was 6% at 12 months.

CONCLUSIONS

- SIMS (Ajust) appears to be a safe procedure, which is feasible under LA.
- SIMS (Ajust) have an 80% patient-reported success rate at 12 months follow-up.

KEYWORDS

mini-slings, tension free vaginal tape, stress urinary incontinence

TABLE 3 Outcomes of SIMS Ajust® at 3 and 12 months follow-up

	Mean • SD, median (IQR) or n (%)			
	Preoperative	3 months	12 months	P
PGI-I				
Success		74 (82.2)	72 (80)	0.136
Improved		6 (6.7)	5 (6)	
Failed		10 (11.1)	13 (14)	
ICIQ-SF				
ICIQ-SF score	15.00 (12.0, 17.0)	0.0 (0.0, 3.0)	0.0 (0.0, 5.0)	•0.001
Change in ICIQ-SF score		11.8 • 5.2	11.0 • 5.7	
ICIQ- QoI score*	7.0 (6.0, 8.0)	0.0 (0.0, 0.0)	0.0 (0.0, 1.0)	
Cough stress test† (n • 85)				
Positive		3 (4)	14 (17)	0.078
Negative		78 (92)	70 (82)	
Missing		4 (4)	1 (1)	

*ICIQ-QoL score refers to the 10-point 'quality of life' Likert scale in ICIQ-SF. †At 12 months, five women had re-operations for SUI and were considered failures for analysis of PGI-I and were excluded from the cough stress test analysis.

High positive cough test rate at 12 months, increasing with time

Presentation Abstract

Session: POD1-Podium 1

Thursday, Jun 30, 2011, 8:00 AM - 9:45 AM

Presentation: 005 - **A MULTICENTRE RANDOMISED TRIAL COMPARING SINGLE-INCISION MINI-SLING (AJUST©) AND TENSION-FREE VAGINAL TAPE-OBTURATOR (TVT-O) IN MANAGEMENT OF FEMALE STRESS URINARY INCONTINENCE**

Pres. Time: Thursday, Jun 30, 2011, 9:11 AM - 9:25 AM

Category: Surgical Complications

Keywords: single-incision sling; tension free vaginal mesh; USI

Author(s): **A. MOSTAFA**[1], W. AGUR [2], M. ABDEL-ALL [3], M. YOUSEF [4], M. ALLAM [5], K. GUERRERO [6], C. LIM [7], M. ABDEL-FATTAH [1];

Objectives: To compare Single-incision Mini-slings (SIMS- Ajust©) versus standard mid-urethral sling (TVT-OTM) in women with stress urinary incontinence (SUI) in regards:
- Postoperative pain profile (primary outcome), hospital stay, peri-operative complications and recovery time.
- Short-term patient-reported & objective cure rates.
- Impact on women's quality of life (QoL) & sexual function.
Background: Mid-urethral slings (MUS) are the most commonly performed procedures for SUI; the vast majority are performed under general anaesthesia (GA)1. SIMS were introduced in 2006 aiming to reduce post-operative pain, recovery time, peri-operative morbidity & consequently improve women's QoL while maintaining equivalent efficacy to standard MUS.
Methods: A multicentre prospective randomised trial in 6 UK centres. Ethical committee approval was obtained and the study was registered on www.clinicaltrials.gov. All eligible women admitted for MUS in the period between October 2009 and October 2010 were invited to participate. Women were included if they had urodynamics SUI or mixed incontinence with pre-dominant bothersome SUI, having failed or declined pelvic floor muscle training. Women were excluded if they had pelvic organ prolapse (> stage 2), previous continence surgery and/or concomitant surgery.
Randomisation was done through a number allocation software and using a telephone randomisation on the procedure day. Women underwent either SIMS- Ajust© (C. R. Bard, Inc., New Jersey, USA) under LA as an opt-out policy or TVT-OTM (Ethicon Inc., Somerville, USA) under GA. Procedures were done as originally described and cystoscopy was performed for all cases.
Postoperative pain profile was assessed on a 10point visual analogue scale at fixed-time points. All women received a structured telephone interview at 4 days & 4 weeks postoperatively to assess pain score and time to return to work/ normal activities. Women completed validated symptom severity questionnaires (International Consultation on Incontinence Questionnaire ICIQ-SF, Urgency Perception Scale (UPS) and quality of life questionnaires (Kings Health Questionnaire (KHQ), PISQ-12) pre -operatively and at 3 month follow -up. In addition they completed Patient Global Impression of Improvement (PGI-I) and underwent cough stress test and vaginal examination at 3month.
Power analysis was done & Data was analysed using SPSS 18.0 (Chicago, Illinois). Descriptive analyses are given and between group comparisons were performed using Chi-Square, Fischer Exact test & Mann- Whitney test as appropriate. Significance level was set at 5%.
Results: 137 women were randomised; SIMS (n=69) vs. TVT-OTM (n=68) during the study period; 136 women (99%) completed their 3month follow -up; women in the SIMs group had significantly lower postoperative pain scores at all time- points assessed and up-to 4 weeks after surgery; shorter hospital stay and earlier return to normal activities' work. There were no significant differences in patient -reported and objective success rates between both operations at 3month follow -up (Table 1).
124 Women (90.5%) completed a valid KHQ pre & postoperatively; 110 (88.7%) women had ≥ 10 points improvement in total KHQ score with no significant differences between both groups (SIMS n:- 54 (85.7%) vs. TVT -OTM n:- 56 (93.3%), p:- 0.179 OR2.33, 95%CI 0.678, 8.028). All KHQ domains showed statistically & clinically significant (≥ 10 points) postoperative improvement with no significant differences between groups (Table 2).
Only 53% (n:- 72) women have resumed sexual activity at 3month follow-up; 53/72 women (73.6%) showed an improvement in their PISQ-12 scores (SIMS n:- 27 (71.1%) vs. TVT -OTM n:- 26 (76.5%), p :- 0.603, OR 1.324, 95%CI (0.460, 3.814) (Table 2).
Conclusion: Adjustable SIMS Ajust© had significantly better postoperative pain profile, earlier return to work and normal activities when compared to TVT-OTM with no evidence of significant differences in women's QoL on short term follow -up. At 3 month only half of the sexually active cohort has resumed their sexual life. Long-term follow up of this RCT is underway to ascertain if this new procedure lives up for its potential.

- 6 UK centers
- 137 women 69 Ajust & 68 TVT-O
- 3 month FU

	TVT-O™	SIMS-Ajust©	P-value
Patient Reported & Objective Outcomes:			
Patient-Reported Success (PGI-I) ♣	63 (92.6%)	58 (85.3%)	0.273
Mean Change in ICIQ-SF (Pre-Post); Mean ±SD	12.32 ± 4.50	11.21 ± 5.61	0.205
Objective Cure (Negative cough stress test)	66 (97.1%)	61 (89.7%)	0.165
Patient Satisfaction on Visual Analogue Scale; median (IQR)	9 (8,10)	10 (8,10)	0.243
Recommend To Friend; n (%)	61(91.0%)	63 (92.6%)	0.980
Changes in Urgency on UPS [[Unsupported Character - ♠]]			
Cure of Urgency	20 (29.4%)	19 (27.5%)	0.957
Improvement of Urgency	16 (23.5%)	14 (20.3%)	0.801
No Changes	26 (38.2%)	20 (29.0%)	0.334
Worsening of Urgency	3 (4.4%)	5 (7.2%)	0.718
De-Novo Urgency	3 (4.4%)	10 (14.5%)	0.085

At 3 months follow-up... Explanations: adjustment from below, (too) short tape, lack of landmarks, reproducibility...

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 tightening (plication…), Burch, bulking agent, pubovaginal sling, AUS
- There are no RCTs reported which compared different surgical approaches for the treatment of the patient whose primary suburethral tape has failed. Only small number of cases studied in most reports on 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

Tape failures : What to do ?

2. Surgical treatment

- Second tape or tape tightening / plication ? No RCT

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

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

TABLE 3. *Anatomical and urodynamic evaluations after tape shortening procedure*

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

Vol. 175, 2196-2200, June 2006
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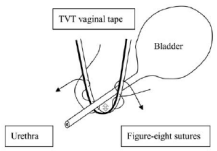
From the Division of Urogynecology, Department of Obstetrics and Gynecology, Chang Gang Memorial Hospital, Linkou Medical Center and Department of Obstetrics and Gynecology, Kaohsiung Municipal Hsiao-Kang Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan, Republic of China.

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.

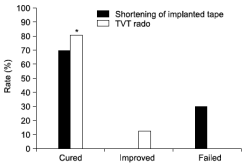


폐쇄공을 통한 요실금 수술 후 재발한 환자에서 이차적 시도로서 테이프 단축술과 Tension-free Vaginal Tape 재시술의 비교

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 Kim[1], Kyu Sung Lee[2], Myung Soo Choo[3], 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)**



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

Int Urogynecol J
DOI 10.1007/s00192-010-1200-7
Received: 20 January 2010 / Accepted: 31 May 2010

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.

IUJPFD. 21;1347-51, 2010

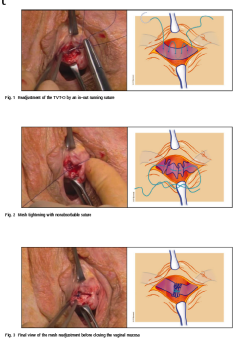


Fig. 1 Readjustment of the TVT-O by an in-out running suture

Fig. 2 Mesh tightening with nonabsorbable suture

Fig. 3 Final view of the mesh readjustment before closing the vaginal mucosa

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 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 26.7ml/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

Table 1. Characteristics of the patients.

Characteristics (n=10)	Mean (range)
Age (years)	66.9 (55-75)
Follow-up (months)	36.4 (33-44)
Mean periods of TOT tape shortening (months)	4.2 (1-12)
Operation time (min)	21 (16-37)
Complication	None

min: minutes, TOT: transobturator tape

Table 2. Comparison of maximum flow rate and postvoid residual before TOT tape shortening and after 1 year follow up

	Before tape shortening	1 year after tape shortening
Qmax (ml/sec)	21.2 (13-30)	22.3 (14-30)
Postvoid residual (ml)	26.0 (0-55)	36.0 (0-150)

TOT: transobturator tape, Qmax: maximum flow rate

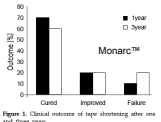

Figure 1. Clinical outcome of tape shortening after one and three years.

Monarc™

The 2 failed patients had ISD, not the others

Int Urogynecol J
DOI 10.1007/s00192-011-1617-7

CASE REPORT

Midurethral sling shortening for persistent stress urinary incontinence

Jeannine M. Miranne · Brittany Star Hampton · Vivian W. Sung

Abstract We describe techniques and objective and subjective outcomes for women who underwent midurethral sling (MUS) shortening for persistent stress urinary incontinence (SUI). This is a case series of women who underwent MUS shortening for SUI within 8 weeks of initial MUS placement. Objective and subjective findings including Urinary Distress Inventory (UDI)-6 and Urinary Impact Questionnaire (UIQ)-7 scores are reported, and shortening techniques are described. Between June 2007 and June 2010, three women underwent MUS shortening for persistent SUI within 8 weeks of initial MUS placement. Shortening was performed with either midline plication or mesh excision and reapproximation. Five months postoperative to shortening, one woman reported subjective improvement in SUI symptoms, and two had subjective and objective resolution of SUI. All showed improvement from baseline in UDI-6 and UIQ-7 scores. There were no erosions. MUS shortening may offer a safe and effective option for management of persistent SUI.

Different authors have reported shortening techniques using plication with various sutures [3]. Right angle clips have also been used for shortening [4]. Because there is little evidence on the optimal approach to MUS revision, surgeon preference was the main rationale for shortening technique in our case series. A single surgeon chose midline plication for Cases A and B. A second surgeon chose mesh excision and reapproximation for Case C. To our knowledge, this is the first report describing removal of a segment of mesh to shorten a MUS. This patient experienced resolution of SUI based on self-report, a negative CST, and validated subjective outcomes, suggesting that excision may be an effective option for shortening. In all three cases, MUS shortening was achieved with 2.0 and 3.0 Prolene. The choice of suture type was based on surgeon judgment, and it is unclear whether a smaller diameter suture would have achieved the same results. Absorbable suture was not used due to the theoretical concern that the sling may "loosen" after the suture dissolves.

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

ORIGINAL ARTICLE

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

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 cmH_2O 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.

Keywords Midurethral sling · Reoperation · Urinary incontinence, stress

Tape failures : What to do ?

2. Surgical treatment

- TVT or Transobturator ? No RCT
- Redo tape: results inferior to primary tape

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

Kobi Stav,* Peter L. Dwyer, Anna Rosamilia, Lore Schierlitz, Yik N. Lim, Fay Chao, Alison De Souza, Elizabeth Thomas, Christine Murray, Christine Conway and Joseph Lee

From the Department of Urogynaecology, Mercy Hospital for Women (KS, PLD, AR, LS, YNL, ADS, ET, CM, CC, JL) and Monash Medical Centre (AR, FC), Melbourne, Victoria, Australia, and Department of Urology, Assaf Harofeh Medical Centre, Zerifin, Israel (KS)

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 ± SD followup was 50 ± 24 months (range 12 to 114). A comparison between repeat (77, mean age 62 ± 12 years) and primary (1,035, mean age 60 ± 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.

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

	Retropubic	Transobturator	p Value
No.	48	29	
Mean ± SD age	62 ± 12	61 ± 13	0.98
Mean ± SD BMI	29.7 ± 5.5	28.4 ± 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 ± SD cm H_2O MUP*	29 ± 15	35 ± 15	0.12
Mean ± SD cm H_2O VLPP	57 ± 30	84 ± 19	0.006
No. with ISD (%)	18 [38]	6 [21]	0.12
No. experienced surgeon (%)	22 [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 ± SD mos followup	35 ± 28	42 ± 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.

Urethral mobility ?

Tape failures : What to do ?

2. Surgical treatment

- Burch ? No RCT

Int Urogynecol J
DOI 10.1007/s00192-012-1720-4

ORIGINAL ARTICLE

What do we do when a midurethral tape fails? Rediscovery of open colposuspension as a salvage continence operation

Ilias Giarenis · Heleni Mastoroudes · Linda Cardozo · Dudley Robinson

Abstract

Introduction and hypothesis Our aim was to evaluate the outcome of open colposuspension for women with urodynamic stress incontinence who had previously undergone a failed midurethral tape.

Methods A retrospective study of 13 women who had undergone open colposuspension after a failed midurethral tape was conducted.

Results At a median follow-up of 12 months, subjective and objective cure rate were 85% and 77%, respectively. Thirty percent of the women developed de novo detrusor overactivity that responded to antimuscarinic treatment. Long-term voiding difficulty was observed in only one patient, who performed clean intermittent self-catheterization for 3 months. Posterior vaginal wall prolapse requiring pelvic floor repair was found in three women (23%) postoperatively.

Conclusions Open colposuspension is an effective option for treating persistent or recurrent stress urinary incontinence after failed midurethral tape, with a high success rate.

Table 1 Patient characteristics

Variable	Statistic
Age (mean±SD, range)	55.30 ± 9.61 (41–70)
Parity (median, range)	2 (1–4)
BMI (mean±SD, range)	26.45 ± 4.50 (19–35)
Postmenopausal *n* (%)	11 (85%)
Previous midurethral tape *n* (%)	
Retropubic tape (TVT)	8 (61%)
Transobturator tape (TVT-O)	5 (39%)
Other previous continence operations, *n*	
Bulking agents	3
Open colposuspension	2

SD standard deviation, *TVT* tension-free vaginal tape (Gynecare, Ethicon), *TVT-O* tension-free vaginal tape-obturator (Gynecare, Ethicon)

Tape failures : What to do ?

2. Surgical treatment

• Bulking agent ? No RCT in PubMed

Tape failures : What to do ?

2. Surgical treatment

• Pubovaginal sling ? No RCT in PubMed

Tape failures : What to do ?

2. Surgical treatment

• AUS ? No RCT in PubMed

Repeat surgery after failed tape

Sling failed: What now ?

- **Urethra fixed:**
  - **Bladder neck fixed: AUS or bulking agent**
  - **Bladder neck mobile or opened: Burch or pubovaginal sling**
- **Urethra still mobile:**
  - **Tape redo (TVT versus TO) or plication**
  - **Burch or pubovaginal sling (BN mobile)**
  - **Bladder neck fixed: Bulking agent or AUS**

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

Notes

Record your notes from the workshop here