Mid urethral Tapes for Stress Urinary Incontinence

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MIPS | III Annual Meeting | Ljubljana December 10-12, 2015

Outline:Mid urethral Tapes for Stress Urinary Incontinence

- Historical Key notes
- Recommendations
- Types of synthetic slings and highlight on different techniques
- In Short: Complications of MUS
- What to use, when and what are the advantages and drawbacks: Meta-analysis and RCT results

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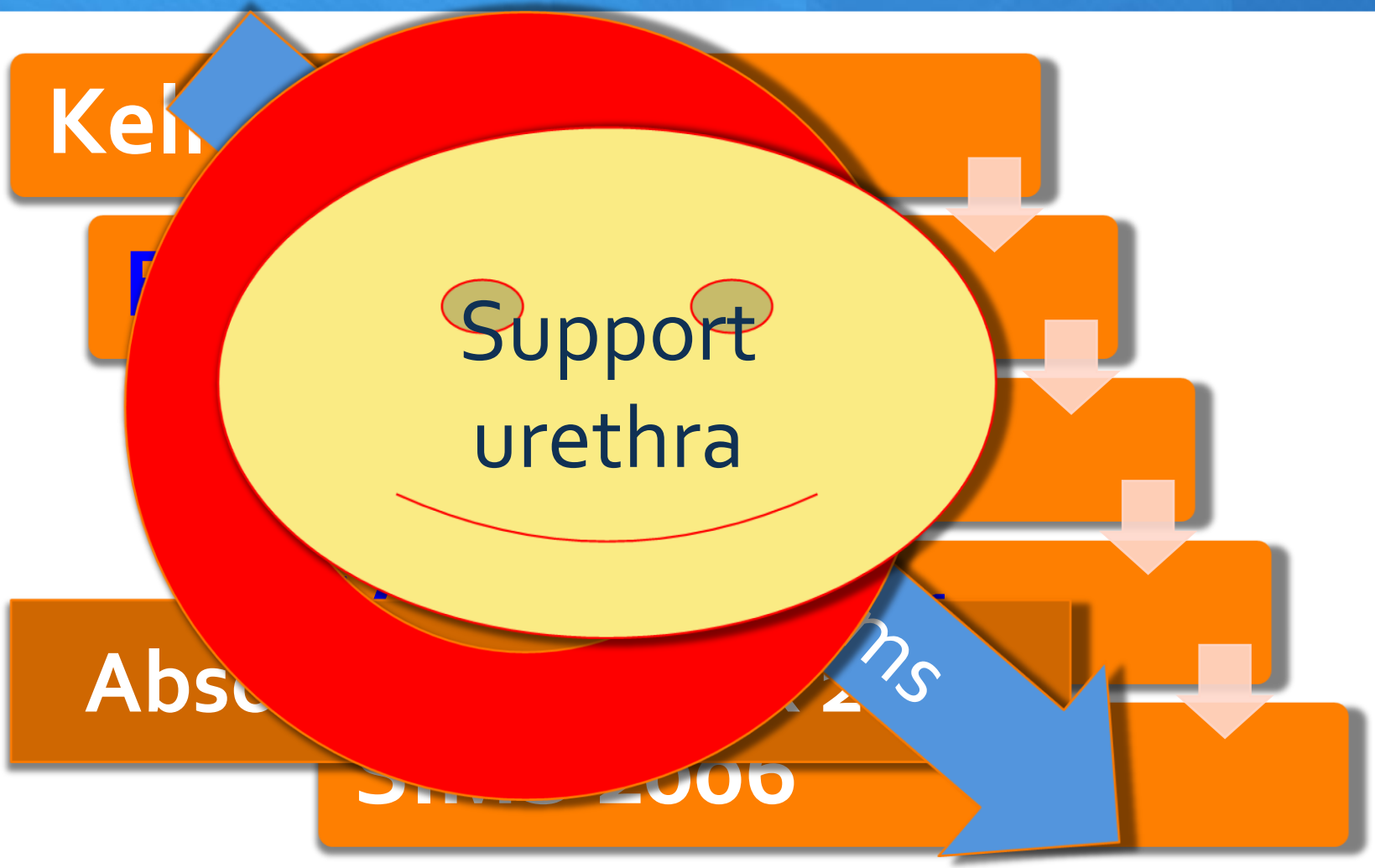
Evolution In The Treatment Of SUI: **the milestones**



Ulmsten

- Since 1996, when Ulmsten et al published the initial paper about retropubic tension- free vaginal tape (TVT), the use of synthetic midurethral slings (MUS) has grown to become the most common surgery performed for SUI in women.

Int Urogynecol J (1996) 7:81–86

International Urogynecology Journal

Original Article

An Ambulatory Surgical Procedure Under Local Anesthesia for Treatment of Female Urinary Incontinence

U. Ulmsten, L. Henriksson, P. Johnson and G. Varhos
Department of Obstetrics and Gynecology, Akademiska Sjukhuset, Uppsala University, Uppsala, Sweden

NOTE TECHNIQUE

Progrès en Urologie (1998), 8, 1080-1082

Un nouveau procédé de traitement de l'incontinence urinaire d'effort (IUE) : soutènement sous-urétral par une bandelette de Prolène® sous anesthésie locale

Richard VILLET (1), Caroline FITREMANN (1), Delphine SALET-LIZEE (1),
Dominique COLLARD (2), Marilyne ZAFIROPULO (1)

◆ UROLOGIE DE LA FEMME

Progrès en Urologie (2002), 12, 70-76

Traitement de l'incontinence urinaire d'effort pure par bandelette sous-urétrale sans tension (TVT). Résultats à moyen terme d'une étude prospective sur 124 cas

Richard VILLET, David ATALLAH., Odile COTELLE-BERNEDE, Pierre GADONNEIX,
Delphine SALEE-LIZEE, Michel VAN DEN AKKER

Service de Chirurgie Viscérale et Gynécologique, Hôpital des Diaconesses, Paris, France

ICS 2000, Tampere

28th - 31st August 2000

220

D ATTALAH (MD), R VILLET (MD), D SALET-LIZEE (MD), P GADONNEIX (MD), M VAN DEN AKKER (MD)

Hôpital des Diaconesses, 18 rue du Sergent Bauchat 75012 PARIS France

A THREE-YEAR POSTOPERATIVE EVALUATION OF TENSION-FREE VAGINAL TAPE (TVT) ON 138 PATIENTS

Aim of the study

This study was to evaluate and to discuss the results on TVT procedure for genuine stress incontinence (GSI) started in our department on october 1996

Patients and methods

From October 1996 to June 1999 , 138 patients were operated for GSI by the TVT procedure The mean age was 60 57

Year	Author	Types of Surgeries
2001	Delorme E	Trans-obturator Subfascial Hammock, MONARC (American Medical System)
2003	Deval B	Supra-pubic arc (SPARC) (American Medical System, Minnetonka, MN)
2003	Petros P	Intra-vaginal Slingplasty (IVS) Tunneller (Tyco Healthcare-United States Surgical, Norwalk, CT)
2003	deLeval J	Trans-obturator vaginal tape (TVT-O) (Gynecare, Ethicon Inc)
2005	Mostow EN	Extracellular matrix graft : absorbable Sling (SIS) (Cook Biotech Inc
2006	Martan A	TVT-Secur (Gynecare, Ethicon Inc)
2007	Calvo J	MiniArc (American Medical Systems, Minnetonka, MN, USA)
2008	Palma, P	Ophira (Promedon, Cordoba, Argentina)
2009	Meschia M	Ajust (C.R. Bard, Inc., Covington, GA, USA)
2012	Dias J	Altis (Coloplast, Denmark)

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Current Guidelines

- All recommendations are consistent with the fact that MUS are the gold standard in the treatment of uncomplicated SUI

AUA guidelines

- **STANDARD :**
  - The intervention choice for SUI should be based on the patient's preferences, as well as the surgeon's experience and judgment

- **RECOMMENDATION GRADE A :**
  - **the MUS** (retropubic, transobturator, or SIS) **should be offered as the preferred surgical treatment** when available, due to the shorter operative time and recovery time, and the lower short-term morbidity.

Actas Urol Esp. 2013;37(8):459–472

ELSEVIER DOYMA

Actas Urológicas Españolas

www.elsevier.es/actasuro

SPECIAL ARTICLE

EAU guidelines on surgical treatment of urinary incontinence☆,☆☆

M.G. Lucas[a,*], R.J.L. Bosch[b], F.C. Burkhard[c], F. Cruz[d], T.B. Madden[e], A.K. Nambiar[a], A. Neisius[f], D.J.M.K. de Ridder[g], A. Tubaro[h], W.H. Turner[i], R.S. Pickard[j]

Table 1 Recommendations for surgery for uncomplicated stress urinary incontinence in women.

Recommendation	GR
Offer midurethral sling to women with uncomplicated stress urinary incontinence as the initial surgical intervention whenever available.	A
Offer colposuspension (open or laparoscopic) or autologous fascial sling to women with stress urinary incontinence if midurethral sling cannot be considered.	A
Warn women who are being offered a retropubic insertion synthetic sling about the relatively higher risk of perioperative complications compared with transobturator insertion.	A
Warn women who are being offered transobturator insertion of midurethral sling about the higher risk of pain and dyspareunia in the longer term.	A
Warn women undergoing autologous fascial sling that there is a high risk of voiding difficulty and the need to perform clean intermittent self-catheterisation; ensure they are willing and able to do so.	A
Do a cystoscopy as part of retropubic insertion of a midurethral sling, or if difficulty is encountered during transobturator sling insertion, or if there is a significant cystocele.	C
Women being offered a single-incision sling device, for which an evidence base exists, should be warned that they may be less effective than standard midurethral slings and that efficacy beyond 1 yr remains uncertain.	C
Single-incision sling devices without level 1 evidence of effectiveness should only be implanted as part of a structured research programme.	A
Only offer adjustable midurethral sling as a primary surgical treatment for stress urinary incontinence within a structured research programme.	C
Do not offer periurethral bulking agents to women who are seeking a permanent cure for stress urinary incontinence.	A

GR = grade of recommendation.

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

AUGS
Advancing Female Pelvic Medicine and Reconstructive Surgery

PRACTICE BULLETIN

CLINICAL MANAGEMENT GUIDELINES FOR OBSTETRICIAN–GYNECOLOGISTS

NUMBER 155, NOVEMBER 2015

(Replaces Practice Bulletin Number 63, June 2005)

Urinary Incontinence in Women

+ **RECOMMENDATION LEVEL A :**

  + ***There are substantial safety and efficacy data that support the role of synthetic mesh midurethral slings as a primary surgical treatment option for stress urinary incontinence in women.***

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Types of synthetic slings

Types of synthetic slings

- To date, three major slings available

  - Tension-free vaginal tape (retropubic approach) – **TVT - SPARC**

  - Tension-free vaginal tape (transobturator approach) – **TOT / TVT-O**

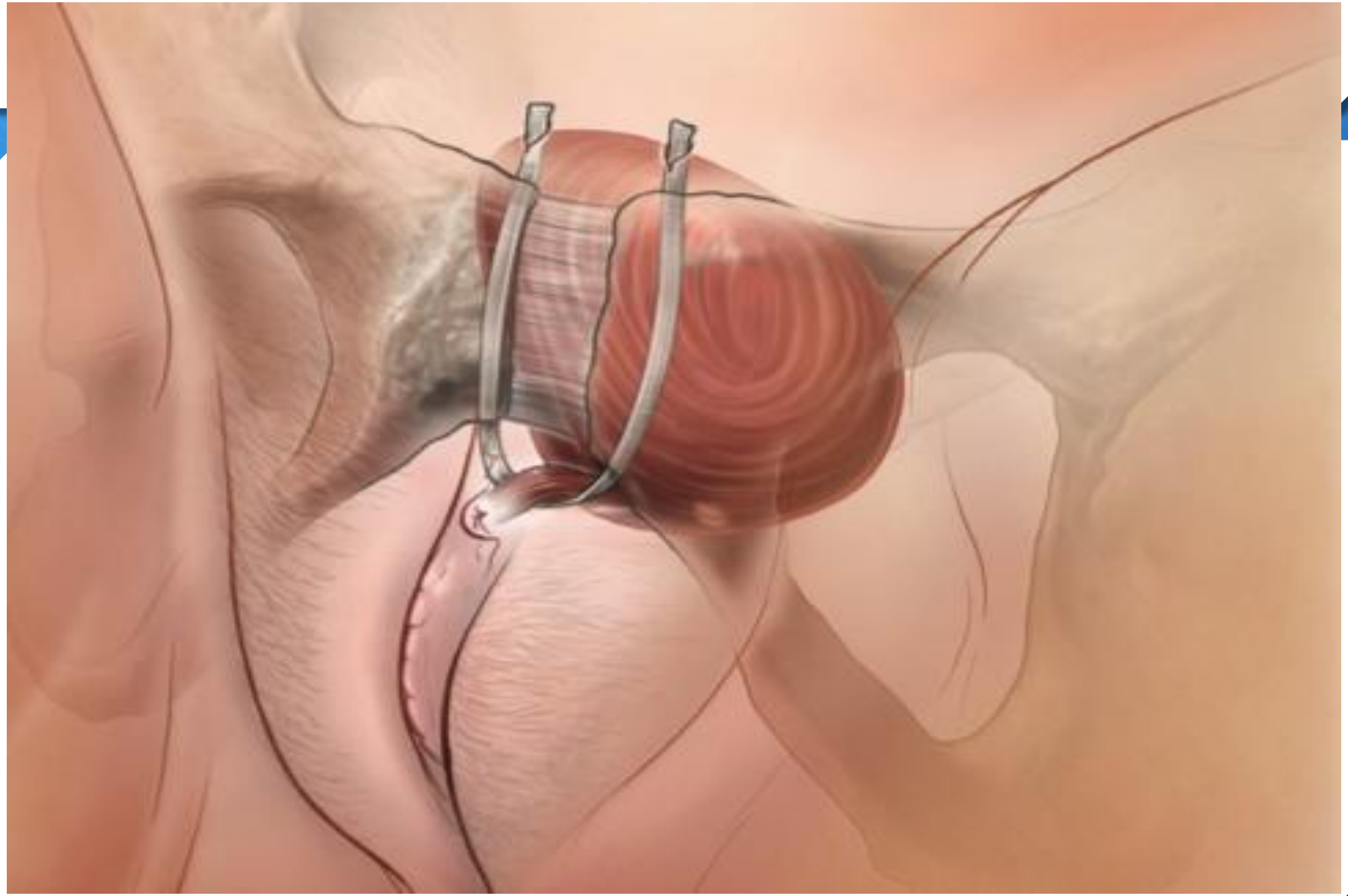
  - **Minisling**

+ There are different types of synthetic materials used.

- **type 1** are **macroporous**, **monofilament**;
- **type 2** are **microporous**;
- **type 3** are **macroporous**, **multifilament**;
- **type** 4 are **submicronic**, coated biomaterials with pore sizes of less than 1 µm.

Type 1 mesh has the highest biocompatibility with the least propensity for infection.

TVT/ SPARC



Two main retropubic suburethral sling

- TVT
- SPARC

TVT/ SPARC

- Minimally invasive midurethral sling that is passed through the retropubic space and that was designed **to replace functionally deficient** pubourethral ligaments.

Outcomes TVT

Table 1. Long-term outcomes of the TVT procedure

Author	N	Patient group	Duration of follow-up (years)	Treatment outcomes (subjective/objective) % cured
Rezapour et al.[13]	34	Recurrent SUI	4	82
Rezapour et al.[14]	80	Mixed UI	4	85
Rezapour et al.[15]	49	Intrinsic sphincter deficiency	4	74
Deffieux et al.[16]	51	SUI	6.9	80
Nilsson et al.[12]	80	SUI	7	81.3
Moran et al.[17]	40	genuine SUI	2	95

TVT v/s SPARC (outcomes)

- 2 RCTs have reported no differences in efficacy between SPARC and TVT at 2 years.
- The success rates for SPARC and TVT were:
  - 83 % (n=41) vs 95% (n=43), 0.05< p < 0.1 (12 months)

    Eur Urol 2005; 47:537-541.

  - 80.7% (n=31) vs 87.1% (n=31), p = 0.706 (2 years)

    Int Urogynecol J Pelvic Floor Dysfunct 2005; 16:230-235.

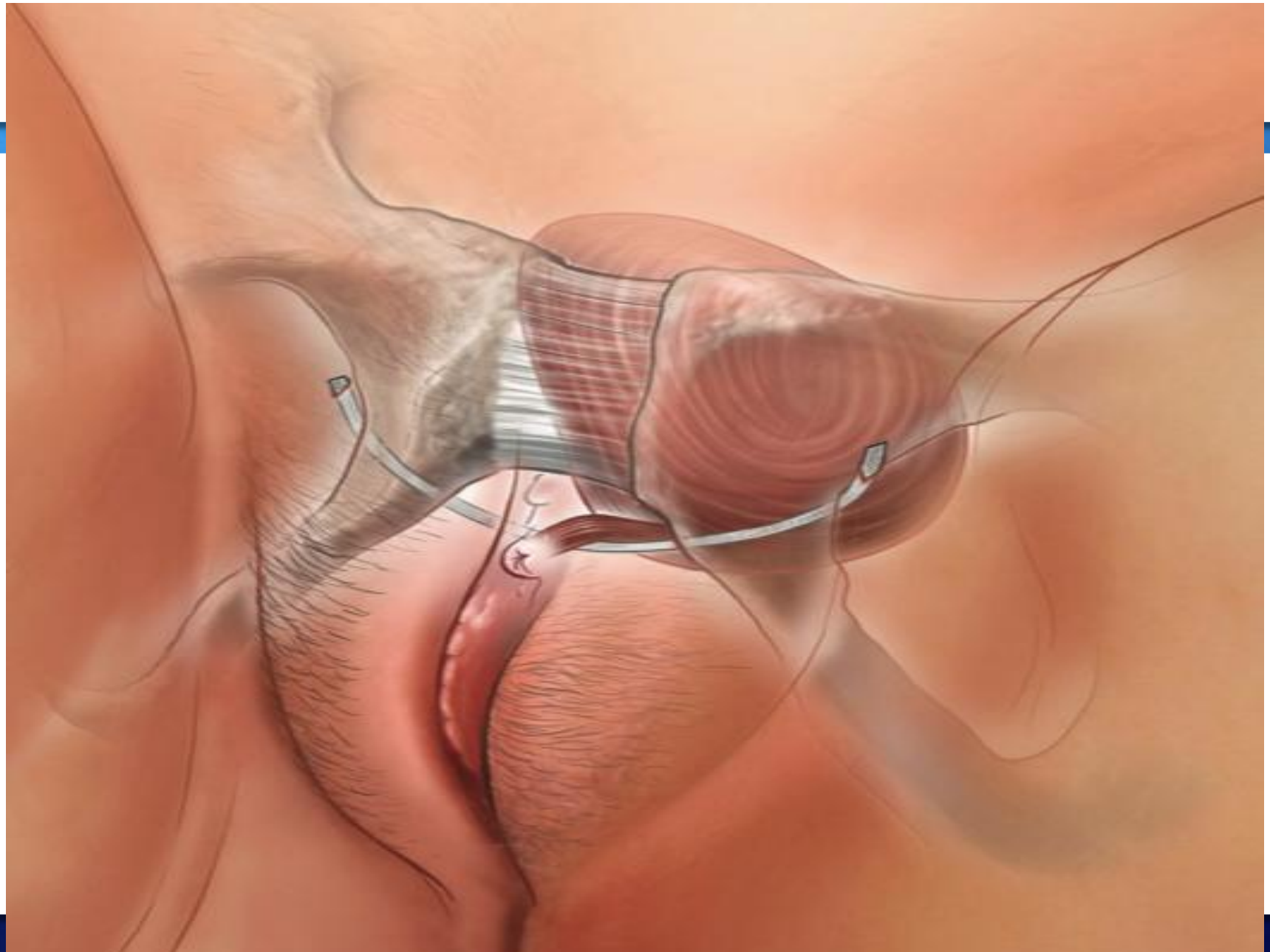
Complications TVT

Table 2. TVT complications

Author	N	Bladder perforations (%)	Postop voiding difficulty (%)	Postop urge (%)	Vascular injuries (%)	Urethral erosion (%)	Vaginal erosion (%)	Postop infection (%)	Nerve damage (%)
Huang et al.[20]	106	2	11	10	–	–	–	–	–
Azam et al.[21]	67	19	–	–	–	–	–	–	–
Neuman[22]	75	8	5		4 (intraop)	–	–	2.7	–
Karram et al.[23]	350	4.9	4.9	–	0.9 (major bleed)	0.9	10.9	0.9	1.7

Schulz JA, Chan MC, Farrell SA; Sub-Committee on Urogynaecology. **Midurethral Minimally Invasive Sling Procedures for Stress Urinary Incontinence.** J Obstet Gynaecol Can. 2008 Aug;30(8):728-40.

TOT



Introduction of TOT in 2001

- **Safer option introduced**

UROLOGIE DE LA FEMME

Progrès en Urologie (2001), 11, 1306-1313

La bandelette trans-obturatrice : un procédé mini-invasif pour traiter l'incontinence urinaire d'effort de la femme

Emmanuel DELORME

Urologie, Châlon sur Saône, France

Outcomes TOT

Table 3. TOT cure rates

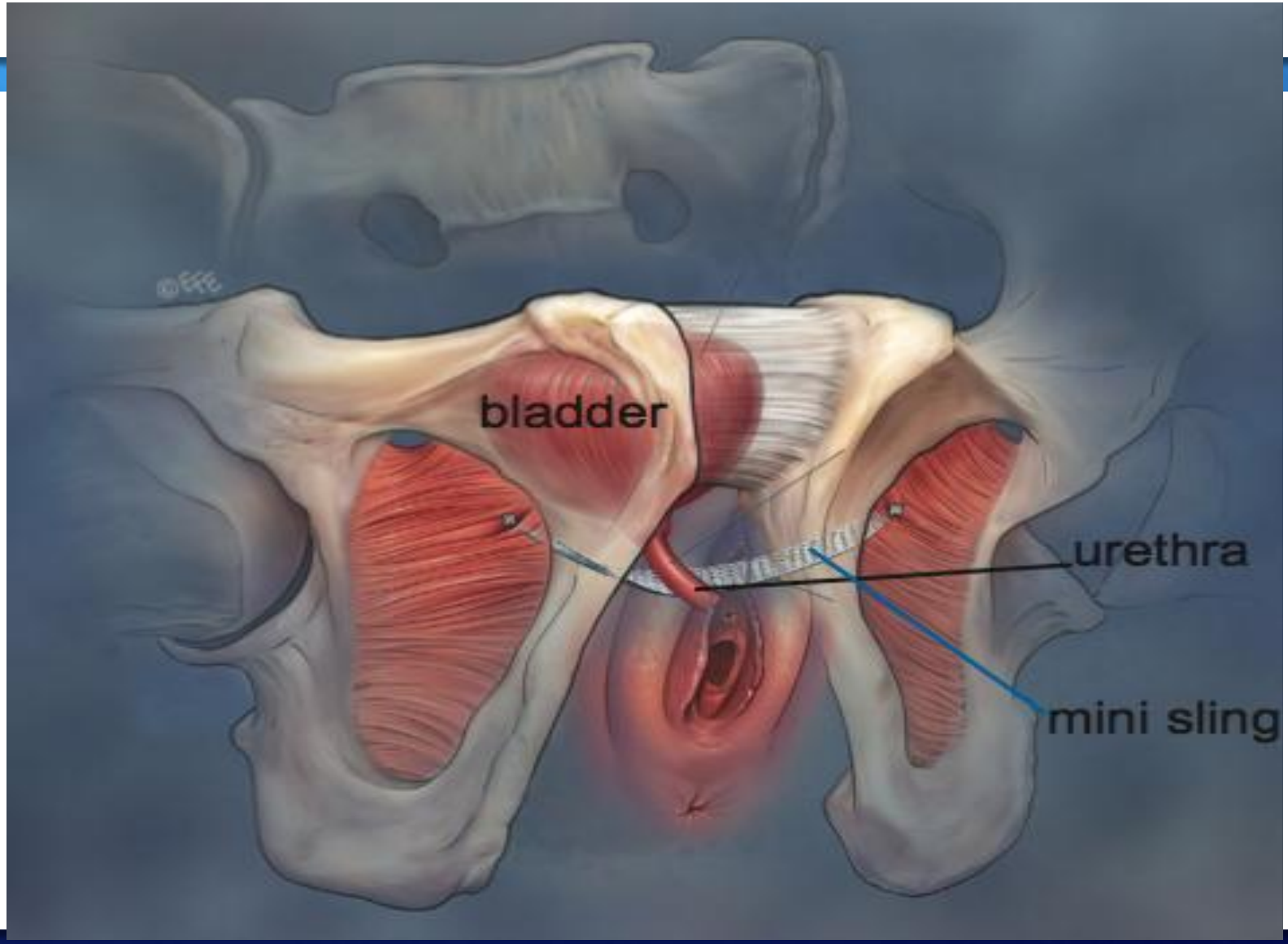
Author	N	Patient group	Duration of follow-up	Treatment outcomes (% cured)
Giberti et al.[33]	108	stress urinary incontinence due to urethral hypermobility	2 years	80
Cindolo et al.[34]	80	stress urinary incontinence with urethral hypermobility	4 months	92
Roumeguere et al.[35]	120	Urodynamic stress	1 year	80
Waltregny et al.[36]	91		3 year	88

Complications TOT

Table 4. TOT complications

Author	N	Postop urge (%)	Dyspareunia (%)	Vaginal erosions (%)	Sling rejection (%)	High thigh pain (%)	Retention (%)	Postop void dysfunction (%)
Giberti et al.[33]	108	14.8	7.3	6.4	3.8	–	–	–
Meschia[43]	231	–	–	–	–	5	–	–
Waltregny et al.[36]	91	–	–	–	–	–	4	–
Delorme[6]	32	6.25	–	–	–		3.13	15.63
Dobson et al.[42]	52	–	–	9.6	–	26	–	–

Single Incision Midurethral Slings (SIMS)



SIMS

- SIMS fundamentally differs from SMUS because they have a shorter trajectory of insertion and therefore need a robust anchoring mechanism to the obturator complex with a strong postinsertion pullout force.
- All currently available SIMS share the same tape material (type 1 polypropylene) and the insertion technique through a single vaginal incision; however, they differ in the type/robustness of the anchorage mechanism used

Rational for introducing SIMS

1- **Shorter length** polypropylene tape => **less foreign material** being inserted into human body => **reducing the adverse reactions** to foreign material

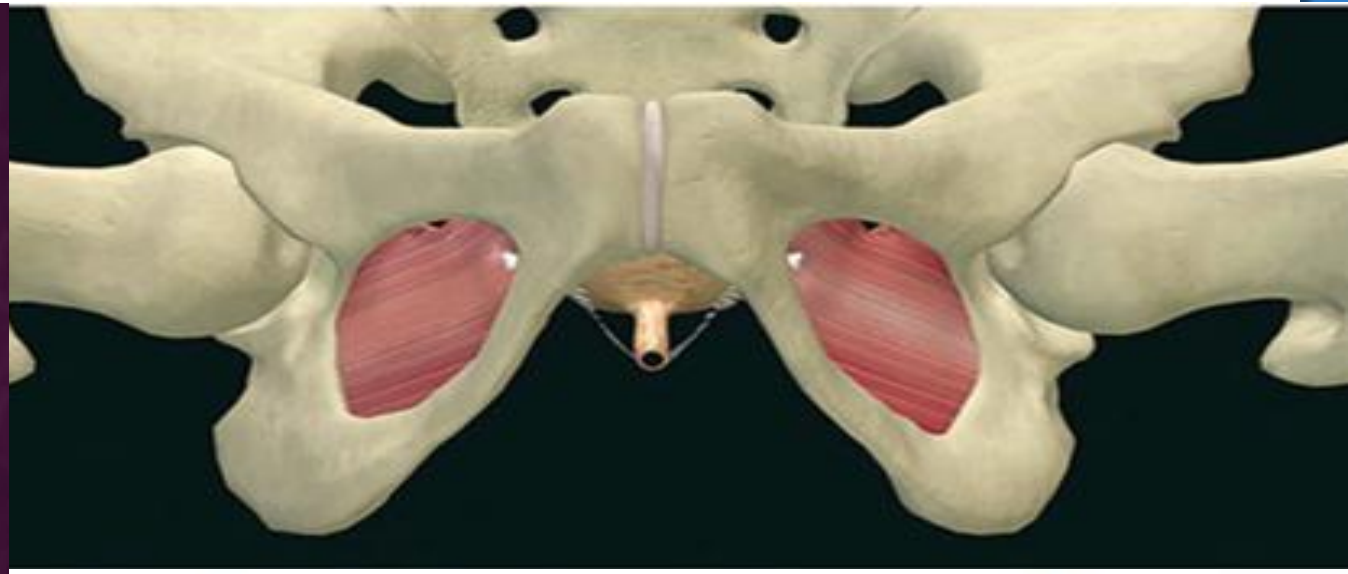
2- **Small trauma to the patient** => insertion through a **single vaginal incision** to create a similar suburethral hammock to standard midurethral slings (SMUS)

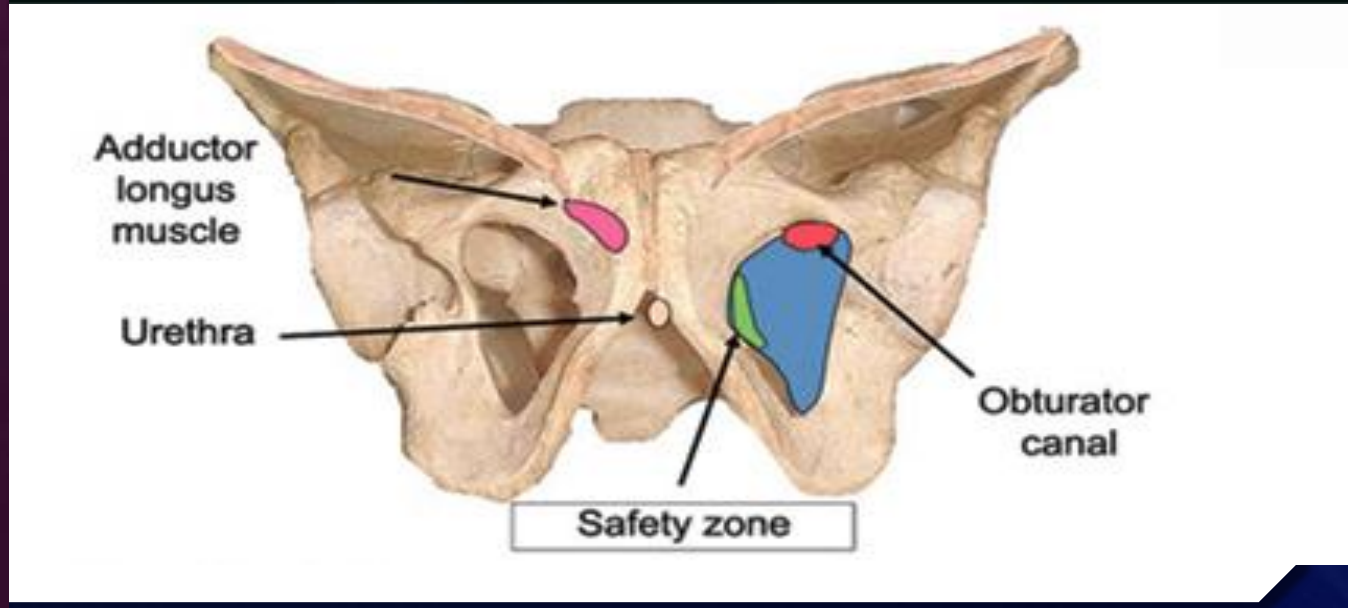
3-**Avoiding both retropubic and groin trajectories** => **prevents having bladder, obturator nerves, and blood vessels in the puncture** path ➔ safer than the traditional slings TVT and TOT

4- the ability to perform the **procedure under pure local anesthesia** and therefore a **shorter recovery and earlier return to work/ normal activities**

European urology 2014

MiniArc




Adductor longus muscle
Urethra
Obturator canal
Safety zone

Step 1. Locate and make a midurethral vaginal incision of approximately 1.5 cm.

Step 2. Dissect bilaterally up to the interior portion of the inferior pubic ramus (1 -1.5 cm).

Step 3. To visualize needle insertion orientation, locate insertion of adductor longus tendon on the patient's pubic ramus. Palpate the notch along the internal edge of ischiopubic ramus where the adductor longus tendon and the inferior pubic ramus meet. The needle insertion should be aimed at the location of this notch.

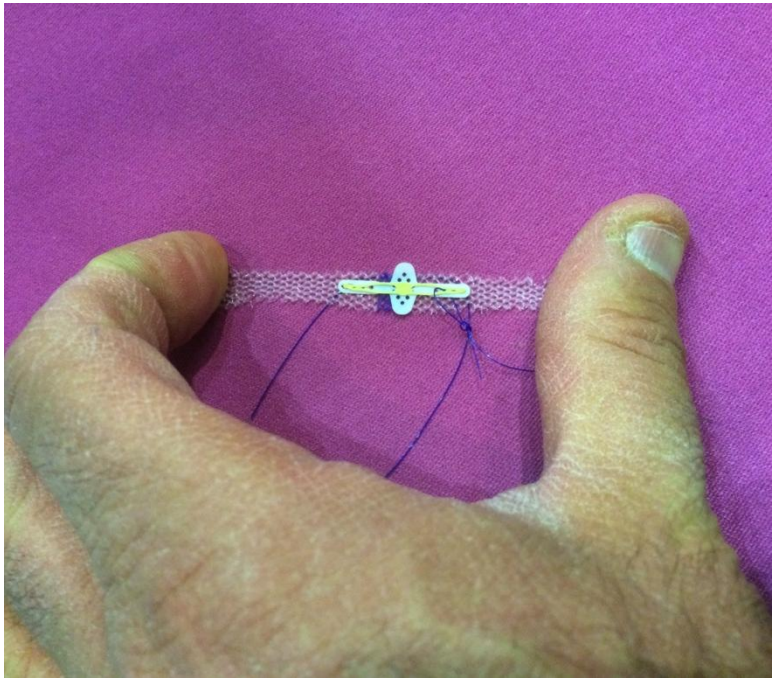
Step 4. Place one of the integrated self-fixating tips onto the needle by sliding it over the end of the needle. Ensure that the integrated self-fixating tip is oriented such that the mesh wraps along the outside of the needle bend.

Step 5. Insert the needle/sling assembly toward the location identified in Step 3 such that the flat of the handle is perpendicular to the desired path. Track the needle along the posterior surface of the ischiopubic ramus until the midline mark on the mesh is approximately at the midline position under the urethra.

Step 6. Remove the needle and repeat on the contralateral side until the appropriate sling tension under the urethra is achieved. Ensure that the mesh lays flat.

Step 7.
Remove needle and close vaginal incision.

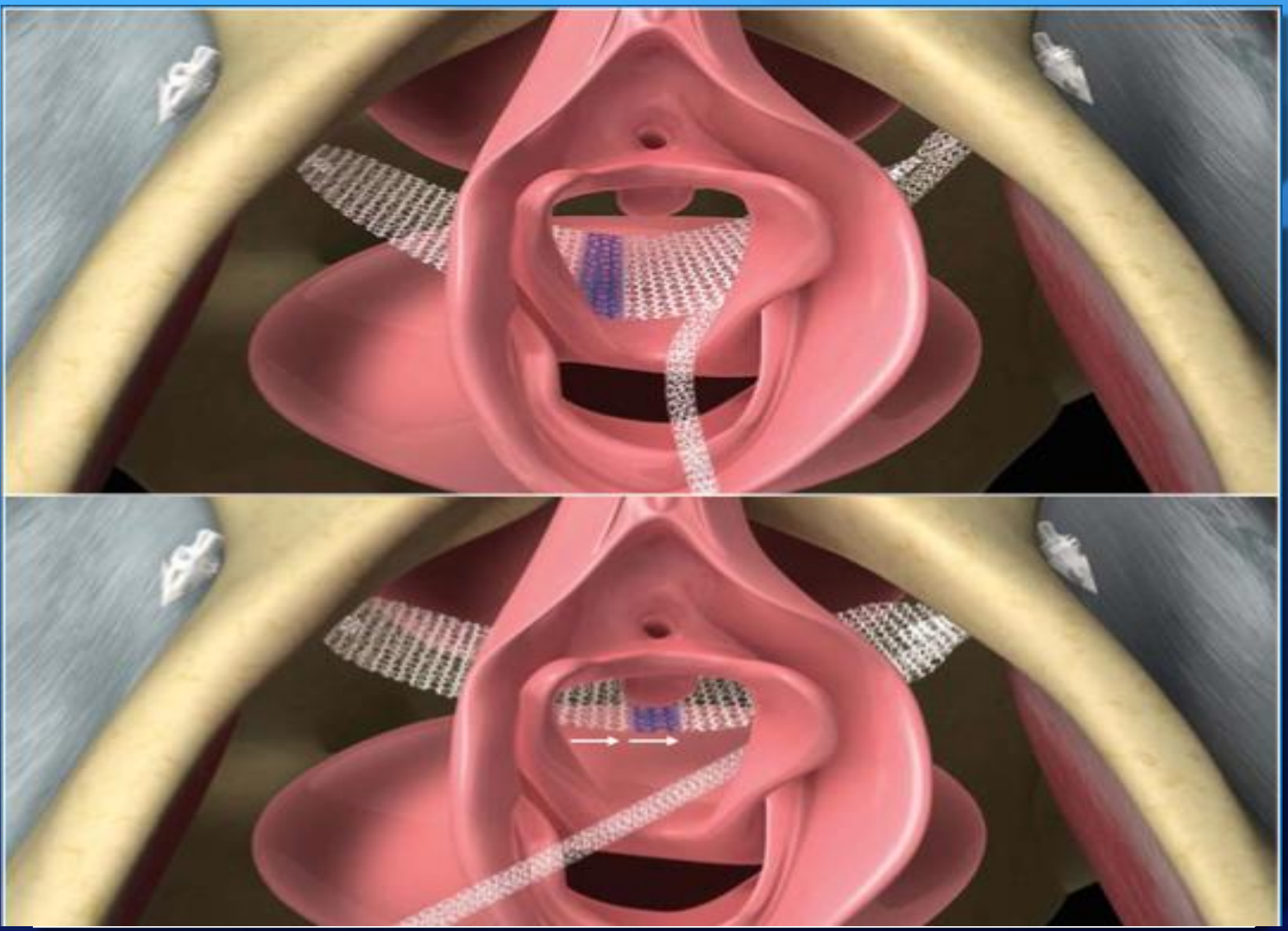
Evolution of Miniarc



Ajust

- The Ajust sling is one of the single-incision vaginal slings that appeared on the market in 2009
- Its puncture method is to use a specially designed anchor to fix the sling on the obturator membrane without letting both ends penetrate through the skin.
- After implantation, the tightness of the sling is adjusted through the device.

BMC Urology (2015) 15:64



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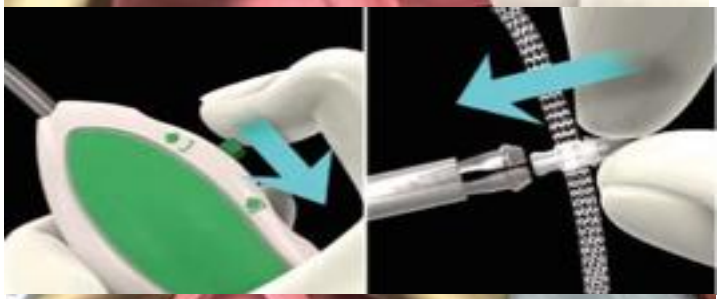

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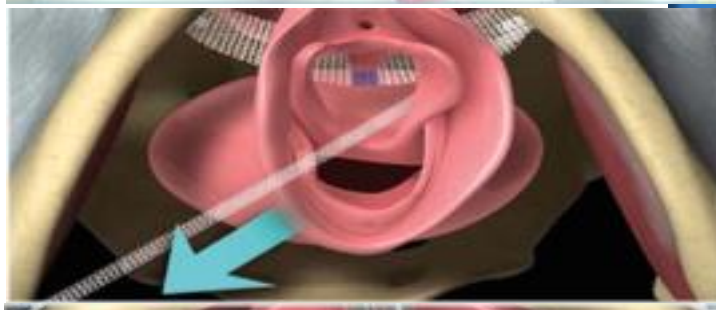

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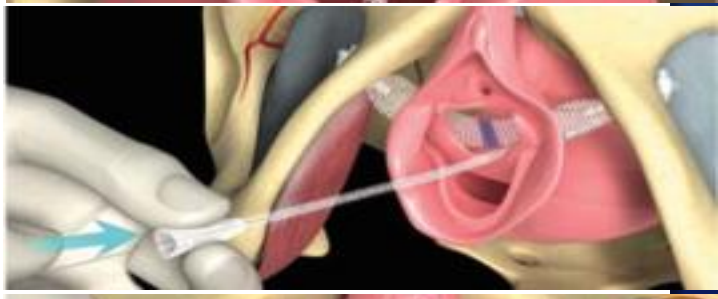

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Cost effectiveness

The adjustable anchored **SIMS (Ajust),** performed **under local anesthesia**, delivers cost savings to the health service provider when **compared with the SMUS (TVT-O)**

Average of 142 £ less cost

Comparison of an adjustable anchored single-incision mini-sling, Ajust®, with a standard mid-urethral sling, TVT-O™: a health economic evaluation

Dwayne Boyers*†, Mary Kilonzo*, Alyaa Mostafa‡ and Mohamed Abdel-Fattah‡

Health Economics Research Unit and †Health Services Research Unit, and ‡Division of Applied Health Sciences, University of Aberdeen, Aberdeen, UK

BJU Int 2013

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In Short: Complications of MUS

Complications post MUS

- INTRAOP Complications:
  - **Bladder perforation** : **38/1000**
  - Active bleeding (blood loss >200 ml) : 19/1000
  - Injury to major vessels : 19/1000
- POSTOP Complications
  - Retropubic hematoma : 19/1000
  - **Minor post-operative voiding difficulty : 76/1000**
  - **Post-operative urine retention : 23/1000**
  - **Postoperative urinary tract infection : 41/1000**
  - Defect in vaginal healing : 7/1000
  - Complications requiring laparotomy : 3.4/1000
  - **SLING erosion**

Incont Pelvic Floor Dysfunct 2008; 2(2):53-60

Urine retention and/or voiding dysfunction

- Usually caused by **undue tension**
- **Sx** = ***hesitancy, straining to void, incomplete emptying, and increased post-voidal residuals***
- **Bladder outlet obstruction and high pressure with low flow** in **urodynamic studies**
- Incidence rate = **1-17 % for voiding disturbances**, **0-3 % for urinary retention**
- **Management of retention** ➔
  - transvaginal transection or loosening
  - urethral dilatation using Hegar dilatation
  - lateral excision

Bladder perforation

- Incidence = **0 – 25 %**
- **Risk factors** = **previous pelvic surgery, repeated anti-incontinence surgery** esp. previous colposuspension
- More frequent with **retropubic approach** *(9.5 vs 0% , p = 0.03 ; David-Montefiore 2006)*
- **Unrecognized bladder injuries** also reported with **TOT**
- **Some authors** recommend **routine CYSTOSCOPY for TOT**, particularly in outside-in approach *(Minaglia 2004)*

Sling erosion

- " **Presence of foreign material within the genitourinary tract** "
- Sx= **persistant vaginal discharge, partner discomfort during intercourse, or asymptomatic**
- Incidence = **0.3 – 23 %**
- **Vaginal or bladder** exposure
- Complications from type I material is RARE (0.2- 1.2 %)
- **Type III (multifilament) = > 7.5 – 14 %** *(Baessler 2005)*
- Most studies => complete removal of eroded tape
- **Conservative mangement** is an **alternative** => cautious observation, re-epithelialization usually occurs within 6 weeks; **if no overgrowth in 3 months, excision of eroded sling should be considered**

Sling erosion

- The risk of erosion, extrusion and infection after midurethral **multifilament microporous IVS** tape implantation is too high which is the reason **why it should no longer be used**.

Annals of Agricultural and Environmental Medicine 2015, Vol 22, No 1

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What to use, **when** and what are the **advantages** and **drawbacks**: Meta-analysis and RCT results

MUS v/s Burch

Midurethral sling (MUS) vs. Burch

+ **NO DIFFERENCE** between the 2 surgeries with regard to **objective cure, subjective cure, quality-of-life, or sexual function outcomes**

TABLE 4

Society for Gynecologic Surgeons Systematic Review Group sling surgery for stress urinary incontinence in women, clinical practice guidelines

Midurethral sling vs Burch (open or laparoscopic)

For women considering midurethral slings or Burch procedures for treatment of SUI, we suggest either intervention for objective and subjective cure and that decision be based on: (1) which adverse events are of greatest concern to patient; and (2) any other planned concomitant surgeries (vaginal vs abdominal route). (1A)

Am J Obstet Gynecol. 2014 Jul;211(1):71.e1-71.e27.

Midurethral sling (MUS) vs. Burch

- MUS => lower rates of **PERIOPERATIVE** adverse effects :
  - ***postoperative pain***
  - ***operating room time***
  - ***hospital stay***
  - ***bowel injury***
  - ***wound infection***
  - ***hematomas***
- Burch procedures => lower rates of **LONGER-TERM** adverse effects :
  - ***return to the operating room for retention or erosion, overactive bladder (OAB) symptoms, and groin pain***

Am J Obstet Gynecol. 2014 Jul;211(1):71.e1-71.e27

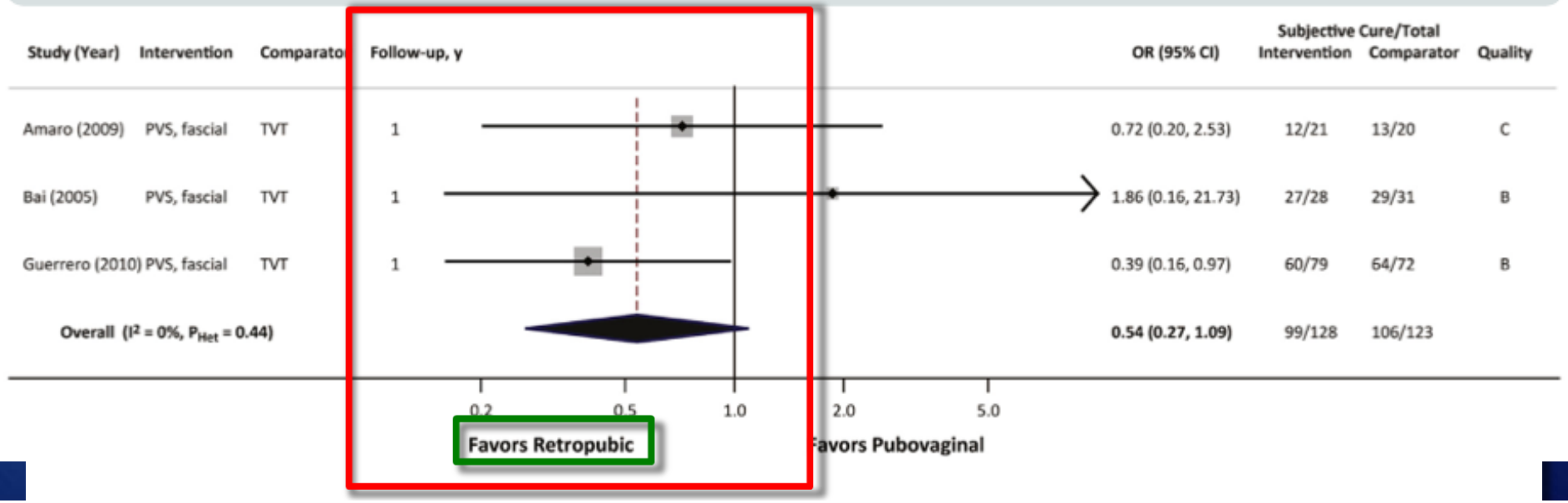
Pubovaginal slings v/s MUS

Pubovaginal slings vs MUS

- The only MUS included in these studies was a **retropubic TVT** sling

Am J Obstet Gynecol. 2014 Jul;211(1):71.e1-71.e27

FIGURE 4
Metaanalysis for subjective cure: pubovaginal vs MUS



Pubovaginal sling (biologic and synthetic) vs midurethral sling (only TVT was studied)

For women considering pubovaginal or midurethral sling for treatment of SUI, we recommend midurethral sling for better subjective cure outcomes. (2C)

Pubovaginal slings vs MUS

- MUS => lower rates of :
  - operating room time
  - blood loss
  - transfusion
  - wound infection
  - retention
  - OAB symptoms
  - hospital stay
- Pubovaginal slings => lower rates of :
  - urinary tract infection and vaginal perforation

Am J Obstet Gynecol. 2014 Jul;211(1):71.e1-71.e27

Retropubic v/s Obturator MUS

Retropubic MUS vs obturator MUS

+ **21 RCTs**

FIGURE 5

Metaanalysis for objective cure: retropubic (retro) vs obturator midurethral slings

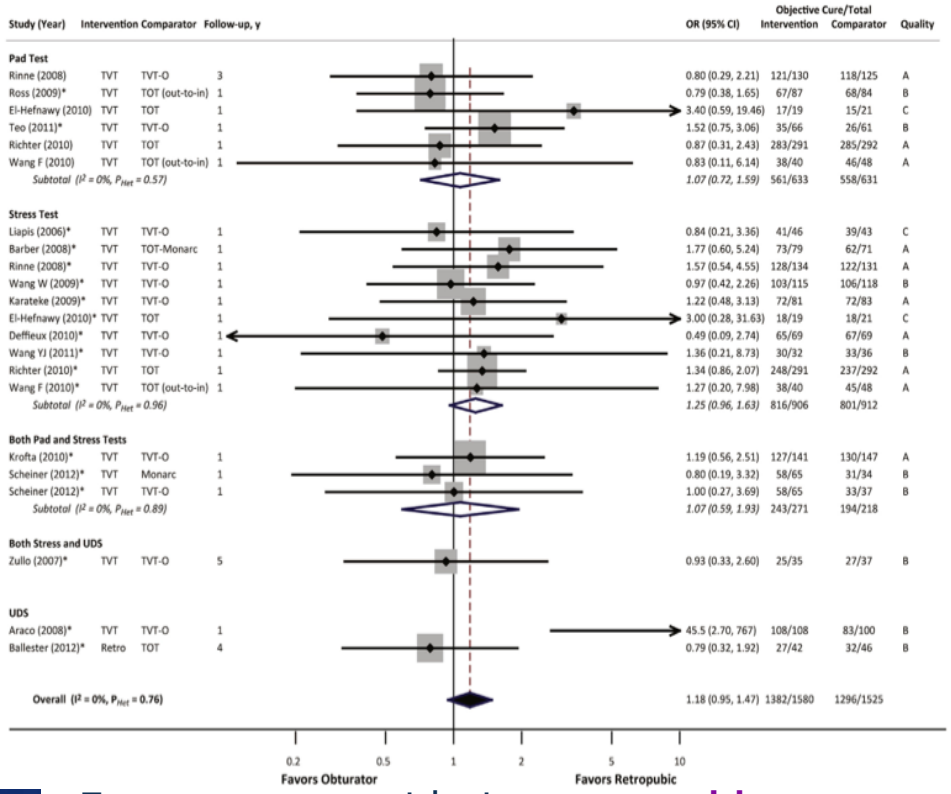
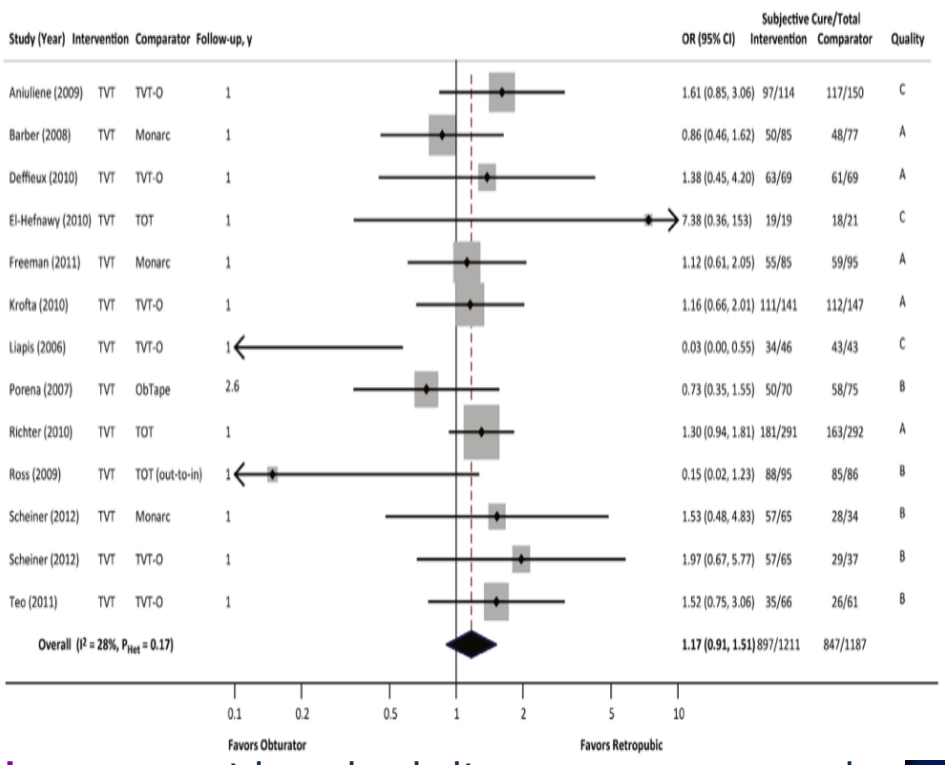


FIGURE 6

Metaanalysis for subjective cure: retropubic vs obturator midurethral slings



For women considering **retropubic or transobturator** midurethral sling, we recommend **either intervention** for objective and subjective cure and that decision be based on which *adverse events* are of greatest concern to patient. (1A) **Am J Obstet Gynecol. 2014**

Retropubic MUS vs obturator MUS

- **Postoperative OAB symptoms** were **more common** in patients following **retropubic slings** (OR, 1.41; 95% CI, 1.01-1.98, P = .046)
- **Retropubic slings** result in lower absolute rates of:
  - ***sling erosion, need to return to the operating room for treatment of sling erosion, nerve injury, ureteral injury, groin/leg pain, and vaginal perforation***
- **Obturator MUS** result in :
  - **shorter operative time, lower blood loss, fewer bladder/urethral perforations, less perioperative pain, fewer urinary tract infections, and less OAB symptoms**

Am J Obstet Gynecol. 2014

THE COCHRANE COLLABORATION®

Mid-urethral sling operations for stress urinary incontinence in women (Review)

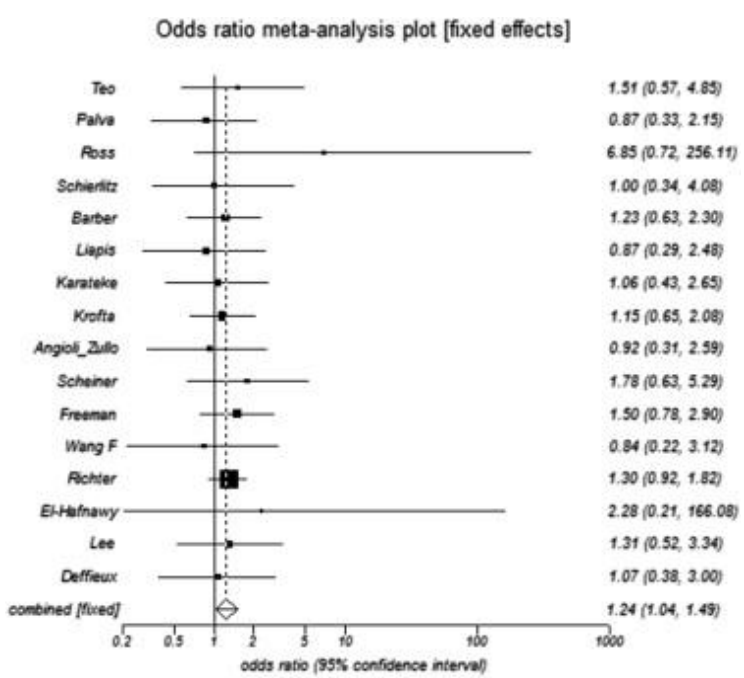
Ford AA, Rogerson L, Cody JD, Ogah J

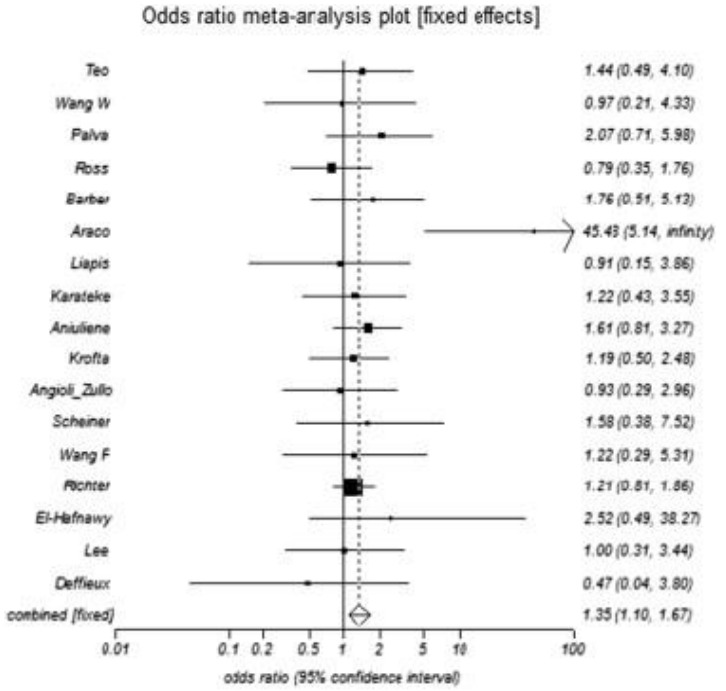
This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2015, Issue 7

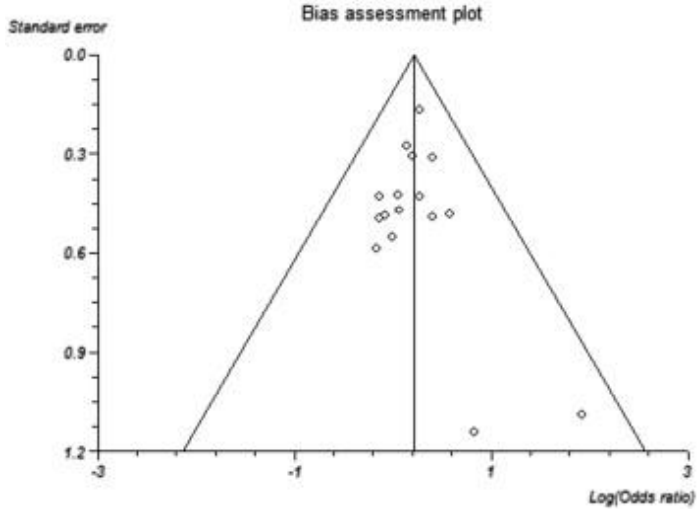
Transobturator (TOR) versus retropubic route (RPR)

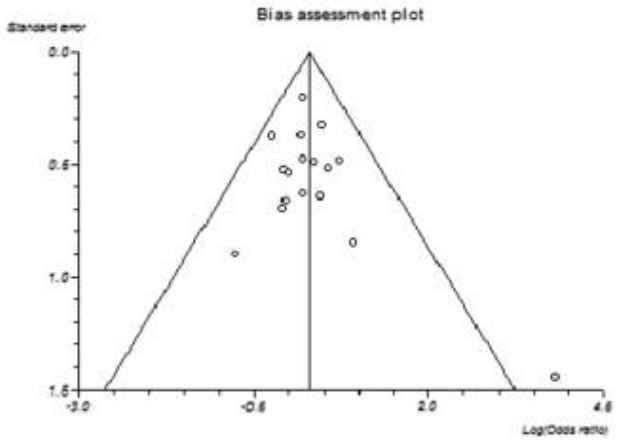
+ **Similar subjective cure rates** : 83.3 % (according to 36 trials)
+ **Shorter operative time** post by an average **of 7 minutes** with **TOR** compared to RPR
+ **Length of stay shorter** by an average of **0.17 days** with **TOR** compared with RPR

	TOR	RPR	Relative risk
Retropubic hematoma		X	*RR 0.33 (28 trials)*
Bowel perforation		X	*RR 0.33 (28 trials)*
Bladder perforation		X	*RR 0.13 (40 trials)*
Post voiding dysfunction		X	*RR 0.53 (37 trials)*
Urgency and urinary incontinence	=	=	*RR 0.98 (31 trials)*
Vaginal tape erosion	=	=	*RR 1.13 (31 trials)*
Groin pain	X		*RR 4.12*
Suprapubic pain		X	*RR 0.29*









The Journal of Urology, Volume 193, Issue 3, 2015, 909–915

A Meta-Analysis of the Performance of Retropubic Mid Urethral Slings versus Transobturator Mid Urethral Slings

urodynamic findings before and after MUS: TVT v/s TVT-O

	Pre op	3 month	6 month
Variable			
ALPP			
MUP			
MUCP			

J Minim Invasive Gynecol. 2013 Jul-Aug;20(4):482-6

Retropubic bottom-to-top versus top-to-bottom approach

- **Subjective cure:** women were significantly **more often dry with the bottom-to-top** approach (TVT™) vs top-to-bottom (SPARC™) (Kim 2004; Lim 2005; Lord 2006)
- **Objective sure** : **similar** between 2 groups, [94.19% versus 89.10%; RR 1.06]
- **Adverse events:**
  - **With bottom-to-top** : **fewer bladder perforation, voiding dysfunction and vaginal tape erosions**

Obturator medial-to-lateral versus obturator lateral-to-medial approach

- **No** statistically significant **difference** between 2 approaches concerning **objective and subjective cure rates** (according to 6 trials)
- **Vaginal perforation less likely** to occur with **medial-to-lateral approach** (RR 0.25, 95% CI 0.12 to 0.53)
- **Voiding dysfunction** occurred significantly **more in the medial-to- lateral** compared to the lateral-to-medial group (RR 1.74, 95% CI 1.06 to 2.8)

MUS v/s minisling

UROGYNECOLOGY

Sling surgery for stress urinary incontinence in women: a systematic review and metaanalysis

Megan O. Schimpf, MD; David D. Rahn, MD; Thomas L. Wheeler, MD, MSPH; Minita Patel, MD, MS; Amanda B. White, MD; Francisco J. Orejuela, MD; Sherif A. El-Nashar, MBBCh, MS; Rebecca U. Margulies, MD; Jonathan L. Gleason, MD; Sarit O. Aschkenazi, MD; Mamta M. Mamik, MD; Renée M. Ward, MD; Ethan M. Balk, MD, MPH; Vivian W. Sung, MD, MPH; for the Society of Gynecologic Surgeons Systematic Review Group

- Comparison between MUS & SIMS
- Majority of SIMS comparators were either TVT-Secure H of U

MUS vs Minisling

FIGURE 8

Metaanalysis for objective cure: traditional midurethral sling (MUS) vs minisling

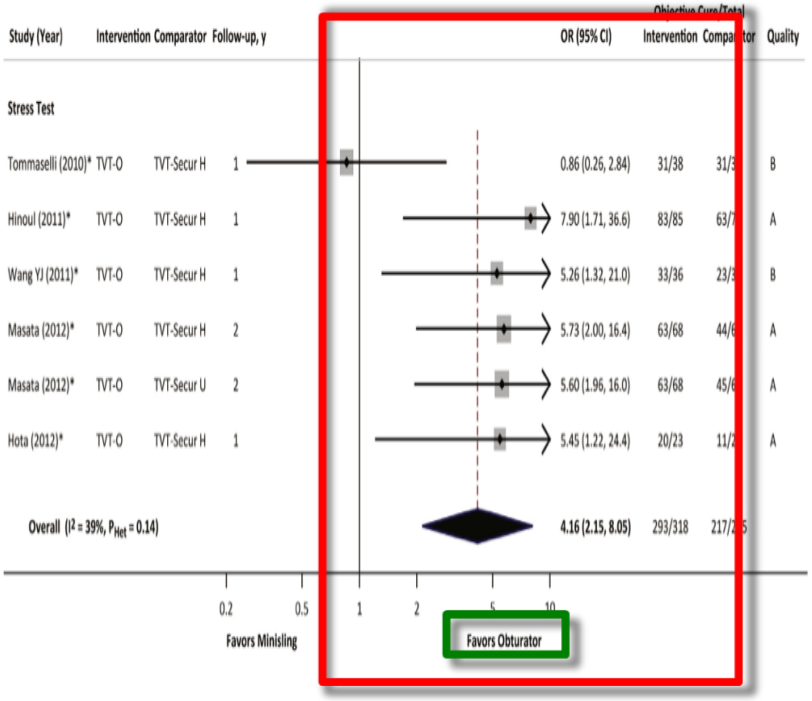
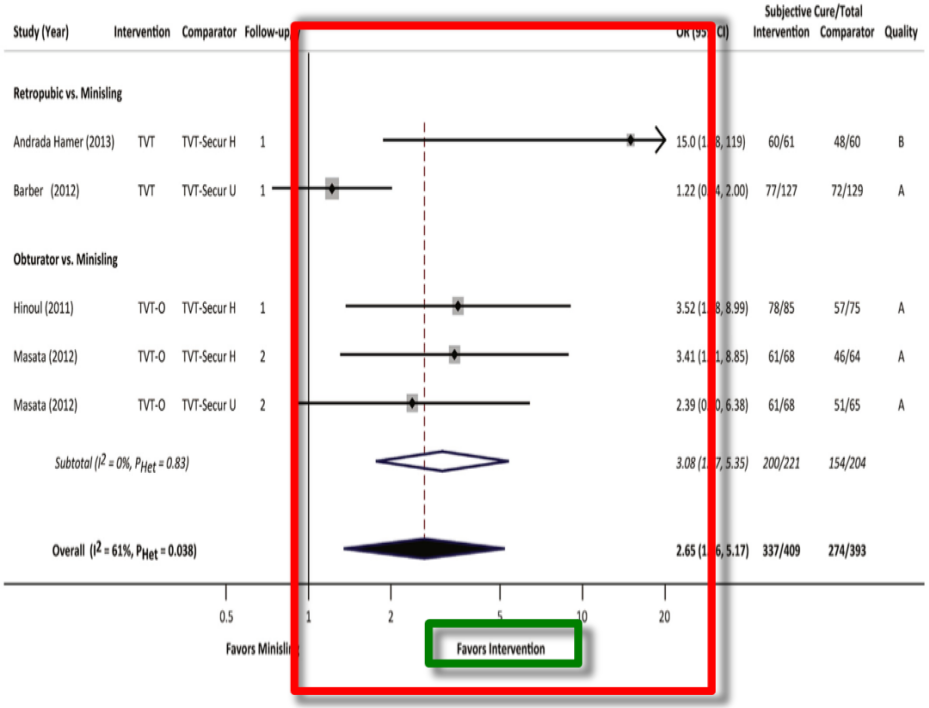


FIGURE 9

Metaanalysis for subjective cure: traditional midurethral sling vs minisling



For women considering minislings (specifically TVT-Secur in H or U configuration) compared to traditional midurethral slings for treatment of SUI, **we recommend traditional midurethral sling to maximize cure rates**. (1A) ***Am J Obstet Gynecol. 2014***

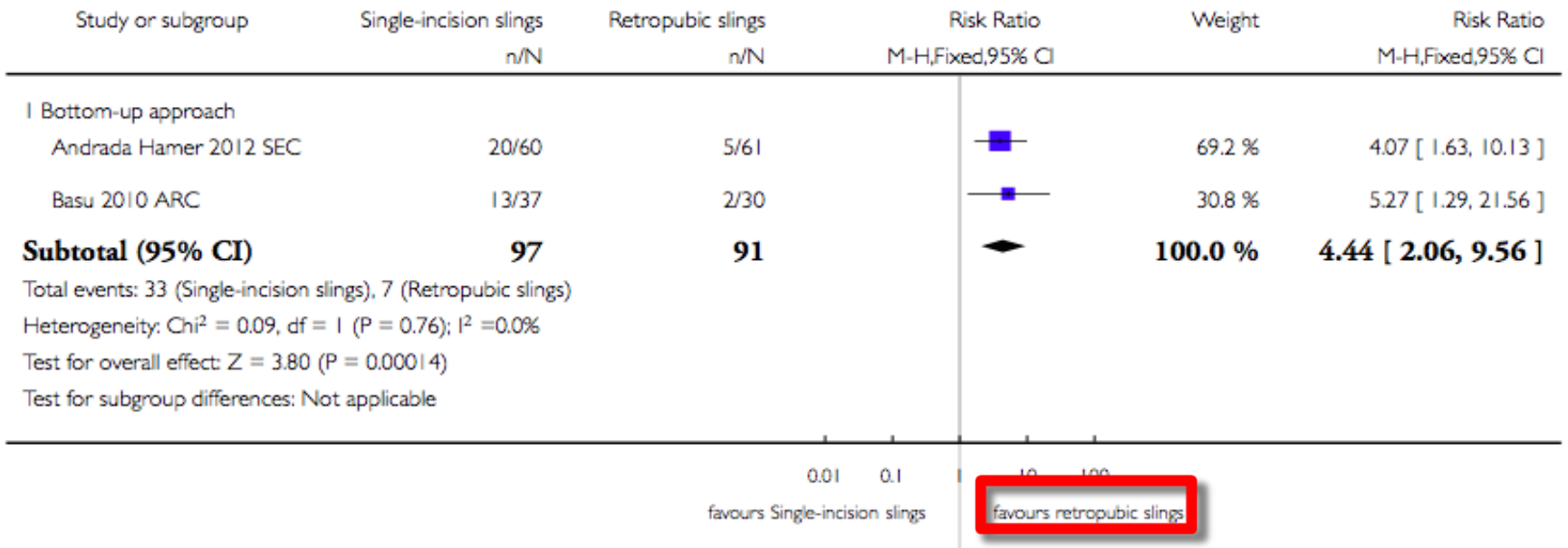
MUS vs Minisling

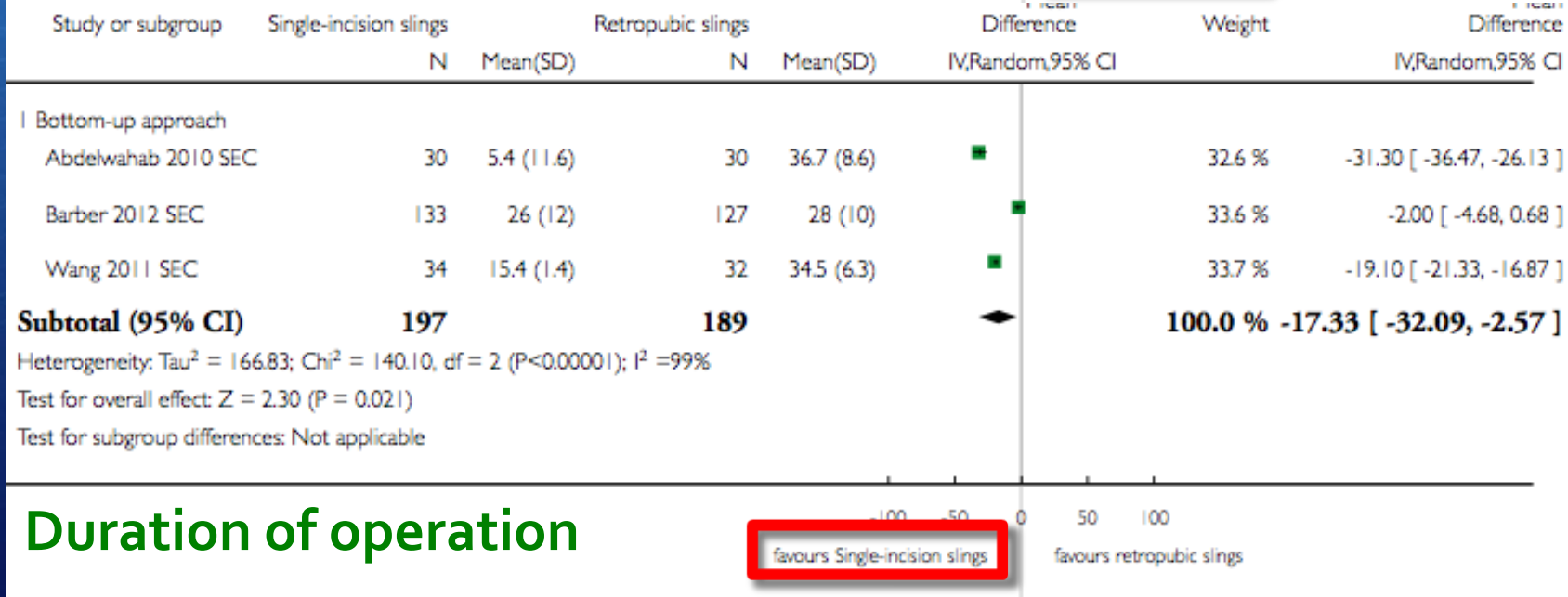
- Considering Side Effects :
- **Minislings**
  - => similar rates **of postoperative overactive bladder symptoms** compared with obturator slings
  - => lower rates compared with retropubic slings
- **Exposure of sling** postoperatively is similar between obturator slings and minislings, **but retropubic slings have lower rates** than both other types. (1D)
- **Dyspareunia** is **more common with Minisling** than either retropubic obturator sling, but absolute rates are low for all types of slings

Single incision vs Retropubic sling

Objective measurement of incontinence

The Cochrane Library 2014, Issue 6





Duration of operation

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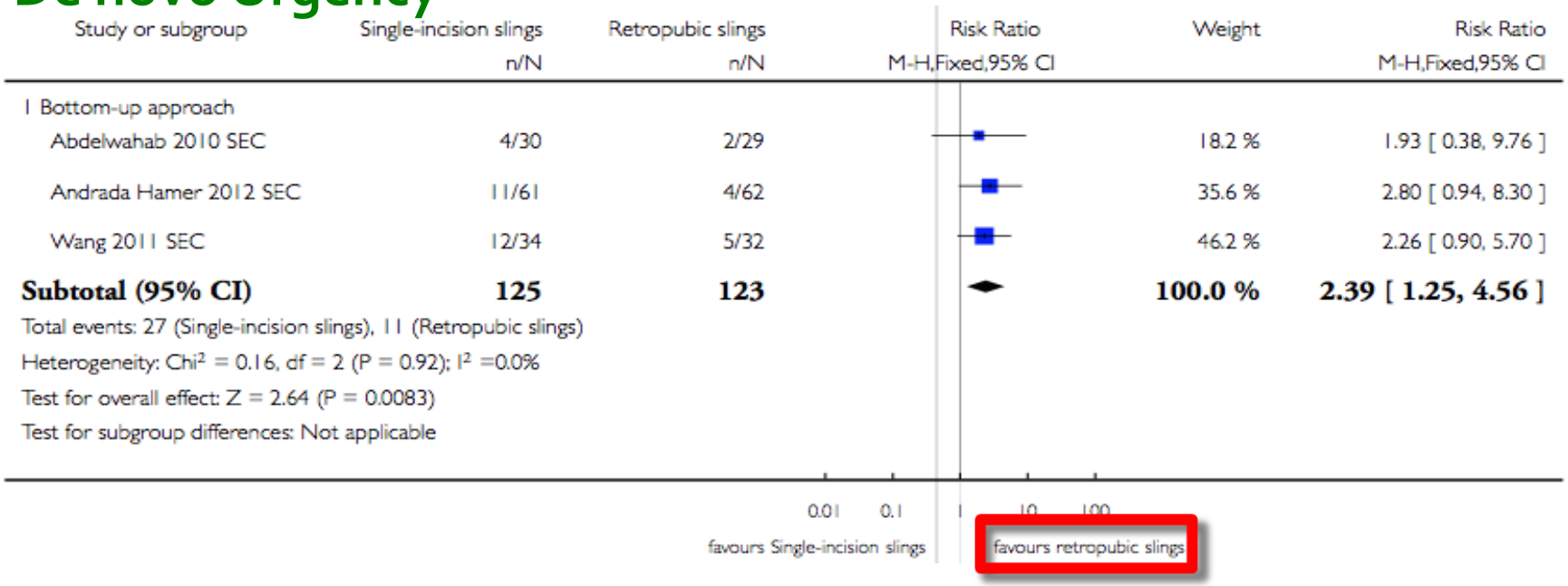
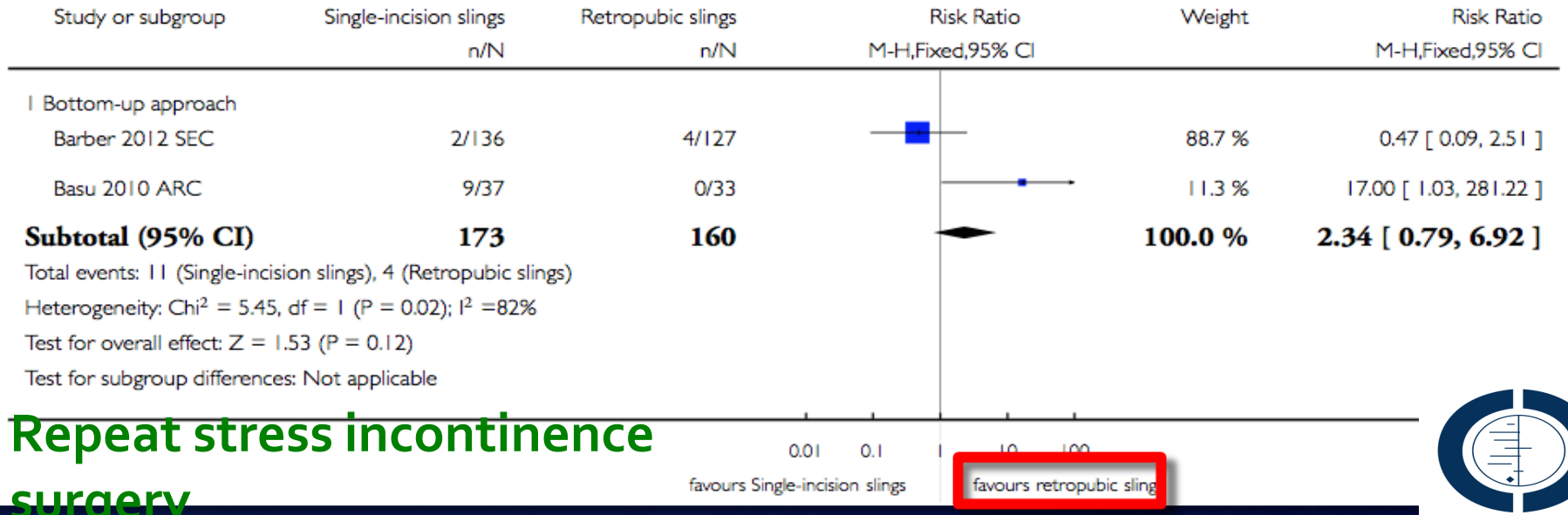
Single incision vs Retropubic sling

The Cochrane Library 2014, Issue 6

De novo Urgency



Repeat stress incontinence surgery



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Single incision vs Retropubic sling

- No significant differences between the two groups concerning :
  - Operative blood loss
  - Length of in patient stay
  - Major vascular or visceral injury; vaginal wall perforation
  - Bladder or urethral perforation
  - Urinary retention and the need for catheterisation
  - Infection due to synthetic mesh; dyspareunia
  - Vaginal mesh exposure
  - Mesh extrusion into bladder or urethra
  - Need for any additional surgical procedure to treat complications

The Cochrane Library 2014, Issue 6

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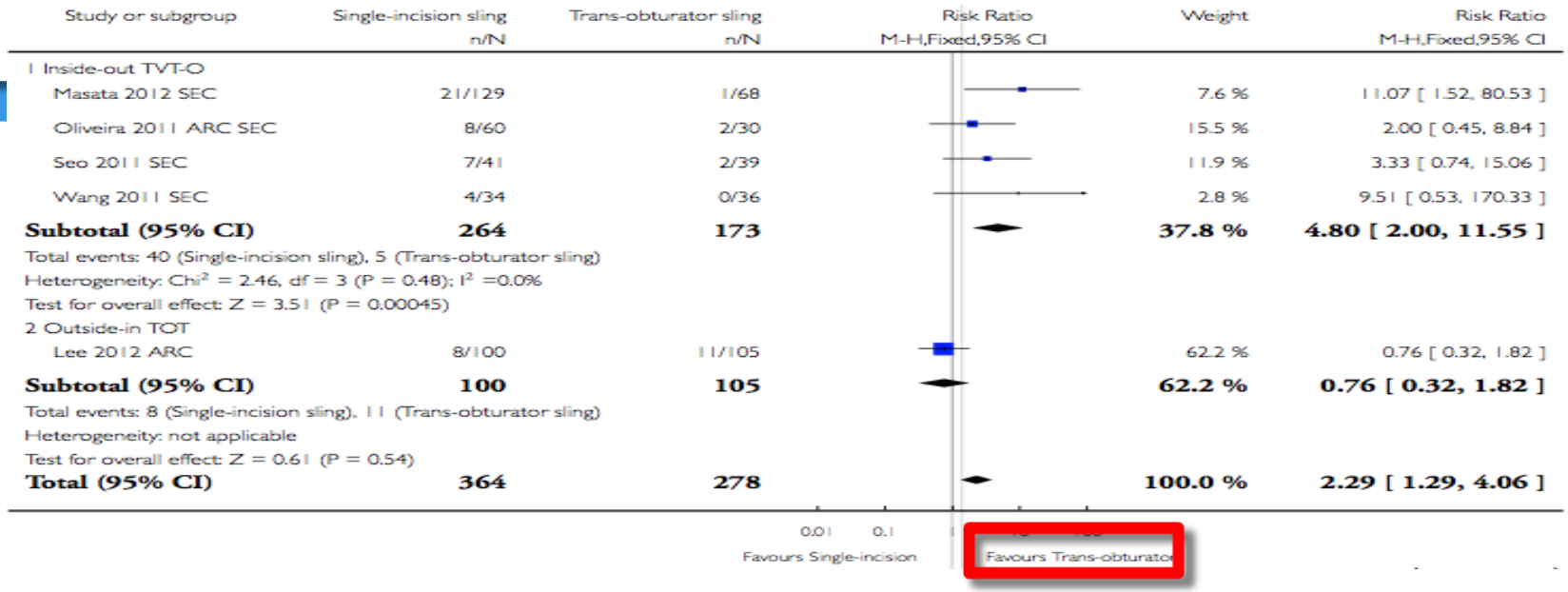
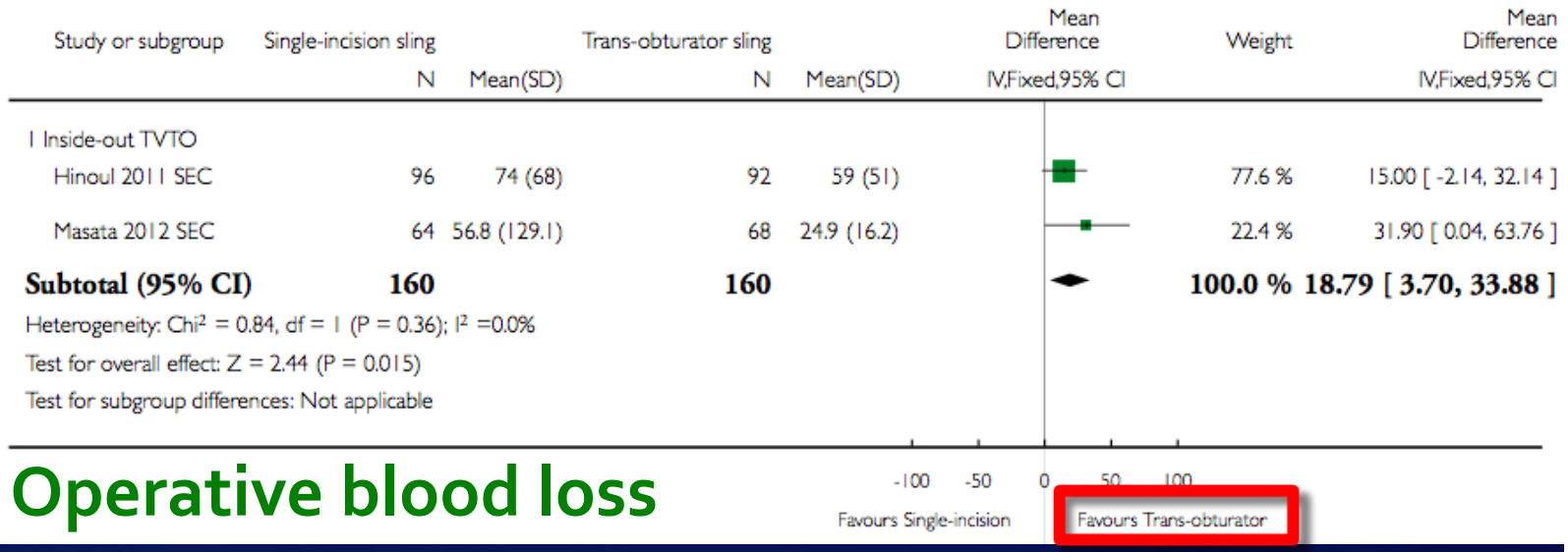
Single incision v/s TVT-O

The Cochrane Library 2014, Issue 6

Number of women with no improvement





Operative blood loss

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Single incision v/s TVT-O

Objective measurement of incontinence

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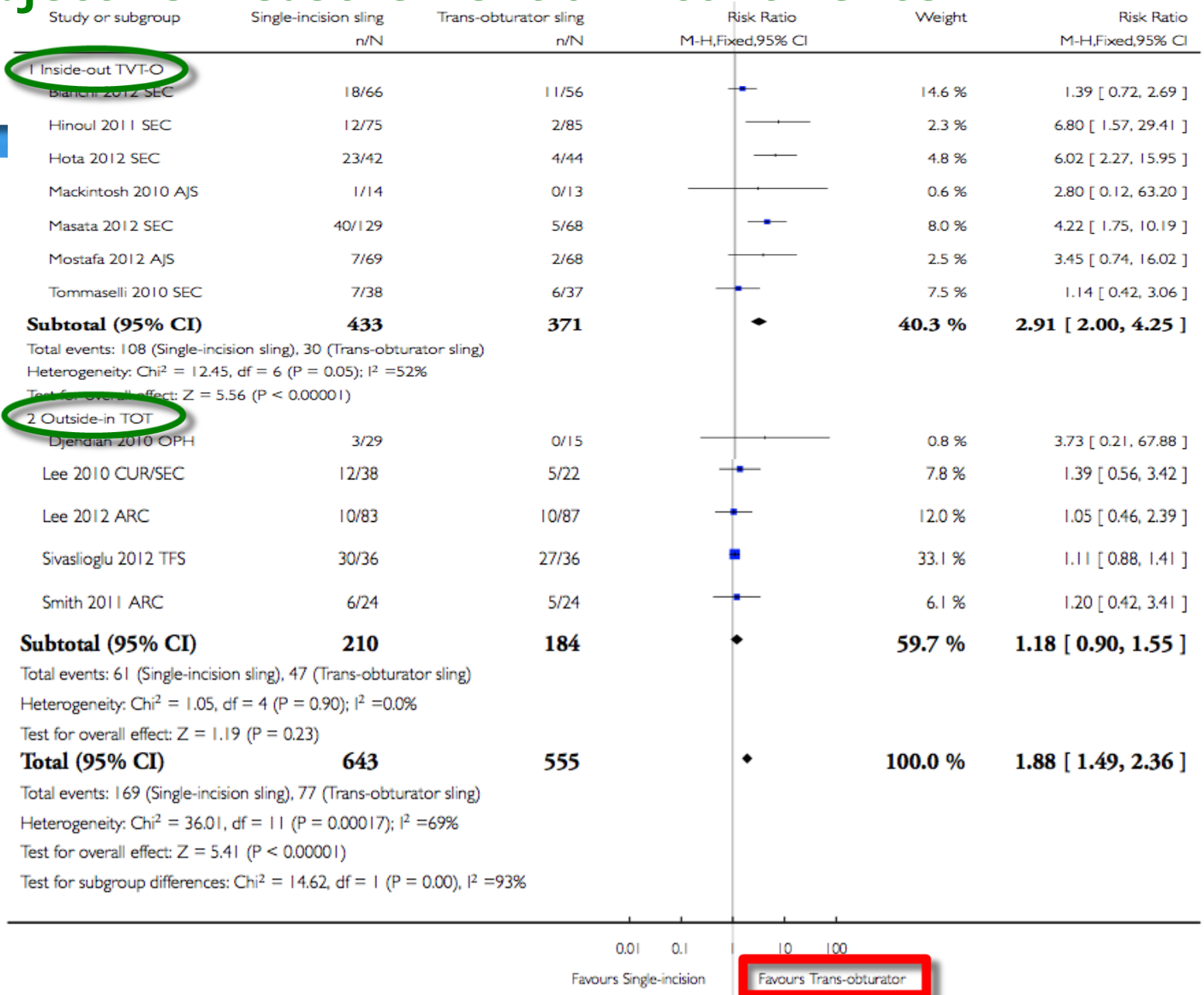

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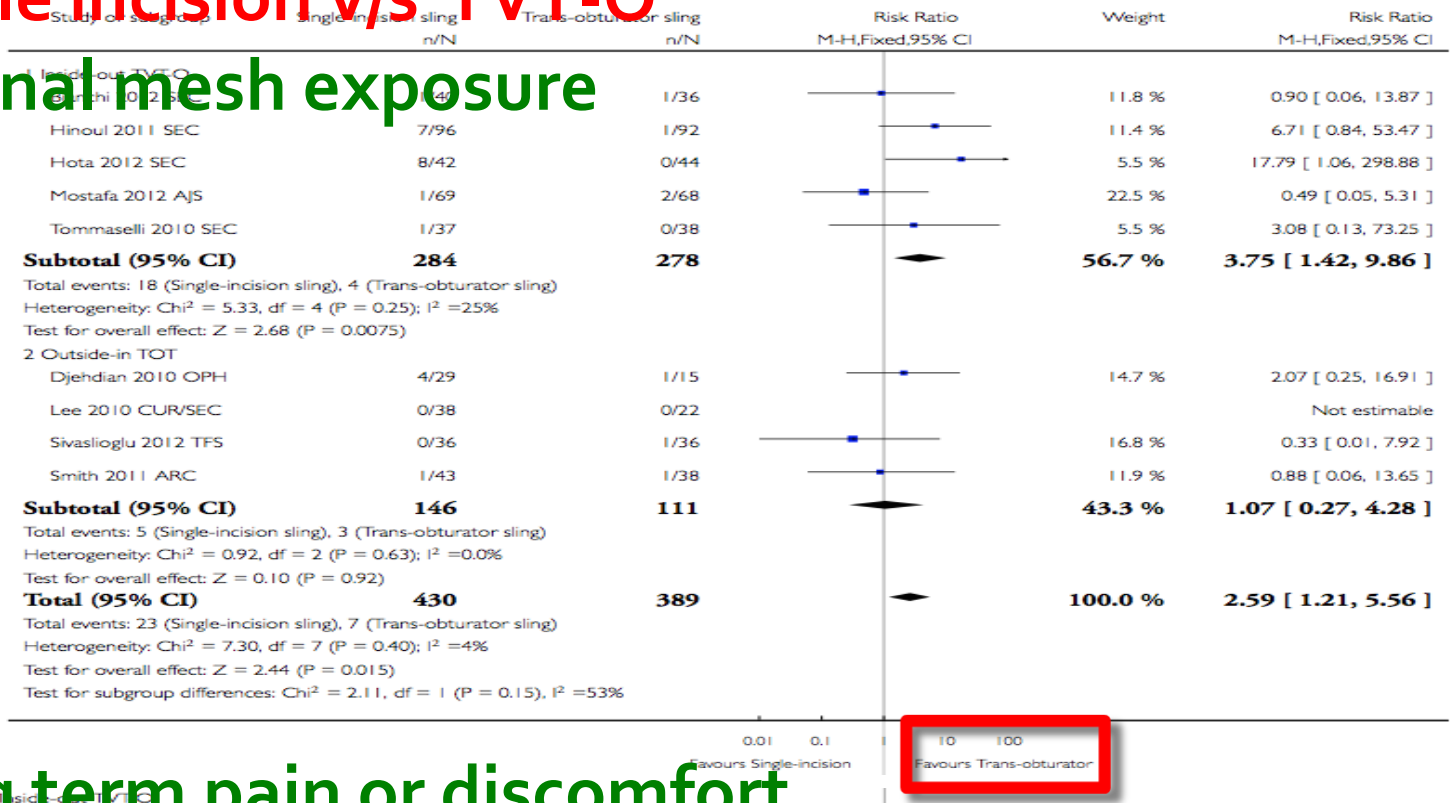
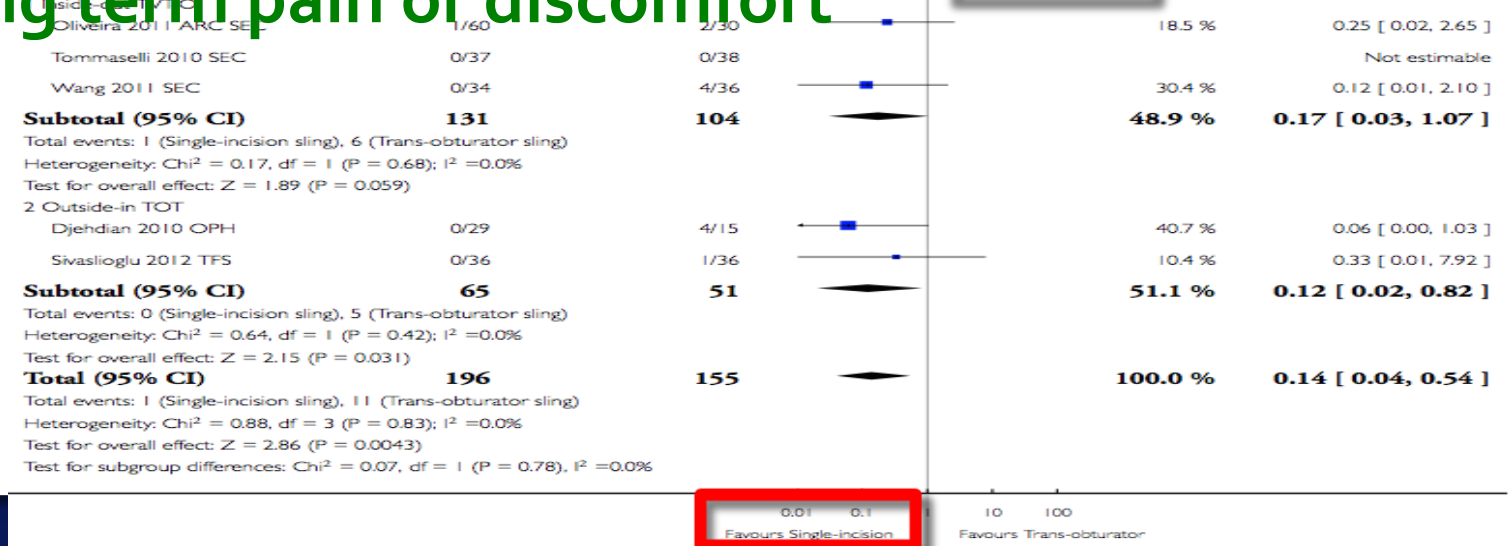
Single incision v/s TVT-O

Vaginal mesh exposure

The Cochrane Library 2014, Issue 6



Long term pain or discomfort



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Single incision v/s TVT-O

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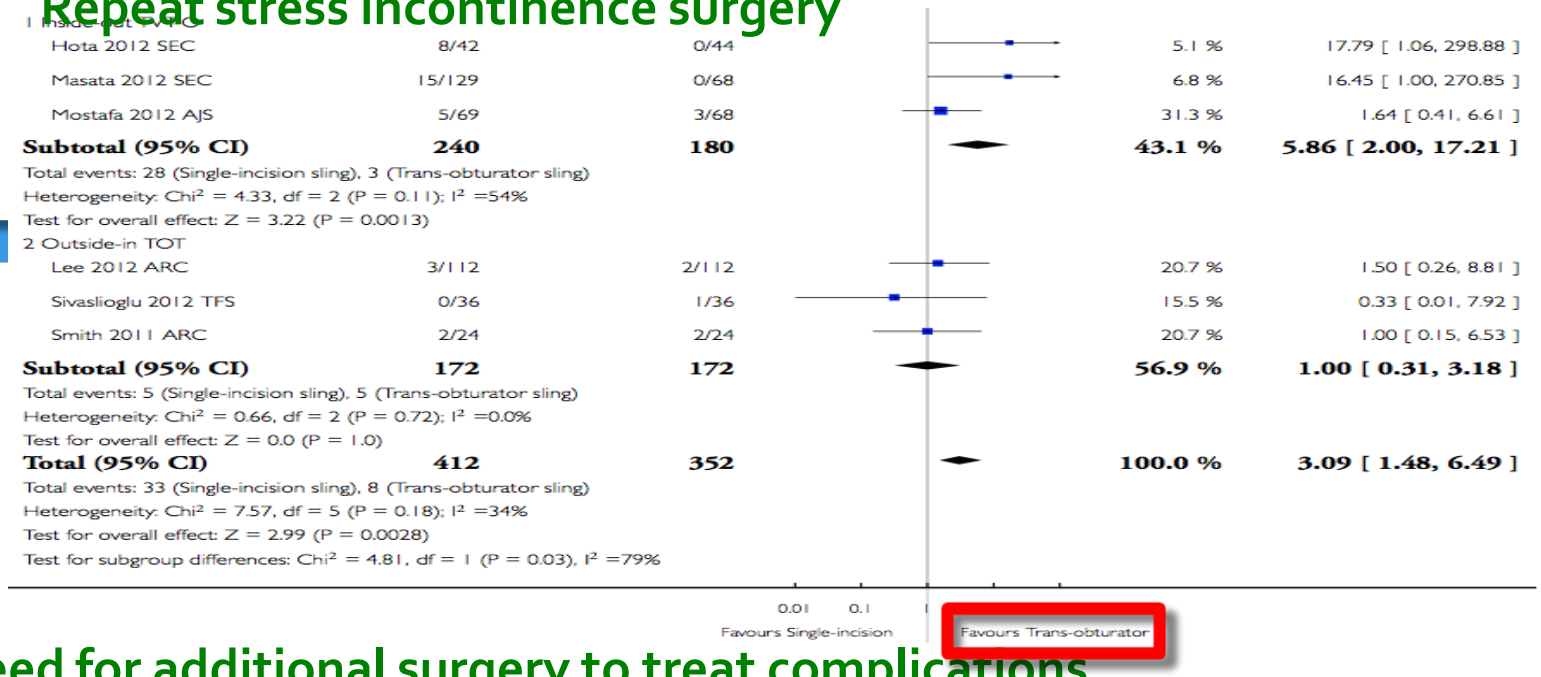
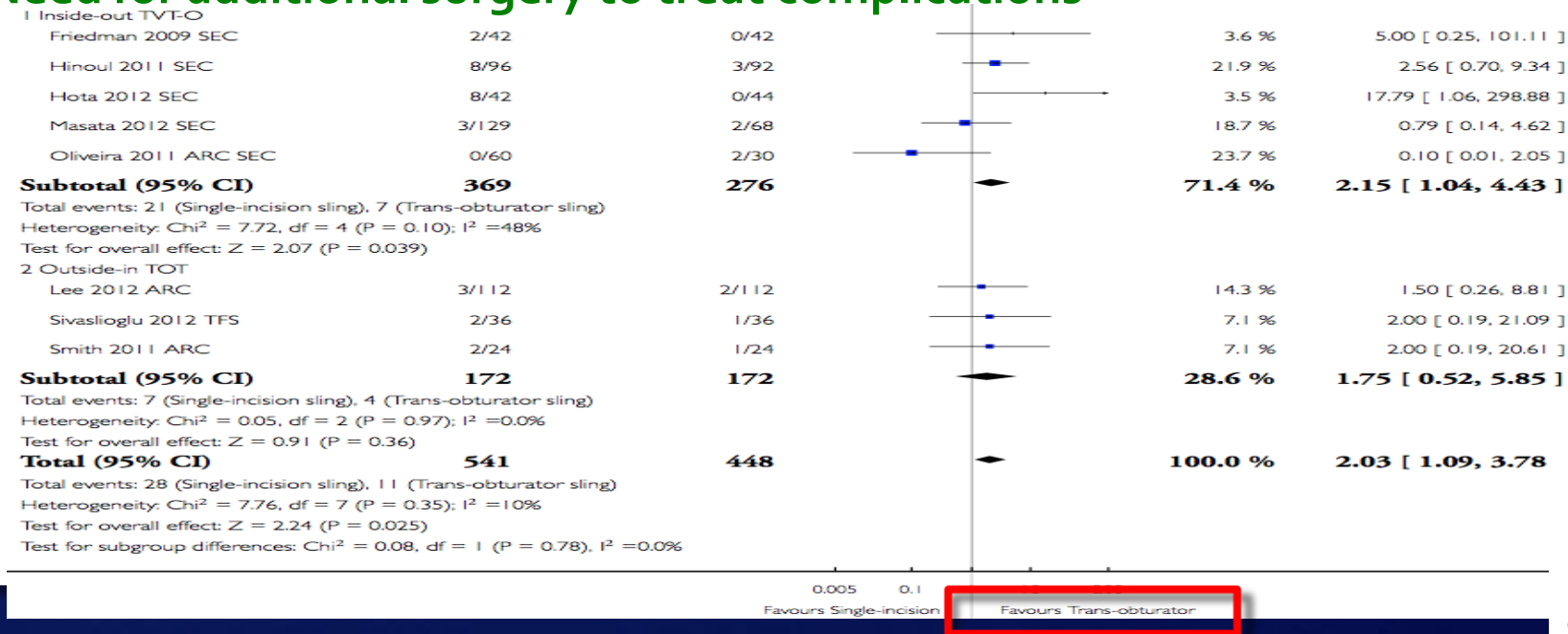
Repeat stress incontinence surgery



Need for additional surgery to treat complications



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Single incision vs Transobturator sling

- **No significant differences between the two groups concerning :**
  - **Length of in patient stay**
  - **Major vascular or visceral injury**
  - **Bladder or urethral perforation**
  - **Vaginal wall perforation**
  - **Urinary retention and the need for catheterisation**
  - **Infection related to the use of synthetic mesh**
  - **De novo urgency**

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European Association of Urology
Platinum Priority – Review – Female Urology – Incontinence
Editorial by Maurizio Serati on pp. 428–429 of this issue

Single-Incision Mini-Slings Versus Standard Midurethral Slings in Surgical Management of Female Stress Urinary Incontinence: An Updated Systematic Review and Meta-analysis of Effectiveness and Complications

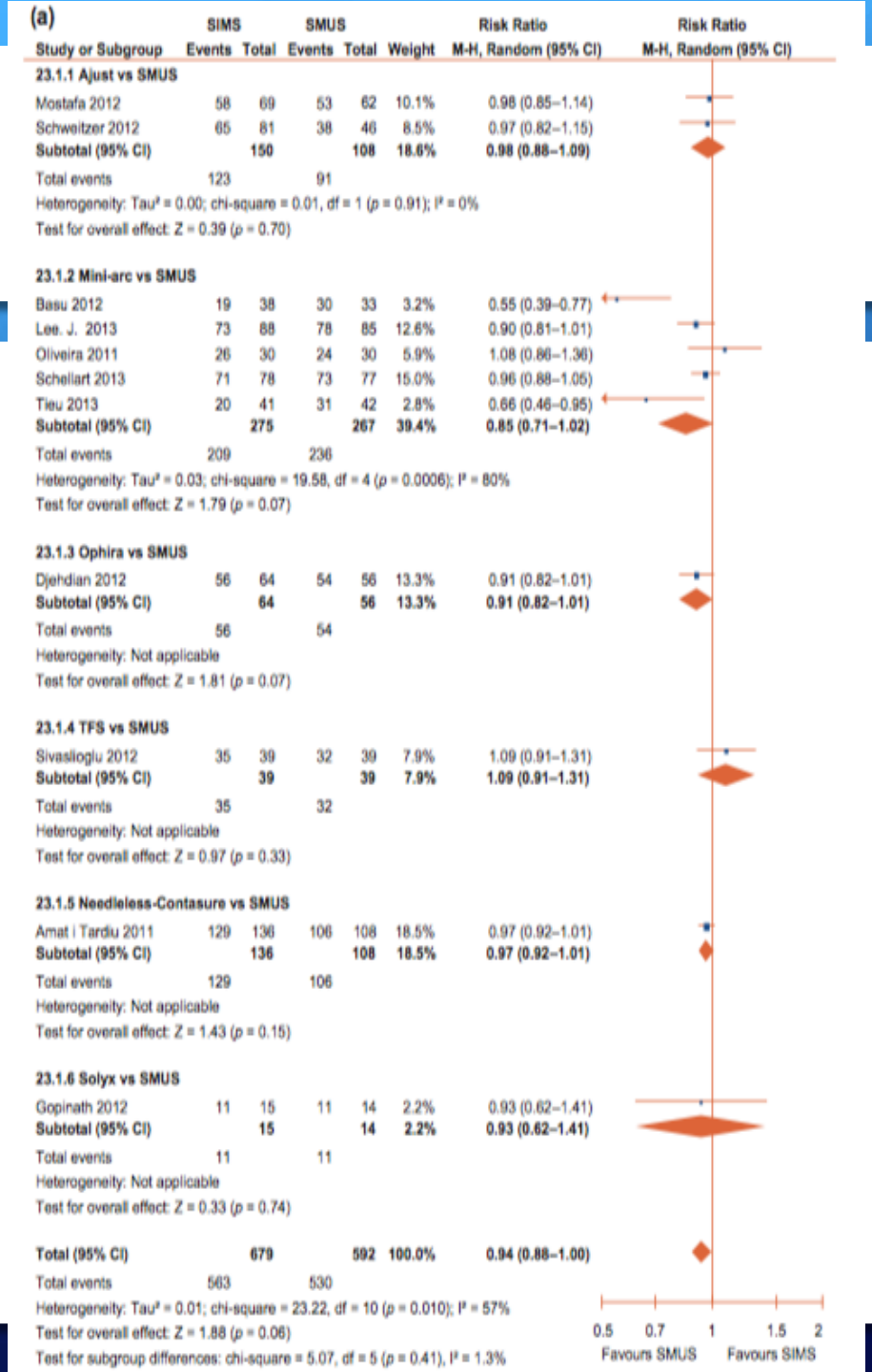
Alyaa Mostafa [a], Chou Phay Lim [b], Laura Hopper [a], Priya Madhuvrata [c], Mohamed Abdel-Fattah [a,]*

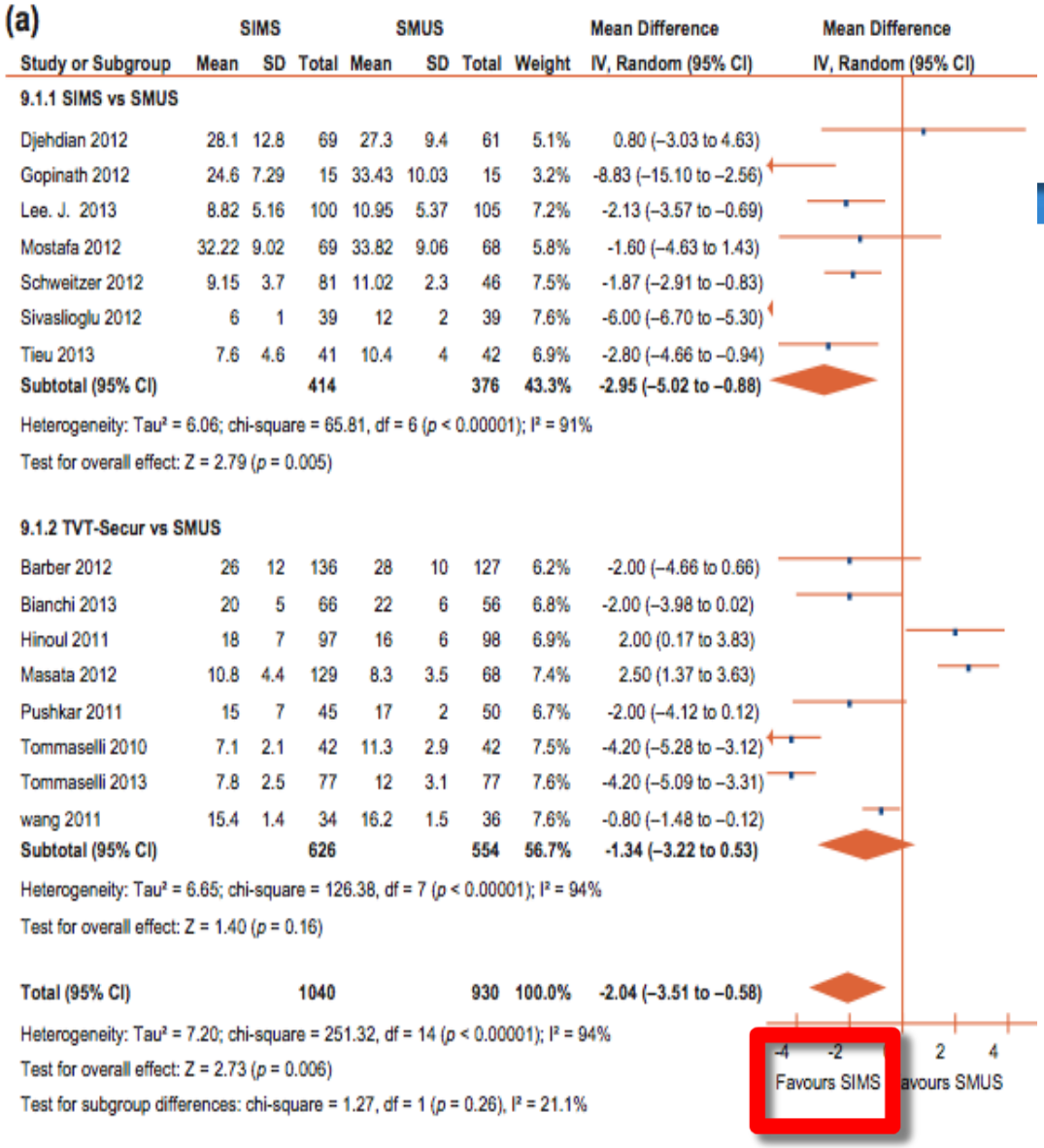
[a] *University of Aberdeen, Aberdeen, UK;* [b] *Aberdeen Royal Infirmary, Aberdeen, UK;* [c] *Sheffield Teaching Hospital NHS Foundation Trust, Sheffield, UK*

A total of **26 RCTs including 3308 women** (SMUS: n = 1573 vs SIMS: n = 1735)

SIMS were compared with **RP-TVT in 4 RCTs** and **TO-TVT in 22 RCTs**

NO EVIDENCE of significant differences **in patient-reported cure** (RR: 0.94; 95% CI, 0.88–1.00) **and objective cure** (RR: 0.98; 95% CI, 0.94–1.01) **for SIMS versus SMUS** at **a mean follow-up of 18.6 months**





SIMS were associated with significantly **shorter operative time** (**- 2.95 min**: 95% CI, - 5.02 to - 0.88)

Single-Incision Mini-Slings Versus Standard Midurethral Slings in Surgical Management of Female Stress Urinary Incontinence: An Updated Systematic Review and Meta-analysis of Effectiveness and Complications

Alyaa Mostafa [a], *Chou Phay Lim* [b], *Laura Hopper* [a], *Priya Madhuvrata* [c], *Mohamed Abdel-Fattah* [a,*]

[a] University of Aberdeen, Aberdeen, UK; [b] Aberdeen Royal Infirmary, Aberdeen, UK; [c] Sheffield Teaching Hospital NHS Foundation Trust, Sheffield, UK

- **No statistically significant difference in the rate of** :
  - Lower urinary tract injury
  - Postoperative voiding difficulties
  - Vaginal tape erosions
  - De novo urgency, and/or worsening of preexisting urgency
- But **the groin pain** rate was significantly **lower in the SIMS** group (RR: 0.30; 95% CI, 0.18–0.49).

Zhang et al. BMC Urology (2015) 15:64
DOI 10.1186/s12894-015-0060-3

BMC Urology

RESEARCH ARTICLE Open Access

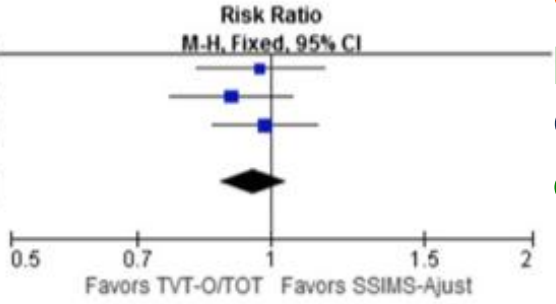
Meta-analysis of female stress urinary incontinence treatments with adjustable single-incision mini-slings and transobturator tension-free vaginal tape surgeries

Peng Zhang[1], Bohan Fan[1], Peng Zhang[2*], Hu Han[3], Yue Xu[3], Biao Wang[2] and Xiaodong Zhang[2]

SIMS- Ajust vs TVT-O / TOT

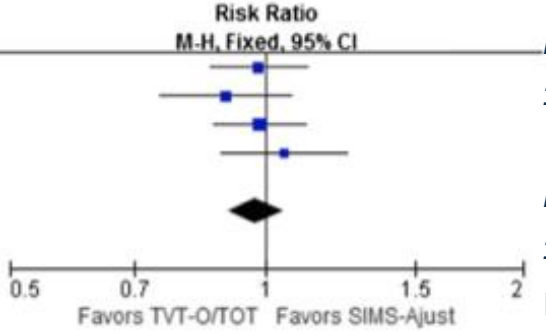
Study or Subgroup	SIMS-Ajust Events	SIMS-Ajust Total	TVT-O/TOT Events	TVT-O/TOT Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Schweitzer K 2012	65	81	38	46	27.3%	0.97 [0.82, 1.15]
Alyaa Mostafa 2013	53	69	58	68	32.9%	0.90 [0.77, 1.06]
Grigoriadis C 2013	69	85	71	86	39.8%	0.98 [0.85, 1.13]
Total (95% CI)		**235**		**200**	**100.0%**	**0.95 [0.87, 1.04]**
Total events	187		167			

Heterogeneity: Chi² = 0.70, df = 2 (P = 0.70); I² = 0%
Test for overall effect: Z = 1.05 (P = 0.30)



Study or Subgroup	SIMS-Ajust Events	SIMS-Ajust Total	TVT-O/TOT Events	TVT-O/TOT Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Dati S 2012	50	57	51	57	23.0%	0.98 [0.86, 1.12]
Alyaa Mostafa 2013	51	69	56	68	25.4%	0.90 [0.75, 1.07]
Grigoriadis C 2013	72	85	74	86	33.1%	0.98 [0.87, 1.11]
Masata J 2013	43	50	41	50	18.5%	1.05 [0.88, 1.24]
Total (95% CI)		**261**		**261**	**100.0%**	**0.97 [0.90, 1.05]**
Total events	216		222			

Heterogeneity: Chi² = 1.57, df = 3 (P = 0.67); I² = 0%
Test for overall effect: Z = 0.71 (P = 0.48)



No significant difference in the **patient-reported** cure rate and **objective cure rate** between SIMS-Ajust and TVT-O/ TOT.

RR = 0.97, 95 % CI (0.90 to 1.05), P > 0.05]

RR = 0.95, 95 % CI (0.87 to 1.04), P > 0.05] (s respectively

SIMS- Ajust vs TVT-O / TOT

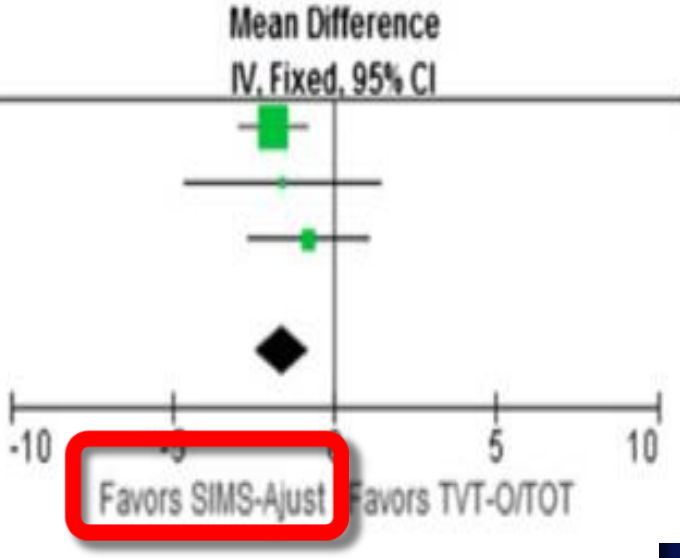
+ SIMS-Ajust has a **shorter operation time** than TVT-O/TOT

[WMD = **–1.61 min**, 95 % CI (–2.48 to –0.88), P < 0.05]

	SIMS-Ajust			TVT-O/TOT				Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI
Schweitzer K 2012	9.15	3.7	81	11.02	2.3	46	69.7%	-1.87 [-2.91, -0.83]
Alyaa Mostafa 2013	32.22	9.019	69	33.82	9.065	68	8.3%	-1.60 [-4.63, 1.43]
Grigoriadis C 2013	18.9	6.1	85	19.7	6.3	86	22.0%	-0.80 [-2.66, 1.06]
Total (95% CI)			235			200	100.0%	**-1.61 [-2.48, -0.74]**

Heterogeneity: Chi² = 0.97, df = 2 (P = 0.62); I² = 0%

Test for overall effect: Z = 3.62 (P = 0.0003)

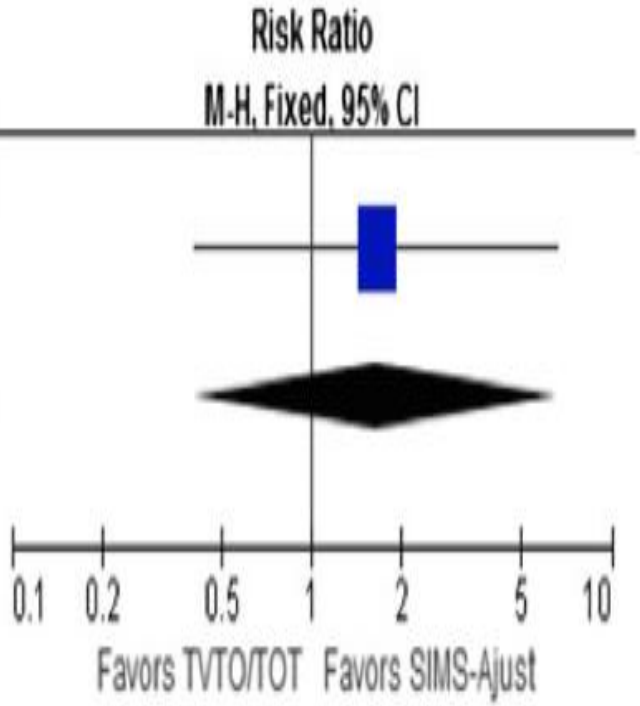


SIMS- Ajust vs TVT-O / TOT

Study or Subgroup	SIMS-Ajust Events	SIMS-Ajust Total	TVT-O/TOT Events	TVT-O/TOT Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Schweitzer K 2012	0	100	0	56		Not estimable
Alyaa Mostafa 2013	5	69	3	68	100.0%	1.64 [0.41, 6.61]
Total (95% CI)		**169**		**124**	**100.0%**	**1.64 [0.41, 6.61]**
Total events	5		3			

Heterogeneity: Not applicable

Test for overall effect: Z = 0.70 (P = 0.48)



No significant difference in the incidence rate **of repeated continence surgery** between these two groups *[RR = 1.64, 95 % CI (0.41 to 6.61), P > 0.05]* , f/u longer than 12 months in both

SIMS- Ajust vs TVT-O / TOT

- **Postoperative groin pain by SIMS-Ajust** is **significantly less** than for TVT-O/TOT [RR = 0.30, 95 % CI (0.11 to 0.85), <0.05
- **No significant difference** between the two operations concerning (**p > 0.05**)
  - **lower urinary tract injuries**
  - **postoperative voiding difficulties**
  - **de novo urgency and/or worsening of preexisting surgery**
  - **vaginal tape erosion**

SIMS- Ajust vs TVT-O / TOT

- One must note that the CI in this metaanalysis was wide and more patients are needed in order to confirm these results concerning Ajust

Sims v/s Sims

One single-incision sling versus another
Primary outcomes

	Number of women with urinary incontinence	Number of women with no improvement	Objective measurement of Incontinence	Quality of life
TVT-secur vs Miniarc	=	=		
U-type vs H-type TVT-Secur	=	=	=	=
Miniarc vs Ajust	=	=	=	=

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One single-incision sling versus another
Surgical outcome measures

	Duration of operation	Operative blood loss
TVT-secur vs Miniarc	=	=
Miniarc vs Ajust	=	=

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One single-incision sling versus another
Adverse events

	Major vascular or visceral injury	Bladder or urethral perforation	Vaginal erosion or perforation	Urinary retention	Postoperative pain and discomfort	De novo urgency
TVT-secur vs Miniarc		=	=	=	=	=
U-type vs H-type TVT-Secur	=	=	=	=		=
Miniarc vs Ajust				=	=	=

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To conclude

- The most common procedure for surgical treatment of SUI is the standard mid-urethral slings (SMUS), including retropubic tension-free vaginal tape (RP-TVT) and transobturator tension-free vaginal tape (TO-TVT)
- The main complication of RP-TVT is the intraoperative bladder injury
- The main concern of TO- TVT is the postoperative pain in the inner thigh
- Mini-sling might be as effective as MUS when selecting the anchor type, less adverse effects (groin pain), less costs (local anesthesia)