Slings and Things – What's Holding You Up?

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Edward Hospital, Naperville Illinois

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Disclosures

Ÿ None

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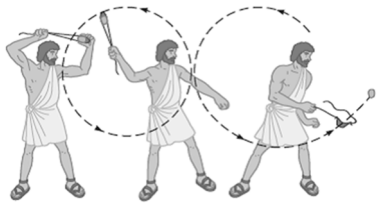

Figure P5.64 The proper use of a sling.

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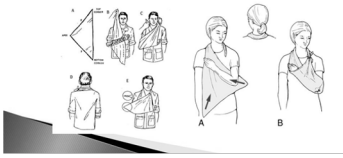
Applying slings:

•Applying slings properly depends on the type of injury.



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Slings and Things

- Slings - *surgery for stress incontinence*
  - Pubovaginal slings (bladder neck)
  - Midurethral slings - mesh
- Things - *surgery for pelvic organ prolapse*
  - Native tissue repairs
  - Mesh-augmented repairs
    - Abdominally placed mesh (sacrocolpopexy)
    - Vaginal mesh (vaginal mesh "kits")

5

Learning Objectives

- Understand the historical development of surgical procedures for stress incontinence
- Describe current surgical techniques for treatment stress incontinence
- Discuss the ongoing controversy concerning the use of mesh in urogynecologic surgery

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Kelly procedure (Suburethral Plication) - 1914

" This affection is due to the loss of elasticity or normal tone of urethral and vesical sphincter, so well shown by the cystoscopic picture, which in many cases presents a gaping internal sphincter orifice which closes sluggishly as the cystoscope is withdrawn. The point of vantage toward which the operative treatment should be directed is the internal orifice of the urethra and sphincter of the bladder"

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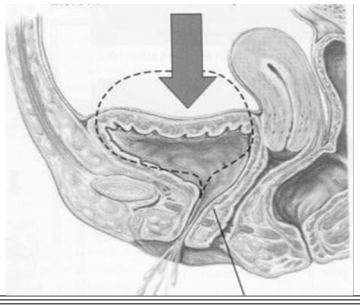

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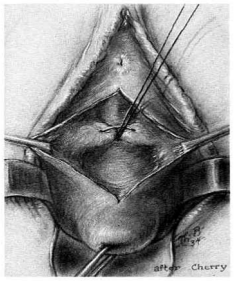

Fig. 2. Kelly operation. Plication of vesical neck.

Technique

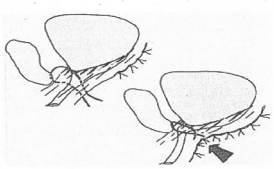

Figure 3. The diagrams demonstrate the suture placement. Note that the paraurethral sutures pass deeply to the inferior aspect of the symphysis pubis, which the needle touches but does not penetrate. No. 1 chromic catgut sutures are used to plicate the pubocervical fascia under the bladder base; care should be taken to avoid overcorrection of the cystocele (disturbing the differential support concept).

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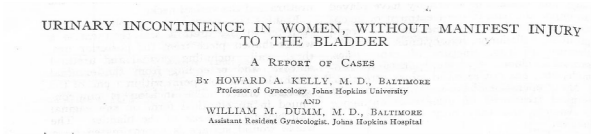

URINARY INCONTINENCE IN WOMEN, WITHOUT MANIFEST INJURY TO THE BLADDER

A Report of Cases

By HOWARD A. KELLY, M. D., Baltimore
Professor of Gynecology Johns Hopkins University
AND
WILLIAM M. DUMM, M. D., Baltimore
Assistant Resident Gynecologist, Johns Hopkins Hospital

- **Kelly 1914: 16 of 20 patients cured (F/U 4 months to 13 years)**

10

Early Sling procedures

- **Goebell (1910) -** ***pyramidalis muscles***
- **Frangenheim (1914) -** ***pyramidalis muscles attached to strips of overlying fascia***
- **Stoeckel (1917) -** ***Goebell-Frangenheim procedure combined with vaginal plastic operation at bladder neck (i.e. Kelly)***
- **Martius (1929) -** ***bulbocavernosus muscle and surrounding fatty tissue***

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Rectus Fascia Transplantation Sling

- **Aldridge (1942)**
  - ***"The new procedure that has been described was devised primarily with the hope of curing post-partum, urinary stress incontinence in women in whom vaginal plastic surgery seemed inadequate."***
  - ***"The disadvantages of the procedure are that it requires a painstaking technique which should not be undertaken by a surgeon who has not acquired a modern conception of the anatomic structures in the anterior vaginal wall about the urethra and bladder."***

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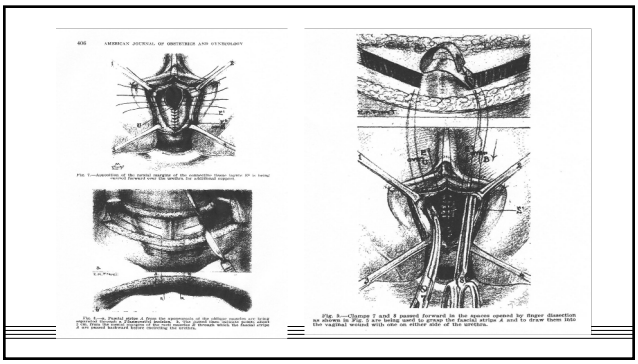

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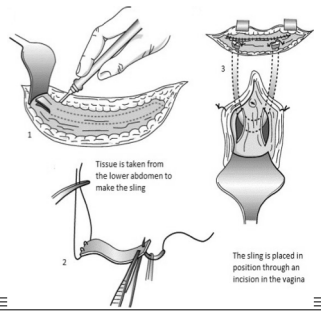
Rectus Fascia Sling



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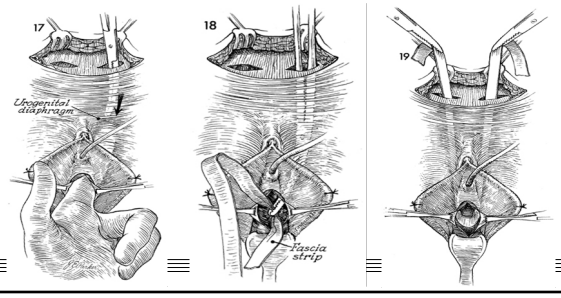
Technique



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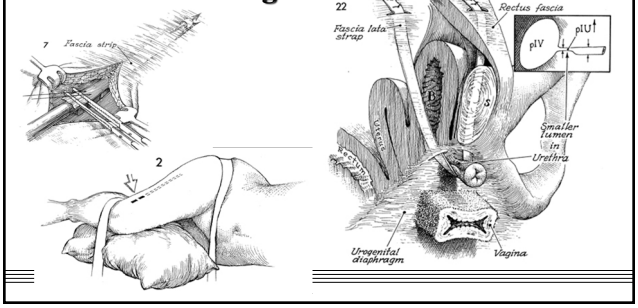
Fascial Lata Sling



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Fascial Slings - Key Publications

- **Ridley 1966, Parker 1979, McGuire 1987, Beck 1988, Breen 1997**
- ***In all of these articles, the Fascial Sling is described as a salvage procedure for patients with recurrent stress incontinence***

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Modified Slings – Patch (1990s)

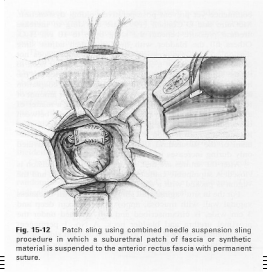

Fig. 15-12 Patch sling using combined needle suspension sling procedure in which a suburethral patch of fascia or synthetic material is suspended to the anterior rectus fascia with permanent suture.

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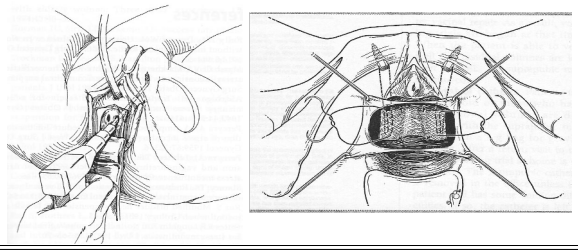
Modified Slings – Bone Anchor (1990s)



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Questions?

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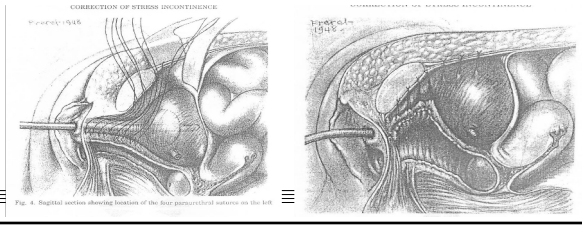
Retropubic Urethropexy (Vesicourethral Suspension)

- **Marshall-Marchetti-Krantz (1949)**



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Burch procedure - 1961

"One day, while *we were doing a Marshall-Marchetti-Krantz operation,* the *sutures in the periosteum continued to pull out* and it was necessary to look for another point of attachment. An examination of the field revealed that the intravaginal finger was pushing the anterior vaginal wall up to a level as high as the origin of the levator muscle from the white line of the pelvis. Since the white line is the usually accepted origin of the so-called fascia surrounding the vagina *it seemed reasonable and anatomically correct to suture this perivaginal fascia to the white line and the underlying levator muscle* with three interrupted sutures on each side. This maneuver produced a most satisfactory *restoration of the normal anatomy of the bladder neck* and, in addition, a surprising correction of most of the cystocele involving the base of the bladder."

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Urethrovaginal fixation to Cooper's ligament for correction of stress incontinence, cystocele, and prolapse

JOHN C. BURCH, M.D.
Nashville, Tennessee

Ÿ Burch 1961: 53 cases; 100% success

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Technique

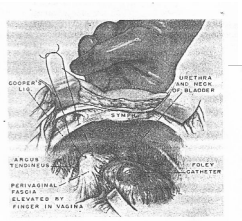

Fig. 1. The suture has been passed through the perivaginal fascia and the wall of the vagina, but not through the mucous membrane. The sutured point is now matched to that point on Cooper's ligament to which it is most easily approximated, and the suture passed through this point and tied.

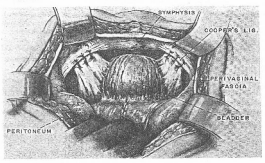

Fig. 2. The lateral edges of the vagina have been approximated to Cooper's ligament by 3 interrupted sutures.

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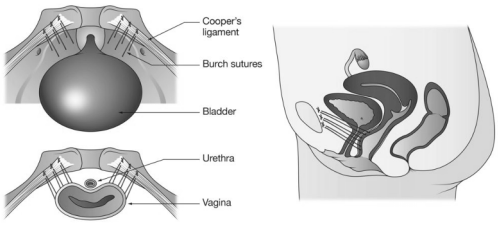
Modified Burch Procedure



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Needle Suspension Procedures

- **Pereyra (1959); Stamey (1973); Raz (1981); Gittes (1987); other variations**
- ***"cure of urinary incontinence depends exclusively on raising the internal vesical neck of the bladder upward and forward behind the symphysis pubis, the cystoscope offers the most accurate way of placing the suspending sutures exactly at the bladder neck"***

Stamey 1980

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Technique

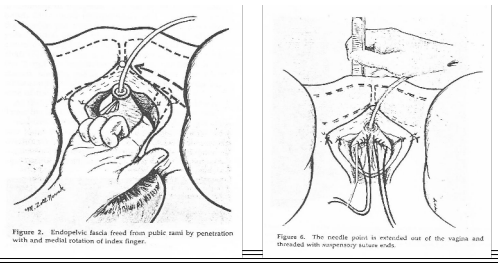

Figure 2. Endopelvic fascia freed from pubic rami by penetration with and medial rotation of index finger.

Figure 6. The needle point is extended out of the vagina and threaded with suspensory suture ends.

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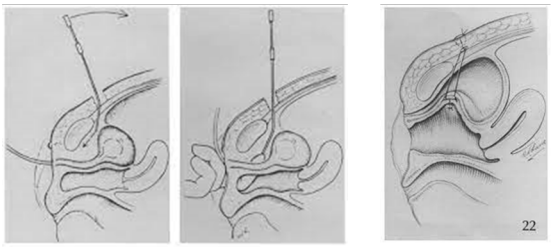
Technique



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SUI Treatments: Early 1900s to Mid 1990s

- **Pubovaginal slings (1910)**
  - **Rectus fascia (1942), Fascia lata (1980s)**
  - ***Primarily used as salvage operations for recurrence***
- **Kelly suburethral plication (1914)**
  - ***Vaginal approach most commonly used by Gynecologists***
- **Retropubic urethropexy (1949)**
  - **MMK (1949), Burch procedure (1961)**
  - ***Abdominal approach used by Gynecologists and Urologists***
- **Needle suspension procedures (1959)**
  - **Pereyra (1959); Stamey (1973); Raz (1981); Gittes (1987)**
  - ***Vaginal approach most commonly used by Urologists***

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Comparison of procedures

Three surgical procedures for genuine stress incontinence: Five-year follow-up of a prospective randomized study

Arieh Bergman, MD, and Giovanni Elia, MD
Los Angeles, California

OBJECTIVE: Our purpose was to evaluate and compare the long-term results of the Kelly plication, modified Pereyra needle suspension, and Burch urethropexy for the treatment of stress urinary incontinence in women.
STUDY DESIGN: One hundred twenty-seven consecutive women underwent surgery at the gynecologic urology division at Women's Hospital, Los Angeles County–University of Southern California Medical Center between January 1986 and June 1987. The only indication for surgery was stress urinary incontinence. Women with previously failed anticontinence procedures were excluded. Fifty-three patients were premenopausal and 74 postmenopausal. History, physical examination, urethrocystoscopy, cotton swab test, filling cystometry, urethral pressure profile at rest and on cough, and uroflowmetry were performed preoperatively, 3 months, 1 year, and 5 years postoperatively. The subjects and surgeons were randomly allocated to one of three surgical procedures: group 1 had anterior colporrhaphy with Kelly plication, group 2 had modified Pereyra needle urethropexy, and group 3 had Burch urethropexy. One hundred seven women were available after 1 year, and 93 were the subjects of the 5-year evaluation. Fisher exact test, χ^2, *t* test, and paired *t* test were used for statistical analysis.
RESULTS: The results of the 1-year postoperative evaluation has been previously published. The objective success rate for groups 1, 2, and 3 after 5 years was 37%, 43%, and 82%, respectively, and the difference was statistically significant. The drop in the success rate in 4 years was 26%, 22%, and 7% for groups 1, 2, and 3, respectively. Urodynamically all three procedures significantly increased the abdominal pressure transmission to the urethra, when successful. Ninety-one percent of women after the Burch procedure had a negative cotton swab test after 5 years compared with 46% for the Pereyra and 30% for the Kelly procedures.
CONCLUSIONS: In our hands the Burch urethropexy has a higher cure rate that holds over time when compared with the modified Pereyra needle suspension and the Kelly plication. The lower incidence of the positive cotton swab test in women after Burch urethropexy may be proof of a better anatomic suspension of the bladder neck. (Am J Obstet Gynecol 1995;173:66-71.)

Bergman 1995

- **Kelly plication vs. Needle suspension (Pereyra) vs. Burch procedure**
- **Burch better than Kelly plication and Needle suspension *due to better suspension of the bladder neck***

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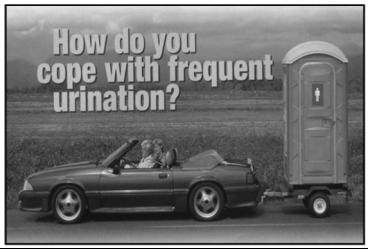
QUESTIONS?



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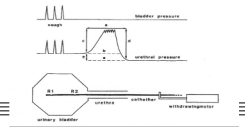
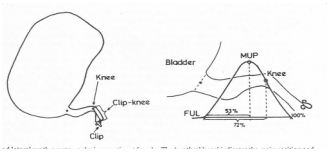
Synthetic Midurethral Slings

- **Pathophysiology - loss of function of pubourethral ligaments to maintain high-pressure zone at mid-urethra**

Comparative urodynamic studies of continent and stress incontinent women in pregnancy and in the puerperium

SERAFIM IOSIF, M.D.
ULF ULMSTEN, M.D.
Lund, Sweden





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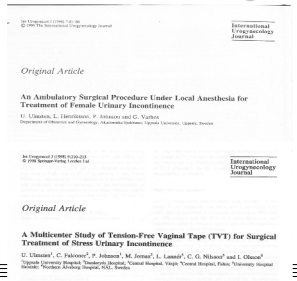
Midurethral Sling - Key Publications



Original Article

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

U. Ulmsten, L. Henriksson, P. Johnson and G. Varhos

International Urogynecology Journal

Original Article

A Multicenter Study of Tension-Free Vaginal Tape (TVT) for Surgical Treatment of Stress Urinary Incontinence

U. Ulmsten[1], C. Falconer[2], P. Johnson[1], M. Jornar[3], L. Lanner[4], C. G. Nilsson[5] and I. Olsson[6]

- **Original "TVT"**
  - **1 year data (1996)**
  - **3 year data (1999)**

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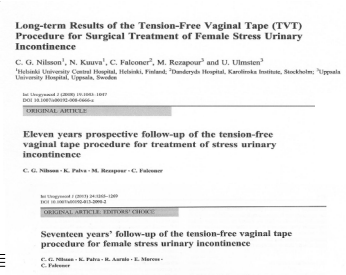
Midurethral Sling - Key Publications



Long-term Results of the Tension-Free Vaginal Tape (TVT) Procedure for Surgical Treatment of Female Stress Urinary Incontinence

C. G. Nilsson[1], N. Kuuva[1], C. Falconer[2], M. Rezapour[2] and U. Ulmsten[3]

[1]Helsinki University Central Hospital, Helsinki, Finland, [2]Danderyds Hospital, Karolinska Institute, Stockholm; [3]Uppsala University Hospital, Uppsala, Sweden

ORIGINAL ARTICLE

Eleven years prospective follow-up of the tension-free vaginal tape procedure for treatment of stress urinary incontinence

C. G. Nilsson · K. Palva · M. Rezapour · C. Falconer

ORIGINAL ARTICLE: EDITORS' CHOICE

Seventeen years' follow-up of the tension-free vaginal tape procedure for female stress urinary incontinence

C. G. Nilsson · K. Palva · R. Aarnio · E. Morren · C. Falconer

- **Long-term data**
  - **5 year (2001)**
  - **11 year (2008)**
  - **17 year (2013)**

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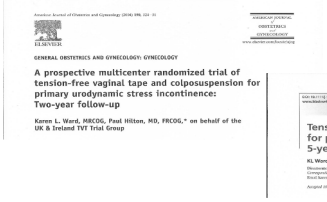
TVT vs. Burch (2004, 2007)



ELSEVIER

GENERAL OBSTETRICS AND GYNECOLOGY: GYNECOLOGY

A prospective multicenter randomized trial of tension-free vaginal tape and colposuspension for primary urodynamic stress incontinence: Two-year follow-up

Karen L. Ward, MRCOG, Paul Hilton, MD, FRCOG,* on behalf of the UK & Ireland TVT Trial Group

Urogynaecology

Tension-free vaginal tape versus colposuspension for primary urodynamic stress incontinence: 5-year follow up

KL Ward, P Hilton on behalf of the UK and Ireland TVT Trial Group*

- **TVT and Burch equivalent - 2 yrs and 5 yrs**

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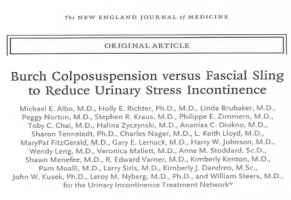
Burch vs. Fascial Sling (2007)



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Burch Colposuspension versus Fascial Sling to Reduce Urinary Stress Incontinence

Michael E. Albo, M.D., Holly E. Richter, Ph.D., M.D., Linda Brubaker, M.D., Peggy Norton, M.D., Stephen R. Kraus, M.D., Philippe E. Zimmern, M.D., Toby C. Chai, M.D., Halina Zyczynski, M.D., Ananias C. Diokno, M.D., Sharon Tennstedt, Ph.D., Charles Nager, M.D., L. Keith Lloyd, M.D., MaryPat FitzGerald, M.D., Gary E. Lemack, M.D., Harry W. Johnson, M.D., Wendy Leng, M.D., Veronica Mallett, M.D., Anne M. Stoddard, Sc.D., Shawn Menefee, M.D., R. Edward Varner, M.D., Kimberly Kenton, M.D., Pam Moalli, M.D., Larry Sirls, M.D., Kimberly J. Dandreo, M.Sc., John W. Kusek, Ph.D., Leroy M. Nyberg, M.D., Ph.D., and William Steers, M.D., for the Urinary Incontinence Treatment Network*

- **Fascial Sling has higher cure rate but also higher morbidity**

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Burch, Fascial sling, TVT sling

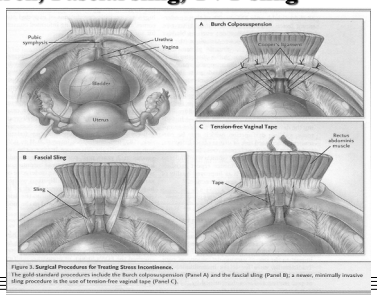

Figure 3. Surgical Procedures for Treating Stress Incontinence.
The gold-standard procedures include the Burch colposuspension (Panel A) and the fascial sling (Panel B); a newer, minimally invasive sling procedure is the use of tension-free vaginal tape (Panel C).

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SUI Surgery Trends

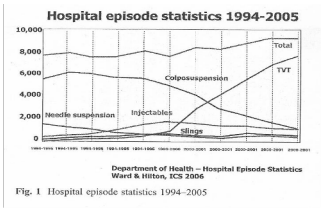

Fig. 1 Hospital episode statistics 1994–2005

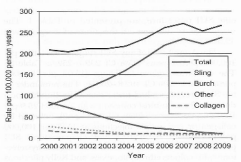

Fig. 1. Annual rates of different types of stress urinary incontinence surgery (SUI) for each year from 2000 to 2009. There was a significant increase in total SUI procedures over the calendar year ($P<.001$). There was also a significant increase for slings over calendar time ($P<.001$). For all remaining procedures, there was a significant decrease over calendar time: Burch ($P<.001$), collagen injection ($P=.001$), laparoscopic SUI procedures ($P<.001$), transvaginal hysterectomy with colpourethrocystopexy ($P<.001$), needle suspension ($P<.001$), and Kelly plication ($P<.001$).
Jansson Funk. Rates and Time Trends for SUI Surgeries. Obster Gynecol 2012.

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MUS variations

- **Retropubic**
  - **Bottom-up**
  - **Top-down**
- **Transobturator**
  - **Outside-in**
  - **Inside-out**
- **Single incision (Mini)**

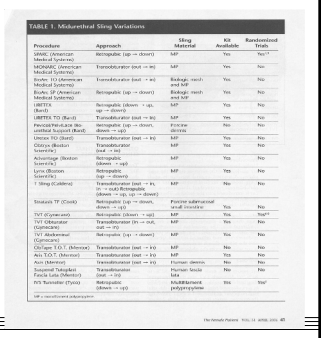

TABLE 1. Midurethral Sling Variations

Procedure	Approach	Sling Material	Kit Available	Randomized Trials
SPARC (American Medical Systems)	Retropubic (up → down)	MP	Yes	Yes[17]
MONARC (American Medical Systems)	Transobturator (out → in)	MP	Yes	No
Bioarc TO (American Medical Systems)	Transobturator (out → in)	Biologic (mid- and MP	Yes	No
Bioarc SP (American Medical Systems)	Retropubic (up → down)	Biologic (mid- and MP	Yes	No
LIBERTEK (Gynecare)	Retropubic (down → up), (up → down)	MP	Yes	No
UROTEK TO (Ethicon)	Transobturator (out → in)	MP	Yes	No
Pelvicol Pelvalace (Bard)	Retropubic (up → down), (down → up)	Porcine dermis	No	No
Uresia TO (Bard)	Transobturator (out → in)	MP	Yes	No
Gynyx (Boston Scientific)	Transobturator (out → in)	MP	Yes	No
Advantage (Boston Scientific)	Retropubic (down → up)	MP	Yes	No
Lynx (Boston Scientific)	Retropubic (up → down)	MP	Yes	No
T Sling (Caldera)	Transobturator (out → in), (in → out) Retropubic (down → up, up → down)	MP	No	No
Stratasis TF (Cook)	Retropubic (up → down), (down → up)	Porcine submucosal small intestine	Yes	No
TVT (Gynecare)	Retropubic (down → up)	MP	Yes	Yes[18]
TVT Obturator (Gynecare)	Transobturator (in → out, out → in)	MP	Yes	No
TVT Abdominal (Gynecare)	Retropubic (up → down)	MP	Yes	No
ObTape T.O.T. (Mentor)	Transobturator (out → in)	MP	No	No
Acu T.O.T. (Mentor)	Transobturator (out → in)	MP	Yes	No
Aris (Mentor)	Transobturator (out → in)	Human dermis	No	No
Suspend Tutoplast Fascia Lata (Mentor)	Transobturator (out → in)	Human fascia lata	No	No
IVS Tunneler (Tyco)	Retropubic (down → up)	Multifilament polypropylene	Yes	Yes[19]

MP = monofilament polypropylene

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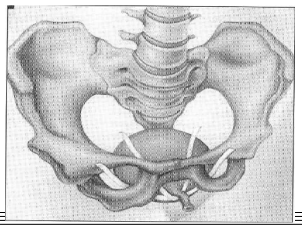
Retropubic vs. Transobturator

- Is orientation of support an issue?



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RCTs: RP-MUS vs TO-MUS

Transobturator Tape Compared With Tension-Free Vaginal Tape for the Treatment of Stress Urinary Incontinence

A Randomized Controlled Trial

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

A Randomized Controlled Trial

ORIGINAL ARTICLE

Retropubic versus Transobturator Midurethral Slings for Stress Incontinence

- Ÿ 2008 (2), 2010
- Ÿ RP ≥ TO in all studies

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Ogah 2009

- Ÿ 62 trials; 7101 pts
- Ÿ MUS as effective as traditional slings, open RPU and Lsc RPU, with fewer complications
- Ÿ Retropubic route better than obturator

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

Ogah J, Cody JD, Rogerson L

THE COCHRANE COLLABORATION®

WILEY

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Schimpf 2014

- MUS = Burch (o)
- MUS > PVS (s)
- Retropubic MUS > transobturator (o,s)
- MUS > Mini (o,s)

RESEARCH www.AJOG.org

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

OBJECTIVE: Understanding the long-term comparative effectiveness of competing surgical repairs is essential as failures after primary interventions for stress urinary incontinence (SUI) may result in a third of women requiring repeat surgery.

STUDY DESIGN: We conducted a systematic review including English-language randomized controlled trials from 1990 through April 2013 with a minimum 12 months of follow-up comparing a sling procedure for SUI to another sling or Burch urethropexy. When at least 3 randomized controlled trials compared the same surgeries for the same outcome, we performed random effects model metaanalyses to estimate pooled odds ratios (ORs).

RESULTS: For midurethral slings (MUS) vs Burch, metaanalysis of objective cure showed no significant difference (OR, 1.18; 95% confidence interval [CI], 0.73–1.89). Therefore, we suggest either intervention; the decision should balance potential adverse events (AEs) and concomitant surgeries. For women considering pubovaginal sling vs Burch, the evidence favored slings for both subjective and objective cure. We recommend pubovaginal sling to maximize cure outcomes. For pubovaginal slings vs MUS, metaanalysis of subjective cure favored MUS (OR, 0.40; 95% CI, 0.18–0.85). Therefore, we recommend MUS. For obturator slings vs retropubic MUS, metaanalyses for both objective (OR, 1.16; 95% CI, 0.93–1.45) and subjective cure (OR, 1.17; 95% CI, 0.91–1.51) favored retropubic slings but were not significant. Metaanalysis of satisfaction outcomes favored obturator slings but was not significant (OR, 0.77; 95% CI, 0.52–1.13). AEs were variable between slings; metaanalysis showed overactive bladder symptoms were more common following retropubic slings (OR, 1.413; 95% CI, 1.01–1.98, P = .046). We recommend either retropubic or obturator slings for cure outcomes; the decision should balance AEs. For minislings vs full-length MUS, metaanalyses of objective (OR, 4.16; 95% CI, 2.15–8.05) and subjective (OR, 2.65; 95% CI, 1.36–5.17) cure both significantly favored full-length slings. Therefore, we recommend a full-length MUS.

CONCLUSION: Surgical procedures for SUI differ for success rates and complications, and both should be incorporated into surgical decision-making. Low- to high-quality evidence permitted mostly level-1 recommendations when guidelines were possible.

Key words: Burch urethropexy, midurethral sling, pubovaginal sling, stress urinary incontinence, single-incision sling

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QUESTIONS?

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The Mesh Story - terminology

- 510(k) approval (used for Class 2 devices)
  - allows approval of new devices based on being "substantially equivalent" to other devices already available
- Premarket Approval Application (PMA)
  - Used for Class 3 (high-risk) devices; requires clinical trials
- 522 (studies)
  - gives FDA authority to mandate post-market surveillance studies of Class 2 or Class 3 devices
- Multidistrict Litigation (MDL)
  - Used for dangerous drugs, medical devices
  - Cases from around the country are transferred to one court

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Use of mesh in Urogynecologic Surgery

- 1950s - surgical mesh for abdominal hernias
- 1970s – mesh used for sacrocolpopexy
- 1996 – first surgical mesh specifically for SUI
  - ProteGen sling (Gore-tex)
    - Approved based on similarity to 1985 Mersilene hernia mesh
- 1998 – TVT sling (Prolene) approved in U.S.
    - Approved based on similarity to ProteGen sling

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Use of mesh in Urogynecologic Surgery

- 2001-2002 - first surgical meshes specifically for POP
  - Based on similarity to ProtoGen Sling (1996) and Mersilene hernia mesh (1985)
- 2004-2008 - Mesh "Kits" developed and marketed
  - Ultimately, over 100 devices by at least 40 manufacturers
- 2008 - FDA Public Health Notification
  - Over 1,000 reports of (rare) complications related to transvaginal mesh (2005-2008)
- 2011 - FDA Safety Communication
  - Additional 2,874 reports of complications from transvaginal mesh (2008-2011)
  - Complications related to mesh are "not rare" and some are unique to mesh itself

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Use of mesh in Urogynecologic Surgery

- 2012 - FDA requires postmarket studies (522) for prolapse mesh and single-incision (mini) slings
- Several manufacturers remove products from market
- Precipitous rise in lawsuits begins
  - 2011 - 730; 2012 - 11,798; 2013 - 34,017; 2014 - 32,296
  - By 2019, more than 108,000 lawsuits have alleged that transvaginal mesh causes complications including pain, bleeding, infection, and organ perforation.
  - "Defective vaginal mesh" has caused thousands of women to suffer severe pain and organ damage.
  - Manufacturers misled the FDA, medical community, patients and public by failing to properly test devices, research the risks and warn of the potential complications and injuries.

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Initially, in 2008, the FDA issued a public health notification on complications associated with transvaginal mesh.

In 2011, the FDA updated its statement and noted that complications associated with transvaginal mesh used to repair prolapse are not rare and that it was continuing to evaluate mesh use for the midurethral sling.

In 2013, the FDA updated its position, noting that "the safety and effectiveness of multi-incision slings is well established in clinical trials that followed patients up to 1 year."

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Use of mesh in Urogynecologic Surgery

- **2014 - Coloplast settles 400 claims; AMS 20,000; Bard 500**
- **2015 - Ethicon settles 4 lawsuits; Boston Scientific settles 3,000 claims; Bard settles another 3,000 claims; Neomedic settles 112 claims**
- **2016 - Ethicon settles 3,000 cases**
- **2016 - FDA reclassifies mesh for POP as Class 3 (High-risk)**
  - **Only 2 companies submit PMAs and begin the required clinical studies (Boston Scientific and Coloplast)**
- **2019 - FDA determines manufacturers have not demonstrated reasonable assurance of safety and effectiveness and orders companies to stop marketing and sales of transvaginal mesh for POP**

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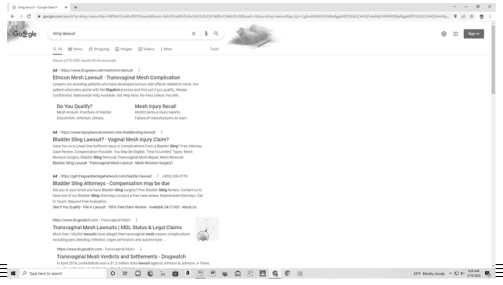
Mesh Lawsuits



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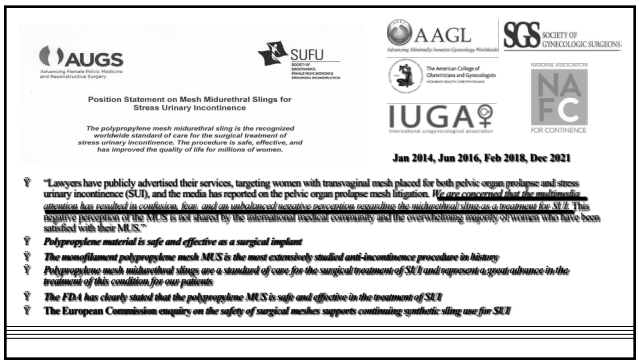

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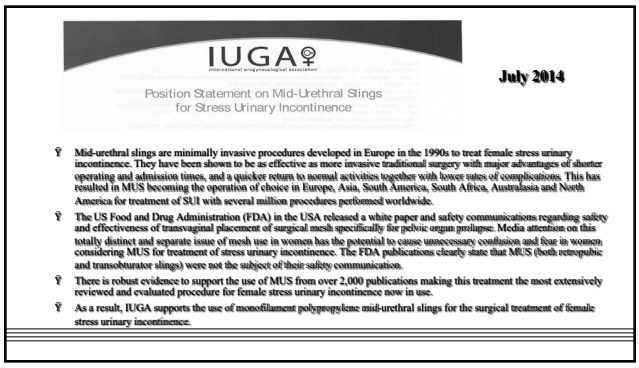

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Conclusions

- ***Concepts concerning stress incontinence and surgical treatments have varied considerably over time***
- ***Current options for surgical management include retropubic urethropexy, pubovaginal sling and synthetic midurethral slings***
- ***Significant risks are associated with vaginally placed mesh for treating POP, but risks related to synthetic midurethral slings are much lower and the use of MUS for treating SUI is supported by the literature***

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Thank you!

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