MUS – small procedure with many complications

The Israeli UroGyne Meeting – 4/3/2022

Prof. Menahem Neuman

Urogynecology Service, Raphael, Medica and Assuta MCs, Israel

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- Founder and Medical Director, FEMSelect, Israel
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- Founder and Medical Director, OORO, Israel
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Ben-Gurion University of the Negev

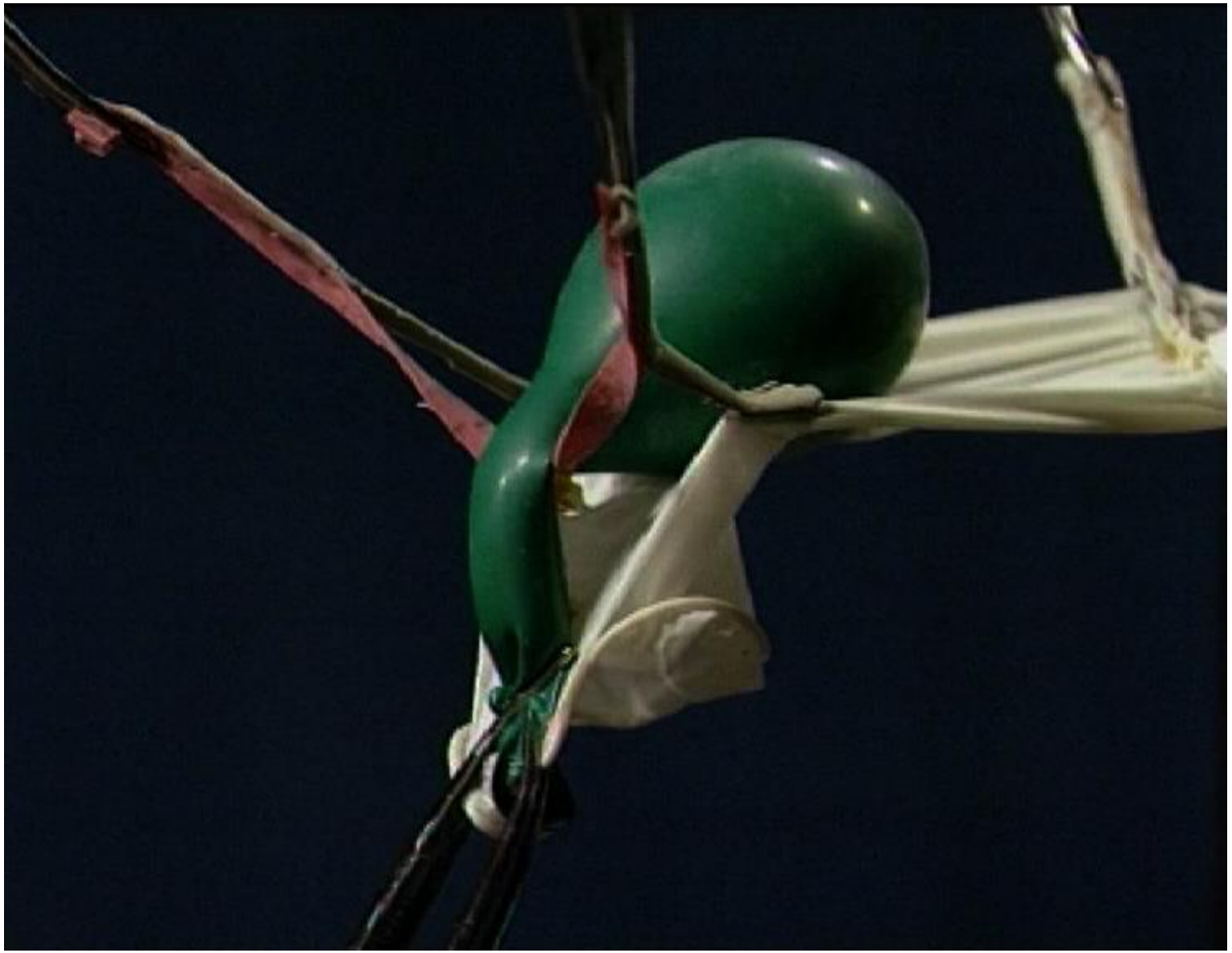
Tradition of Excellence

Bar-Ilan University
אוניברסיטת בר-אילן

Quadra P

Professor Peter Papa Petros

Menahem Neuman



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תמורות בכירורגיה למניעת דליפת שתן במאמץ

מנחם נוימן[1], אלינה מוסייב[2], יורם דיאמנט[1],

[1]המח' לרפואת נשים וילדות, המרכז הרפואי שערי־צדק, [2]הפקולטה למדעים, מכללת בית ברל, יהושלים

ת ק צ י ר

כ־5 אחוזים מאוכלוסיית הנשים לוקות בדליפת שתן במאמץ. הרקע לכך הוא אנאטומי — ריפיון ריצפת האגן ולכן השיקום הוא ניתוח. מבין מאות הניתוחים שתוארו בספרות הרפואית ברבות השנים, נפוצים בעיקר אלה שהם בעלי יכולת גבוהה לריפוי והכרוכים בסיכון ניתוחי נמוך. עם זאת, מגברת הנטיה לבחור בניתוח פולשני פחות, וכלבד ששיעור הריפוי לא ייפגע. מטרת חעבורה היא בחינת התמורות בניתוחי הבחירה למניעת דליפת שתן במאמץ בעשור הנוכחי, הן בספרות הרפואית והן במרכז הרפואי "שערי־צדק". נסקרו נתונות החולות שנותחו בשל דליפת שתן במאמץ בעשור האחרון במחלקת נשים במרכז הרפואי "שערי צדק" ופורסו הניתוחים שבוצעו, הסיבוכים שנבעו מהם והתוצאות הטיפוליות.

נמצא, כי הניתוחים האחורניים (רטרופוביים) ובהם בעיקר ה־*Burch-colposuspension*, הם הנפוצים והיעילים ביותר והישניהם הטיפוליים מחווים אבן־בוחן להצלחת שאר הניתוחים. גם לניתוחי המיתלה לסוגיהם מקום בסל הניתוחים לטיפול בדליפת שתן במאמץ ולעומתם — הן הקולפורפיה הלדנית והן הניתוחים הלאפארוסקופיים למניעת דליפת שתן במאמץ — ננטשו במידה רבה. ניתוח "המיתלה הלדני ללא מתח", דווח לראשונה בשנת 1995, והשימוש בו גדל והולך בישראל כמו גם בעולם. היתרונות הגלומים בו כוללים אפשרות לביצועו בהרדמה מקומית, העדר הצורך בניקוז המשכי של שלפוחית השתן, שכיחות נמוכה של קשיים בתר־ניתוחיים בהתרוקנות, אישפוז קצר ובעיקר — החלמה מהירה. דווח, כי לימיתלה הלדני ללא מתח" שיעור ריפוי התואם את שיעורי הריפוי של הניתוחים האחורניקיים. עדיין קיים צורך בהערכת השתמרות הריפוי מניתוח זה לאורך שנים.

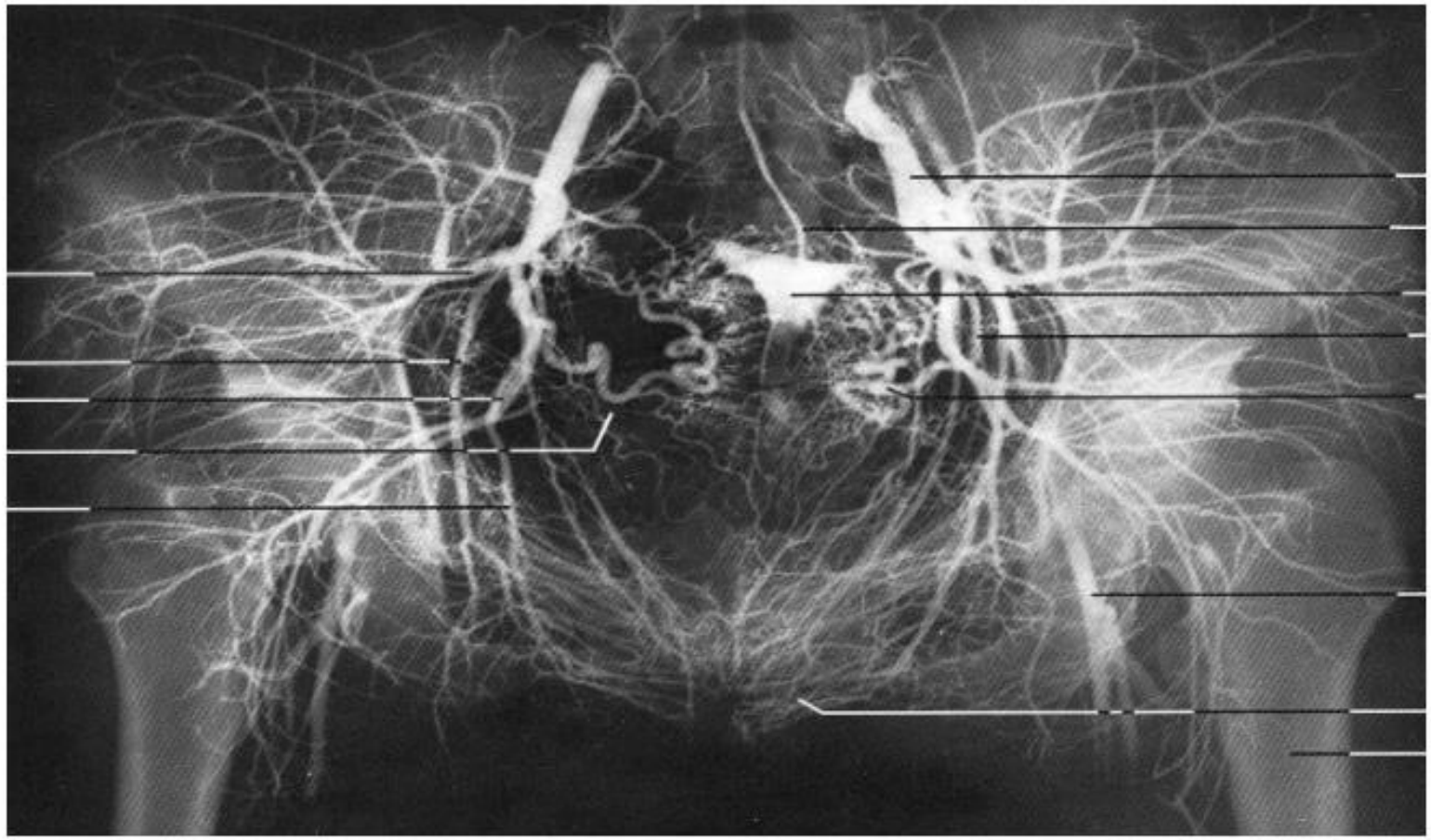
The mines along the MUS road

- Intra-op.
- Early post-op
- Late post-op

The intra-op MUS mines

- Bleeding
- Bladder / Urethral / Intestinal injury
- Buttonhole / Vaginal wall penetration

The intra-op MUS mines: Bleeding



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The intra-op MUS mines: Bleeding

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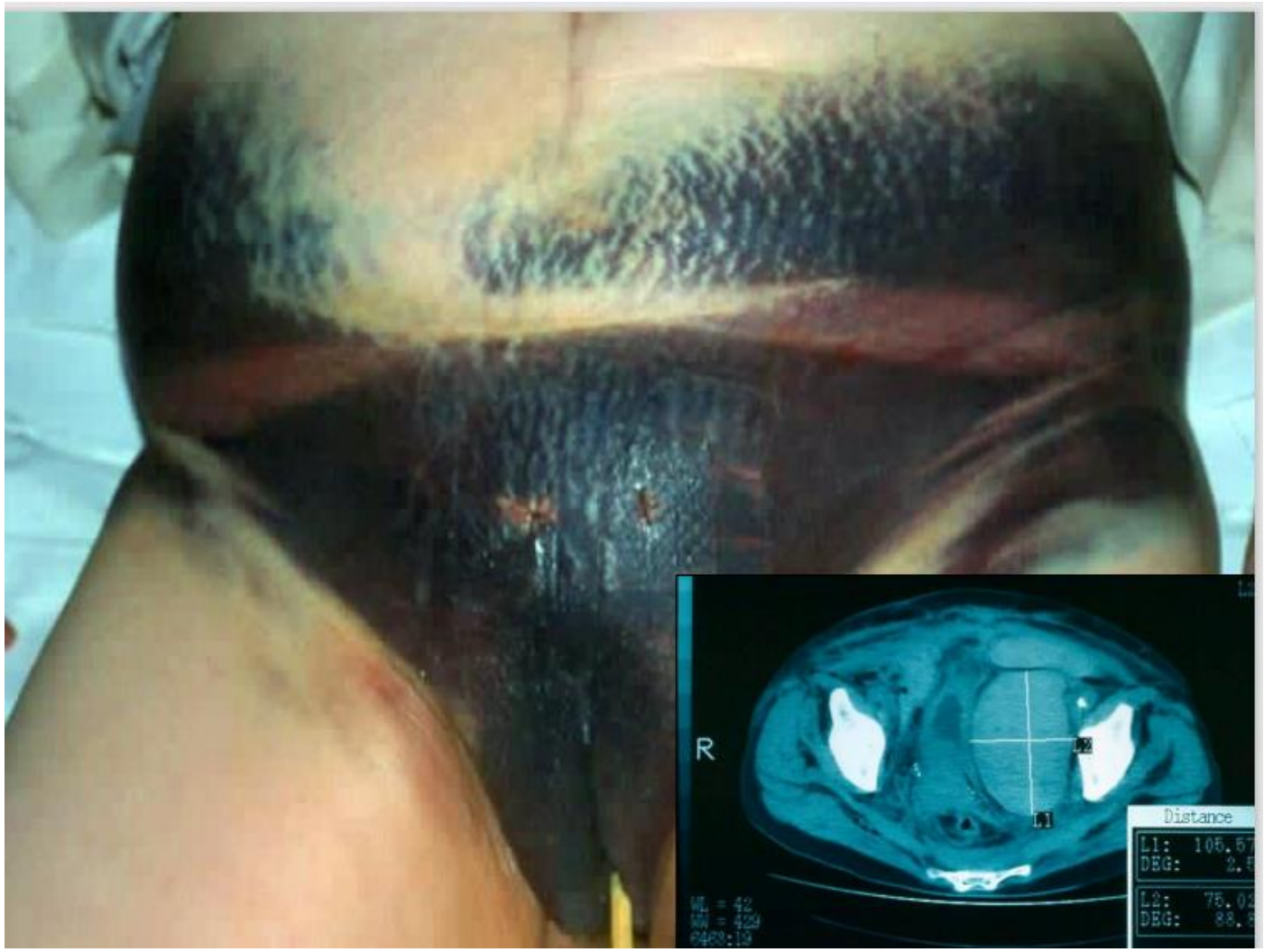
The intra-op MUS mines: Bleeding



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The intra-op MUS mines: Bleeding

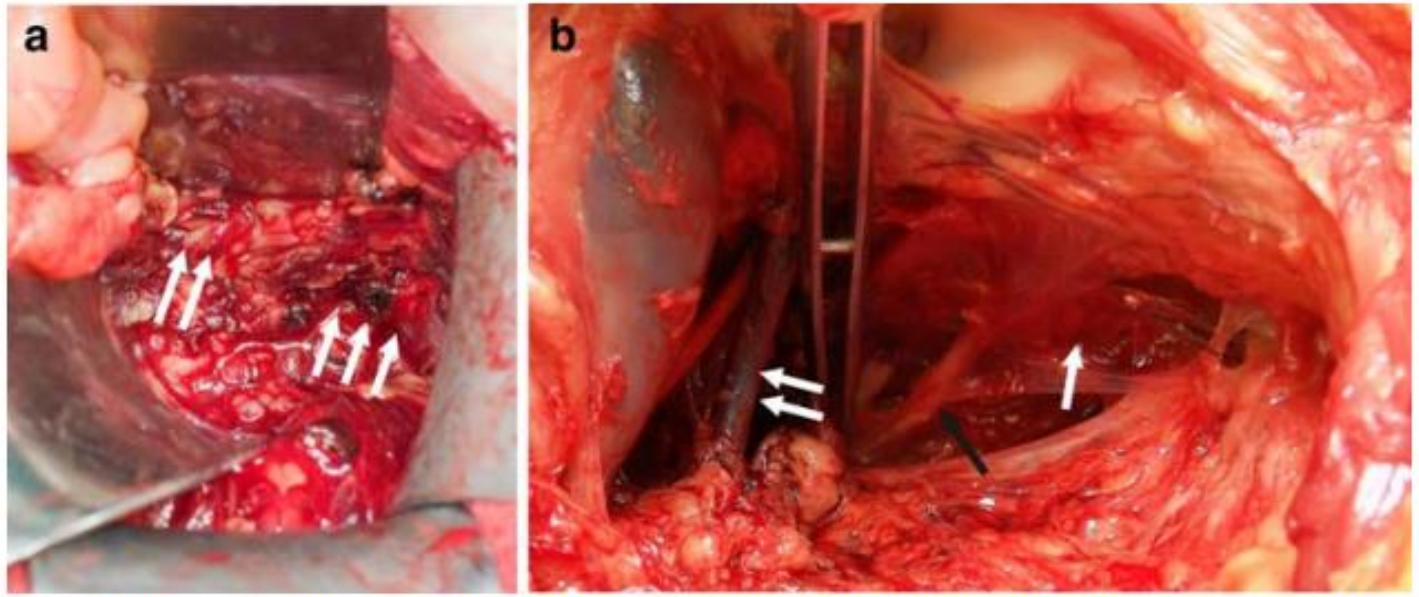


Fig. 1 Bleeding site from the internal obturator muscle and anatomical relationship of the tape inserter to the internal obturator muscle, nerve and vessels. **a** Bleeding site—perioperative finding, **b** anatomical relationship of the tape inserter to the internal obturator muscle, nerve and vessels, *White arrow* internal obturator muscle, *black arrow* arcus tendineus fascie pelvis (ATFP), *two white arrows* obturator vessels and nerve (nerve is located behind the vessels), *free white arrows* bleeding site from the internal obturator muscle, beyond the tip of the tweezers is the spina ischiadica

The intra-op MUS mines: Bleeding

Int Urogynecol J (2006) 17: 176–177
DOI 10.1007/s00192-004-1280-3

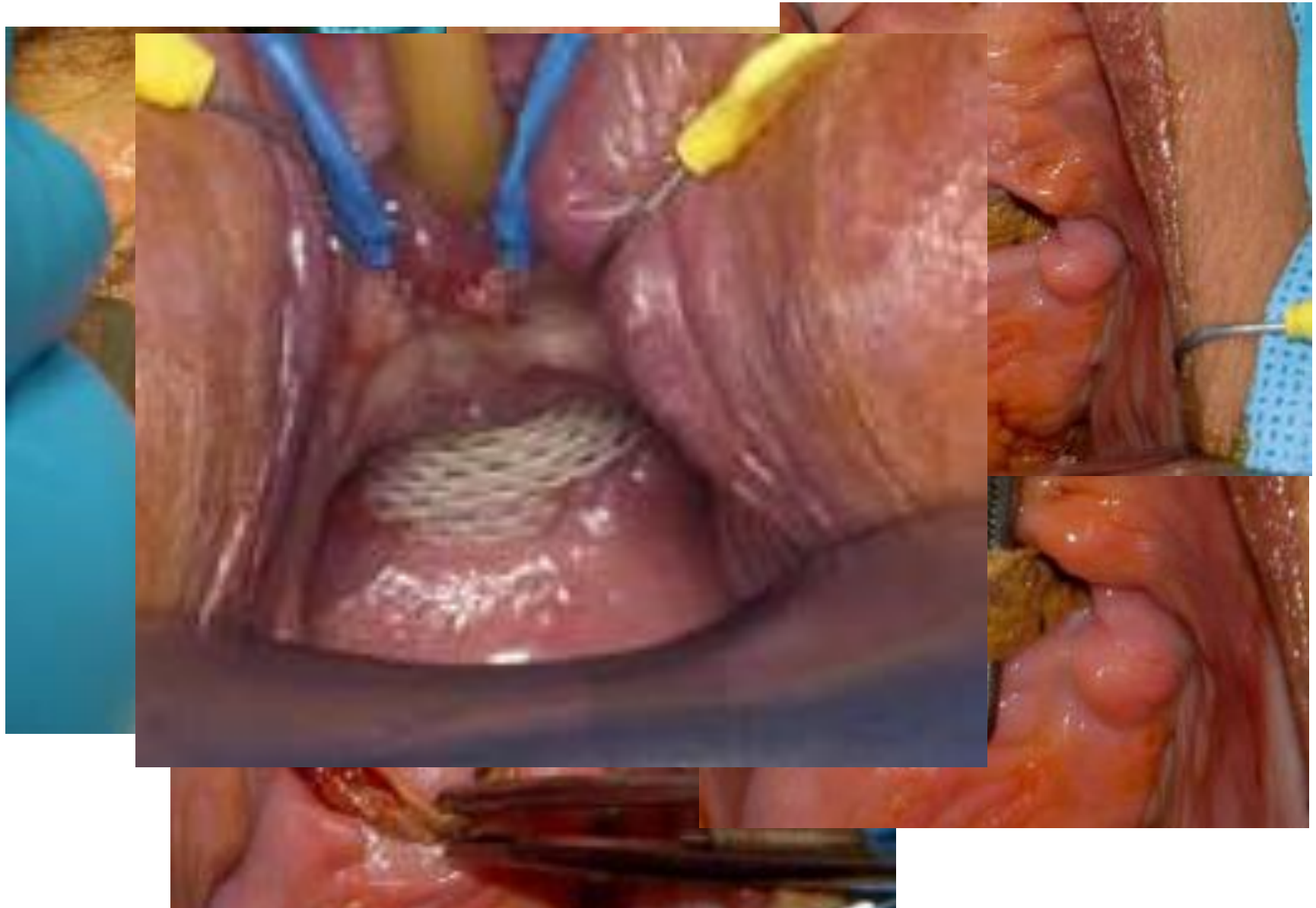
ORIGINAL ARTICLE

Menahem Neuman

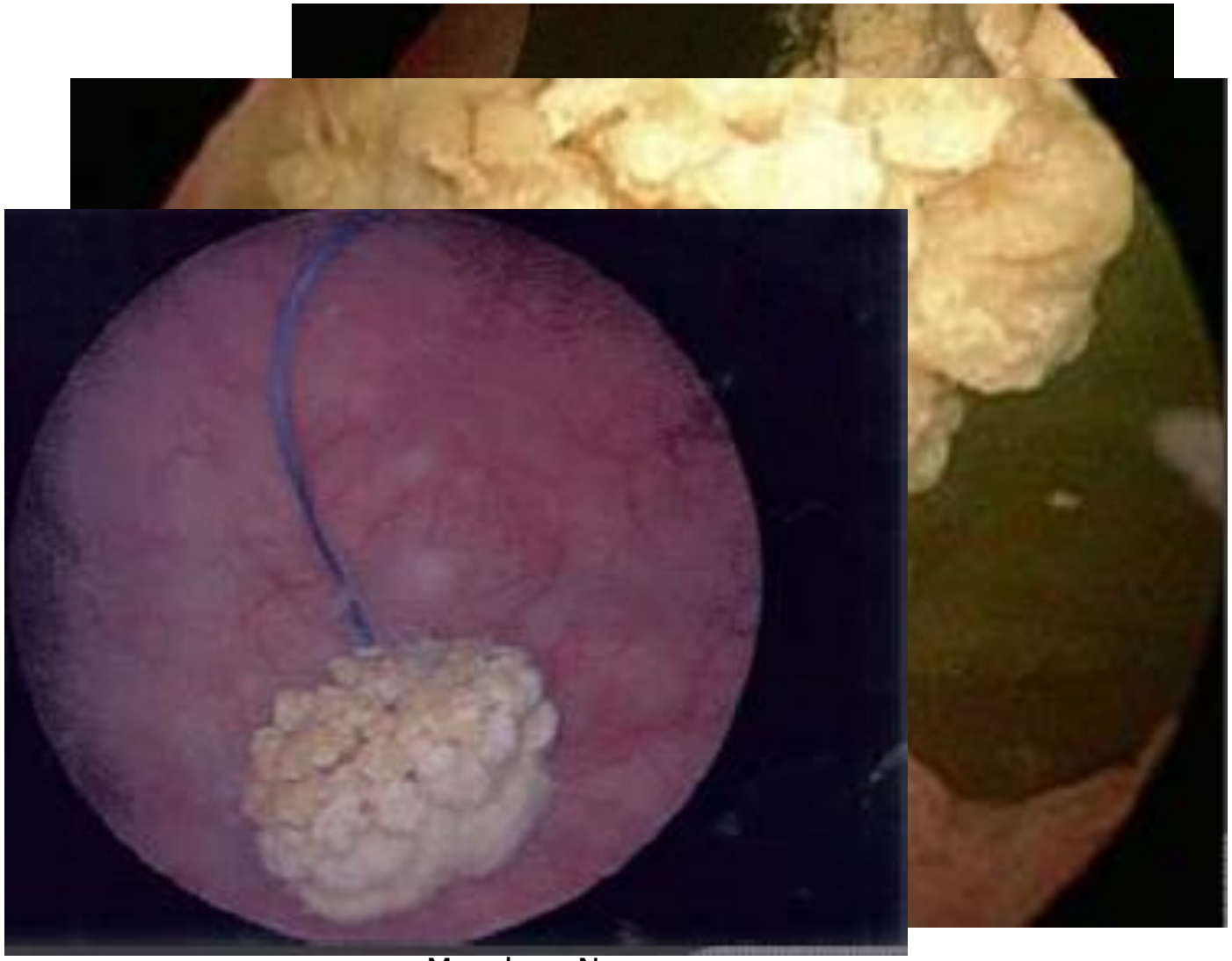
Transvaginal suture placement for bleeding control with the tension-free vaginal tape procedure

**Perpendicular absorbable suture,
at mid path of the sling,
through whole vaginal wall**

TVT Vaginal Protrusion



TVT Bladder Protrusion



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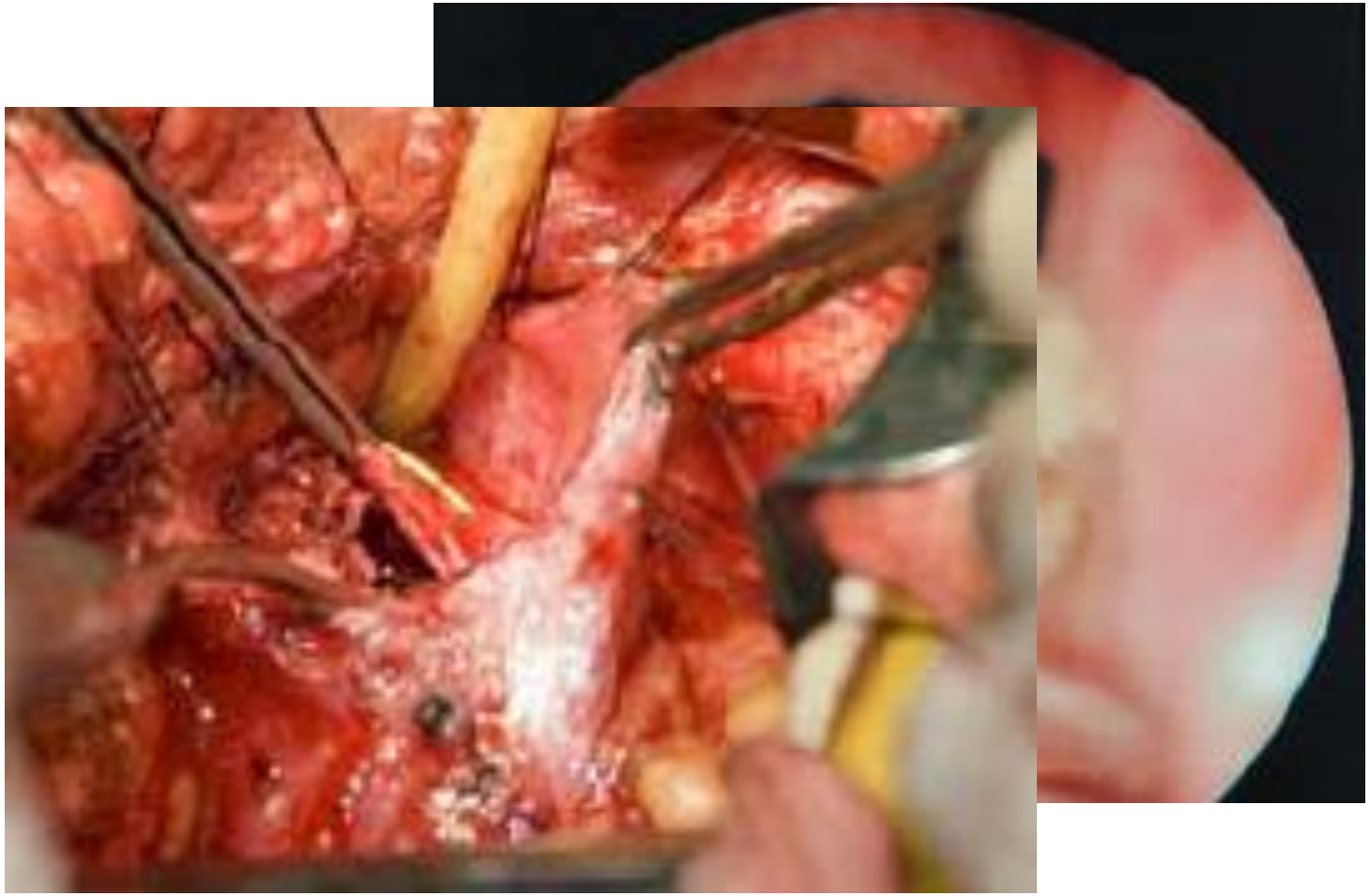
TVT Urethral Protrusion



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The intra-op MUS mines

Bladder / Urethral / Intestinal injury

Review › BJOG. 2009 Jul;116(8):1120-6. doi: 10.1111/j.1471-0528.2009.02199.x.
Epub 2009 May 11.

Urethral injury associated with minimally invasive mid-urethral sling procedures for the treatment of stress urinary incontinence: a case series and systematic literature search

H C Morton [1], P Hilton

Case Reports › Ned Tijdschr Geneeskd. 2008 May 3;152(18):1057-60.

[Bowel perforation during placement of a tension-free vaginal tape for stress urinary incontinence]

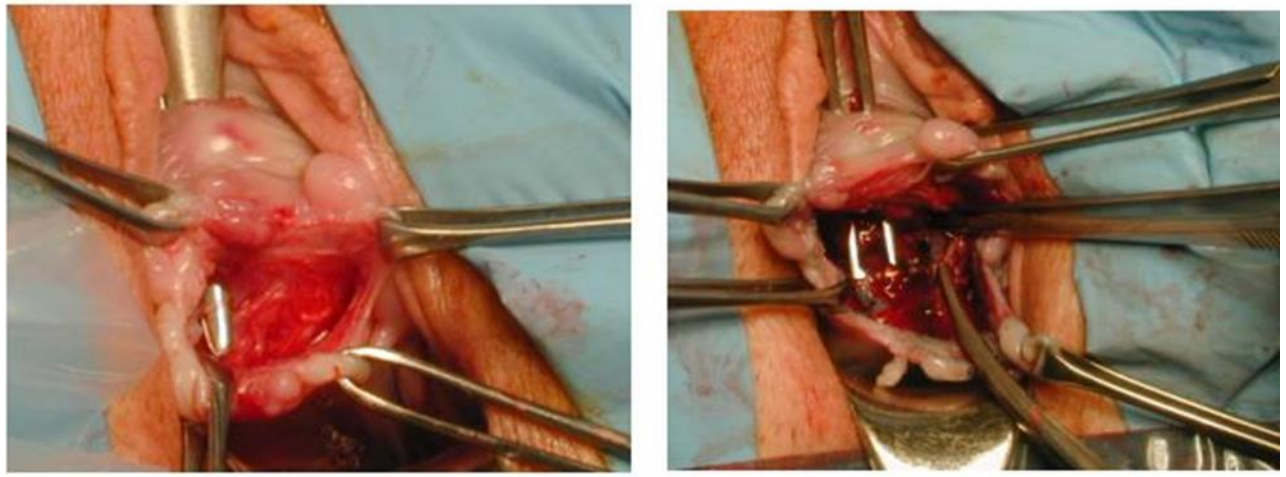
[Article in Dutch]

E W M Janszen [1], W S van der Vloedt, J G de Wall, A L Milani

The intra-op MUS mines

Bladder / Urethral / Intestinal injury

Uretrovaginal fistulae after /
resection of transuretral sling



Intra-op MUS mines mitigations

⇒ TOT instead of TVTRP

⇒ Inside-Out rather than Outside-in

⇒ proper tunneling,

at the precise layer

up to the inferior pubic ramus edge

The early post-op MUS mines

- PO-BOO
- Thigh / Inguinal pain
- Hematoma / Op. field infection / fasciitis
- Failure

The early post-op MUS mines: PO-BOO

Post Tension-free Vaginal Tape Voiding Difficulties

Prevention and Management

Menachem Neuman, MD

Abstract: One of the frequent complications of tension-free vaginal tape (TVT) is postoperative urinary retention. Over-tight tape is the main cause of early postoperative urinary obstruction. Prevention and early correction of this complication may shorten rehabilitation and improve therapeutic results.

Three recurring factors might have led to the postoperative urinary obstruction by overcorrection of the mid urethra: concomitant performing of anterior colporrhaphy, excessive effort applied to overcome occasional difficulties in separating the plastic TVT sleeves; use of the cough method for fine adjustment of the TVT tape.

Ten women suffering from post TVT urinary retention are presented: 6 women with mild urinary retention were managed by repeated catheterizations of the bladder, while 4 women with severe postoperative urinary obstruction were treated surgically to release the tape. Since treatment all patients are voiding normally and continent.

A new surgical approach for treatment of complete urinary obstruction after the TVT operation is described.

Key Words: incontinence, TVT, urinary obstruction

(*J Pelvic Med Surg* 2004;10: 19–21)

The Tension-free Vaginal Tape (TVT) procedure for surgical correction of female urinary stress incontinence was described by Ulmsten in 1995 and has become popular very rapidly. The reason for the popularity of the procedure is mainly because TVT is a minimal invasive operation with a high success rate and a low complication rate.[1,2] Well-documented complications of former operations for the treatment of urinary stress incontinence, such as intraoperative blood loss, pelvic or abdominal organ injury, as well as postoperative appearance of rectocele, detrusor instability, sexual mechanical problems and urethral erosion - are extremely rare in the TVT era. Nevertheless, reports are being published on post TVT urinary retention.[3–6] This article was designed to identify relevant risk factors for post TVT urinary retention and to offer better understanding of the surgical background of its occurrence, as well as describing a new approach to overcome the post TVT urinary obstruction.

Received for publication August 1, 2003; accepted December 5, 2003.

From the Division of Urogynecology, Department of Gynecology, Shaare Zedek Medical Center, Jerusalem; the Ben-Gurion University of the Negev; and the Urogynecology Service, American Medical Center, Rishon LeZion, Israel.

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ISSN: 1542-5983/04/1001-0019

DOI: 10.1097/01.spv.0000117315.17029.68

MATERIALS AND METHODS

211 TVT procedures were performed in 2 institutions (90 in SZMC and 121 in AMC) from April 1998 to December 2001. A further 103 TVT operations were performed during the first 6 months of 2002 (33 in SZMC and 70 in AMC) when precautions against post TVT voiding difficulties had already been put into practice. The preoperative evaluation includes interview, physical examination, cystometry, leak point measurements, flow profile and ultrasound of the urinary system. Up to December 2001 anterior colporrhaphy was performed with both mild and advanced cystocele, the plastic sleeves were not separated, the women were asked to cough and the TVT was tightened according to the original description to the point where leakage was almost stopped. Choice of anesthesia was given to the women: 22 had local anesthesia, 75 had regional anesthesia and 217 chose general anesthesia. The patients who had general anesthesia had no cough test, the tape being placed at the level of the inferior pubic edge. The medical files were reviewed and the data on women with postoperative voiding difficulty were retrospectively collected. The women's demographic characteristics are presented in Table 1.

RESULTS

Ten of the operated women (10/211 = 4.73%) suffered from postoperative voiding difficulties of various degrees: 6 women had 100–700 mL' residual urine (mild retention), and 4 were completely unable to void (severe retention). Anterior colporrhaphy to correct cystocele (8/10) and technical difficulties with removal of the TVT plastic sleeves (10/10) were both associated with post TVT voiding difficulties. No col-

Prevention: Tension free, No cough test

Early intervention:

- Partial BOO: expectancy
- Total BOO: sling tension **operative** release

The early post-op MUS mines: Thigh / Inguinal pain

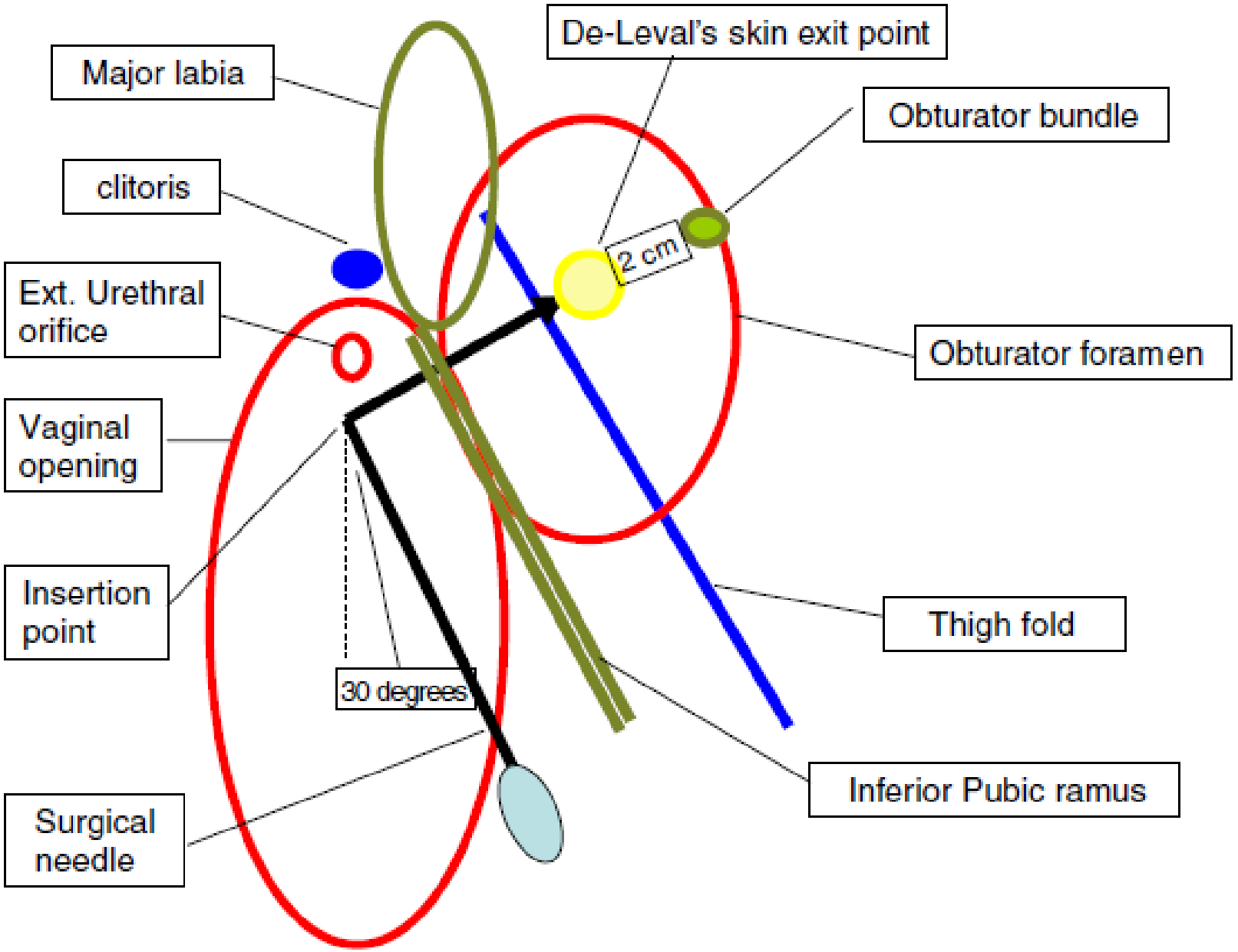
(Inside-out TOT)

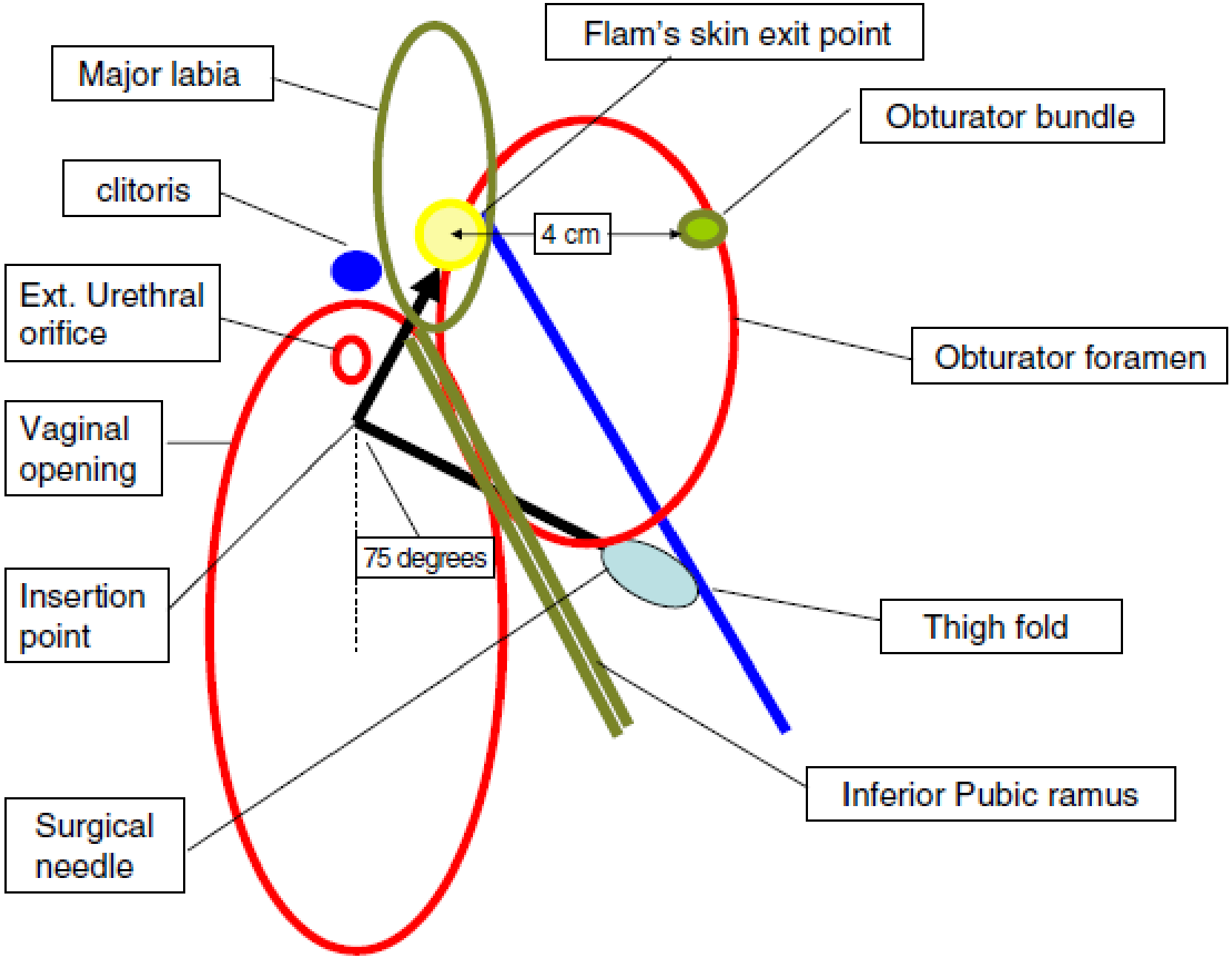
Gynecol Surg (2011) 8:171–174
DOI 10.1007/s10397-010-0635-7

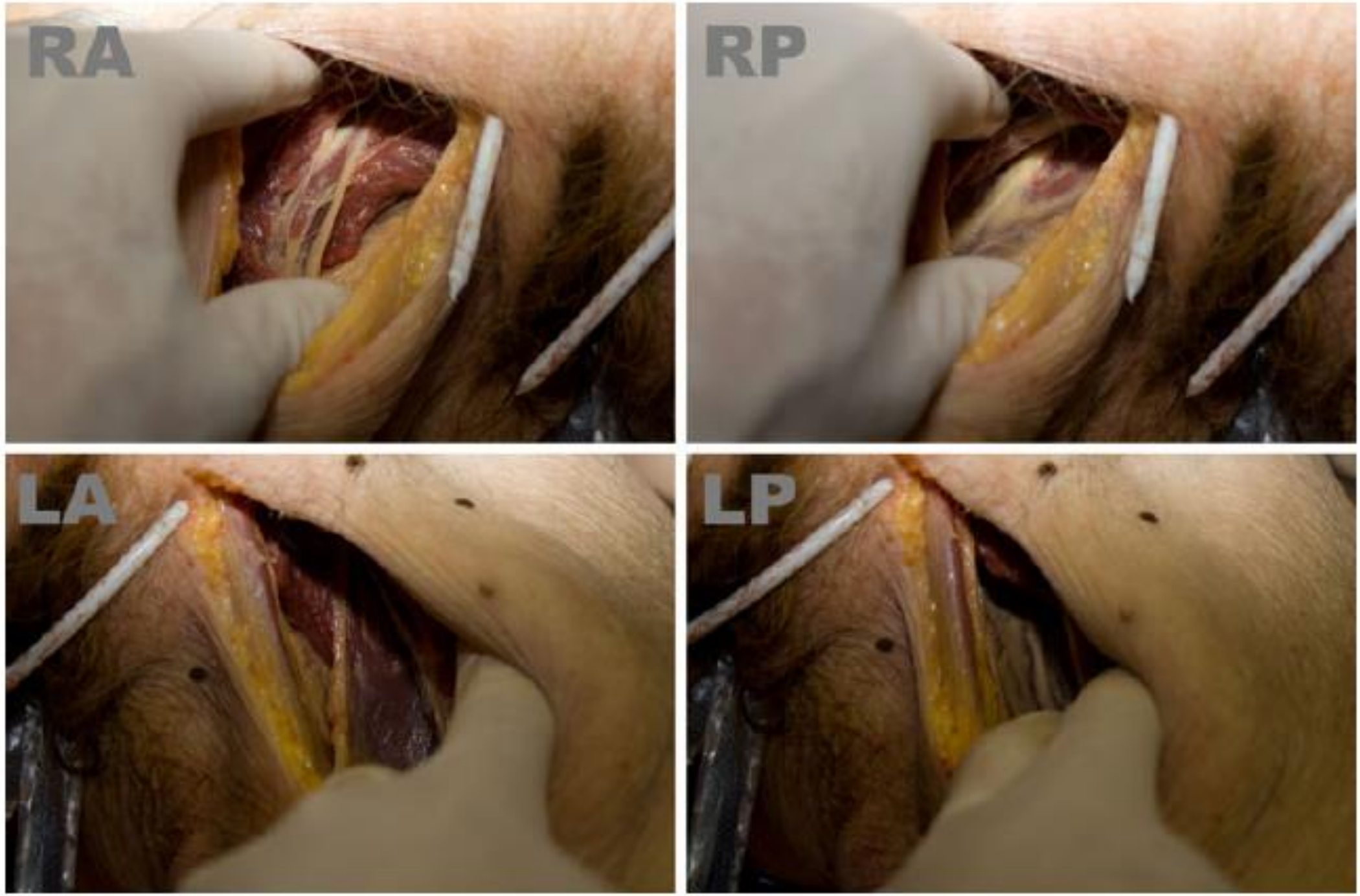
ORIGINAL ARTICLE

Modified needle route for potential reduction of the trans-obturator inside-out-related thigh pain: a cadaveric study

Menahem Neuman · P. Hubka · A. Martan · V. Sosnovski · J. Bornstein


Major labia
clitoris
Ext. Urethral orifice
Vaginal opening
Insertion point
Surgical needle
De-Leval's skin exit point
Obturator bundle
2 cm
Obturator foramen
Thigh fold
30 degrees
Inferior Pubic ramus


Flam's skin exit point
Major labia
Obturator bundle
clitoris
4 cm
Ext. Urethral orifice
Obturator foramen
Vaginal opening
75 degrees
Insertion point
Thigh fold
Surgical needle
Inferior Pubic ramus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INTERNATIONAL JOURNAL OF UROLOGY

International Journal of Urology (2012) doi: 10.1111/j.1442-2042.2012.03117.x

Original Article

Comparison of two inside-out transobturator suburethral sling techniques for stress incontinence: Early postoperative thigh pain and 3-year outcomes

Menahem Neuman,[1,2,3,4] Vladimir Sosnovski,[1] Svetlana Goralnik,[1] Benjamin Diker[1] and Jacob Bornstein[1,2]

The early post-op MUS mines:

Op. field infection / fasciitis

The early post-op MUS mines:

Op. field infection / fasciitis

The early post-op MUS mines:

Op. field infection / fasciitis

Gynecological Surgery
Publisher: Springer-Verlag GmbH
ISSN: 1613-2076 (Paper) 1613-2084 (Online)
DOI: 10.1007/s10397-005-0093-9
Issue: Volume 2, Number 2
Date: July 2005
Pages: 93 - 95

Original Article

The use of prophylactic antibiotics in the tension-free vaginal tape procedure: is it indicated?

Menahem Neuman[1, 2, 3]

The early post-op MUS mines:

Hematoma / Op. field infection

J Urol. 2002 Dec;168(6):2549.

Click here to read

Infected hematoma following tension-free vaginal tape implantation.

Neuman M.

Department of Gynecology, Shaare Zedek Medical Center and Ben-Gurion University of the Negev, Jerusalem, Israel.

The early post-op MUS mines: Failure

Failure definition
OAB?
Persistent USI? Recurrence?

Early post-op MUS mines mitigations

- PO-BOO => tension free
- Thigh / Inguinal pain => keep medial, “shave” the ramus
- Hematoma => ensure hemostasis
- Op. field infection / fasciitis => keep sterile
- Failure => precise tape placement (next to the mid urethra)

The late post-op MUS mines

- PO-BOO
- Sling exposure
- Dyspareunia / Hispareunia
- Failure

The late post-op MUS mines: PO-BOO

Sling dissection - whole
Precise localization
Preferably – lateral
No need for tape removal

The late post-op MUS mines: Sling exposure

The late post-op MUS mines: Sling exposure

Original article

Reducing mesh exposure in Posterior Intra-Vaginal Slingplasty (PIVS) for vaginal apex suspension

MENAHEM NEUMAN (*) - YUVAL LAVY (**)

(*) Urogynecology, Dept. of Gynecology: "Shaare Zedek", Ben-Gurion University of the Negev, "Hadassah-Har-Hazofim" and "Assuta" Medical Centers, "Leumit Advanced Personal Healthcare" and "Meuhedet Health Fund"
(**) The Hebrew University of Jerusalem, Women Health Centers of "Clalit Medical Services"

Placement:

- **Tension free**
- **Under the fascia**
- **Loose tissue closure**

The late post-op MUS mines: Dyspareunia / Hispareunia

Sling removal, segmental or total

Impact of incontinence surgery on **sexual function**: a systematic review

J Sex Med. 2012 , Jha

Coital incontinence is significantly reduced following continence surgery

Sexual function in women before and after TVT

Acta Obstet Gynecol Scand. 2014 , Glavind

Most women experience an improvement in sexual life after a TVT mainly because of absence of incontinence during sexual activity or absence of fear of incontinence during sexual activity

The late post-op MUS mines: Failure

Neurourology and Urodynamics 23:282–283 (2004)

Trans Vaginal Tape Readjustment After Unsuccessful Tension-Free Vaginal Tape Operation

Menahem Neuman*

Urogynecology, Department of Gynecology, Shaare Zedek Medical Center, Jerusalem, Ben-Gurion University of the Negev and Urogynecology Service, American Medical Center, Rishon LeZion, Israel

Aims: This study is aimed at evaluating a new surgical technique to deal with tension-free vaginal tape (TVT) failure. The TVT operation, described by Ulmsten in 1995, is based on a mid urethral Prolene tape support. TVT is accepted as an easy-to-learn and safe minimal invasive surgical technique. Yet, as with other surgical methods for correction of female urinary stress incontinence, therapeutic failures occur with TVT also. **Materials and Methods:** Described here is a new approach for addressing this issue. Out of 344 women who underwent TVT and who were followed for up to 55 months, four (1.2%) requested to be reoperated on the grounds of a diagnosis of operative failure. These four women were treated by trans vaginal readjustment of the tape. **Results:** Three out of the four reoperated patients reported subjective continence, subsequently confirmed clinically. The fourth patient, although suffering residual minor urinary leakage, declined further interventions. **Conclusions:** The readjustment technique seems effective, easy, and safe for the treatment of failed TVT operations. More experience is needed prior to suggesting this technique as a recommended approach. *Neurourol. Urodynam. 23:282–283, 2004.*

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

- Cosson Int Urogynecol J 2010
- The sub-urethral mesh readjustment is a simple and safe procedure for patients with recurrent SIU after TVT-O procedure. Success rates are high, surgery minimally invasive but long-term follow-up is needed to evaluate efficiency.

Operative **shortening** of the sling as a second-line treatment after TVT failure

- Gibas Cent European J Urol 2013
- The operative shortening of the sling is a simple, cheap, and effective method of second-line treatment in cases of TVT failure

The TVT Procedure as Second-Line Anti-Incontinence Surgery for TVT-Obturator Failure Patients

Menahem Neuman, MD

(*J Pelvic Med Surg* 2006;12:000–000)

Conclusions: The TVT procedure is a safe, easy-to-perform, and effective second-line operation for the cure of post-TVT-obturator persistent urinary stress incontinence. However, long-term data collection is required before drawing solid conclusions regarding this surgical approach for women diagnosed with TVT-obturator failure.

Menahem Neuman

Int Urogynecol J (2007) 18: 23–26
DOI 10.1007/s00192-006-0113-y

ORIGINAL ARTICLE

Alexander Tsivian · Menahem Neuman · Evgeny Yulish · Avraham Shtricker · Samuel Levin · Shmuel Cytron · A. Ami Sidi

Redo midurethral synthetic sling for female stress urinary incontinence

Received: 2 November 2005 / Accepted: 8 March 2006 / Published online: 1 April 2006

Menahem Neuman

Results of primary versus recurrent surgery to treat stress urinary incontinence in women

Heesakkers Int Urogynecol J 2015

Recurrent surgery to treat rSUI are do not differ from results of primary surgery.

Surgical treatment of rUSI: a systematic review and meta-analysis of RCT's

Ebdel-Fattah Urol 2013

No difference in patient-reported and objective cure rates between **RP-TVT and TOT** in the surgical treatment of women with R-SUI.

Long term MUS mines mitigations

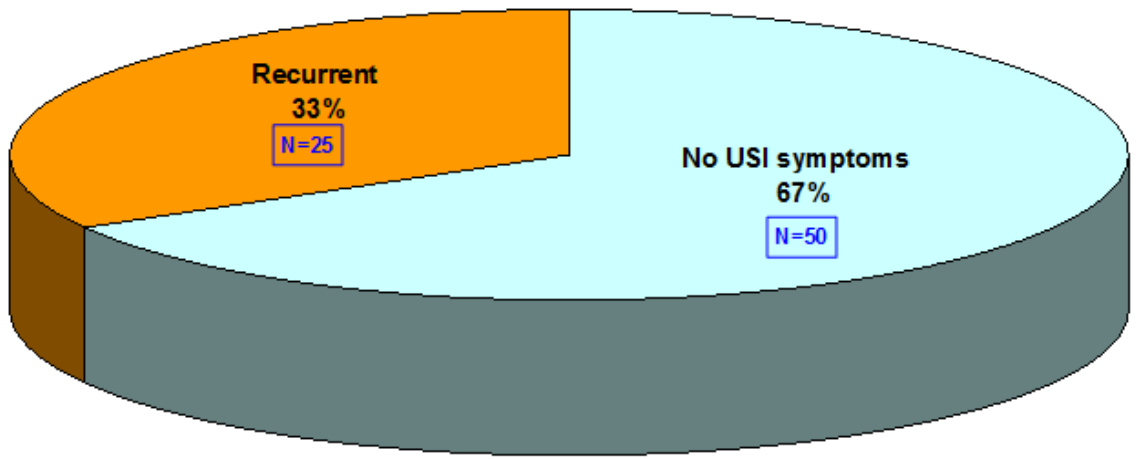
- PO-BOO => Diagnose & treat PO-BOO AEAP
- Sling exposure => tunnel properly (deep enough)
- Dyspareunia / Hispareunia => treat Exposure AEAP
- Failure => treat AEAP

The late post-op MUS mines: Failure

TVTS – J&J (31 publications)

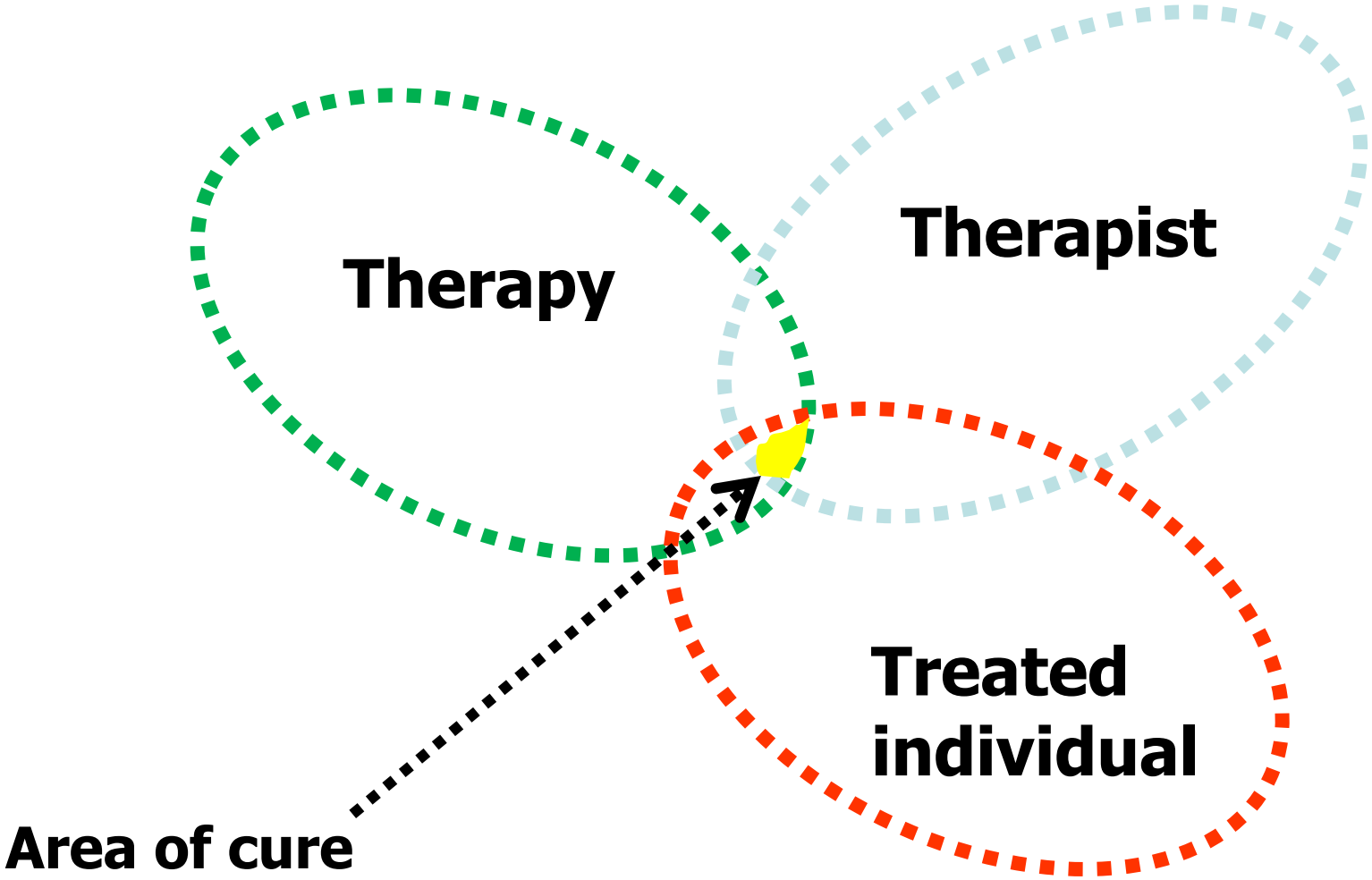
Author	year	Pts No.	F/U - Mnts	Failure rate
Neuman	2007	100	12	12%
Jimenez Calvo	2008	51	10	10%
Tartaglia	2009	32	15	0%
Sola	2009	110	8	5%
Oliveira	2009	107	15	15%
Debodinance	2009	154	12	19%
Meschia	2009	91	12	20%

7 years after mini TVT



Menahem Neuman

The triple T concept of treatment



Keys for success

- Patient selection
- Surgeon selection
- Treatment selection

Keys for success

- USI
- C/I: (local active infection, s/p irradiation)

Keys for success

- Patient selection
- Surgeon selection
- Treatment selection

Definition of Urogynaecologist

British Association of Urogynecology

- Evidence of training in a Unit, which provides the full range of investigations and treatments required for training.

Definition of Urogynaecologist

British Association of Urogynecology

- Provide **three clinical sessions** in Urogynaecology per week.
- Surgery: **One major urogynaecology procedure** associated with pelvic floor dysfunction i.e. incontinence and prolapse per working week.

Keys for success

- Patient selection
- Surgeon selection
- Treatment selection

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Surgery versus Physiotherapy for Stress Urinary Incontinence

Julien Labrie, M.D., Bary L.C.M. Berghmans, Ph.D., Kathelijn Fischer, M.D., Ph.D.,

N ENGL J MED 369;12 NEJM.ORG SEPTEMBER 19, 2013

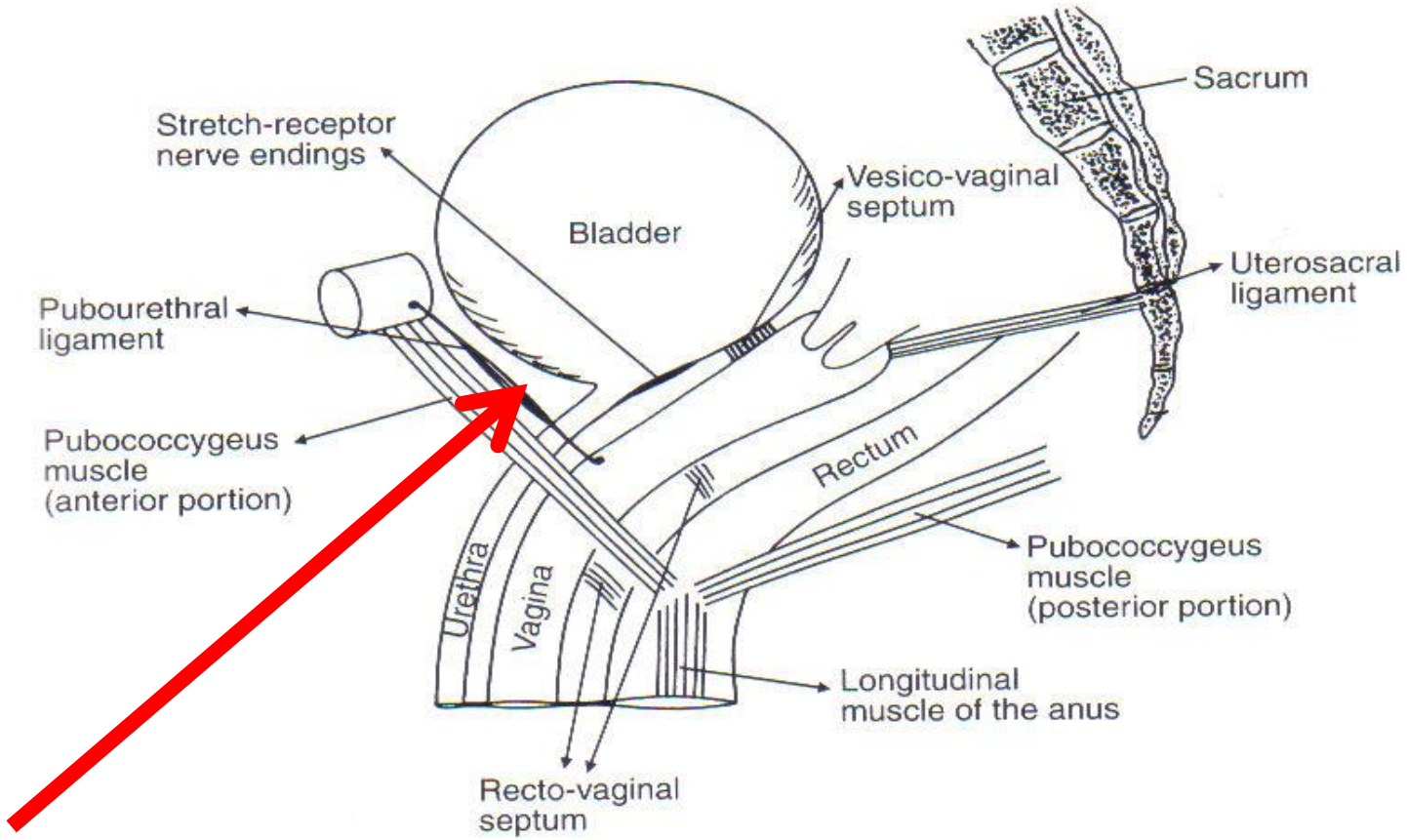
CONCLUSIONS

For women with stress urinary incontinence, initial midurethral-sling surgery, as compared with initial physiotherapy, results in higher rates of subjective improvement and subjective and objective cure at 1 year. (Funded by ZonMw, the Nether-

מנחם נוימן

Outcome	Surgery Group (N=196)	Physiotherapy Group (N=174)
PGI-I: improvement — no./total no. (%)	177/195 (90.8)	112/174 (64.4)
PGI-S: no symptoms — no./total no. (%)	167/195 (85.6)	114/174 (65.5)
Subjective cure — no./total no. (%)‡	167/196 (85.2)	93/174 (53.4)
Objective cure — no./total no. (%)§	140/183 (76.5)	94/160 (58.8)

אורוגינקולוגיה - כירורגיה



מנחם נוימן

My own choice of Anti-incontinence operations:

TOT, inside out

TVT-RP for rUSI & ISD

Para urethral injectables – for the very friable Pts

Future anti-incontinence surgery

- **Micro SMUS?**

Effect of pregnancy and delivery on urinary incontinence after the SMUS

Cavkaytar Int Urogynecol J 2015

Four patients had a TVT and 8 had TOT.

Seven women had CS and 5 women VD.

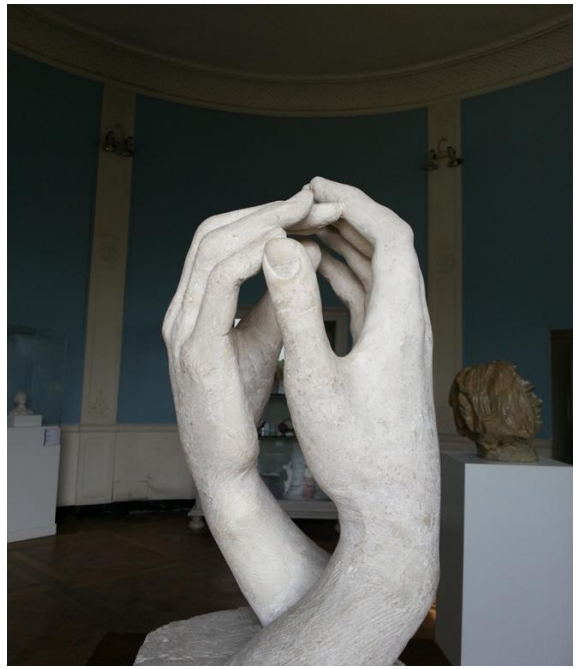
10 were continent after delivery (83.3 %).

1. Int Urogynecol J. 2014 Mar;25(3):381-6. doi: 10.1007/s00192-013-2229-1. Epub 2013 Oct 9.

Is there a need for postoperative follow-up after routine urogynaecological procedures? Patients will self-present if they have problems.

Menahem Neuman

Thank you !



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