

TVT(tension-free vaginal tape) vs TOT(transobturator tape)- techniques for Female Stress Urinary Incontinence

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TOT

outside-in and inside-out techniques

Transobturator approach spares
retropubic space

TVT

- cure rates of approximately 87% (Ulmsten 98, Olsson 99, Moran 2000, Nilsson 2001 and Nilsson –03 IUGA 7 years follow-up)
- complications:
- perforation of the bladder 3.7-23%
- bleeding 0.8-3.3%
- voiding difficulty 1.5-17%
- DE NOVO urge 2.5-25%
- some fatal peritonitis and fatal wounds of the large retroperitoneal vessels

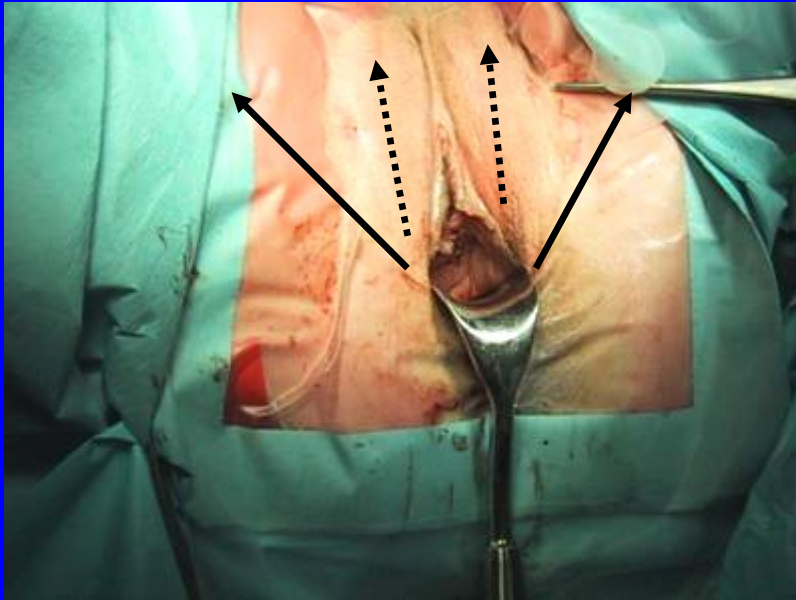
TVT and PU Ligaments



- based on the integral theory of stress urinary incontinence, Ulmsten and Petros developed an innovative technique to compensate for the insufficiency of pubourethral ligaments

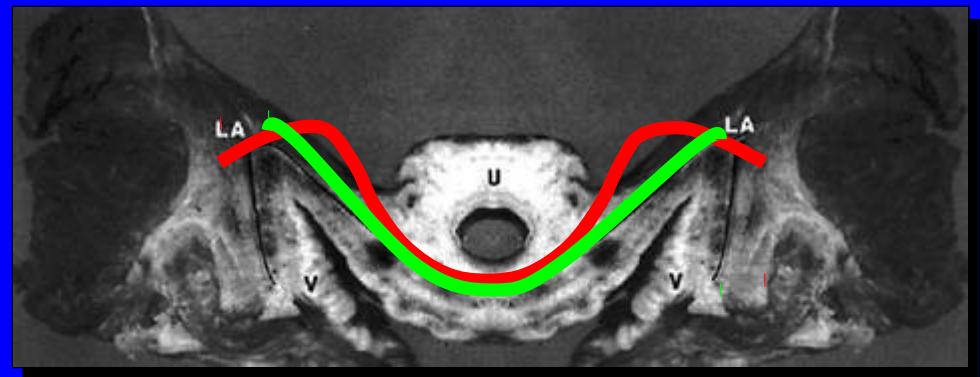
The TOT Subfascial Hammock

TVT (dotted) TOT (solid)



- restores anatomical pubourethral ligament support like the TVT Pubovaginal Sling

TOT & Normal PU Ligament

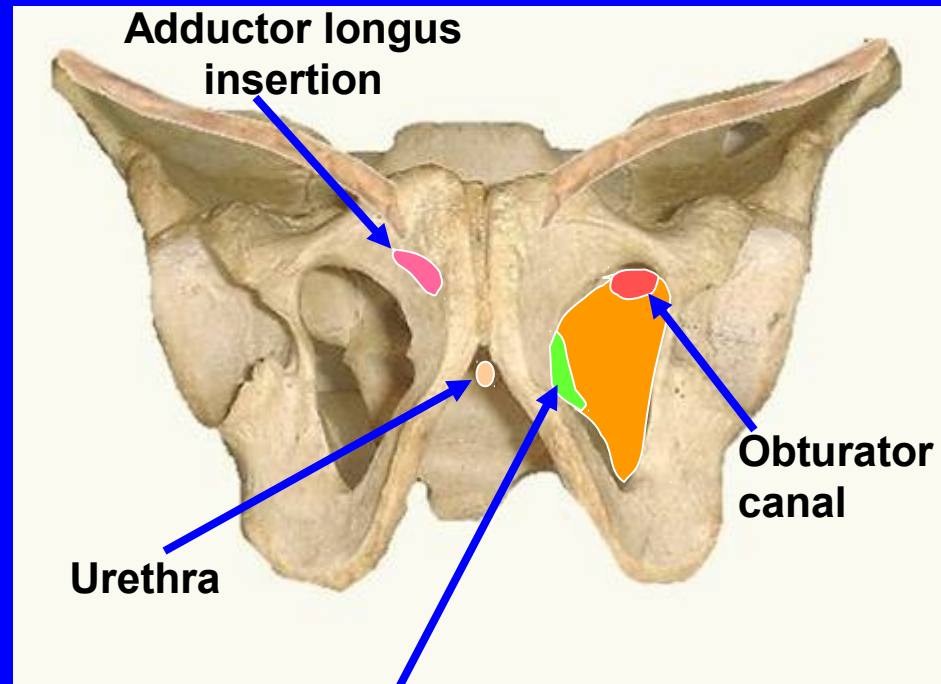
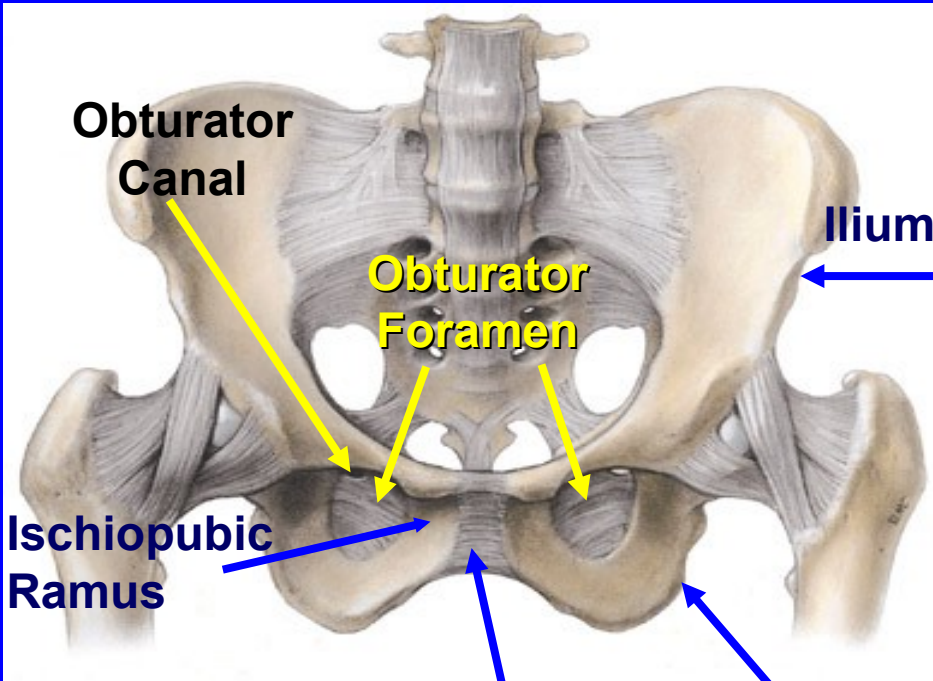


LA = Levator Ani U = Urethra V = Vagina

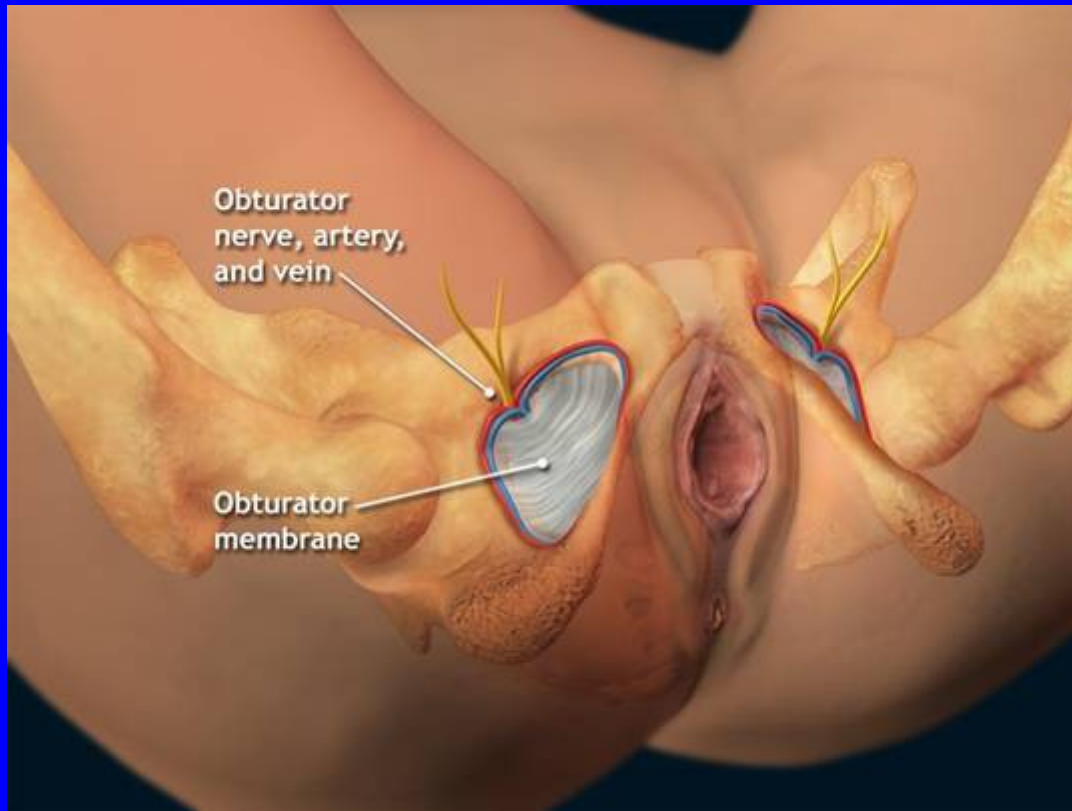
Why transobturator tape techniques?

- To reduce TVT complications; avoiding the retropubic space reduces the risk of perforation of the bladder, bowel and major pelvic vessels

Obturator Anatomy

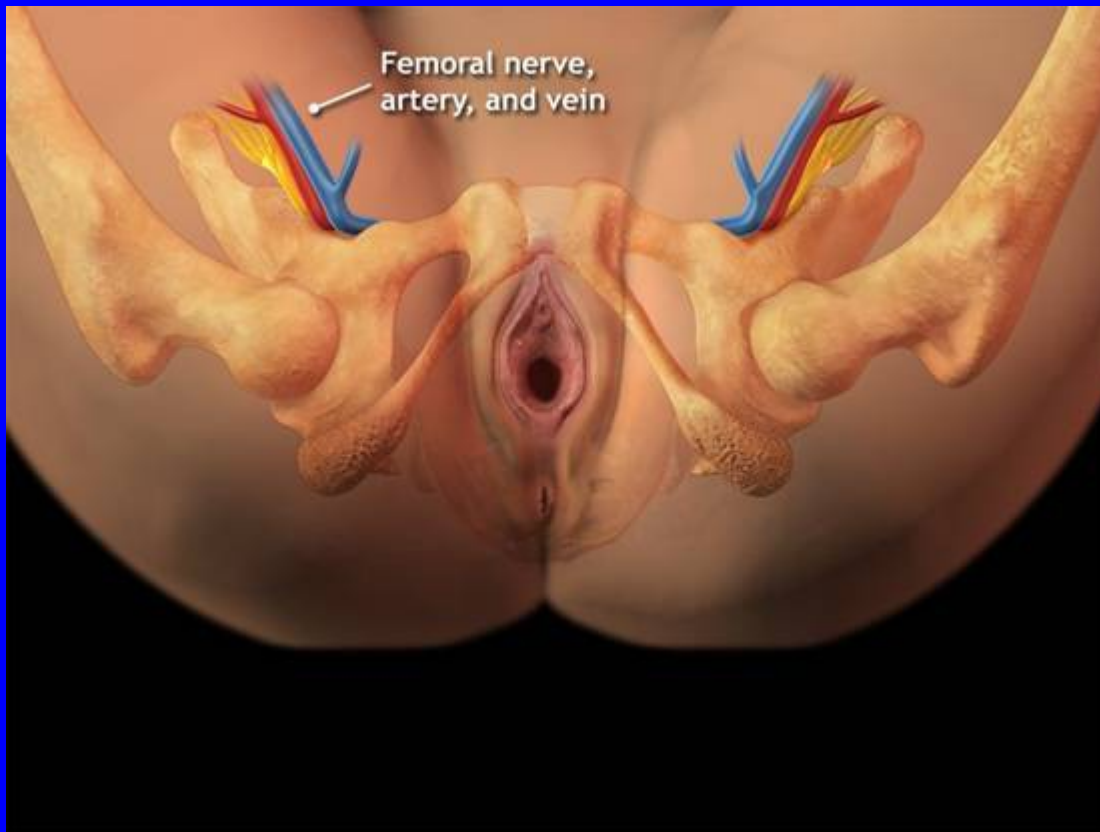


Obturator Nerve, Artery and Vein



- Anterior branch of the obturator artery lies on the external rim of the ischio-pubic ramus and is thus protected by this bony structure from being injured by the passage of the TOT inside-out device

Femoral Nerve, Artery and Vein



- Large femoral neurovascular structure are located within Scarpan triangle

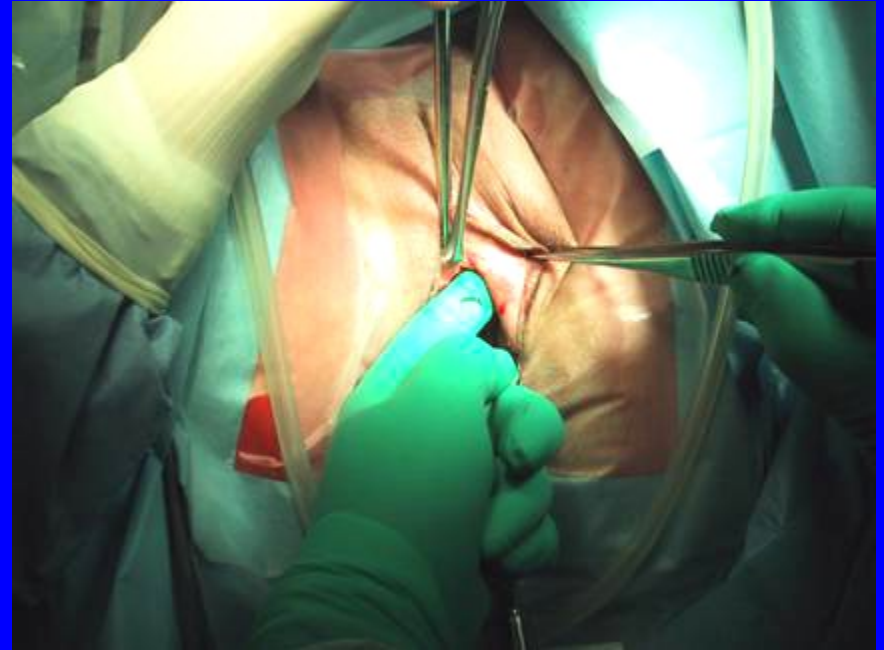
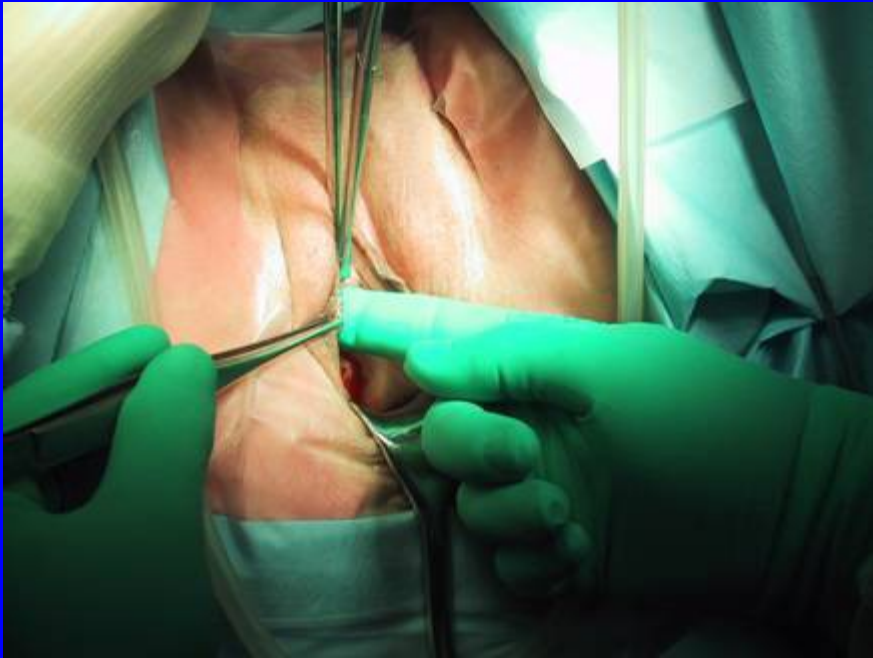
Outside-in Transobturator Approach -developed by Dr Emmanuel Delorme 2001, France



- Vaginal epithelium is dissected off underlying periurethral fascia, dissect bilaterally to the inferior pubic ramus

Vaginal Dissection

Introduce fingertip



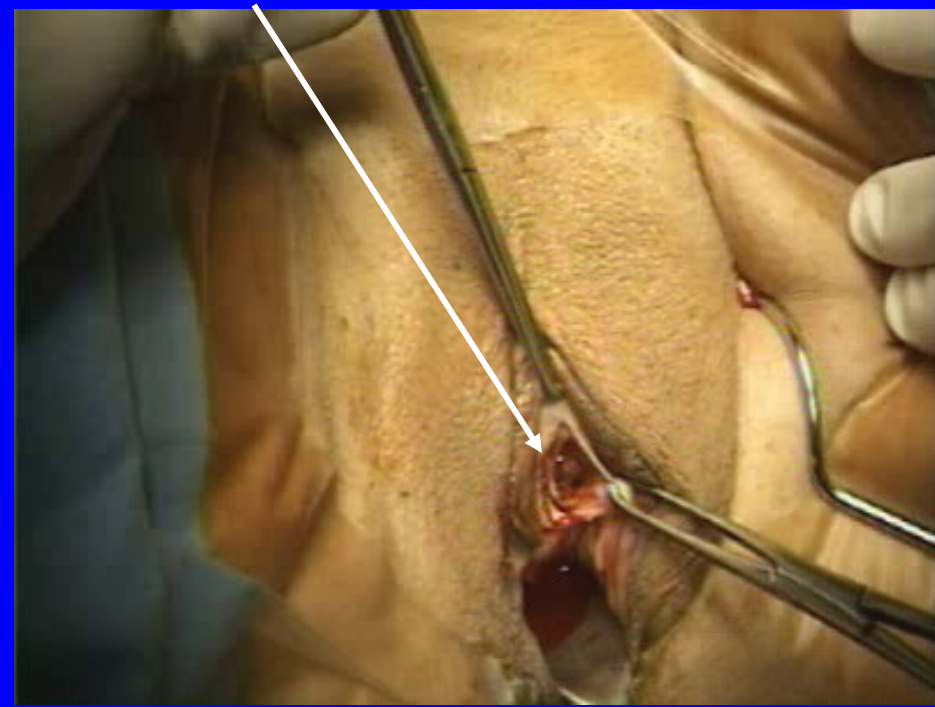
Palpate Obturator Incision Position

**Identify internal edge
of obturator foramen**



Needle Path and Needle Placement

needle

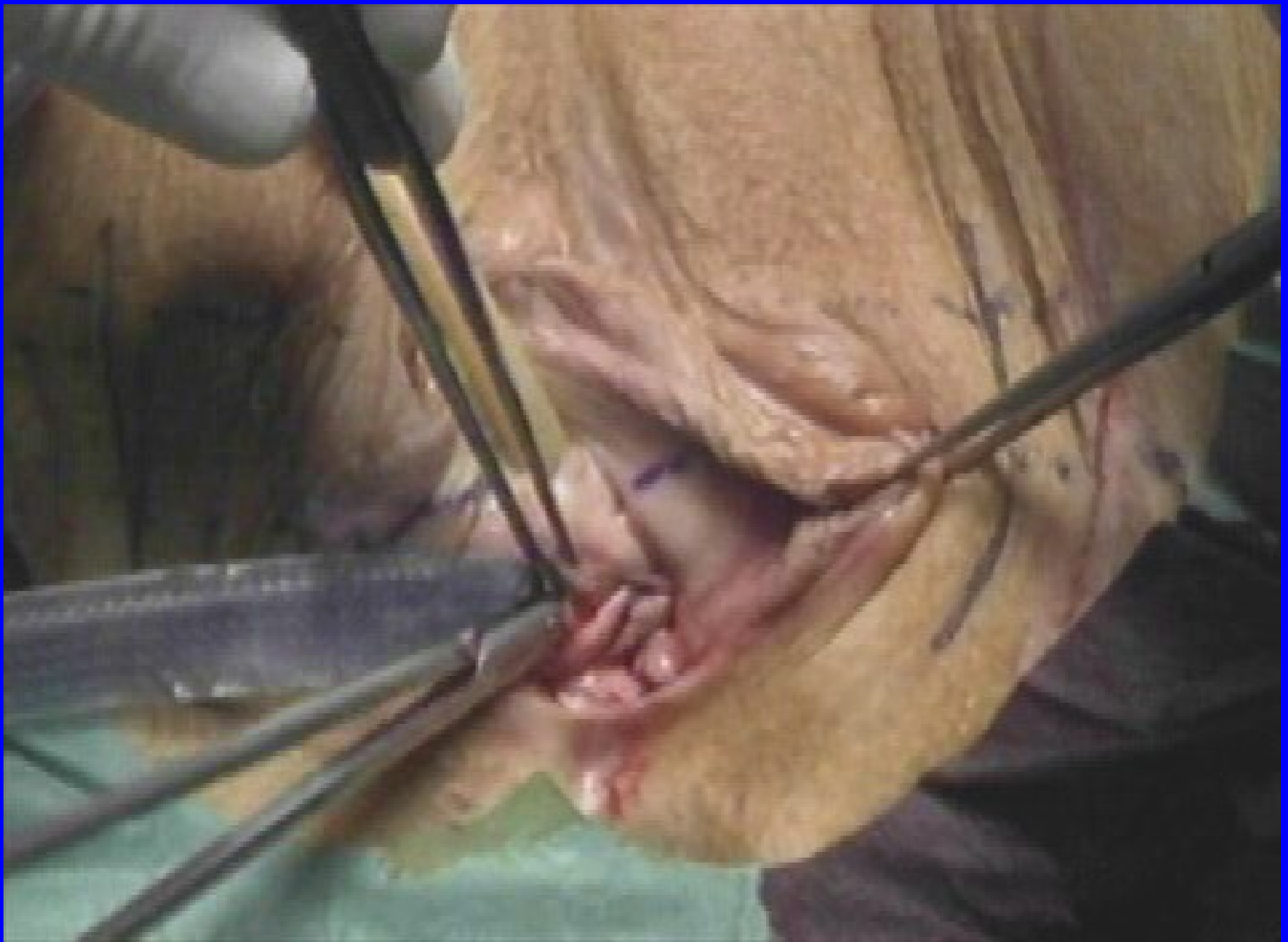


Mesh Attachment and Needle Removal



Inside-out Transobturator Approach -developed by prof. Jean de Leval 2003, Belgium











Delorme et al. One year results of TOT outside-in procedure Prog.Urol.2003(4):656-659

- 32 pat., mean age 64
- urodynamics, 5 ISD
- 18 mixed inc.
- no prolapse
- no intraop. complic.
- mean oper.time 15min
- follow-up 17 months
- 29/32 cured (90.6%)
- 3/32 improved (9.4%)
- 5/32 relative BOO
- 1 ret.(4 weeks cathetr.)
- 2 de NOVO URGE
- no erosions

Costa et al. TOT(outside in)for SUI:multicenter study, France

- ICS 10/2003 Florence
- 7 centres, 165 patients
- mean age 57 years
- 61% mixed incont.
- urodynamics,5% ISD
- 15% recurrent inc.
- with or without associated prolapse
- spinal (50), general (115)
- follow-up 5 months
- 1 bladder,2 urethral perf.
- 1 vaginal perforation
- 5 pat. complained from transient pain (13%)
- 4 (2.4%) post.op.ret.
- 6 vaginal erosions
- 4% de NOVO URGE
- 1 urethral perf. later
- cured 83%, failed 10%

Jacquelin et al. Early Experience with 120 Patients and TOT outside-in for Female SUI, 2004

- 15 centers
- effectiveness obj./subj.
- follow-up 3 months
- operating time 20 min
- blood loss 32.4 ml
- no hematomas
- no perforations
- 4 (3.3%) had surgical revisions to release sling tension
- 4 (3.3%) urge sympt.
- 5 (4.2%) urinary inf.
- signif.impr. in QoL
- cured: 2 (1.8%)
recurrent incontinence

de Leval New technique for treatment of SUI;TOT inside – out.Eur Urol 2003:44(6):724-730

- 107 patients
- mean age 62 years
- urodynamics,74 SUI
- spinal 82, general 24
- 33 prolapse oper.
- operating time 14 min
- no peroperat. complic.
- 15.9% (17) pain in the thigh folds
- mean hospital stay 1.8 days(0.5-8)
- 3 ret.(2.8%), no transections
- one vaginal erosion
- an abscess drainage at day 8
- follow-up one month

Waltregny et al. Inside-out transobturator vag. tape(TVT-O): short- term results of a prospect.study.ICS/IUGA 8/2004

- 53 patients
- mean age 61 years
- urodynamics, 48 SUI
- 6 ISD,12 concomitant prolapse operations
- 33 spinal, 20 general
- follow-up over 6 months in all patients
- 3 de NOVO URGE
- no vaginal, urethral or bladder perforations
- no hematoma, vaginal or urethral erosion, fistula or tape reject.
- pain in thigh region
- 3 ret.,2 tape transect.
- cured:94.3%,1 improv.
- QoL: signif. improv.

Mellier et al. Suburethral tape via the obturator route: is the TOT a simplification of the TVT? Int Urogynecol J (2004)15:227-232

- **retrospect.,non-random.,non-concurr.**
- **99 TVT, 2/3 local**
- **94 TOT, 2/3 spinal**
- **urodynam.,no prolapse**
- **clinical evaluation at 6-8 weeks**
- **follow-up 30/13 months via telephone**
- **TVT:bladder perf. 10%,vaginal 4%**
- **TOT:1 urethral perf.**
- **TVT 8 hemorrh.TOT 2**
- **TVT 2 hematomas**
- **TOT 1 vaginal erosion**
- **TVT de NOVO URGE 3%,TOT 4%**
- **cure:TVT 91%,TOT 95%**

**de Tayrac et al. A prospective
randomized trial comparing TVT and
TOT for SUI. Am J Obstet
Gynecol(2004)190, 602-608**

- **TVT 31, TOT 30**
- **1-year outcome**
- **spinal or general anesth.**
- **urodynamics, SUI**
- **no prolapse**
- **no cystoscopy, indigo carmine i.v.(TOT)**
- **operating time: TVT 27 min and TOT 15 min**
- **bladder perf.: TVT 9.3%, TOT 0%**
- **urethral erosions: TVT 1, TOT 0**
- **no vaginal erosions**
- **obturator hematoma: TVT 0, TOT 1**
- **tape transection(ret.): TVT 0, TOT 1**
- **cure: TVT 84%, TOT 90%**

Delmas et al. TOT(outside-in) in the treatment of Female SUI: Anatomical dangers. Eur Urol Suppl 2003;2(1):197

- 10 female cadavers
- when the tunneler is entered more anteriorly, there is a danger for a superior passage and perforation of the anterior aspect of the bladder ; when the tunneler is entered more posteriorly, perforation of the vagina is possible as urethral perforation

Transobturator technique

- may eliminate vascular, bladder and bowel injuries
- avoids retropubic scarring
- may prove useful in patients with earlier retropubic procedures
- offers minimal blind perineal needle passage
- may prove useful in obese patients

Transobturator technique

- offers short-term efficacy similar to TVT
- offers shortened procedure time
- may prove useful in treatment failures?
- may eliminate the need for cystoscopy?
- easy to learn

With the transobturator technique the tape is inserted at a 45 angle to the vertical and horizontal planes. A narrower angle, such as that which occurs with the TVT, can contribute to difficult micturition? TOT: fewer voiding difficulties, urinary retention and urge symptoms?

Conclusion

- The U-shaped placement of the TVT-tape can contribute to long-term efficacy?
- Prospective, randomized study between tension-free vaginal tape and a new transobturator procedure is needed with longer follow-up times.