



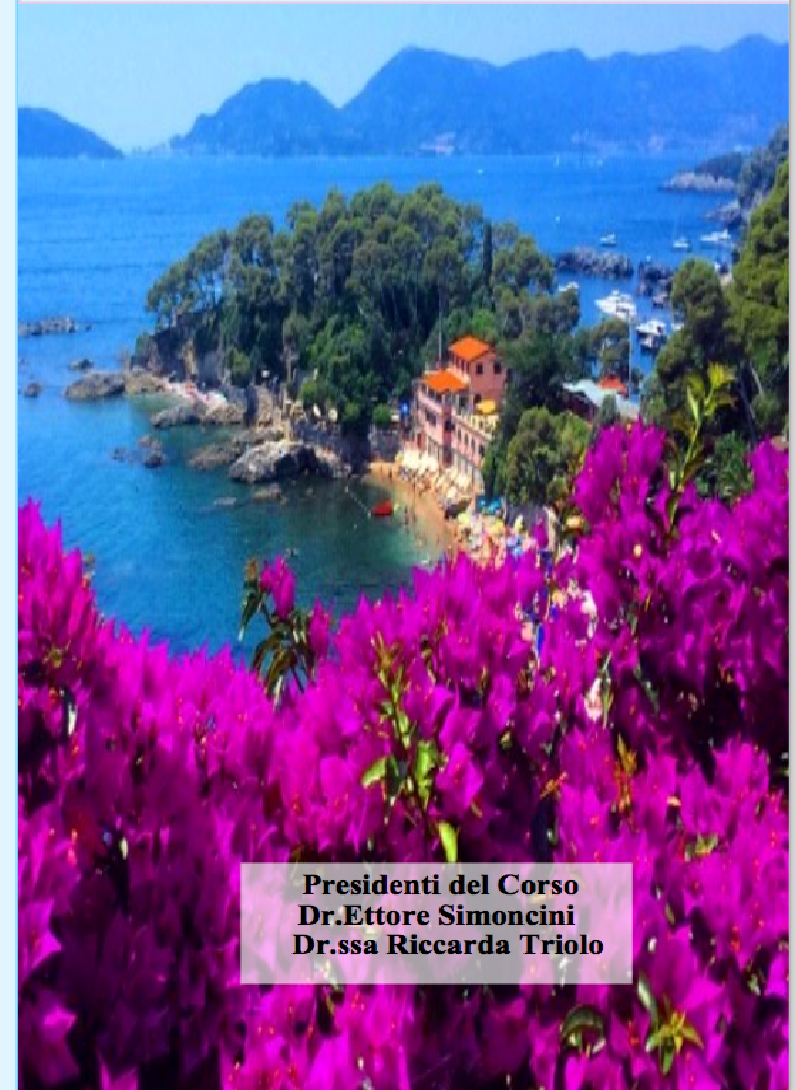
Female Urinary Incontinence: **SURGICAL TREATMENT**

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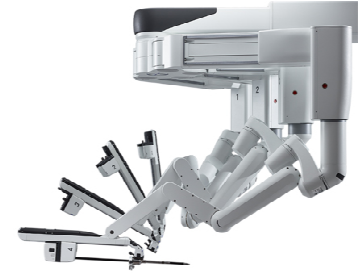
**CORSO INTENSIVO
SU PATOLOGIA UROGENITALE E
INCONTINENZA URINARIA
NELLA DONNA**
Lerici - loc. Fiascherino (SP),

5 Maggio 2017

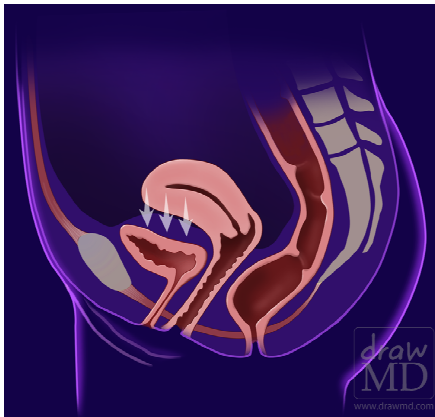


**Presidenti del Corso
Dr. Ettore Simoncini
Dr.ssa Riccarda Triolo**

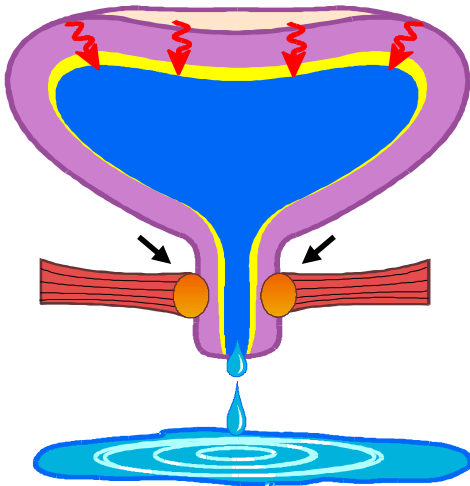
URINARY INCONTINENCE: WHEN A SURGICAL APPROACH



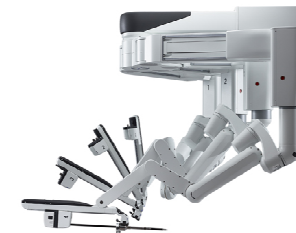
Failure of clinical and behavioural management



- ❖ In patients with **SUI** failing pelvic floor muscle training (PFMT) and other forms of pelvic floor physiotherapy, the next step is usually surgical



- ❖ Bladder outlet obstruction



STRESS INCONTINENCE SURGERY

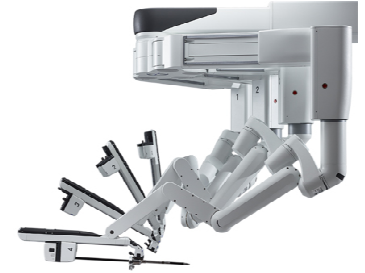
The initial goal of the evaluation is to determine whether the patient has uncomplicated SUI or complicated SUI

Evaluation	Findings	
	Uncomplicated	Complicated
History*	Urinary incontinence associated with involuntary loss of urine on effort, physical exertion, sneezing, or coughing	Symptoms of urgency, incomplete emptying, incontinence associated with chronic urinary retention, functional impairment, or continuous leakage
	Absence of recurrent urinary tract infection	Recurrent urinary tract infection [†]
	No prior extensive pelvic surgery	Previous extensive or radical pelvic surgery (eg, radical hysterectomy)
	No prior surgery for stress incontinence	Prior anti-incontinence surgery or complex urethral surgery (eg, urethral diverticulectomy or urethrovaginal fistula repair)
	Absence of voiding symptoms	Presence of voiding symptoms: hesitancy, slow stream, intermittency, straining to void, spraying of urinary stream, feeling of incomplete voiding, need to immediately revoid, postmicturition leakage, position-dependent micturition, and dysuria
Physical examination	Absence of medical conditions that can affect lower urinary tract function	Presence of neurologic disease, poorly controlled diabetes mellitus, or dementia
	Absence of vaginal bulge beyond the hymen on examination	Symptoms of vaginal bulge or known pelvic organ prolapse beyond the hymen confirmed by physical examination, presence of genitourinary fistula, or urethral diverticulum
	Absence of urethral abnormality	
Urethral mobility assessment	Presence of urethral mobility	Absence of urethral mobility
Postvoid residual urine volume	Less than 150 mL	Greater than or equal to 150 mL
Urinalysis/urine culture	Negative result for urinary tract infection or hematuria	

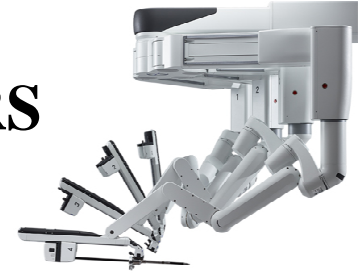
STRESS INCONTINENCE SURGERY

Clinical characteristics affecting surgical planning

- Urethral hypermobility
- Intrinsic urethral sphincter deficiency
- Obesity
- Previous incontinence surgery
- Previous pelvic surgery
- Presence or absence of prolapse
- Coexisting pelvic disease



STRESS INCONTINENCE SURGERY: RISK FACTORS



Risk factors that may have an impact on the success of the treatment

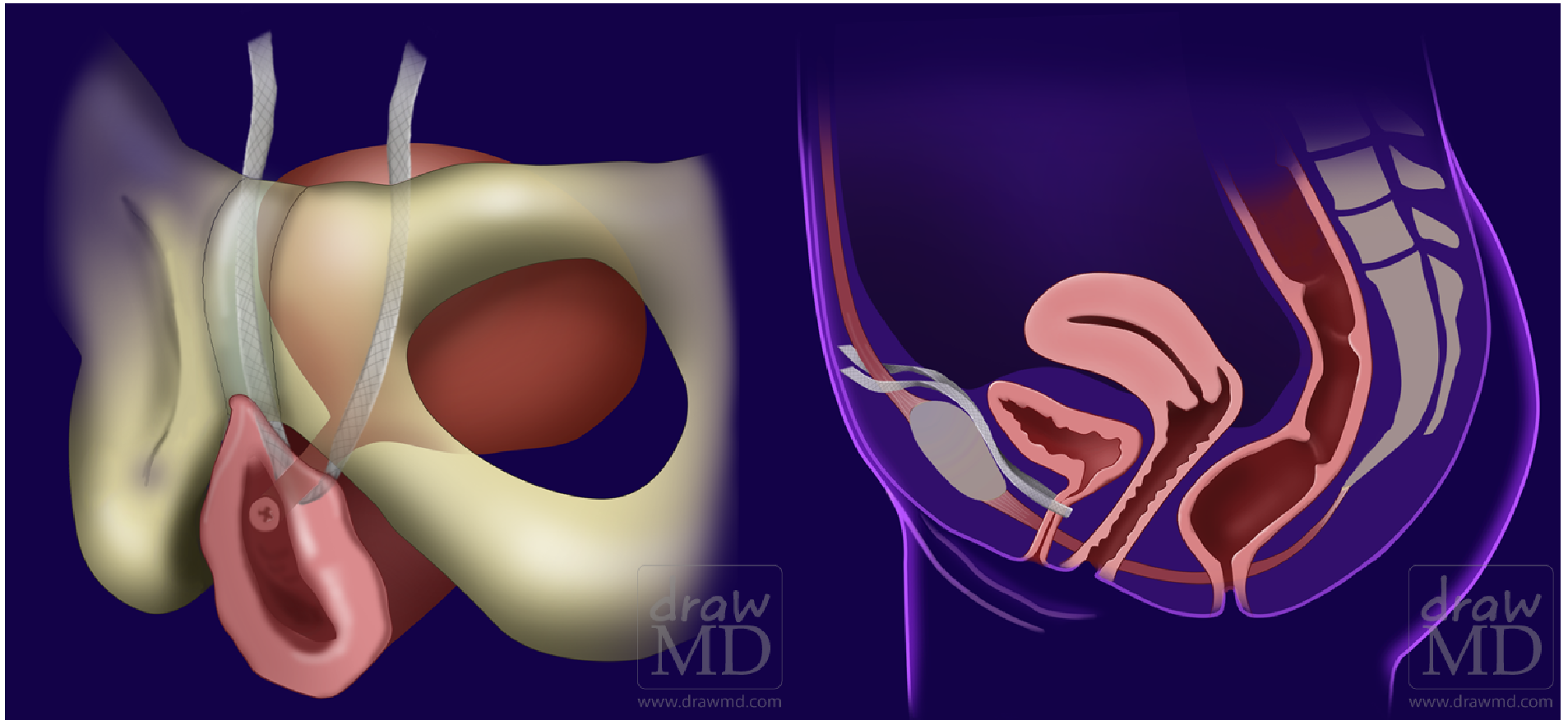
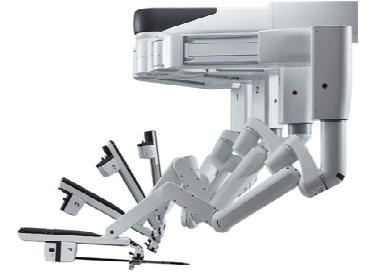
- ✓ “MODERATELY OR GREATLY BOTHERSOME” UUI AT BASELINE
- ✓ CHRONIC URINARY RETENTION
- ✓ IMPAIRED BLADDER EMPTYING
- ✓ HYPOSENSITIVE BLADDER
- ✓ RECURRENT URINARY TRACT INFECTION
- ✓ PRIOR UI SURGERY/TREATMENT
- ✓ POP-Q STAGE > III DEGREE
- ✓ OLDER AGE
- ✓ COMORBIDITIES (ES. DIABETES, PERIPHERAL NEUROPATHY, DEMENTIA)



Risk Factors for Urgency Incontinence in Women Undergoing Stress Urinary Incontinence Surgery
Advances in Urology, 2013

Prevention and management of postoperative urinary retention after urogynecologic surgery
International Journal of Women's Health, 2014

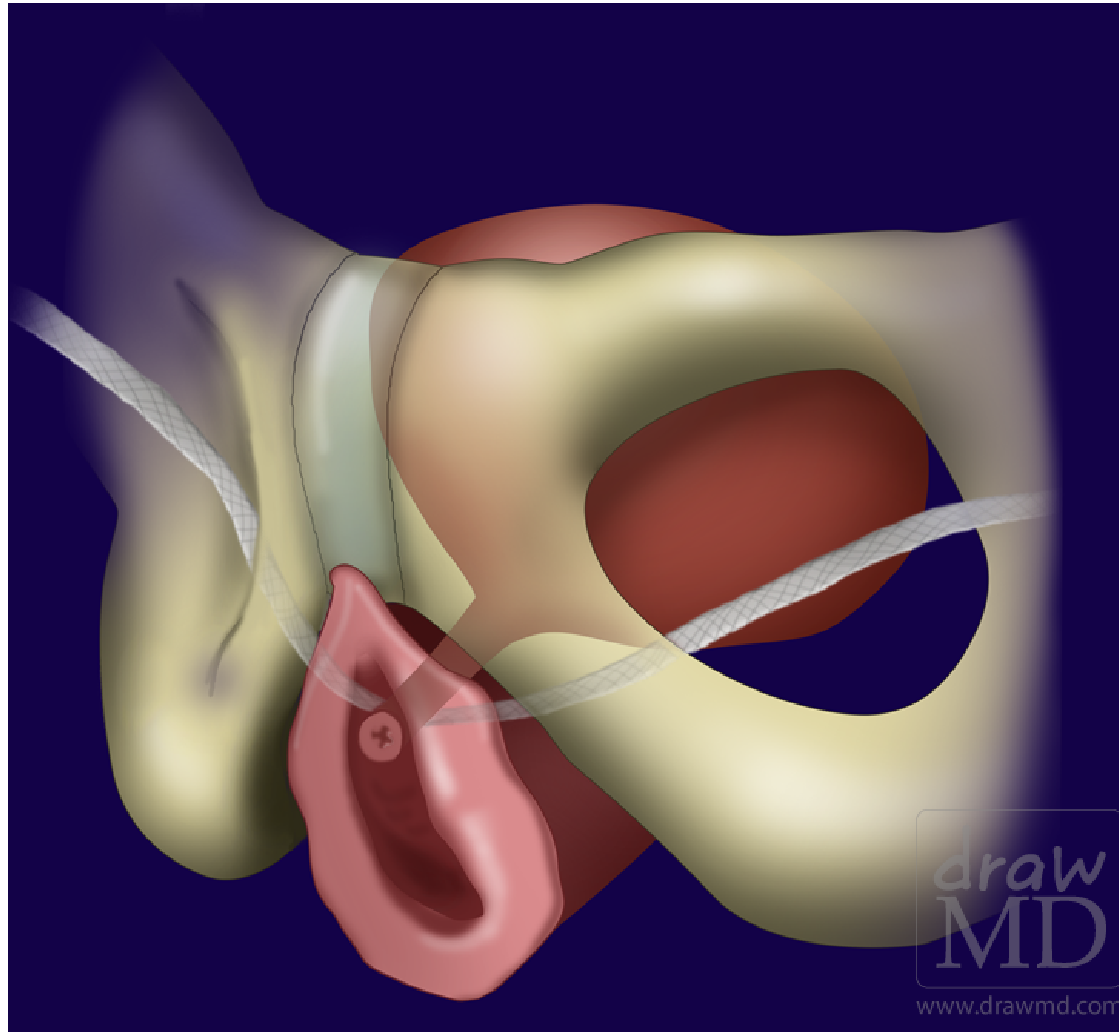
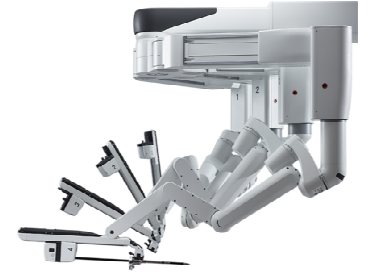
RETROPUBIC TVT



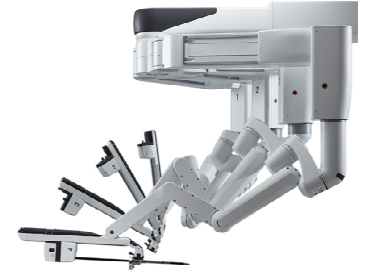
Anterior branch of the obturator vein and artery

Posterior branch of the obturator vein and artery

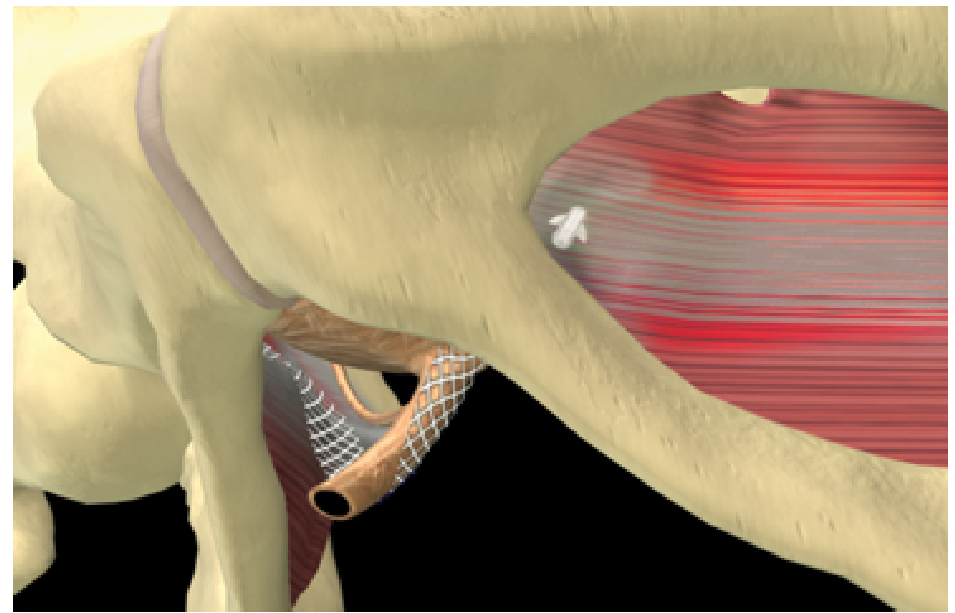
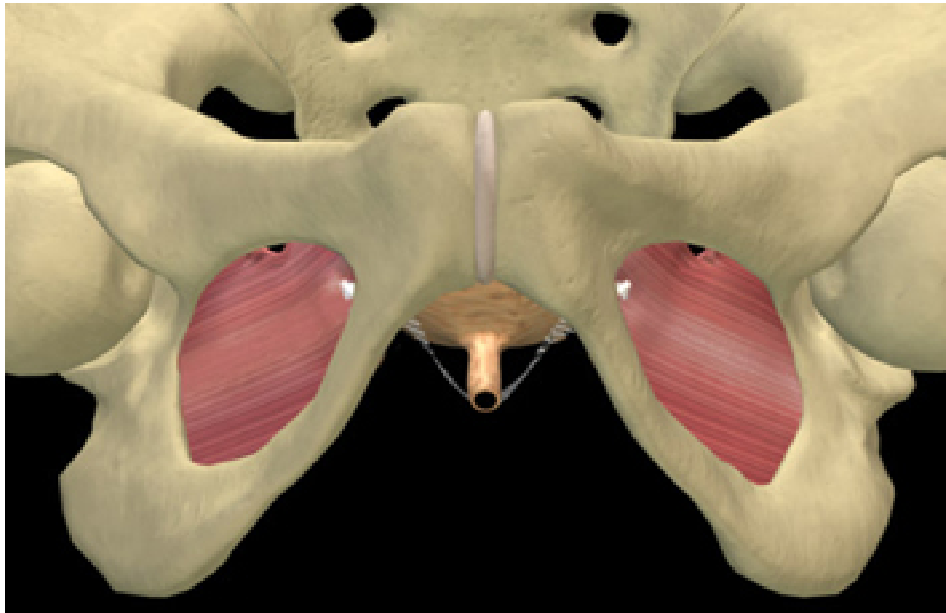
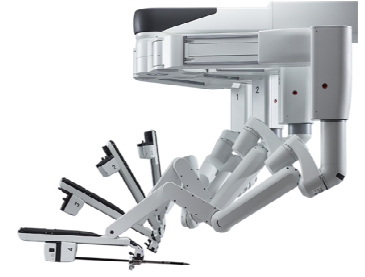
TVT-O



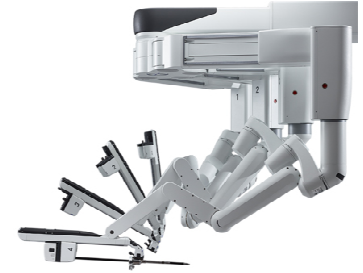
TVT-O video



MINISLINGS



TRANS VAGINAL TAPE COMPLICATIONS



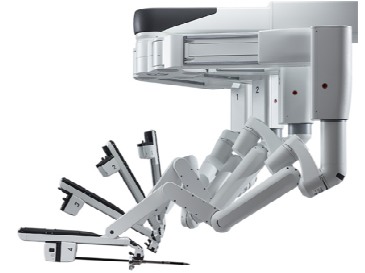
Type of complication	TVT	TOT
OAB	49%	41.4%
Obstruction	48%	30%
Vaginal exposure	11.5%	25.7%
Persist pain	10.5%	32.8%
Dyspareunia	3.8%	18.5%
Infection of tape	4.2%	18.5%
Bladder/urethral penetration	5.2%	2.8%
Fistula	2.3%	8.5%
Hematoma	2.3%	1.4%



More than 300 pz with MUS (midurethral sling) complications 2003-2010

Petri et al, Comparison of late complications of retropubic and transobturator slings in stress urinary incontinence
Int Urogynecol J (2012)

MUS MIDURETHRAL SLING



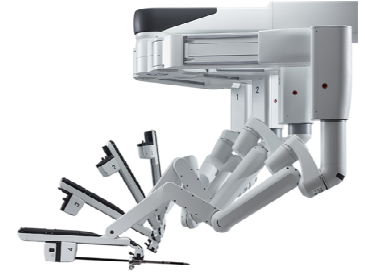
- ❖ TVT retropubic approach seems to be more effective than TOT in patients with Intrinsic Sphincteric Deficiency (ISD) and thus favored in these patients.
- ❖ In patients with primary incontinence and without ISD, both TVT and TOT are effective and the decision of one type over the other is left up to the surgeon's experience.
- ❖ Minisling are effective and relatively safe with cure rates of about 80% in the short term. They are also suitable for women who have had unsuccessful previous incontinence surgery.



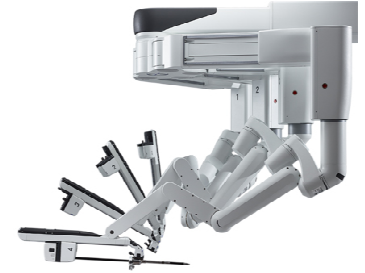
Ogah J. et al **Minimally invasive synthetic suburethral sling operations for stress urinary incontinence in women (Review)** The Cochrane Collaboration 2010

A. Medina et al **Evaluation and Surgery for Stress Urinary Incontinence: A FIGO Working Group Report** Neurourology and Urodynamics 2016

BULKING AGENTS



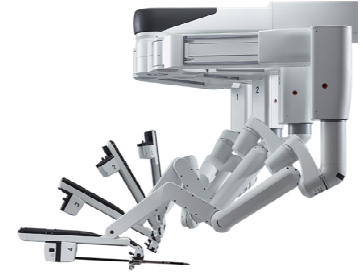
BULKING AGENTS



- Calcium hydroxyl apatite (Coaptite®)
- Carbon coated Zirconium (Durasphere®)
- Polydimethylsiloxane elastomer (Macroplastique®)
- Polyacrylamide hydrogel (Bulkamid®)
- Non-animal stabilized hyaluronic acid/dextranomer NASHA-dx (Zuidex®)



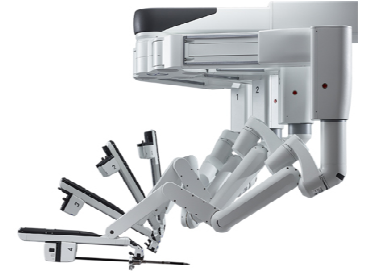
BULKING AGENTS



- Bulking agents are an option for patients who do not wish to undergo more invasive surgery:
 - elderly patients
 - patients with a high anesthetic risk
- The benefit of bulking agents is limited and short-term.
- Patients should be aware that repeat injections are likely to be required and that efficacy is inferior to conventional surgical techniques and diminishes over time.



BURCH COLPOSUSPENSION

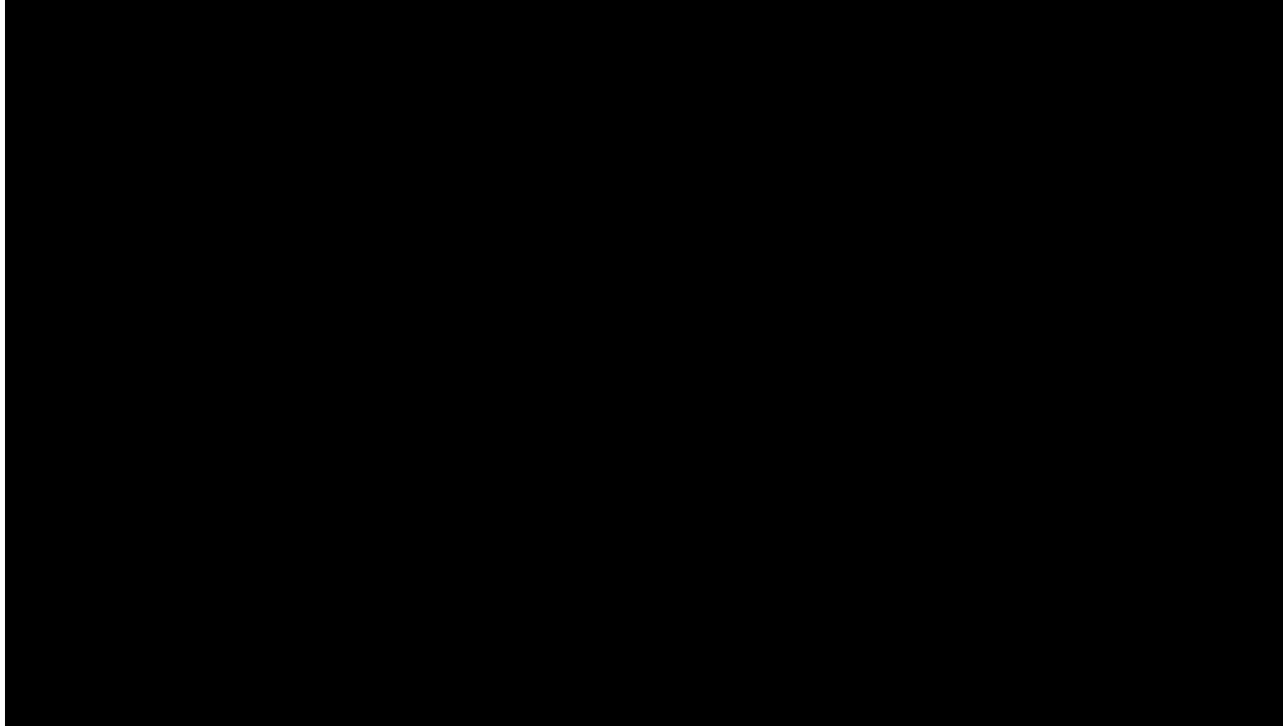
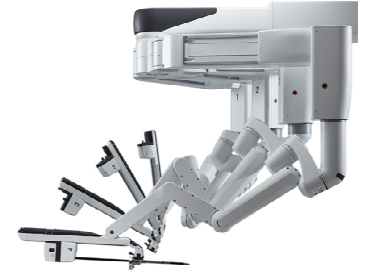


❖ **Burch colposuspension is the elevation of the anterior vaginal wall and paravesical tissues towards the ileopectineal line of the pelvic side wall using two to four sutures on either side.**

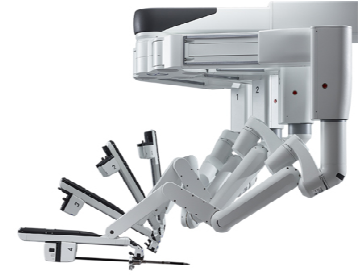
- Overall continence rate is 85% to 90%
- Lower risk of voiding dysfunction compared to traditional sling surgery



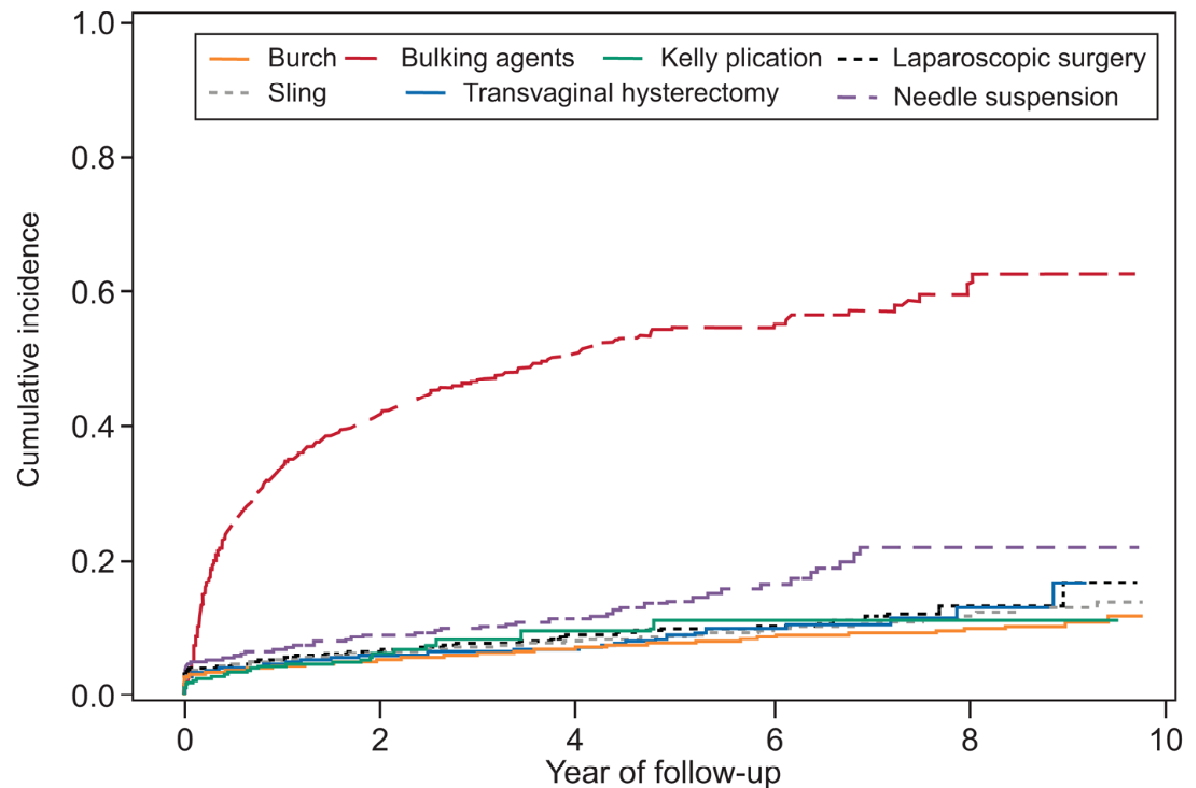
BURCH COLPOSUSPENSION



SUI surgery: long term outcome



- Health care claims data in USA 2000-2009
- 155,458 procedures
- 9-years cumulative incidence of repeat surgery:
 - Overall 14.5%
 - Bulking agents 61.2%
 - Sling 13.0%
 - Burch 10.8%

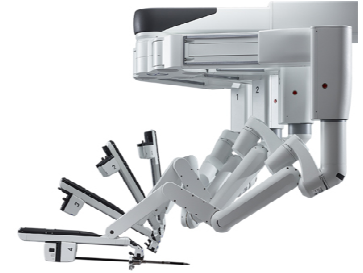


STRESS INCONTINENCE SURGERY

Recommended treatment of SUI under specific circumstances based on level of evidence

Condition	Recommendations		Grade	LOE	
	Primary	Optional procedure			
Primary SUI	TOT, TVT	PVS, BC	A	1a	
Mixed urinary incontinence	TVT, TOT	PVS, BC	C	3–4	
Concomitant POP	TOT, TVT BC	PVS	B	1b–3	
ISD	TVT, PVS TOT	BC	B	2–3	
Previous failed continence surgery	TVT, PVS BC	Urethral bulking, TOT, AUS TOT, urethral bulking, AUS	C	2–4	
Immune compromised conditions	BC	PVS, TVT, TOT	D	5	TOT trans obturator tape TVT retropubic tension free vaginal tape PVS pubovaginal sling BC Burch colposuspension MUS midurethral sling (TOT and TVT)
≥65 years of age	TOT	TVT, urethral bulking, BC, PVS	C	3	
Morbid obesity	TOT	TVT, BC, PVS	C	2–3	

URGE INCONTINENCE: SURGICAL TREATMENT



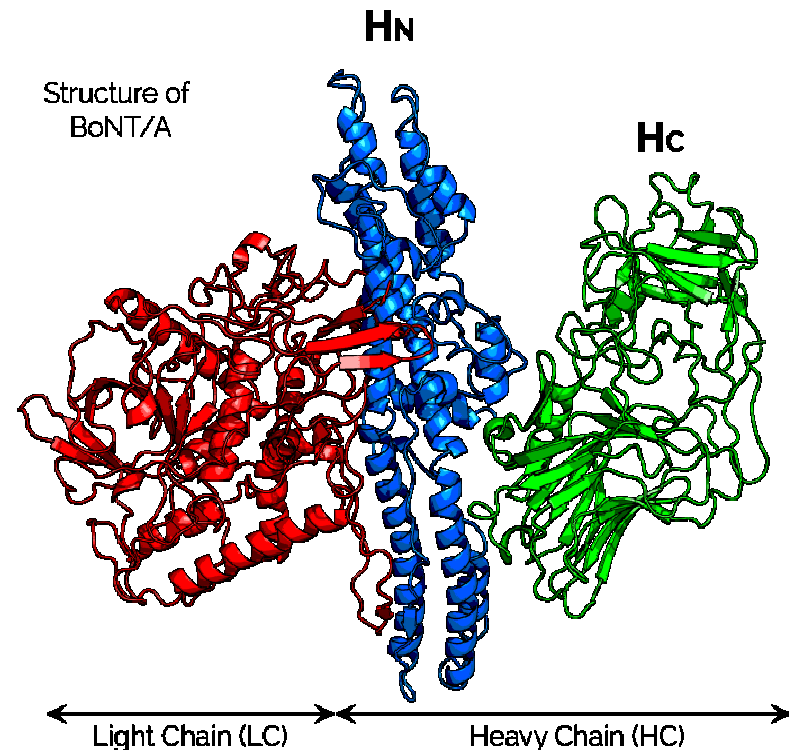
Refractory Overactive Bladder

- In the patient who has failed behavioral and pharmacologic therapies or who is not a candidate for these therapies, **onabotulinumtoxinA therapy**, **PTNS**, or **sacral neuromodulation** may be offered.

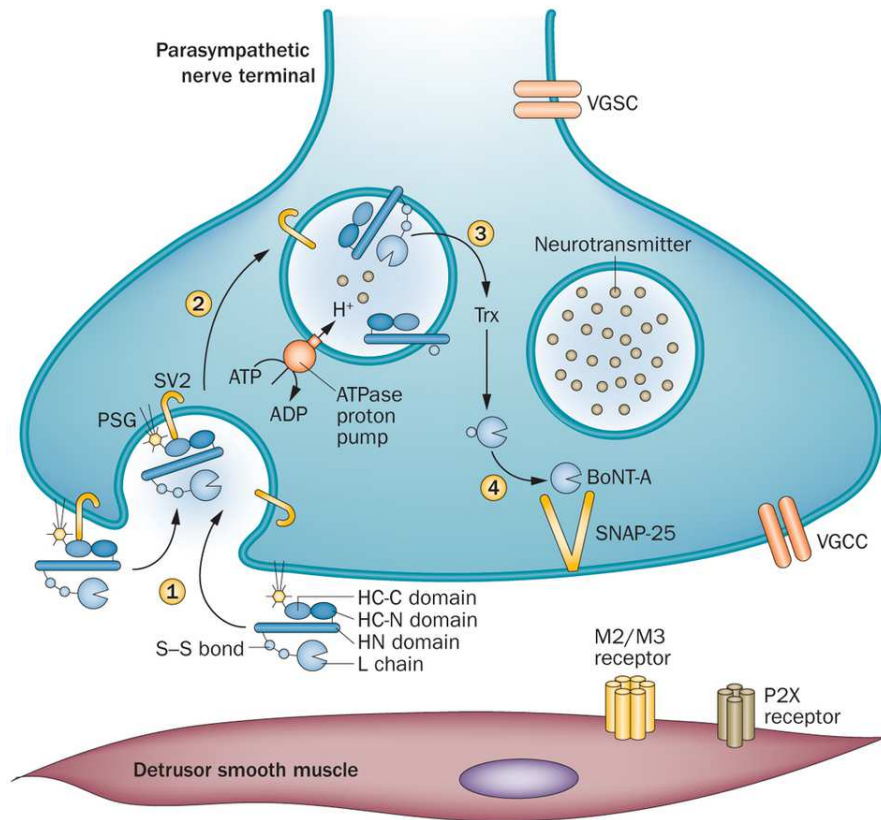


BOTULINUM TOXIN

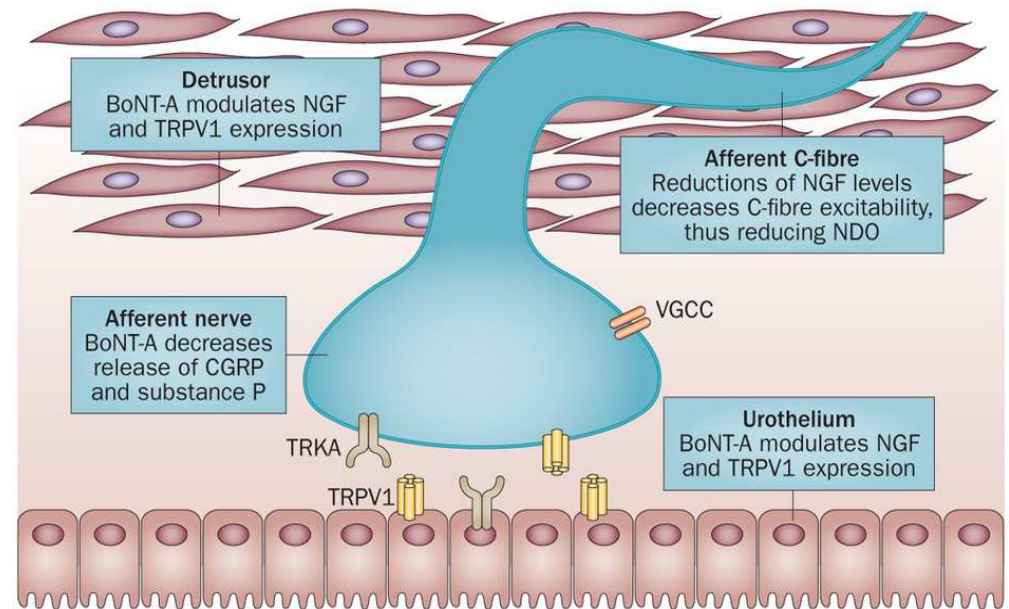
- Botulinum toxin is a neurotoxin produced by the bacterium *Clostridium botulinum*
- Seven subtypes of botulinum toxin (A–G) are available for clinical use
- Only serotypes A and B are commercially available currently
- Botulinum neurotoxin subtype A (BoNT-A) has the longest duration of action of any subtypes
- Serotype A marketed as Botox®(onabotulinumtoxinA) or Dysport®(abobotulinumtoxinA)
- Clinical use among others:
 - ❖ Chronic migraine
 - ❖ Strabismus
 - ❖ Upper motor neuron syndrome
 - ❖ Lower urinary tract dysfunctions (LUTD)



ACTIONS OF BOTULINUM NEUROTOXIN SUBTYPE A (BoNT-A)



Nature Reviews | Urology

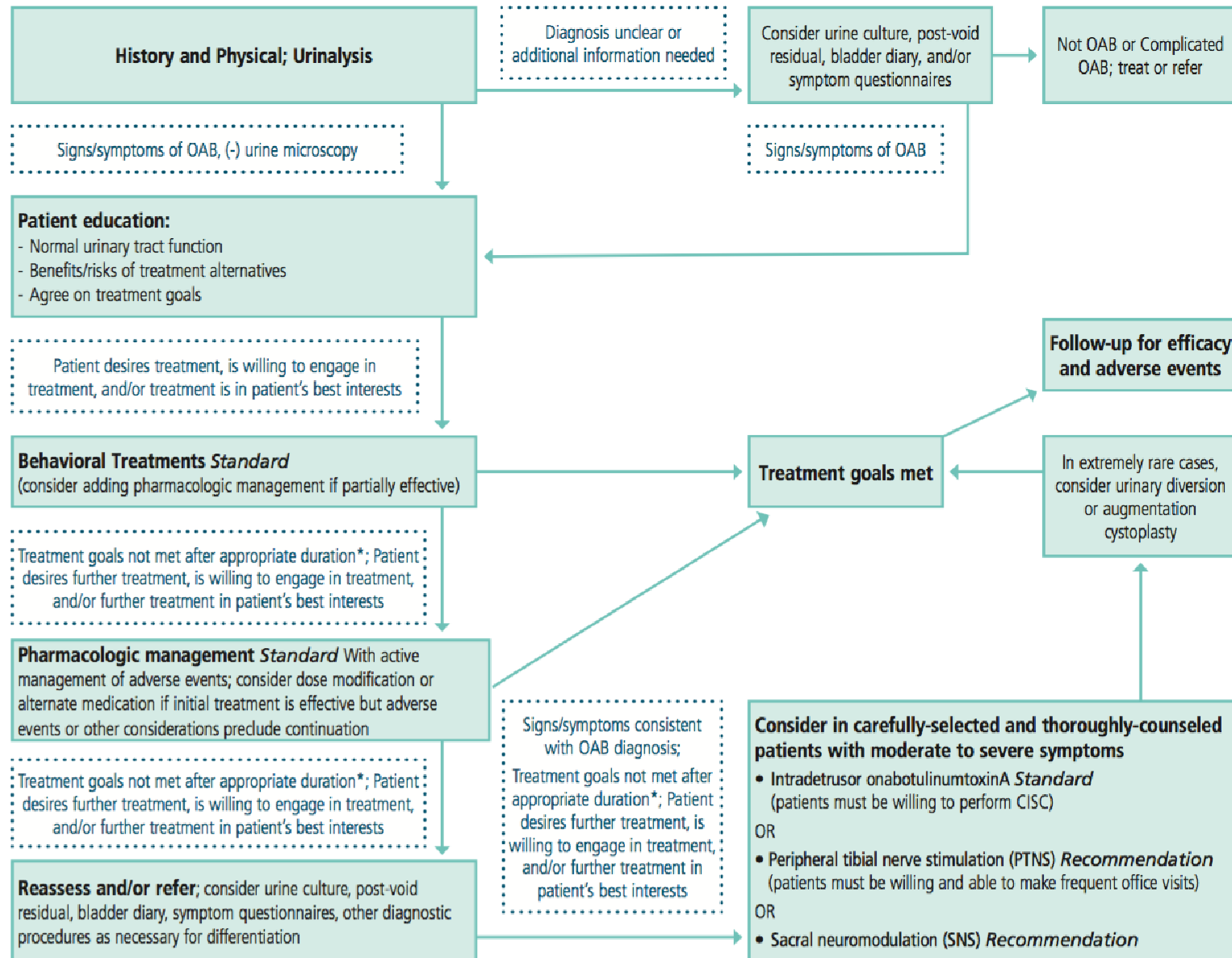


Nature Reviews | Urology

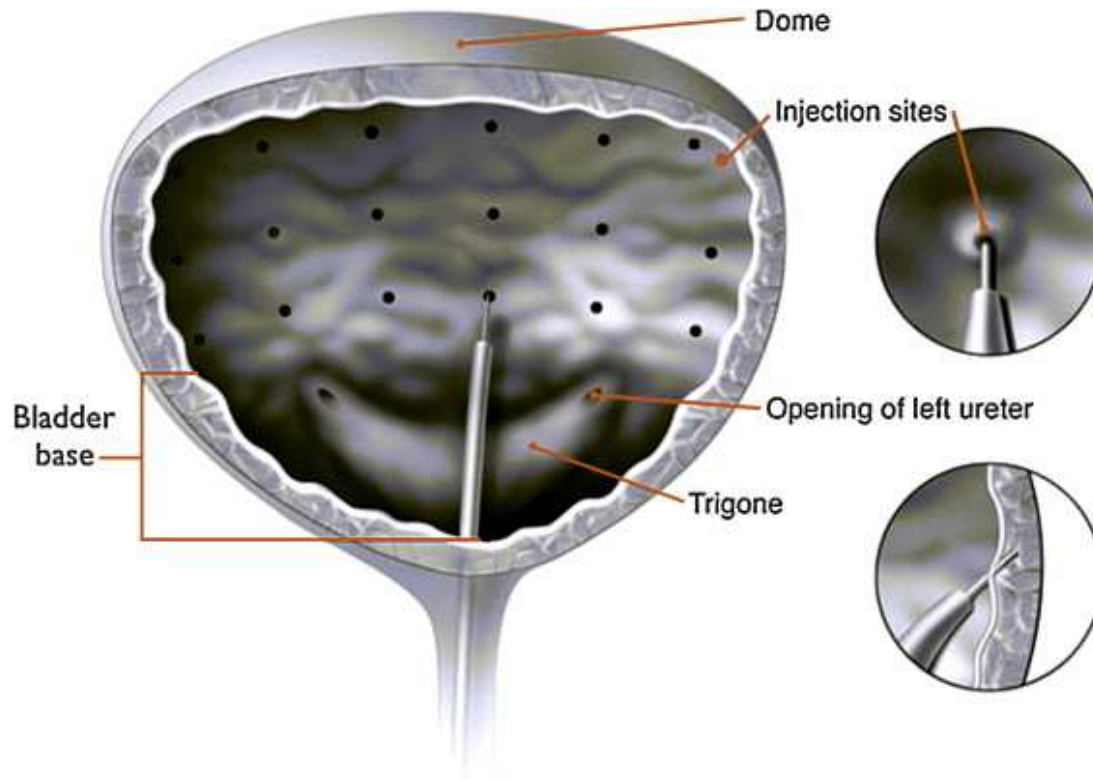
Table 1 BoNT-A treatment for voiding LUTS			
BoNT-A dose	Injection site and number	Main effects	Adverse events
SCI and DSD			
100 units	Urethra, 4	Decreased PVR volume, P_{det} MUCP, increase Q_{max} , decrease IIQ-7, ^{1,2,3*,4*,5,48} reduced incidence of UTI by 50% ⁴⁸	Increased incontinence severity
MS and DSD			
100 units	Urethra, 1–4	Increased voiding volume, reduced P_{det} , no change in PVR volume ^{55,57*}	Transient urinary incontinence
Detrusor underactivity			
80–100 units	Urethra, 4	Decreased PVR volume by 71%, decrease P_{det} by 38%, 67% patient satisfaction ^{5,50,51}	NR
50 units	Urethra, 4	90% patient satisfaction ⁵¹	NR
100 units	Urethra, 4	48% P_{det} recovery ⁵³	NR
Voiding dysfunction owing to CVA			
100 units	Urethra, 4	Decrease voiding pressure, increase Q_{max} ⁵⁶	NR
Dysfunctional voiding			
100 units	Urethra, 4	Decrease P_{det} and PVR volume ⁵	NR
Paediatric DV			
50–100 units	Urethra, 3	Decreased DLPP, increase Q_{max} , decreased PVR volume ^{112–114}	NR
Non-relaxing sphincter			
100 units	Urethra, 4	Decreased PVR, ⁵ decrease voiding pressure, improved QOL-150 ⁵³	Mild stress incontinence
BPH-related LUTS			
200 units	Transperineal, 4 ml (2 injections)	Improve IPSS 65%, decreased PSA 51%, ^{59*,60}	NR
100–200 units	Transperineal, 4 ml	Decreased prostate volume & PVR volume, increased Q_{max} ^{60,62}	NR
100 or 300 units	Transrectal	Improved IPSS, improved QOL-I, patients resumed voiding ^{61*}	NR
200 units	Transperineal	No change in prostate variables, improved AUA score, increased Q_{max} , improved QOL score, decrease PVR ⁶⁴	Not superior to placebo
100–300 units	Transrectal or transperineal placebo	Reduced IPSS, reduced TPV, increased Q_{max} ^{12*}	NR
Bladder neck dysfunction			
100 units	BN and prostate urethra, 74	Improve IPSS, increase Q_{max} , decrease frequency ⁶⁷	NR
100 units	Trigone, BN and urethra, 74	Improve IPSS, improved Q_{max} , decreased PVR volume ⁶⁸	NR
200 units	BN, 4	Satisfaction rate 80% at 2 months, no ejaculatory dysfunction ⁶⁹	NR
*Indicates randomized trial. Abbreviations: AUA, American Urological Association; BN, bladder neck; BoNT-A, botulinum toxin A; CVA, cerebrovascular accident; DLPP, detrusor leak-point pressure; DSD, detrusor–sphincter dyssynergia; DV, dysfunctional voiding; IIQ-7, Incontinence impact questionnaire-7; IPSS, international prostate symptom score; LUTS, lower urinary tract symptoms; MS, multiple sclerosis; MUCP, maximal urethral closure pressure; NR, not reported; P_{det} , detrusor pressure; PVR, post-void residual; Q_{max} , maximum flow rate; QOL, quality of life; QOL-I, quality of life index; SCI, spinal cord injury; TPV, total prostate volume; UTI, urinary tract infection.			

Table 2 BoNT-A treatment for storage LUTS			
BoNT-A dose	Injection site and number	Main effects	Adverse events
SCI and NDO			
200–300 units	Detrusor, 20–30	Increased CBC and PVR volume, decreased P_{det} , increased compliance, ^{9,7,33*} decreased incidence of AD, improved QOL-I, ⁸⁹ decreased IDC, decreased UII, resolved VUR ^{71*,73,75,76}	Need for CIC in patients with large PVR volume, UTI
200 units	Detrusor, 20	NR	Development of AD ^{78,85,91}
MS and NDO			
200–300 units	Detrusor, 30	Improved CBC, QOL-I improved UII ^{96*,87*,88*,93,94}	UTI, urinary retention, increased PVR, need for CIC
100 units	Detrusor, 20	Increased CBC, PVR volume, decreased P_{det} , UII, enabled patients to avoid CIC ⁹⁵	NR
PD or CVA and NDO			
100 units	Detrusor, 20	Decreased UII, increased MBC, improved QOL-I ^{97–101}	Increased PVR, UTI, urinary retention
100 units	Bladder and trigone, 10–20	No urinary retention or need for CIC ⁹⁹	NR
Paediatric MMC and NDO			
5–10 units/kg	Detrusor, 30–40	Increased MBC, decreased P_{det} , increased compliance, patients became continent ^{102–104}	Need for CIC
10 units/kg	Detrusor and urethra	Decreased VUR, ¹⁰⁵ improved PVR ^{105,107}	NR
OAB and/or IDO			
300 units	Detrusor, 30	Increased CBC, decreased P_{det} , decreased DO, UII ⁸	Increased PVR volume, dysuria, UTI
200 units	Suburothelium, 20	Decreased urinary urgency ^{6,117}	Urinary retention 30% of patients require CIC
200–300 units	Detrusor and urethra	Increased CBC, decreased PVR volume ¹¹⁶	NR
200 units	Detrusor, 15–20	NR	UTI and urinary retention ^{119–121/}
100 units	Detrusor, 30	Decreased urinary urgency, UII and DO ¹³³	Urinary retention
100 units	Trigone, 10	Decreased urgency ¹¹⁸	Less AUR
50–300 units	Detrusor	Decreased urgency, increased CBC, decreased UII, improved QOL ^{121*,122*,123*}	Dose-dependent increase in PVR volume; 5.4% urinary retention, UTI
100 units	Detrusor, 20	Decreased urinary frequency, UII, 60.8–62.8% had a positive response ^{124*,125*}	NR
200 units in liposomes	Bladder instillation	Decreased frequency of urinary urgency episodes ^{19*,194*}	NR
Paediatric OAB			
100 units	Detrusor, 20	Increase CBC, decreased UII, ^{108,110} reduced DO ¹⁰⁹	UTI, urinary retention
*Indicates randomized trial. Abbreviations: AD, autonomic dysreflexia; BoNT-A, botulinum toxin A; CBC, cystometric bladder capacity; CIC, clean-intermittent catheterization; CVA, cerebrovascular accident; IDC, involuntary detrusor contractility; IDO, idiopathic detrusor overactivity; MMC, myelomeningocele; MS, multiple sclerosis; NDO, neurogenic detrusor overactivity; NR, not reported; OAB, overactive bladder; PD, Parkinson's disease; P_{det} , detrusor pressure; PVR, post-void residual; Q_{max} , maximum flow rate; QOL-I, quality of life index; SCI, spinal cord injury; UTI, urinary tract infection; UII, urgency urinary incontinence; VUR, vesicoureteral reflux.			

Diagnosis & Treatment Algorithm: AUA/SUFU Guideline on Non-Neurogenic Overactive Bladder in Adults



BoNT-A injections



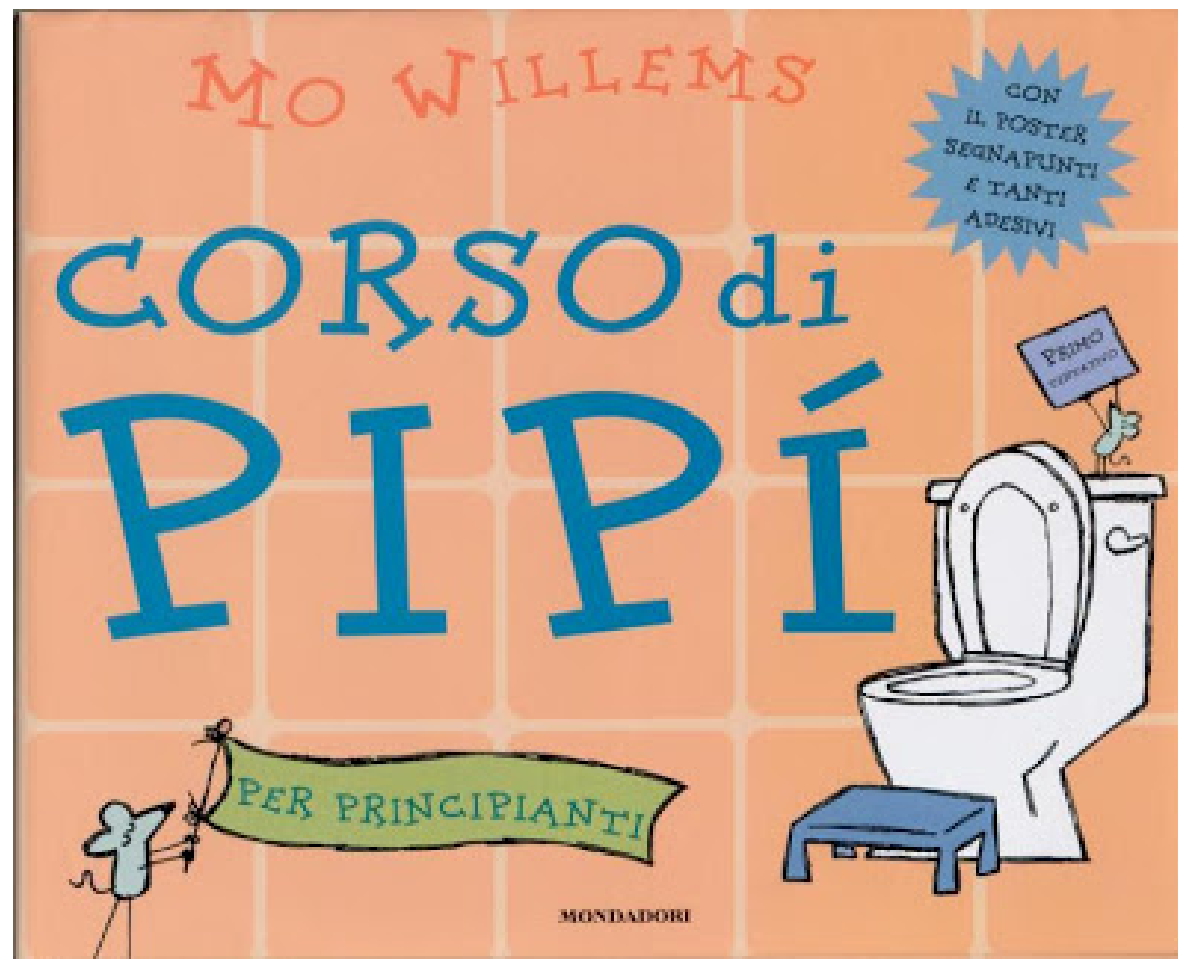
BoNT-A injections into the detrusor muscle received approval from the FDA for the specific indications:

❖ Neurogenic Detrusor Overactivity (NDO) 2011

❖ Overactive Bladder (OAB) and Idiopathic Detrusor Overactivity (IDO) 2013

OAB-IDO

- ❖ 100 units
- ❖ 20 repeat injections of a 0.5 ml total volume
- ❖ 20 sites



THANKS FOR ATTENDING!!