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Female Pelvic Medicine and Reconstructive Surgery

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Disclosures

- Abbvie – consultant
- Astellas - consultant
- Bluewind – DSMB Chair
- Boston Scientific - consultant
- Laborie – consultant
- Medtronic – consultant
- Neuspera - consultant
- NewUro – consultant
- Sumitomo Pharma - consultant

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Outline

- OAB/UUI/SUI – Evaluation and Treatment
- Nocturia
- Fecal Incontinence
- Pelvic Organ Prolapse – Definitions/Treatment
- Urethral Diverticula
- Fistula

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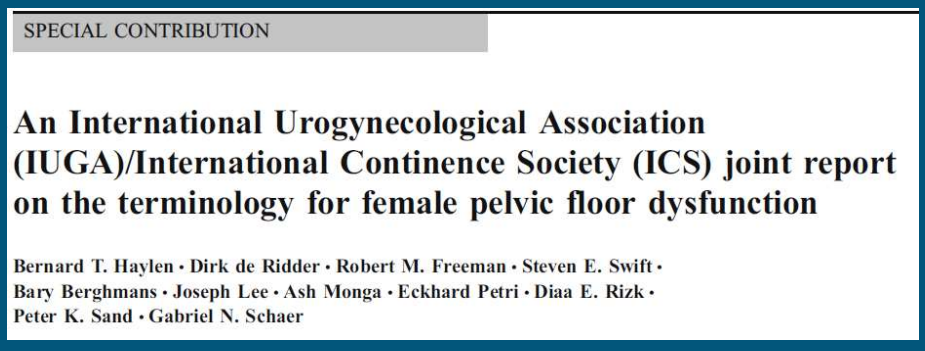

SPECIAL CONTRIBUTION

An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction

Bernard T. Haylen · Dirk de Ridder · Robert M. Freeman · Steven E. Swift · Bary Berghmans · Joseph Lee · Ash Monga · Eckhard Petri · Diaa E. Rizk · Peter K. Sand · Gabriel N. Schaer

Haylen BT, et al, Int Urogynecol J, 21:5-26, 2010
Haylen BT, et al, Neurourol Urodyn, 29:4-20, 2010

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Urinary Incontinence

- Complaint of Involuntary Loss of Urine
  - Stress Incontinence (SUI)– Loss on effort or physical exertion or sneezing/coughing
  - Urgency Incontinence(UI) – Loss with Urgency
    - Urgency – Complaint of sudden compelling desire to urinate which is difficult to defer
  - Mixed Incontinence – SUI and UI
  - Continuous Incontinence – Continuous involuntary loss

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Frequency

- Number of voids
  - Daytime *F* – per day
  - Nocturnal *F* – times sleep is interrupted
  - Twenty-four hour *F* – daytime plus nocturnal voids

Traditionally up to 7 voids per waking hours considered normal – but highly variable

Fitzgerald MP and Brubaker L: Variability of 24-hour voiding diary variables among asymptomatic women. J Urol 2003; **169**: 207

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Increased Urinary Frequency

- Complaint that micturition occurs more frequently during waking hours than previously deemed normal by the woman
- All relative to the patient's perception of their prior "normal"

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OAB Syndrome

- Urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection or other obvious pathology
- Overactive bladder (OAB) is a clinical diagnosis characterized by the *presence of bothersome urinary symptoms* - AUA OAB Guidelines

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Diagnosis and Treatment of Overactive Bladder (Non-Neurogenic) in Adults: AUA/SUFU Guideline

E. Ann Gormley, Deborah J. Lightner, Kathryn L. Burgio, Toby C. Chai, J. Quentin Clemens, Daniel J. Culkin, Anurag Kumar Das, Harris Emilio Foster, Jr., Harriette Miles Scarpero, Christopher D. Tessier, Sandip Prasan Vasavada

From the American Urological Association Education and Research, Inc., Linthicum, Maryland, and the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction

Gormley EA, et al, J Urol, 2012
Updated 2014
Updated May 2019

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Clinical Symptoms

- Self reported sxs of urgency, frequency and/or urgency incontinence = OAB……in the absence of other obvious process
- Differentiate from
  - UTI – dysuria, SP pressure, +UA
  - Polydipsia – high intake, multiple high vol voids
  - Diabetes insipidus – multiple high vol voids
  - IC/PBS – pain component

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Guideline Statement 1

The clinician should engage in a diagnostic process to document symptoms and signs that characterize OAB and exclude other disorders that could be the cause of the patient's symptoms; the minimum requirements for this process are a careful history, physical exam and urinalysis.

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History

- Questions
  - OAB
  - SUI
  - Difficulty emptying, hesitancy
  - Fluid intake habits
  - Caffeine and alcohol intake
  - Medications
  - *BOTHER*

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Co-Morbid Conditions

- Neurologic dz – MS, CVA, spinal cord injury
- Mobility issues
- Fecal motility disorders
- Diabetes Mellitus
- Recurrent UTIs
- Hematuria
- Sxs of pelvic organ prolapse
- Prior incontinence/prolapse surgery
- Pelvic cancer
- Prior pelvic radiation

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Urinalysis

- UA
  - Rule out UTI
  - Rule out hematuria → urologic evaluation
    - Microhem = 3 or more RBC on a properly collected specimen in absence of obvious benign cause*
- Urine Culture – ***NOT*** necessary unless there are signs of infection on UA

  + nitrite/LE on dip or pyuria/bacteruria on micro

*Barocas, D, et al. Microhematuria: AUA/SUFU Guideline. 2020

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Guideline Statement 2

- In some patients, additional procedures and measures may be necessary to validate an OAB diagnosis, exclude other disorders and fully inform the treatment plan. At the clinician's discretion, a urine culture and/or post-void residual assessment may be performed and information from bladder diaries and/or symptom questionnaires may be obtained.

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Post-Void Residual

- "Measurement of the post-void residual (PVR) is not necessary for patients who are receiving first-line behavioral interventions or for uncomplicated patients receiving anti-muscarinic medications"
- "PVR should be assessed in patients with obstructive symptoms, history of incontinence surgery, neurologic diagnoses and in other patients at clinician discretion when PVR assessment is deemed necessary to optimize care and minimize potential risks"
- Measure with an US bladder scanner or urethral catheter immediately after a patient voids

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Urinary Diaries

- "Diaries that document intake and voiding behavior may be useful in some patients, particularly the patient who cannot describe or who is not familiar with intake and voiding patterns. Diaries also are useful to document baseline symptom levels so that treatment efficacy may be assessed" – 3 days
- Components of typical urinary diary
  - Time of void
  - Voided volume
  - Volume, time and type of fluid intake
  - Time of incontinence episode – circumstances
  - Degree of urgency

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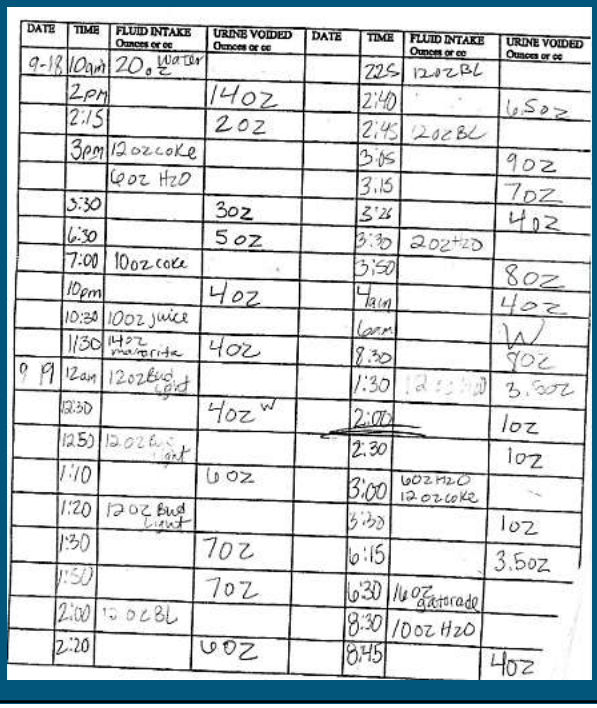

DATE	TIME	FLUID INTAKE Ounces or cc	URINE VOIDED Ounces or cc	DATE	TIME	FLUID INTAKE Ounces or cc	URINE VOIDED Ounces or cc
9-18	10am	20oz water			225	12oz BL	
	2pm		14oz		2:40		6.5oz
	2:15		2oz		2:45	12oz BL	
	3pm	12oz coke			3:05		9oz
		6oz H2O			3:15		7oz
	5:30		3oz		3:26		4oz
	6:30		5oz		3:30	20z+20	
	7:00	10oz coke			3:50		8oz
	10pm		4oz		4am		4oz
	10:30	10oz juice			6am		W
	1:30	14oz margarita	4oz		8:30		9oz
9	12am	12oz Bud Light			1:30		3.5oz
	12:30		4oz W		2:00		1oz
	12:50	12oz BL			2:30		1oz
	1:10		6oz		3:00	60z H2O 12oz coke	
	1:20	12oz Bud Light			5:30		1oz
	1:30		7oz		6:15		3.5oz
	1:50		7oz		6:30	16oz Gatorade	
	2:00	12oz BL			8:30	10oz H2O	
	2:20		6oz		8:45		4oz

BL = Bud Light

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Guideline Statement 3

- Urodynamics, cystoscopy and diagnostic renal and bladder ultrasound **should not be used** in the initial workup of the uncomplicated patient

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"Complicated" or Refractory Patients

- Neurogenic component
- Outflow issues/obstruction
- Prior surgeries
- Difficult to distinguish based on H and P
- Poor historian
- Failed prior treatments

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Complicated or Refractory

- Choice of additional testing depends on history, presentation and clinical judgement
  - Prior incontinence surgery
    - Cystoscopy – r/o intravesical foreign body
    - Urodynamics – r/o obstruction
  - Outflow sxs
    - Urodynamics - r/o obstruction

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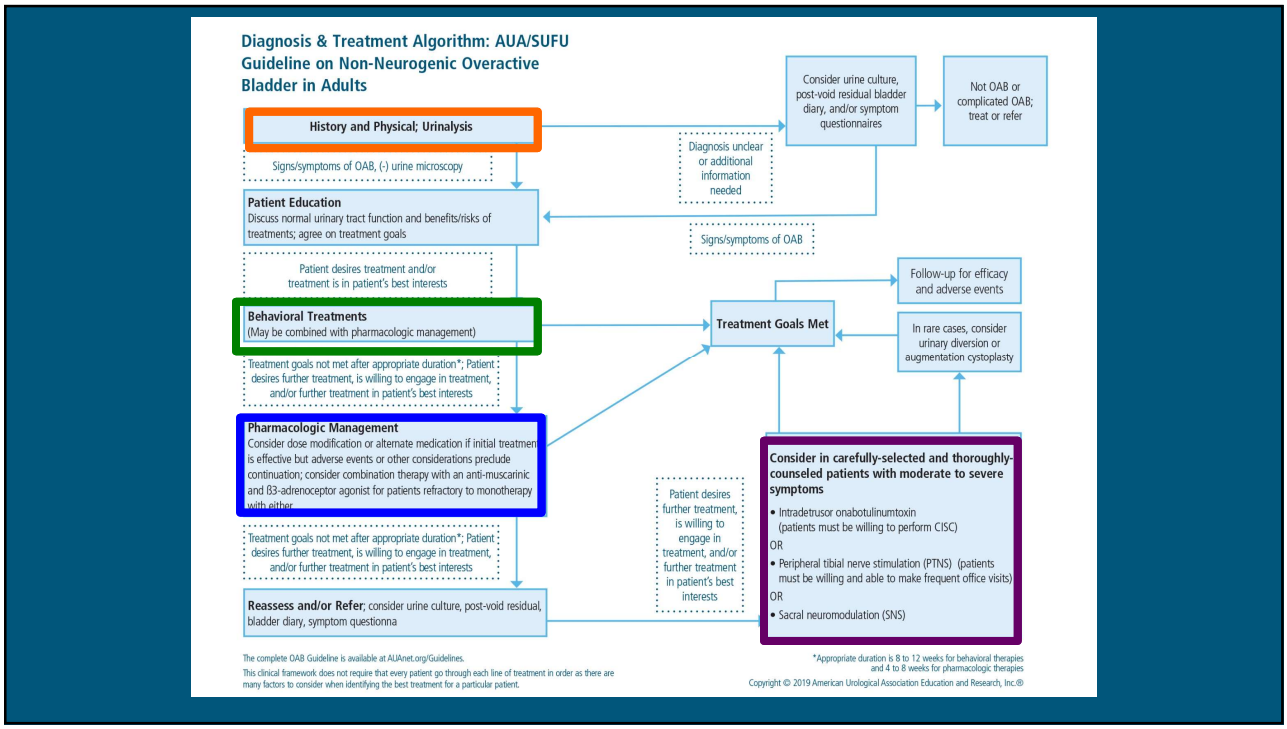
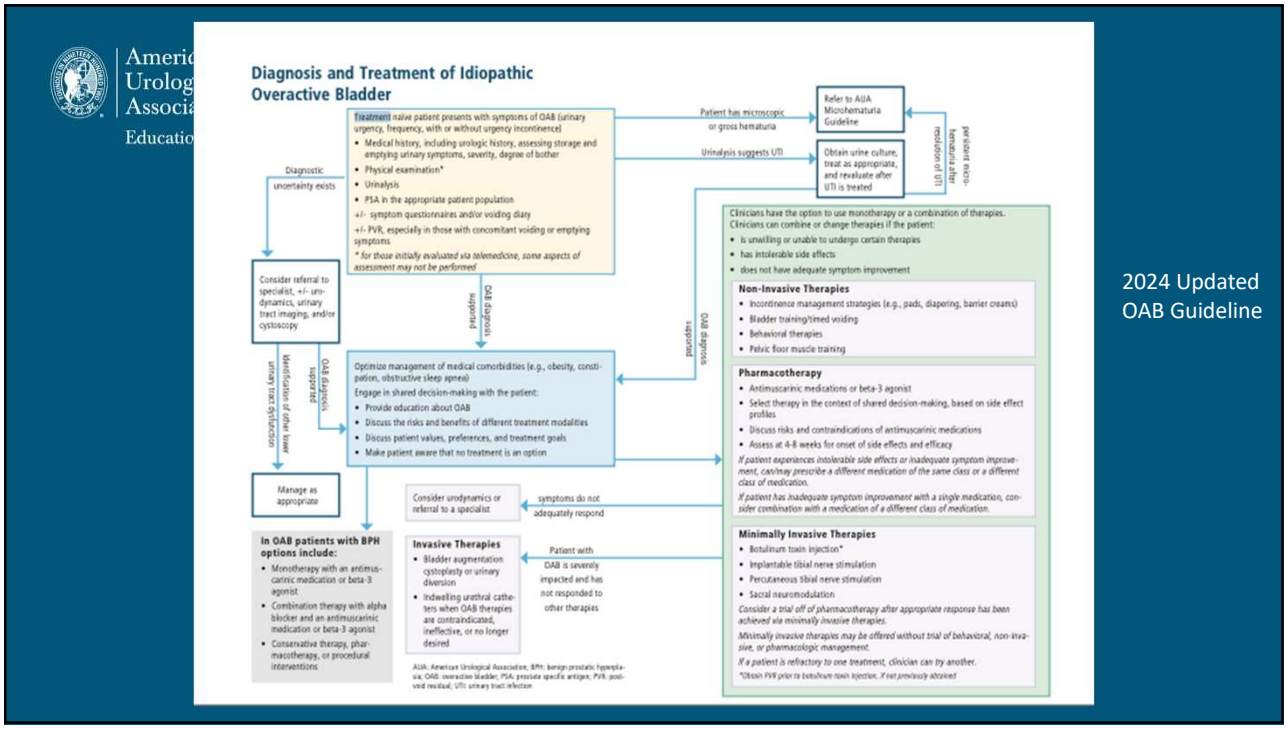
Evaluation Summary

- History, focused PE, UA – Mandatory
- Fluid diary – helpful in many cases
  - Typically at least 3 days
- Cystoscopy, imaging, urodynamics – not indicated in initial evaluation of typical patient
- If “complicated” or refractory to treatment or considering invasive treatment may consider above





2024 Updated OAB Guideline

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Treatment - Guidelines

- First-line treatment with behavioral therapy presents essentially no risks to patients and should be offered to all
- Second-line treatment with anti-muscarinics/beta agonists is not invasive and presents the risk of side effects that primarily compromise quality of life.
- Third-line treatments of various neuromodulation therapies require active participation by a motivated patient

AUA OAB Guidelines

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Behavioral Treatment

- Education
  - Normal and abnormal bladder function
- Modifying voiding habits
  - Bladder training
  - Delayed voiding
- Pelvic floor muscle training
- Other
  - Fluid management
  - Weight loss

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Pharmacologic Treatment

- Anticholinergics (antimuscarinics) – M2/M3
  - Oxybutynin – oral or transdermal
  - Tolterodine
  - Darifenacin
  - Solifencin
  - Trospium
  - Fesoterodine
- Sympathomimetics - Beta 3 agonists
  - Mirabegron
  - Vibegron

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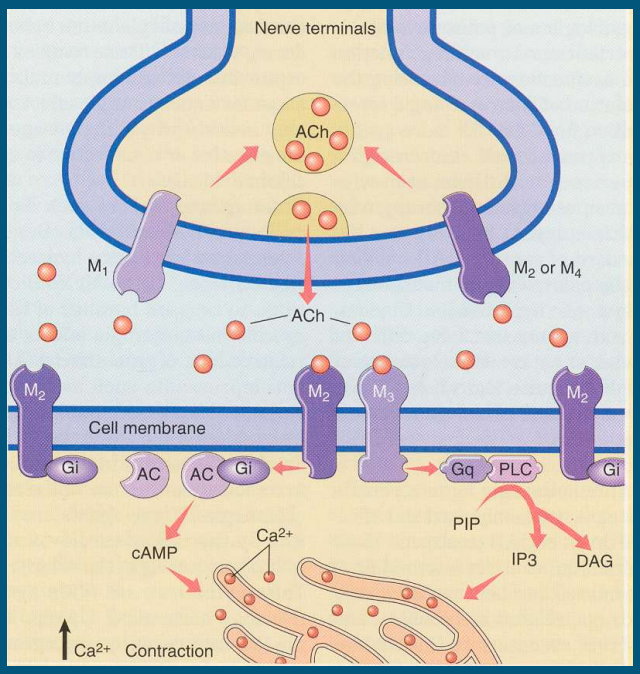
AC Block some of the Muscarinic Receptors - Comparative Receptor Presence in Detrusor Wall (M2>>M3)***



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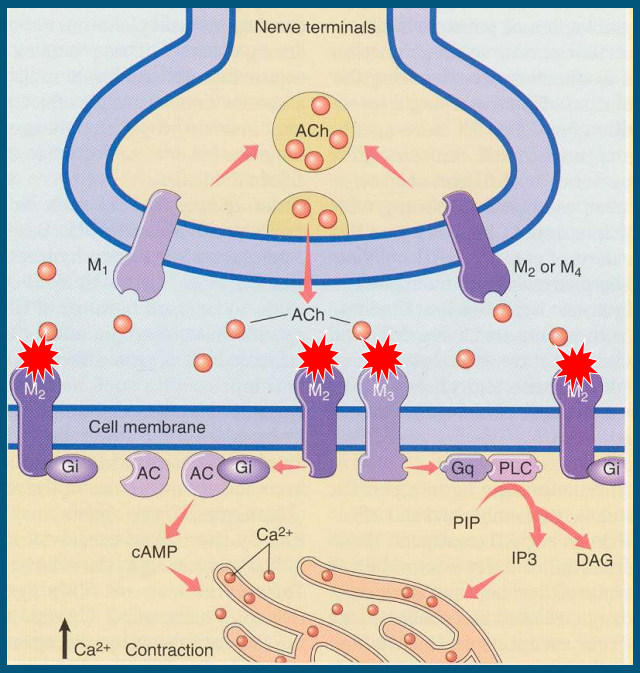

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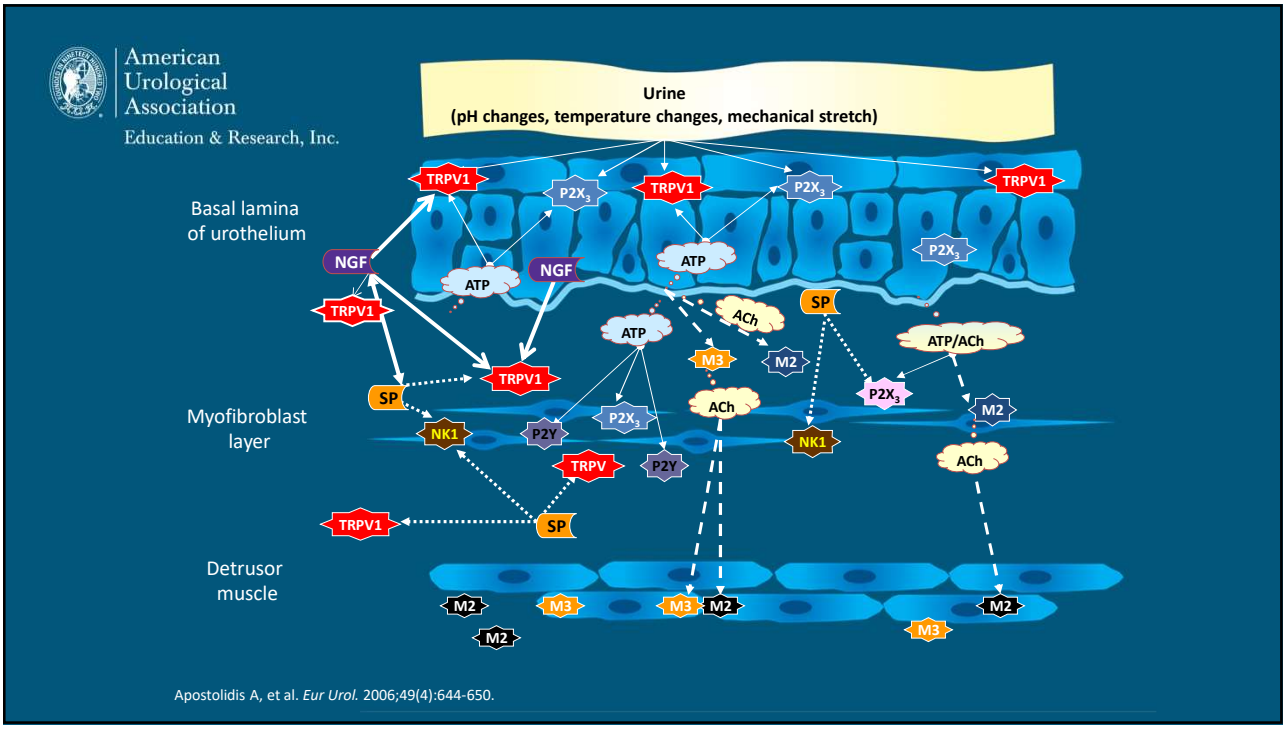

Apostolidis A, et al. *Eur Urol.* 2006;49(4):644-650.

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Guideline Statement 8

- Clinicians should offer oral anti-muscarinics or oral beta-3 adrenoceptor agonists as second line therapy
  - An extensive review of the randomized trials that evaluated pharmacologic therapies for OAB (including trials with placebo control groups as well as trials with active treatment comparison groups) **revealed no compelling evidence for differential efficacy across medications.** This finding is consistent with the conclusions of several published systematic reviews.

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Anti-muscarinics

- Class side effects
  - Dry mouth
  - Constipation
  - Dry/itchy eyes
  - Blurred vision
  - Dyspepsia
  - Impaired cognitive function

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Cautions with Anti-Muscarinics

- Don’t use in patients with uncontrolled narrow angle glaucoma
- Use caution in prescribing anti-muscarinics in patients who are using other medications with anti-cholinergic properties
  - Tricyclic antidepressants
  - Parkinson's drugs
  - Alzheimer's meds
  - Certain anti-nausea drugs with atropine like effects
  - Anti-cholinesterase inhibitors

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JAMA Internal Medicine | Original Investigation

Anticholinergic Drug Exposure and the Risk of Dementia
A Nested Case-Control Study

Carol A. C. Coupland, PhD; Trevor Hill, MSc; Tom Dening, MD; Richard Morriss, MD; Michael Moore, MSc; Julia Hippisley-Cox, MD

CONCLUSIONS AND RELEVANCE Exposure to several types of strong anticholinergic drugs is associated with an increased risk of dementia. These findings highlight the importance of reducing exposure to anticholinergic drugs in middle-aged and older people.

JAMA Intern Med. doi:10.1001/jamainternmed.2019.0677
Published online June 24, 2019.

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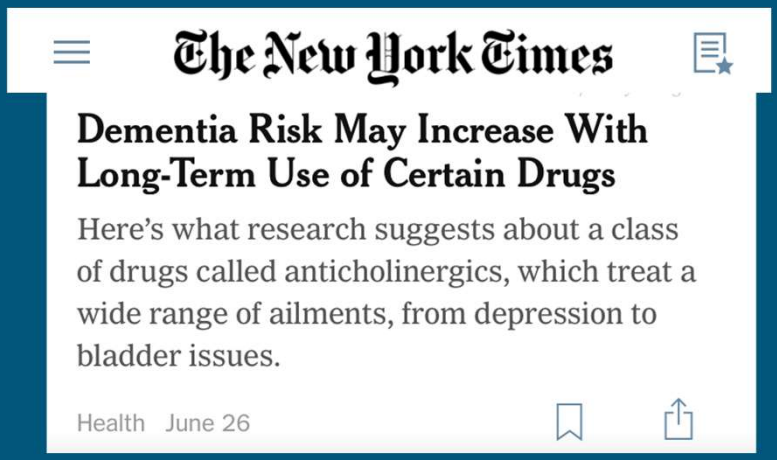
Anticholinergic Dementia Concerns



The New York Times

Dementia Risk May Increase With Long-Term Use of Certain Drugs

Here's what research suggests about a class of drugs called anticholinergics, which treat a wide range of ailments, from depression to bladder issues.

Health June 26

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Imipramine (off label use)

- Tricyclic antidepressant
- Exact mode of action not clear
  - Direct relaxant effect on detrusor muscle
  - Sympathomimetic
  - Central
- Combination of imipramine + AC may be additive
- Evidence – retrospective studies and case series

Contraindicated in pts on MAO inhibitors

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Beta-3 agonists

- Beta-3 adrenergic agonist – promotes bladder “relaxation”
- “Efficacy” similar to anti-muscarinics
- Lacks some of the anti-cholinergic side effects – dry mouth, dry eyes, etc.

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- Anticholinergics – block parasympathetic muscarinic receptors
  - Block abnormal contractions
- Beta 3 agonists – stimulate sympathetic Beta 3 receptors
  - Promote bladder relaxation
- Alpha blockers – inhibit sympathetic alpha receptors
  - Relax bladder neck and proximal urethral smooth muscle

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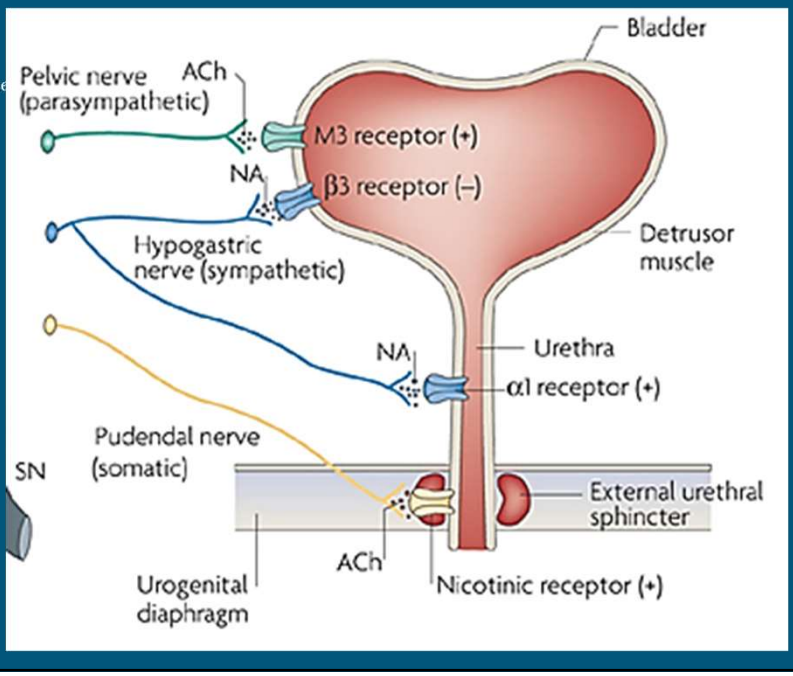

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Combination Therapy

- In patients with OAB who do not achieve adequate improvement with a single OAB medication, clinicians may offer combination therapy with a medication from another class (Guideline statement 22 in 2024 update)

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Third-line Therapy - Guidelines

- Tibial nerve stimulation (TNS)
- Sacral neuromodulation
- OnabotulinumtoxinA

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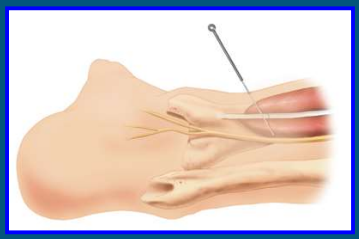
Tibial Nerve Stim



- Stimulation delivered via a 34 gauge needle electrode
- Needle electrode inserted medial/above medial malleolus
- Weekly x 12 weeks
- Maintenance therapy – tailored to each patient's response – typically once a month

Other versions of TNS commercially available

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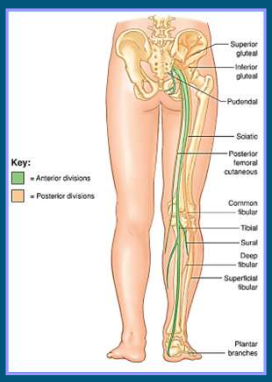
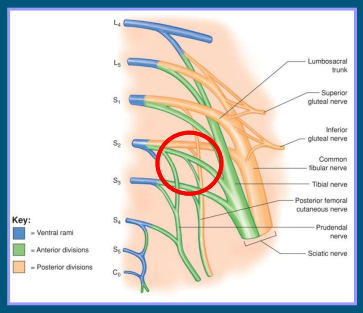
Treatment with TNS

- Impulses travel from the ankle along the tibial nerve to the sacral nerves
  - Tibial nerve has input from S 2, 3 and 4 roots





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TNS vs Sham

- N = 220
- 52% PTNS and 57% sham correctly guessed intervention
- PTNS significant improvements on urge, frequency, UI and symptom severity and QOL questions.

K Peters, et al, J Urol, 2010

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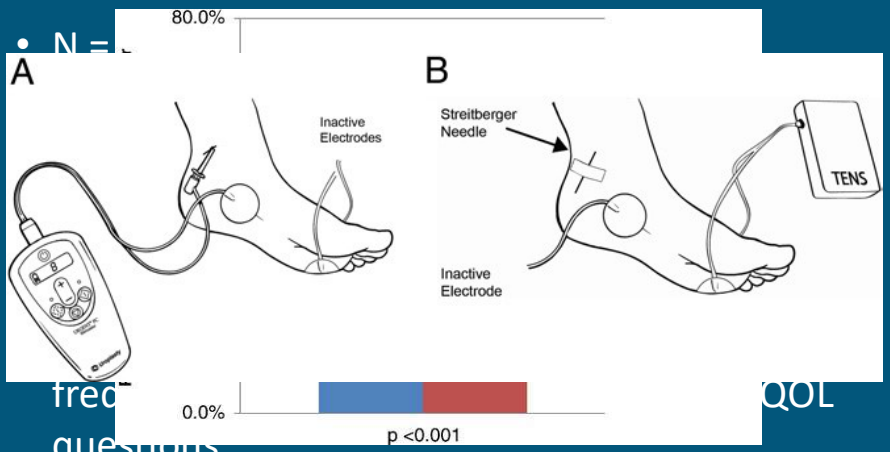
TNS vs Sham

- N =
- fred
- QOL questions.



K Peters, et al, J Urol, 2010

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Implanted TNS

2 devices approved by FDA

- Ecoin
  - Implanted subcutaneously under skin of ankle
  - Contains battery – 2 year life
- Bluewind
  - Implanted deep to fascia near neurovascular bundle
  - Tiny – no battery
  - Patient wears device on ankle 3x/week for an hour

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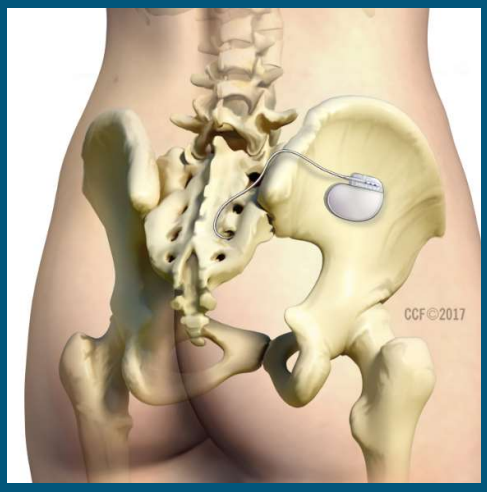
Sacral Nerve Modulation



- Sacral Nerve Modulation (SNM) is stimulation of the sacral nerves to modulate the reflexes that influence the bladder, sphincter, and pelvic floor.
- SNM utilizes mild electrical pulses to improve or restore normal voiding function.

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Sacral Neuromodulation

- Indications – Urinary Urgency, Urgency incontinence, Frequency, Idiopathic Retention, Fecal Incontinence
- Direct Stimulation of the S3 sacral nerve
- Trial phase with external IPG and temporary or permanent lead
- Permanent lead and IPG placed if trial successful

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PNE Vs Staged Approach

- 2 basic approaches
  - Place fine lead in office and if works place permanent lead and IPG in OR at single setting
    - Peripheral Nerve Evaluation (PNE)
  - Place permanent lead in OR – if works return to place IPG in second OR setting
    - Staged Approach

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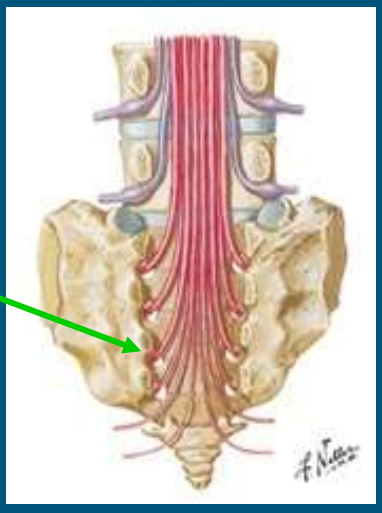
Sacrum – Sacral Nerves



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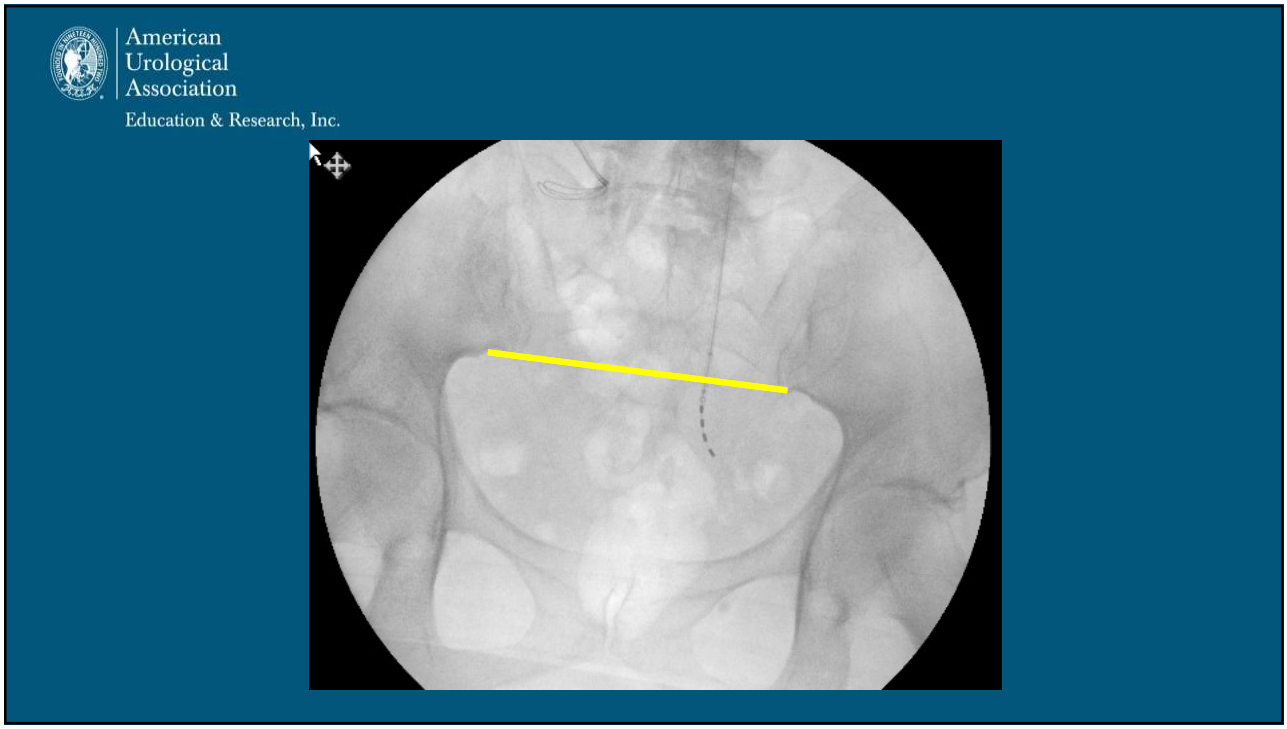
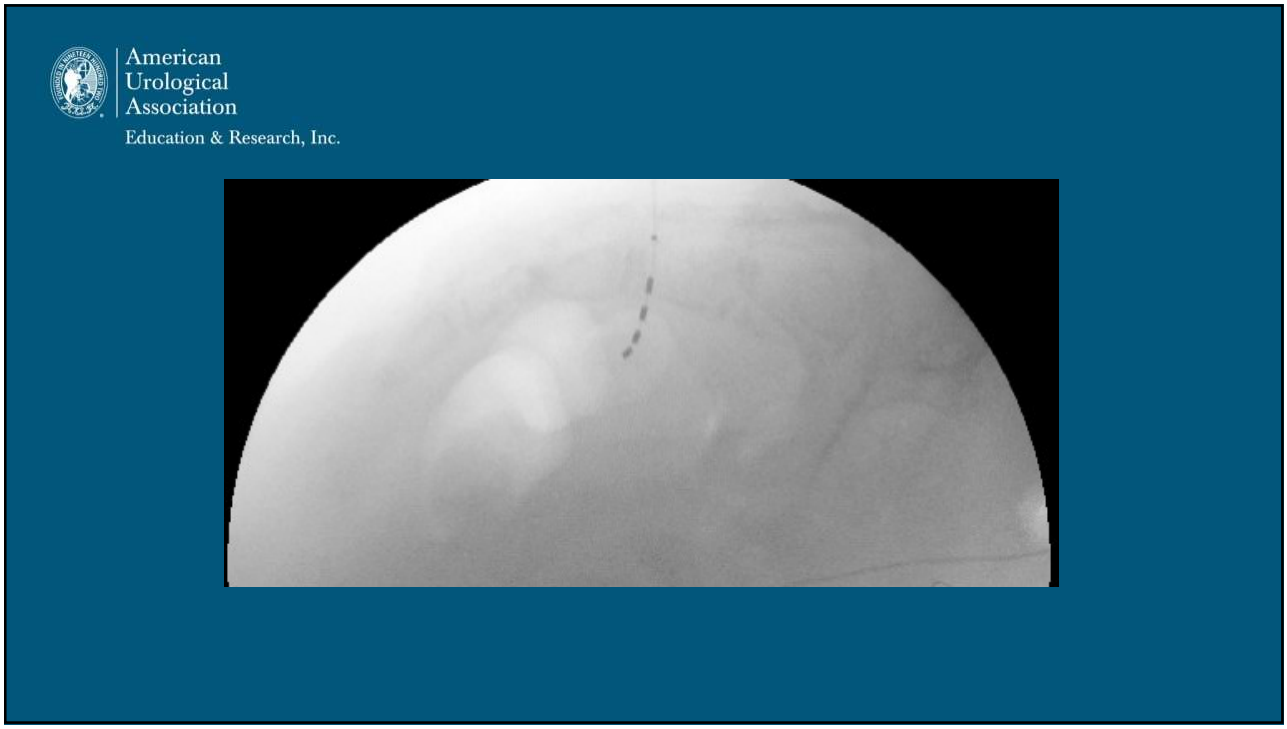
Motor and Sensory Responses***

Nerve Innervation	Response		Sensation
	Pelvic Floor	Foot/calf/leg	
S2 Primary somatic contributor of pudendal nerve for external sphincter, leg, foot	"clamp"* of anal sphincter	Leg/hip rotation, plantar flexion of entire foot, contraction of calf	Contraction of base of penis, vagina
S3 Virtually all pelvic autonomic functions and striated muscle (levator ani)	"bellows"** of perineum	Plantar flexion of great toe, occasionally other toes	Pulling in rectum, extending forward to scrotum or labia
S4 Pelvic autonomic and somatic No leg or foot	"bellows"**	No lower extremity motor stimulation	Pulling in rectum only

* Clamp: contraction of anal sphincter and, in males, retraction of base of penis. Move buttocks aside and look for anterior/posterior shortening of the perineal structures.

** Bellows: lifting and dropping of pelvic floor. Look for deepening and flattening of buttock groove.





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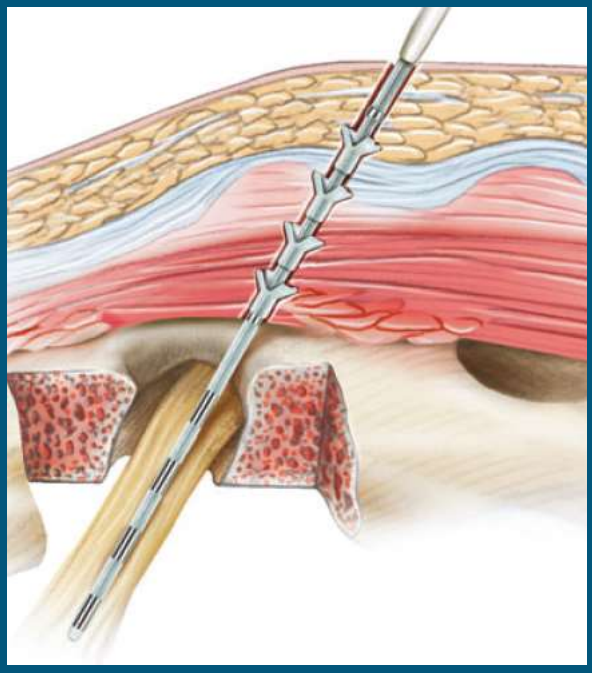

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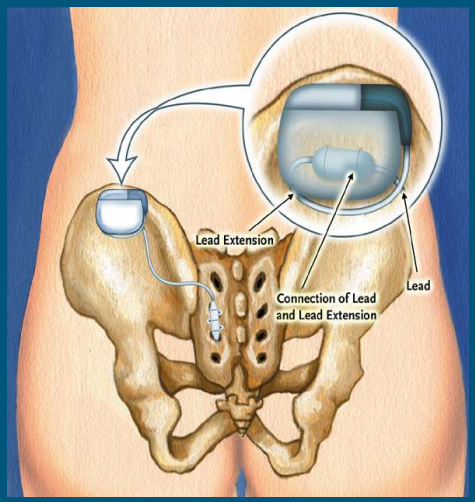
Stage II:

- Patients with a successful test stimulation (>50% reduction in symptoms) proceed to Stage II: implantation of neurostimulator



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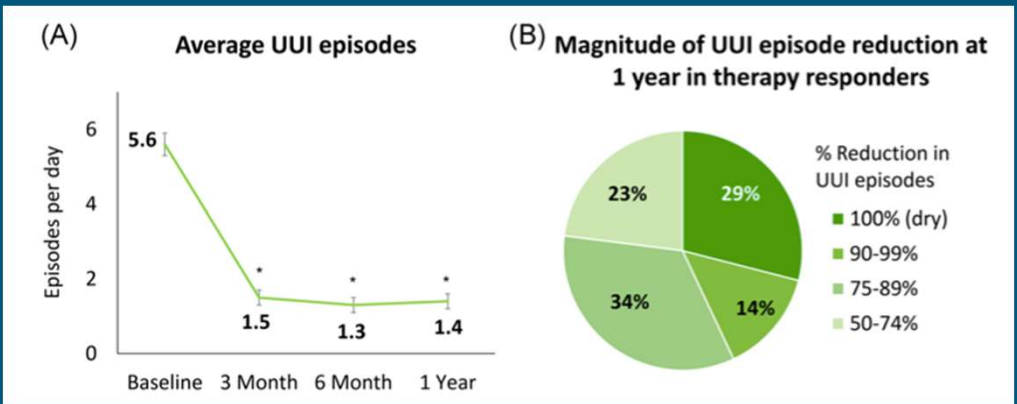
Efficacy for UUI at 1 year



Benson K, et al, NeuroUrod, 2020

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SNM Outcomes

- OAB Efficacy >75%
- Idiopathic Retention - Efficacy
- Fecal Incontinence Efficacy >75%

- Complications
  - Infection – 1%
  - Discomfort – 5% - typically able to resolve w programming
  - Lead revision – 2%
  - Explanted <5%

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Recent Changes in SNM

- Rechargeable options
- 10-15 yr battery life
- Current devices are MRI conditional
  - Can get MRI with old broken lead fragment

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Botulinum Toxin

- Most potent neurotoxin known to man
- Works by inhibiting acetylcholine release from presynaptic cholinergic junction leading to chemodenervation, reduced muscle contractility and likely reduced afferent input
  - Onabotulinum Toxin A light chain cleaves SNARE proteins (SNAP-25) preventing vesicles filled with Ach from fusing to cell membrane and being released into synapse***
- Reversible in about 6 months

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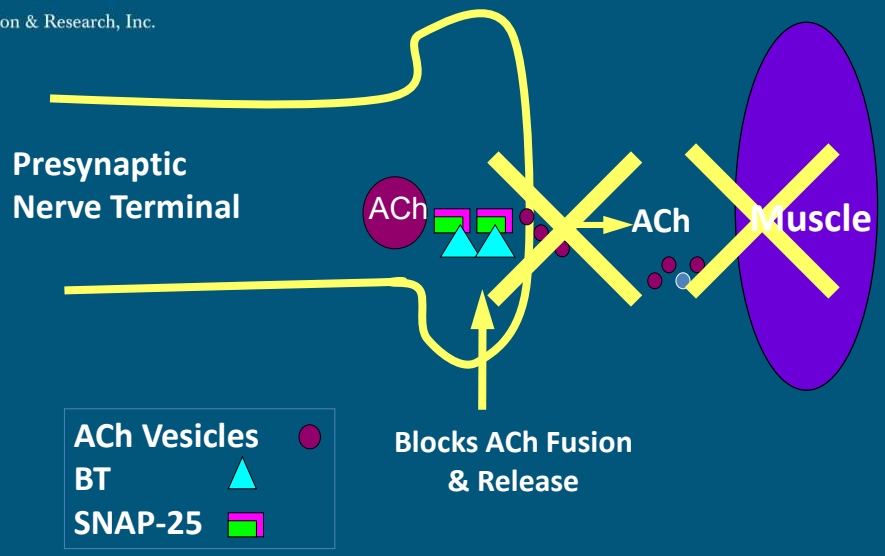
Botulinum Toxin



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Onabotulinum Toxin A injection

- In office (or OR)
- Patient must be willing to self cath if needed
- Clear urinalysis
- Prophylactic antibiotic
- Instill anesthesia into bladder and allow to dwell
- Drain and inject Onabotulinum Toxin A

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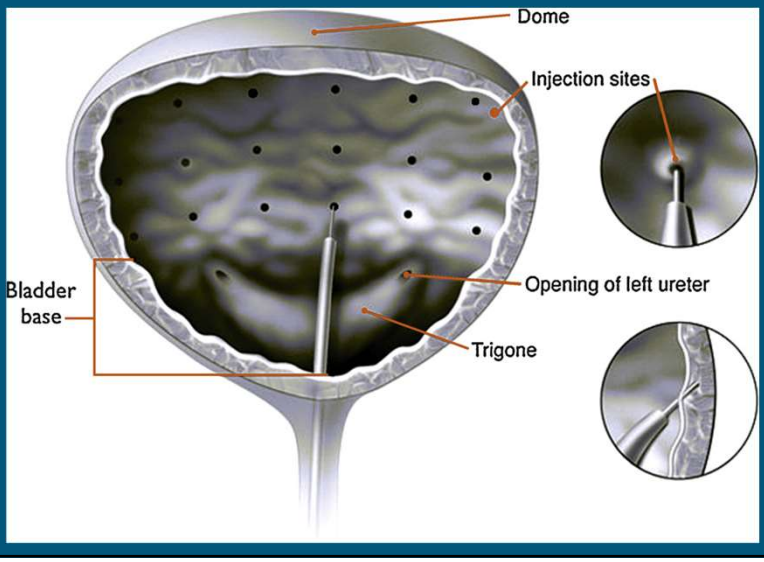
Onabotulinum Toxin A injection



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Onabotulinum Toxin A Outcomes

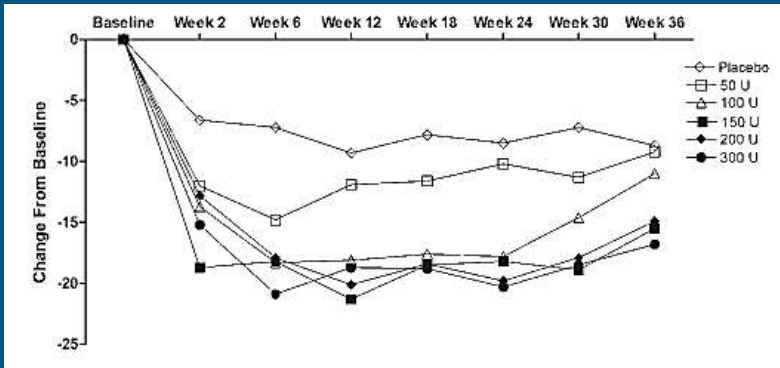

Figure 3. Change from baseline in mean King's Health Questionnaire score (symptoms component) by treatment group.

Dmochowski RR, et al JU, 2010

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Botulinum Toxin

- Decreases OAB symptoms
- Increases bladder capacity

- For IDO – lasts about 6 months (100 u)
- 6% risk of need for temporary CIC (at 100 u)
- Risk of UTI

- There are other types of botulinum toxin
  - Dosages/strengths differ

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Augmentation Cystoplasty

When all else fails

Achieves:

Increase in bladder capacity

Interruption of coordinated detrusor contractions

Low pressure system

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Contraindications

- Intrinsic bowel disease
  - Crohn's disease
  - Radiated bowel - relative
- Conditions resulting in short bowel
- Reduced manual dexterity
- Reduced cognitive function
- Significant renal impairment - relative

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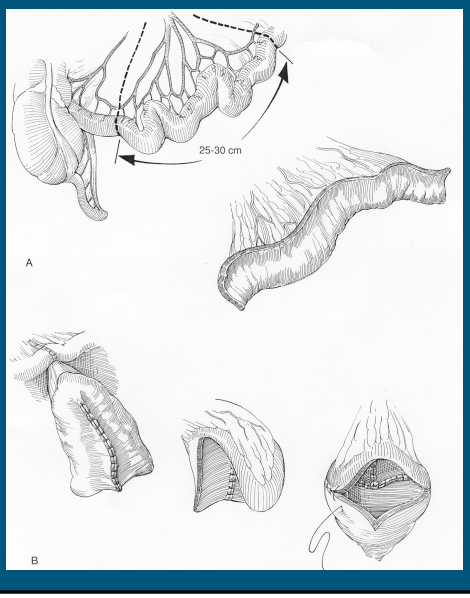
Enterocystoplasty



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Key Technical Points***

- Spare distal 15-20 cm of ileum
  - Prevent metabolic disturbances – B12 deficiency
- Detubularize
  - Prevent peristalsis and rises in bladder pressure
- Patient must be able to catheterize

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Complications***

- Need for CIC
  - IDO – up to 40%
  - NDO – 60%
- Failure
  - IDO – 45%
  - NDO – 10%
- Metabolic Disturbances
- Mucous Accumulation
- Stones – more common in those who catheterize
- Perforation – up to 10% - may present as acute abdomen
- Malignancy

Biers, et al, BJUI, 2011

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Pregnancy after Augmentation

- Should deliver vaginally if possible
- Closer monitoring
  - UTI
  - Upper tract obstruction requiring intervention

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OAB and BPH

- The clinician may offer the patient with BPH and bothersome OAB, in the context of shared-decision making, initial management with non-invasive therapies, pharmacotherapy or minimally invasive therapies

(Guideline statement 32 in 2024 update)

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OAB Evaluation and Treatment

- Evaluation
  - History and Physical exam (including pelvic) and UA
  - Fluid diary/PVR/symptom questionnaire
  - Cysto, UDS – complex or refractory patients
- Treatment
  - 1st – Behavioral therapy
  - 2nd – Medication
  - 3rd – Neuromodulation/onabotulinumtoxinA

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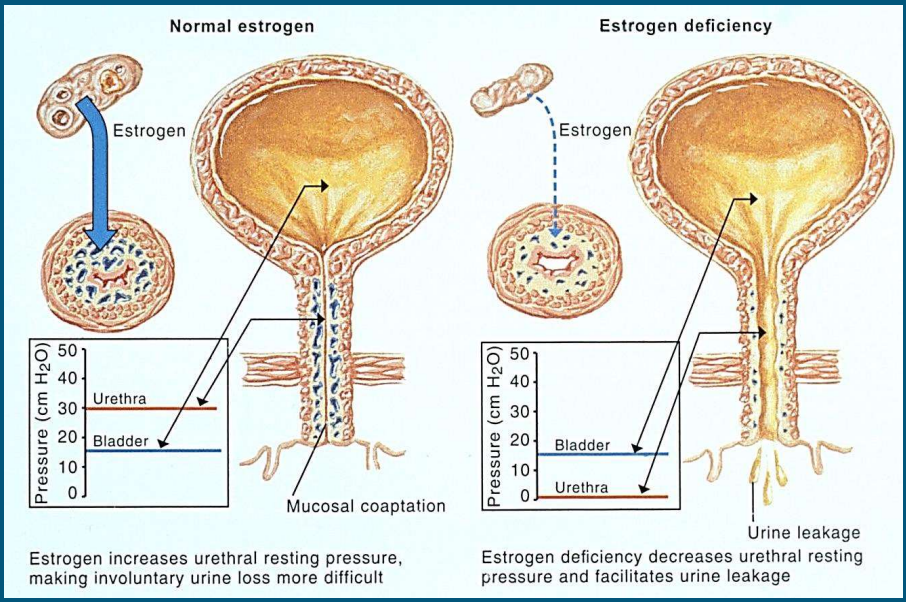
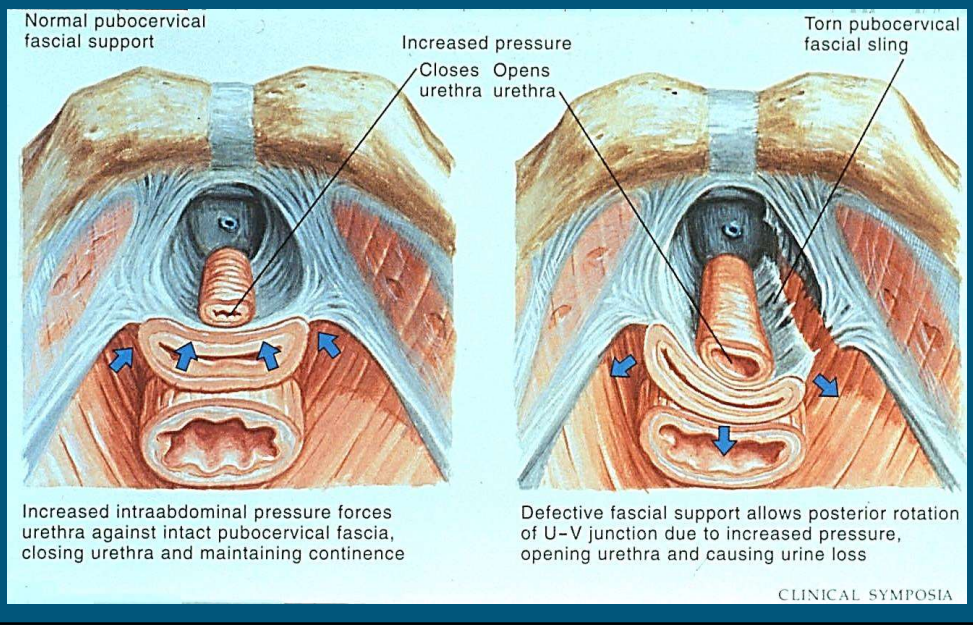
Stress Urinary Incontinence

- Loss of resistance of urethra to sudden increases in abdominal pressure – resulting in urine loss.
- 35% of women experience SUI
  - Very mild/Not bothersome for many
- Etiology
  - Loss of intrinsic mucosal coaptation – ISD
  - Loss of hammock like support – hypermobility
  - Loss of ligaments allowing for dynamic kinking – integral theory

Intrinsic Sphincteric Deficiency (ISD)



Hypermobility



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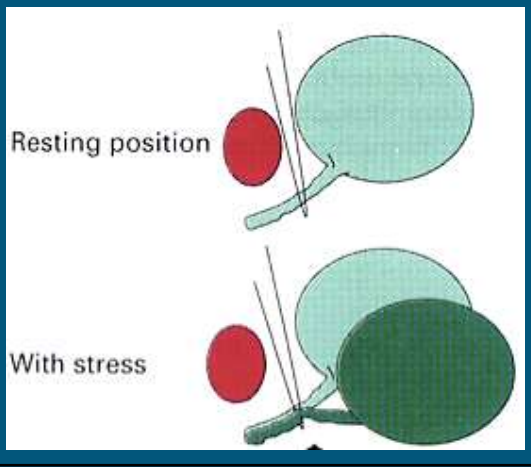
Integral Theory – dynamic kinking

depends on intact pubourethral ligaments



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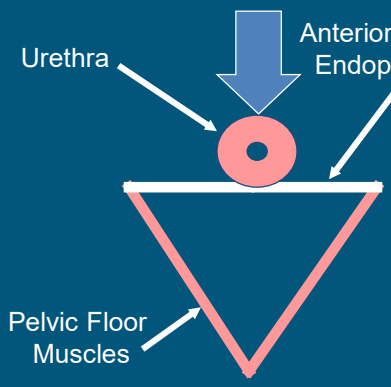
Evaluation of the Incontinent Woman: Stress Incontinence



However, if the:

anterior vaginal wall
intrinsic coaptation
pubourethral ligaments

fails to provide

adequate support
resistance
dynamic kinking

to the urethra….

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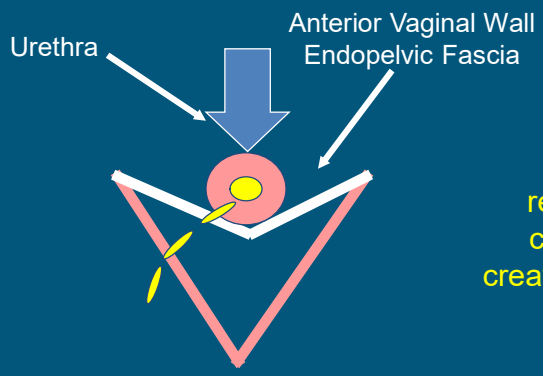
Evaluation of the Incontinent Woman: Stress Incontinence



…the urethra remains open and urine can pass through. This creates "stress" incontinence.

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UDS Measures of ISD***

- Valsalva leak point pressure (VLPP)
  - Lowest intravesical pressure at which leakage occurs with cough or valsalva in the absence of a detrusor contraction
  - ISD defined urodynamically by McGuire as
    - VLPP < 60 cmH_2O
    - Often called "low pressure urethra"

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AUA SUI Guidelines 2023

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American Urological Association (AUA)/
Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (SUFU)

APPROVED BY THE AUA BOARD OF DIRECTORS MARCH 2023

Authors' disclosure of potential conflicts of interest and author/staff contributions appear at the end of the article.

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Reviewed and Validity Confirmed 2023

SURGICAL TREATMENT OF FEMALE STRESS URINARY INCONTINENCE: AUA/SUFU GUIDELINE

(Published 2017; Amended 2023)

Kathleen C. Kobashi, MD; Michael E. Albo, MD; Roger R. Dmochowski, MD; David A. Ginsberg, MD; Howard B. Goldman, MD; Alexander Gomelsky, MD; Stephen R. Kraus, MD; Jaspreet S. Sandhu, MD; Tracy Shepler; Jonathan R. Treadwell, PhD; Sandip Vasavada, MD; Gary E. Lemack, MD

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Diagnosis

- History
- Physical Exam
  - Objective observation of leak per urethra with strain
- Urodynamics
  - "poor man's uds"
  - Cystometry
  - Valsalva Leak Point Pressure

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"Stress Test"

- Fill bladder - (stand on patient's side) have patient cough and strain.
- If no leak, but hx suspicious for SUI have patient stand and repeat cough and strain
- If still no leak have her reproduce activity that brings on leakage

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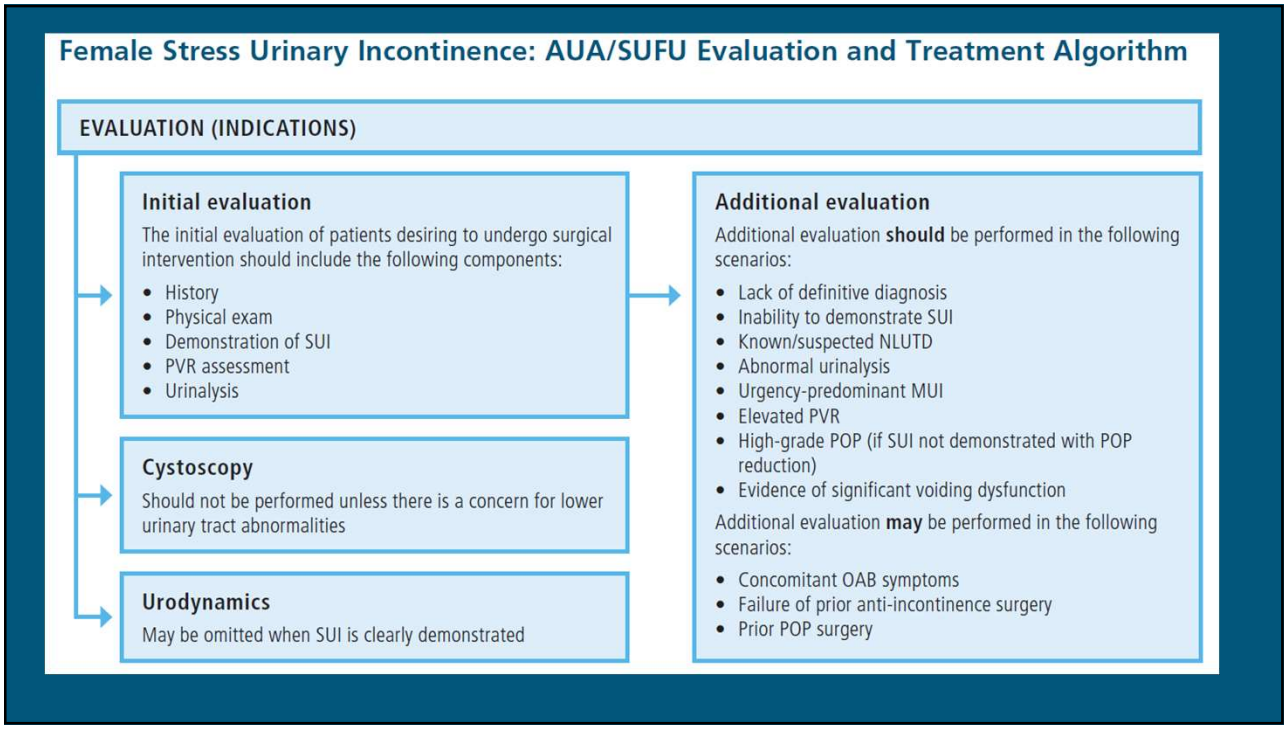
Is UDS Mandatory before SUI Surgery?

- Traditional view
  - UDS prior to invasive, potentially morbid surgery
    - Is there data to support that??
      - Not really
- VALUE Trial
  - Women with pure SUI or SUI predominant mixed incontinence
  - For whom sling was being planned
  - Randomized to UDS vs No UDS
  - Results – No difference in outcomes!

"Index" patient with SUI doesn't need UDS prior to surgery

CW Nager et al, NEJM, 2012



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Rationale for Bulking Agents

- Increase coaptation of the urethra by augmenting submucosal layer
- Increases urethral resistance to rises in intra-abdominal pressure.

- *Ideal candidate: ISD without hypermobility (someone who has previously failed surgery)*
  - *However, recent studies indicate those with hypermobility do just as well*

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Bulking Agents

- Carbon coated zirconium beads – **Durasphere**
- Silicone microimplants – **Macroplastique**
- Calcium hydroxylapatite – **Coaptite**
- Polyacrylamide hydrogel – **Bulkamid**
  - Unique – majority is water

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Bulking Agent Outcomes

- 1/3 dry
- 1/3 improved
- 1/3 failed

- Sometimes requires a number of injections initially to get desired outcome
- The majority of those who are dry or improved require another injection within 18 months
- Complications – temporary retention – abscess (rare)

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Bulking Agent

Tension-Free Vaginal Tape Surgery versus Polyacrylamide Hydrogel Injection for Primary Stress Urinary Incontinence: A Randomized Clinical Trial

Anna-Maija Itkonen Freitas, Maarit Mentula, Päivi Rahkola-Soisalo, Sari Tulokas and Tomi S. Mikkola*,†

J Urol, 2020

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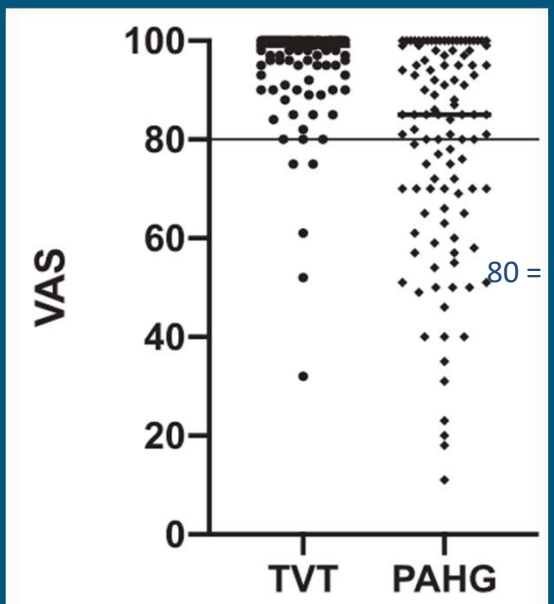

80 = "good satisfaction"

Figure 3. Patient satisfaction on intent to treat analysis 1 year after TVT or PAHG treatment.

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Conclusions: Mid urethral tension-free vaginal tape slings were associated with better satisfaction and cure rates than polyacrylamide hydrogel in women with primary stress urinary incontinence. However, complications were mainly associated with tension-free vaginal tape. Thus, tension-free vaginal tape should be offered as first line treatment in women who expect to be completely cured by the initial treatment and are willing to accept the complication risks. Since polyacrylamide hydrogel treatment also provides high satisfaction and cure rates, women with primary stress urinary incontinence can be offered polyacrylamide hydrogel as an alternative treatment.

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Surgical Treatment of SUI

- Anterior Repair – Kelly plication
- Retropubic Suspensions
  - MMK
  - **Burch**
- Transvaginal Suspensions
  - Pereyra
  - Stamey
  - Raz
- Slings
  - In situ vaginal wall
  - **Autologous fascial**
  - Other biologic (cadaveric, SIS, dermis,etc.)
  - Synthetic
    - Bladder neck
    - **Midurethral**
      - **Retropubic**
      - **Transobturator**
      - **Minisling**

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- Many (including myself) would suggest that for an index case:
  - Good SUI history
  - No voiding problems – slow stream, etc
  - Leakage demonstrated on exam
  - No other big questions to answer
- Can do surgery without UDS
  - 2023 AUA SUI Guidelines agrees

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Choice of Surgery

- The Gold Standards
- Long-term (>5 years) outcomes data
  - Traditional Burch procedure
  - Autologous Fascial Sling
  - Synthetic Mid-Urethral Sling

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Other Procedures

- Other biologic slings
  - Data shows more of a decline in efficacy than autologous slings
- Transobturator slings
  - Probably just as good for many patients
  - ? In patients with significant ISD and/or fixed urethras
- Mini-slings – now longer term data
  - 2023 SUI Guidelines – same level as RP and TO MUS

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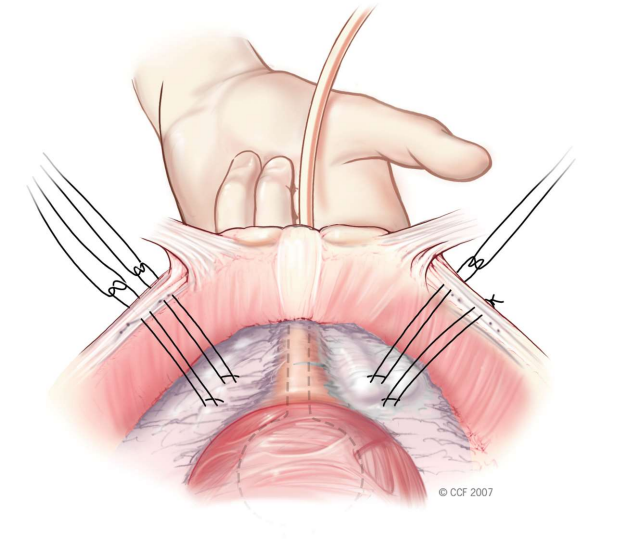
Burch Suspension



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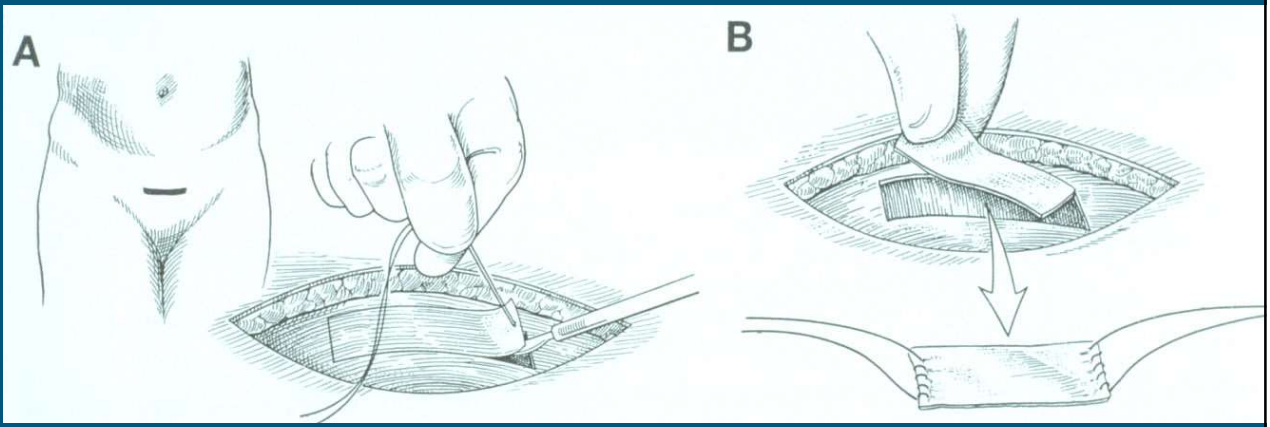
Autologous Fascial Sling



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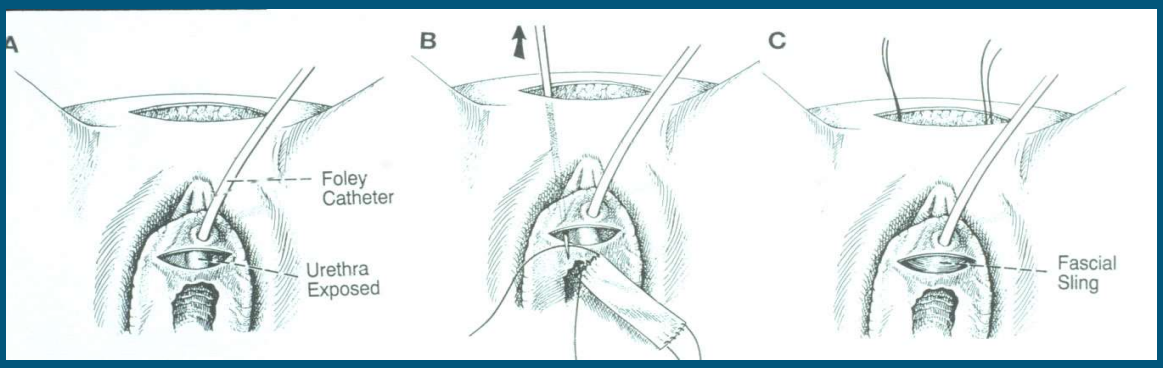

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Autologous fascia – Outcomes

- Multiple authors report 75-85% cure with > 5 year f/u
- No dyspareunia (without bone anchors)
- 5-15% voiding dysfunction
- Gold standard sling

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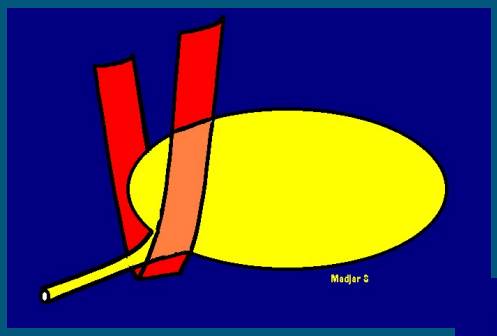
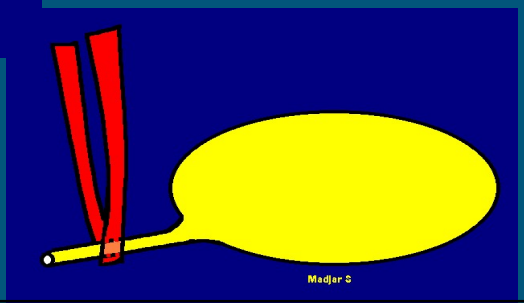
Sling Placement



Bladder Neck Sling

Midurethral Sling



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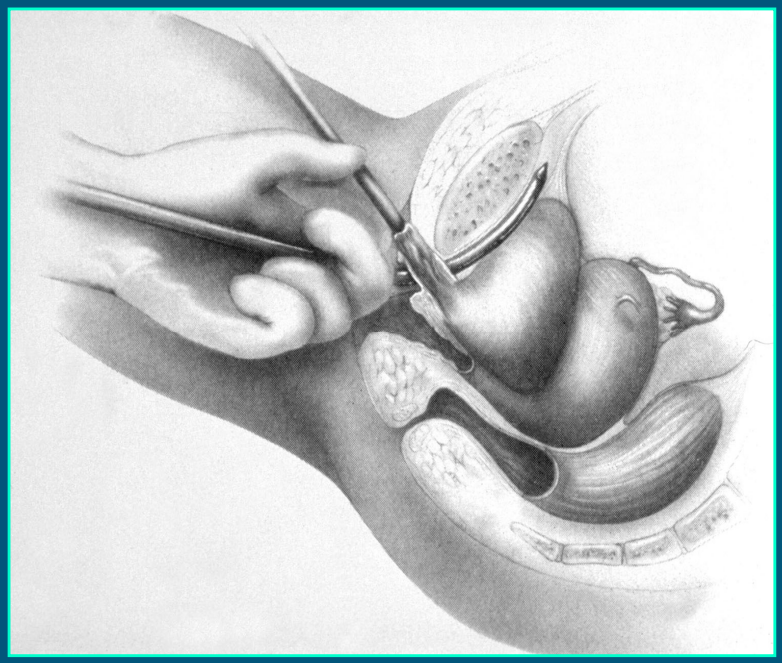

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TVT 17 year Prospective Outcomes

- 90 women - retropubic TVT – 3 centers
  - 74 potential for follow-up (alive and non-demented)
  - 78% had follow-up at median 17 years
  - Minimum follow-up was 15 years
- Mean Follow Up – 16 yrs 9 mo
  - 91% objective cure (negative stress test)
  - 87% subjective cure
    - On PGI – 77% cured, 20% improved

Nilsson, et al, Int Urogyn J, 2013

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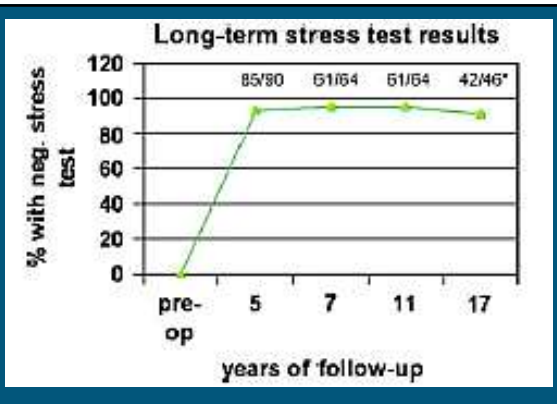

Table 2 Patients' global impression of improvement at 5, 7, 11, and 17 years of follow-up

	5 years	7 years	11 years	17 years
Percentage cured or improved	95.3	97.6	97.0	87.2
Number available for evaluation	85/90	78/80	67/69	48/55

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Retropubic TVT complications

Table I. The number of complications associated with 1455 TVT operations performed in Finland by the end of 1999

	n	%	95% CI*
Per-operative complicatitions			
Blood loss over 200 ml	27	1.9	1.2–2.7
Bladder perforation	56	3.8	2.9–5.0
Injury of the epigastric vessel	1	0.1	0.0–0.4
Injury of the obturator nerve	1	0.1	0.0–0.4
Vaginal hematoma	1	0.1	0.0–0.4
Urethral lesion	1	0.1	0.0–0.4
Postoperative complications			
Complete postoperative urinary retention	34	2.3	1.6–3.3
Voiding difficulty	111	7.6	6.3–9.2
Retropubic hematoma	27	1.9	1.2–2.7
Hematoma outside the retropubic area	7	0.5	0.2–1.0
Wound infection of the abdominal incision	12	0.8	0.4–1.4
Defect healing of the vaginal incision	10	0.7	0.3–1.3
Urinary tract infection	59	4.1	3.1–5.2
Urge symptoms	11	0.8	0.4–1.4
Dysuria	2	0.1	0.0–0.5
Vesicovaginal fistula	1	0.1	0.0–0.4
Urinary retention related to urological anomaly	1	0.1	0.0–0.4
Pain in the region of the gluteal muscle and thigh	3	0.2	0.0–0.6
Venous thrombosis	1	0.1	0.0–0.4
Seroma formation	1	0.1	0.0–0.4
Total	367		

*Poison distribution.

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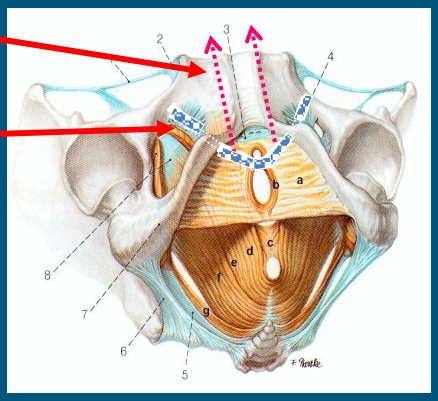
Mid-urethral sling orientation

- Retropubic
  - Relatively vertical
- Transobturator
  - Relatively horizontal



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Transobturator Slings

- Many studies have shown excellent outcomes with transobturator slings
- Lower rate of bladder perforation
- Lower rate of obstruction
- Higher rate of groin pain
- Banding in fornix

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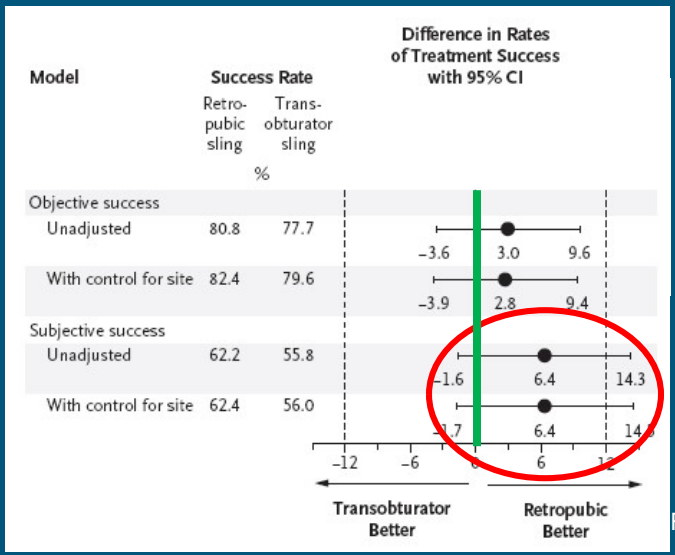
TOMUS – 12 months



Richter et al, NEJM, 2010

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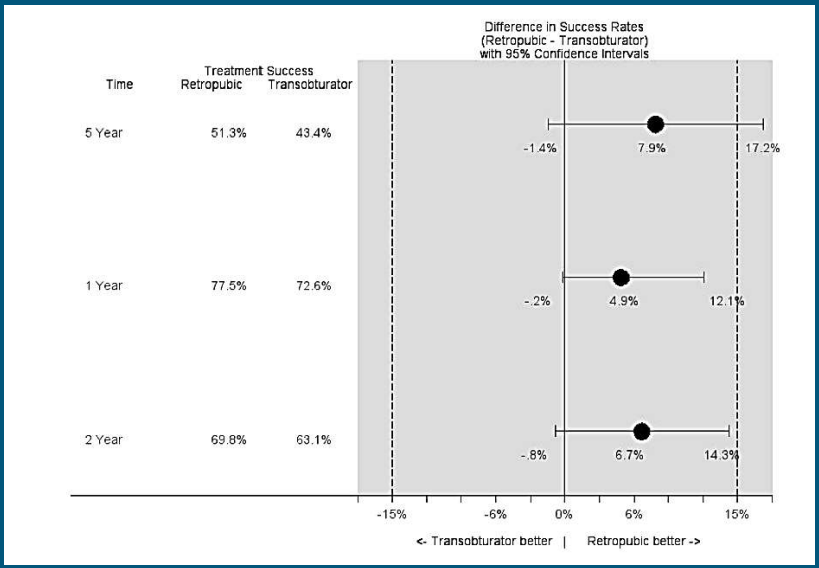
TOMUS 5 Years



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AUGS
Advancing Female Pelvic Medicine and Reconstructive Surgery

SUFU
Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction

Position Statement on Mesh Midurethral Slings for Stress Urinary Incontinence

The polypropylene mesh midurethral sling is the recognized worldwide standard of care for the surgical treatment of stress urinary incontinence. The procedure is safe, effective, and has improved the quality of life for millions of women.

- First version released 2014
- Updated Nov 2021

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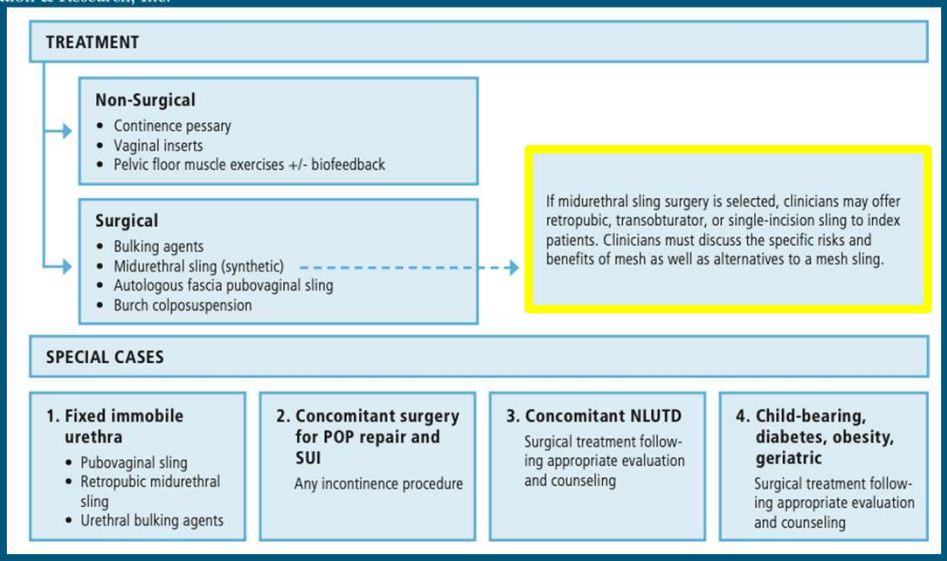
AUA SUI Guidelines 2023



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Surgery for SUI

- Diagnosis typically straightforward and based on history and physical exam
  - UDS not necessary for uncomplicated patients
- Gold standard procedures
  - Burch, autologous fascial sling, midurethral sling
- In 2023 midurethral sling most commonly used
- However, there are some moving back to fascia given medicolegal atmosphere

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Complications of Sling Surgery

- Failure
- Bladder outlet obstruction
- Bleeding
- Infection
- Bladder injury/Perforation
- Urethral injury
- Neurologic injury/pain
- Mesh related
  - Extrusions into vagina
  - Mesh perforations into urethra
  - Mesh perforations into bladder

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Symptoms of Iatrogenic Obstruction

- Retention
- Incomplete emptying
- Diminished force of stream
- Bending forward to void
- Recurrent UTI
- "de novo" DO
  - *may be result of obstruction*

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Intervention

- Only *absolute* selection criteria for urethrolysis should be a temporal relationship between surgery and onset of voiding symptoms
- Failure to generate a detrusor contraction during urodynamics should not exclude a patient from definitive treatment, e.g. urethrolysis

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Obstruction From MUS

- In cases of early intervention (up to 7-10 days) may be able to loosen by pulling down
- After 10 days need to incise as MUS is ingrown with native tissue
- Critical to identify and cut or loosen sling
  - If MUS not identified treatment WILL FAIL
- Chronically can become a tight band

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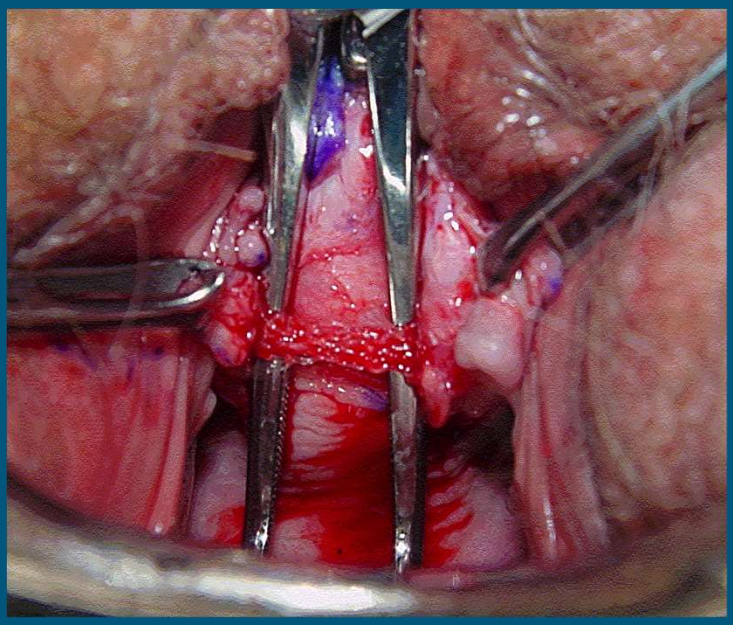

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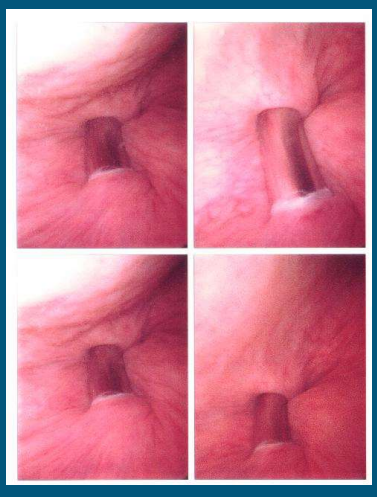
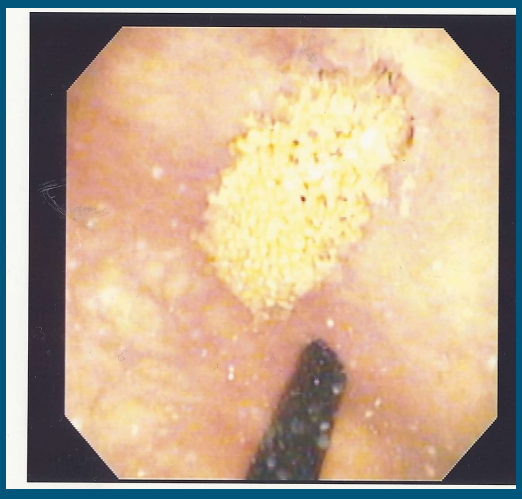
Bladder Perforation





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Bladder perforation

- Recognition of perforation
  - Cystoscopy
  - Fluid emanating from incision
- Remove trocars and repass

- Obturator tape incidence is extremely low but higher with outside in than inside out

- MUST DO CYSTO AFTER PASSING SLING TROCHARS
  - AUA SUI Guidelines

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Urethral Injury

- Overall low incidence (< 1%)
- Essential to recognize injury
  - Careful cystourethroscopy
  - Large injury: probably best to abort surgery (mesh)
    - Primary repair

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Mesh Related Complications of Vaginal Sling Surgery

- Extrusion (vaginal exposure)
- Perforation (into urinary tract)
  - Urethra
  - Bladder

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Vaginal Exposure

- If asymptomatic – can leave alone – currently used meshes – infection does not travel along
- Trial of estrogen cream – limited use
- Excise exposed portion

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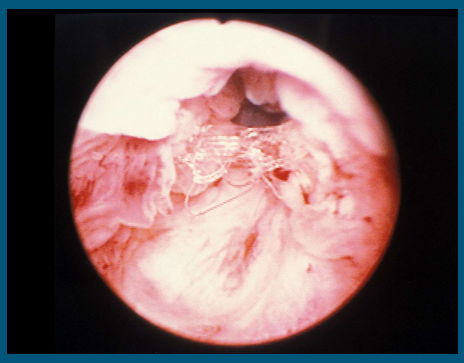
Erosion into Urethra

- Should be noted on preop cystoscopy
- Some manage with holmium laser excision
  - Difficult to get every last piece out of lumen
- I prefer to explore and remove mesh



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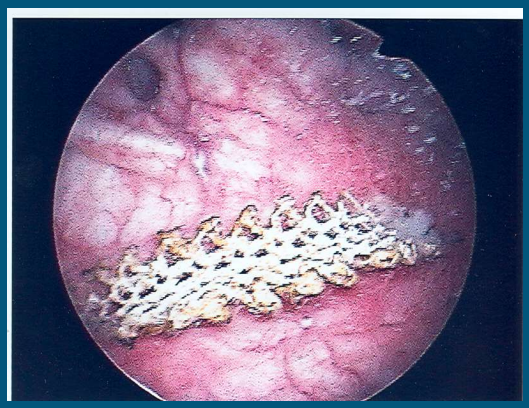

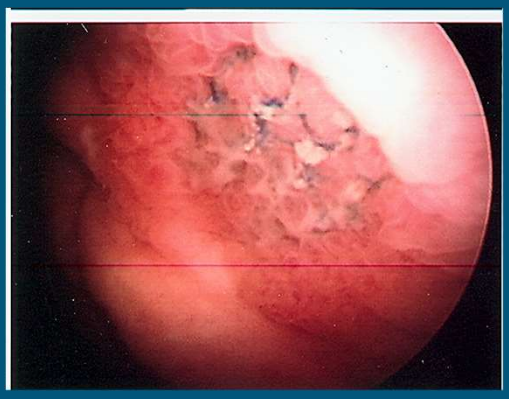

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Perforations/Erosions into Bladder

Endoscopic (holmium laser) – I do not like (my bias)

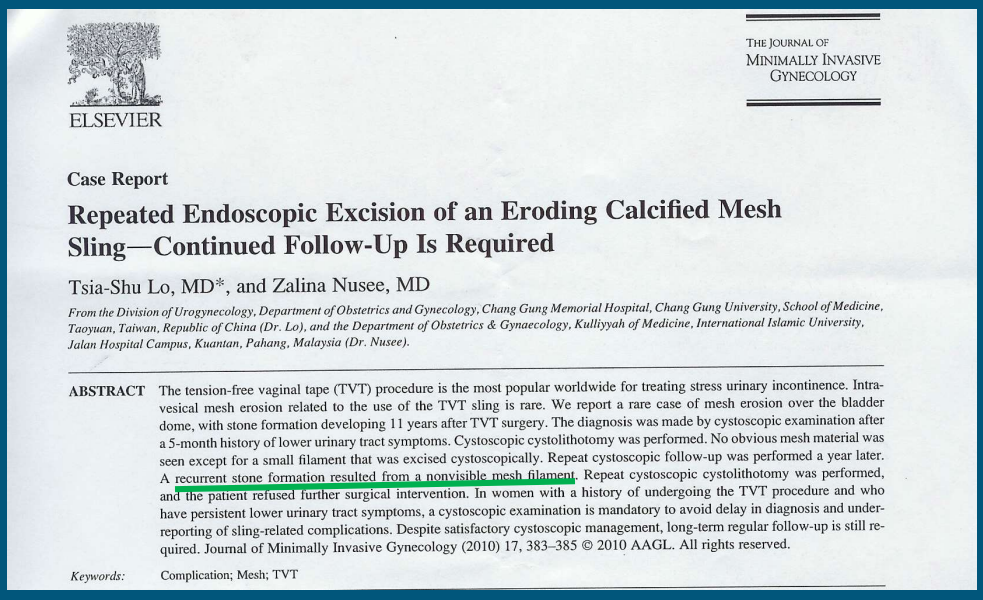
- Must remove all mesh – below level of mucosa or have little prongs still sticking in that cause symptoms

Transvaginal – posterior half of bladder

Transvesical

- Open (allows excision of all relevant portions of mesh)
- Lap assisted

Endoscopic Management



ELSEVIER

THE JOURNAL OF MINIMALLY INVASIVE GYNECOLOGY

Case Report

Repeated Endoscopic Excision of an Eroding Calcified Mesh Sling—Continued Follow-Up Is Required

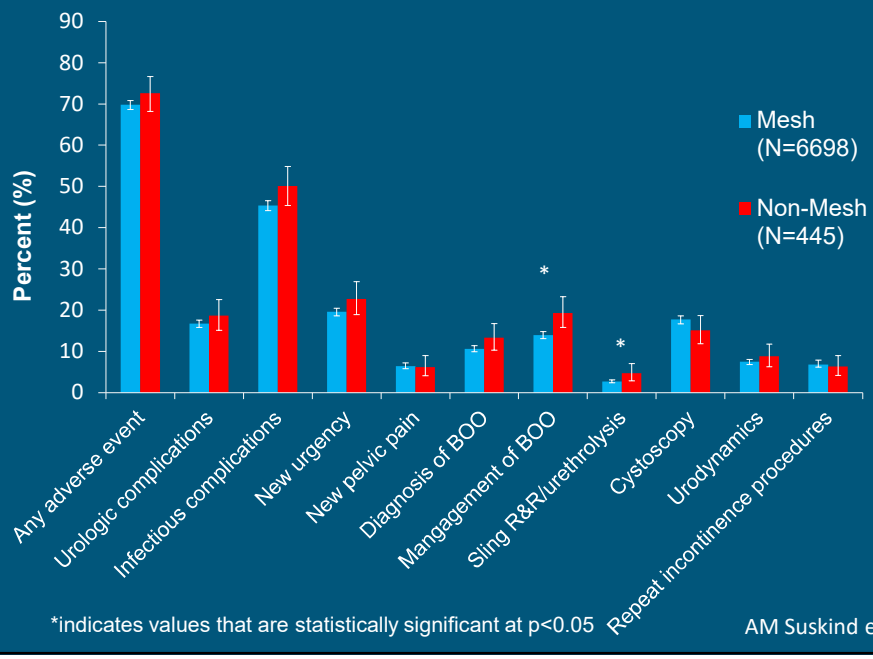
Tsia-Shu Lo, MD*, and Zalina Nusee, MD

From the Division of Urogynecology, Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, Chang Gung University, School of Medicine, Taoyuan, Taiwan, Republic of China (Dr. Lo), and the Department of Obstetrics & Gynaecology, Kulliyyah of Medicine, International Islamic University, Jalan Hospital Campus, Kuantan, Pahang, Malaysia (Dr. Nusee).

ABSTRACT The tension-free vaginal tape (TVT) procedure is the most popular worldwide for treating stress urinary incontinence. Intravesical mesh erosion related to the use of the TVT sling is rare. We report a rare case of mesh erosion over the bladder dome, with stone formation developing 11 years after TVT surgery. The diagnosis was made by cystoscopic examination after a 5-month history of lower urinary tract symptoms. Cystoscopic cystolithotomy was performed. No obvious mesh material was seen except for a small filament that was excised cystoscopically. Repeat cystoscopic follow-up was performed a year later. A recurrent stone formation resulted from a nonvisible mesh filament. Repeat cystoscopic cystolithotomy was performed, and the patient refused further surgical intervention. In women with a history of undergoing the TVT procedure and who have persistent lower urinary tract symptoms, a cystoscopic examination is mandatory to avoid delay in diagnosis and underreporting of sling-related complications. Despite satisfactory cystoscopic management, long-term regular follow-up is still required. Journal of Minimally Invasive Gynecology (2010) 17, 383–385 © 2010 AAGL. All rights reserved.

Keywords: Complication; Mesh; TVT

Adverse Events at 1 Year: Fascial vs Mesh Sling



*indicates values that are statistically significant at p<0.05

AM Suskind et al

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Mixed Incontinence

- Treat the most bothersome component first
- UUI is more likely to be more bothersome

- When sling placed – UUI will improve in about half of women
  - Always tell them sling is for SUI, if UI improves that is a bonus

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Outline

- **OAB/UUI/SUI – Evaluation and Treatment**
- Nocturia
- Fecal Incontinence
- Pelvic Organ Prolapse – Definitions/Treatment
- Urethral Diverticula
- Fistula

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Nocturia

- Individual has to awaken one or more times at night to void
- Increases with age. 50% of M and F over 60 have
  - Can be a primary sleep disorder
    - Wakes up and might as well void
  - Sleep deprivation, fatigue, cognitive dysfunction, FALLS
- Nocturnal urine production = total amount voided between when goes to sleep and the time of waking
- Voiding diary critical
  - Global polyuria
  - Nocturnal polyuria
  - Bladder storage disorder

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Nocturia Causes

- Global polyuria
  - Increased fluid intake
  - Diabetes mellitus
  - Diabetes insipidus
- Nocturnal polyuria - >35% of daily urine production during sleeping hours
  - Lifestyle – excessive evening drinking
  - Disruption of ADH levels
  - Congestive heart failure – mobilization of edema
  - Nephrotic syndrome
  - Sleep apnea
- Bladder storage
  - BPE
  - OAB

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Nocturia Treatments

- Global Polyuria
  - Decrease fluids
  - Diagnose underlying issue
- Nocturnal Polyuria
  - Decrease evening fluids
  - Sleep apnea – CPAP
  - Compression stockings
  - Medications
    - Lasix earlier in day
    - Desmopressin
- Bladder storage
  - BPE – treat
  - OAB treat

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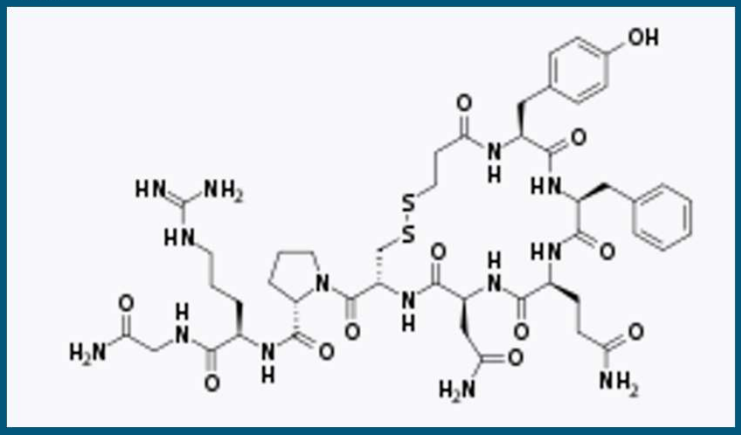
Desmopressin (DDAVP)



$C_{46}H_{64}N_{14}O_{12}S_2$

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Desmopressin (DDAVP)

- Synthetic analogue of vasopressin
  - Different formulations and ways of administering
- Increases reabsorption of water in collecting tubule via increased aquaporin channels
  - Decreases urine production for a few hours
- Side effects
  - Headache
  - Nausea
  - Hyponatremia
  - Seizures

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Desmopressin Use

- Risks higher in older people
  - Obtain a baseline Na
  - Repeat a few days later and then again in 2 weeks
- If developing hyponatremia stop use
- Treatment:
  - Mild/moderate (Na >120) asymptomatic – stop med
  - Symptomatic or severe (Na<120) – slow hypertonic saline
    - Do not correct too quickly

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Fecal Incontinence

- 7% of women age 30-90 have at least monthly FI
- More prevalent in higher ages

Evaluation

- Detailed history – diet, activity, pmhx
- PE focused on vaginal and anorectal area – squeeze, tone
- Endoscopy, endoanal US, physiologic testing if necessary

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Table 1. Medical Conditions Associated with Diarrhea
Endocrine (diabetes, thyroid disease)
Inflammatory bowel disease (Crohn's disease, ulcerative colitis)
Irritable bowel syndrome
Infectious (viral, parasitic, bacterial)
Medication related (laxatives, colchicine, magnesium-containing supplements, metformin, chemotherapy)

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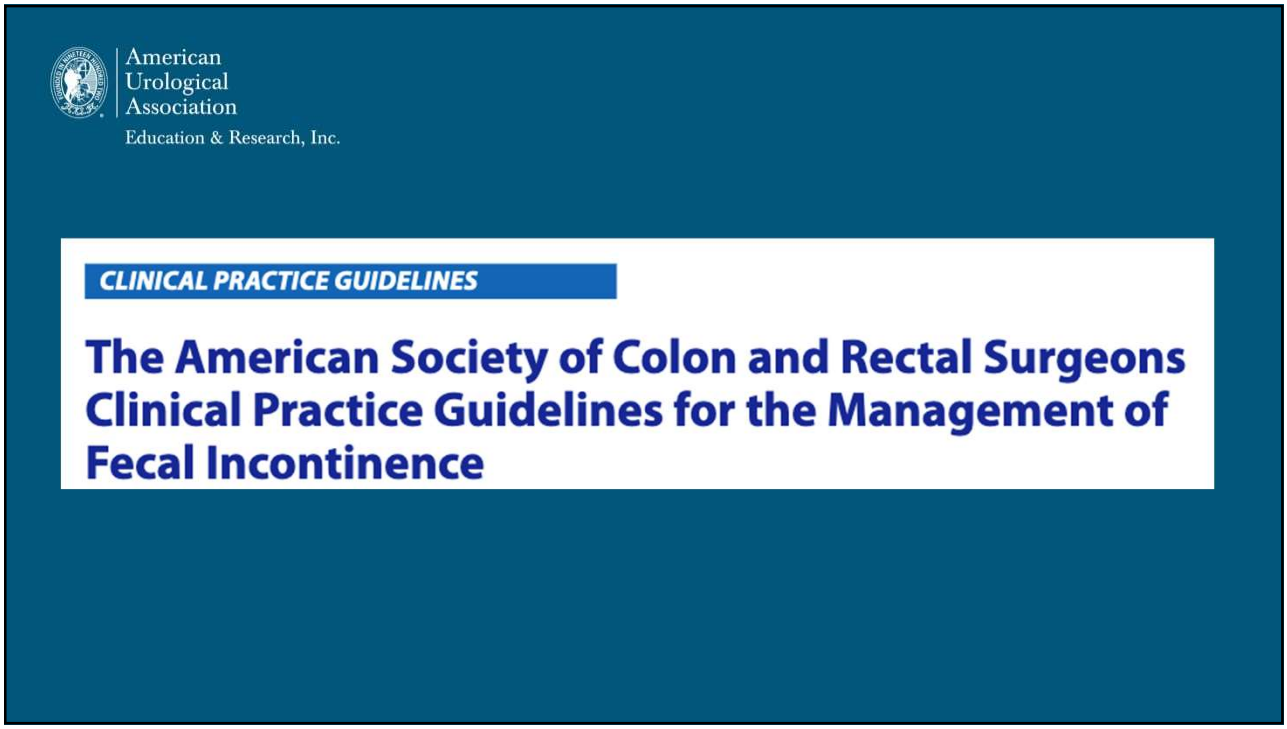
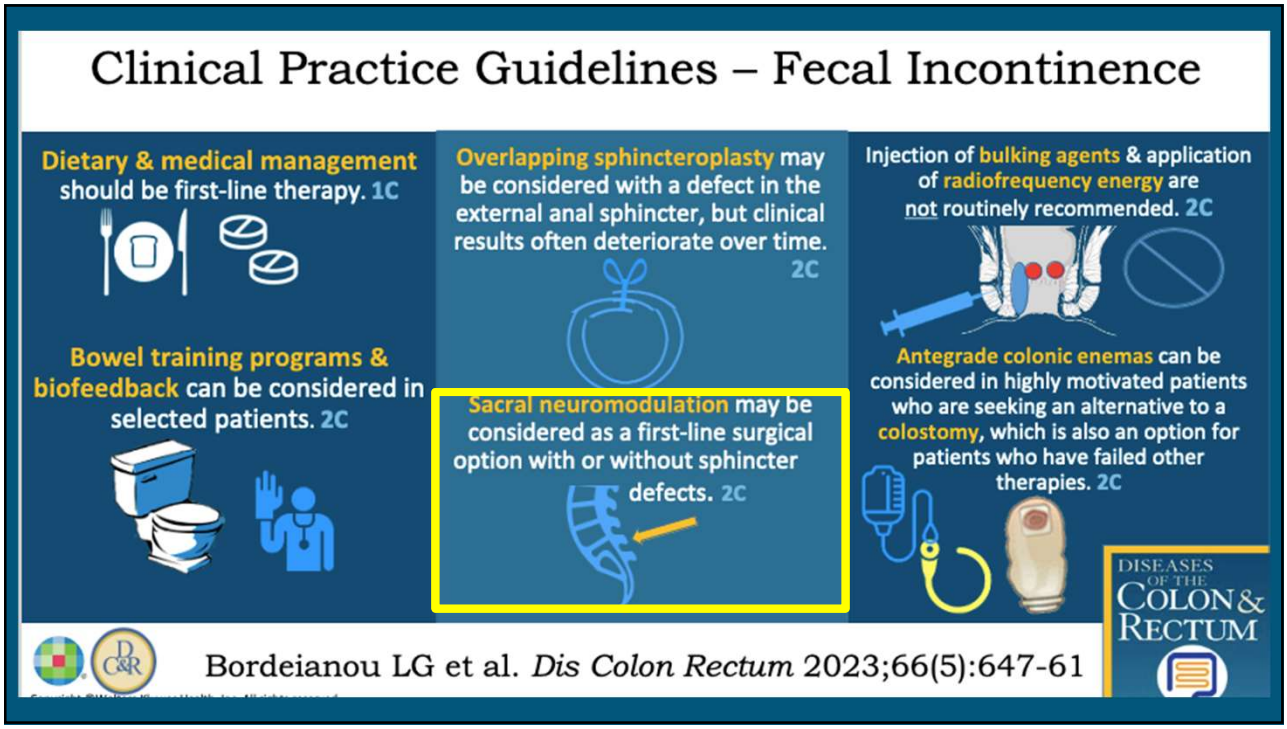
Fecal Incontinence Treatment

- Behavioral Tx
  - Diet
  - Bulking of stool – fiber
  - Regular toileting schedule
  - Pelvic floor muscle rehabilitation
- Vaginal inserts to obstruct fecal leak
- Medication
  - Loperamide – reduces GI motility
- Neuromodulation
  - Sacral works very well
  - ? PTNS
- Bulking agent
- Surgery
  - Sphincteroplasty
  - Muscle transposition
  - Diversion





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Pelvic Organ Prolapse (POP)
What a Urologist Needs to Know

- Prevalence and risk factors
- Patient evaluation
- Pertinent anatomy
- Surgical repair
  - Anterior (Cystocele)
  - Apex
  - Posterior (Rectocele)
- Mesh kits

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Pelvic Organ Prolapse (POP) Prevalence

- POP in > 50% of women over 50
- Women > 65 are the fastest growing segment of the US population
- Demand for services expected to double in the next 30 years

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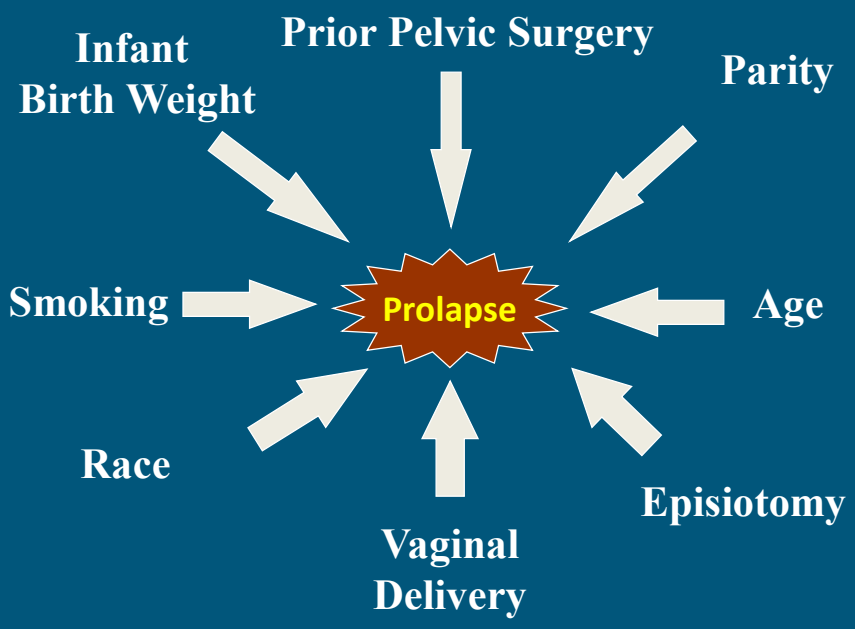
Prolapse Risk Factors

Nature and Nurture

- Family history
- Race and Ethnicity
- Age
- Collagen disorders
- Neuromuscular dz
- Vaginal delivery
- Parity – size of child
- Hysterectomy
- Prior prolapse repair
- High BMI
- Smoking
- Chronic cough
- Occupation
- Socioeconomic status

Effect of various factors on POP



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Female Pelvic Floor

Prevents abdominal contents from falling out

Controls storage and evacuation of feces

Allows conception and parturition

Two components

Viscerofascial layer – connective tissue (endopelvic fascia)

Muscular layer – levator ani muscles

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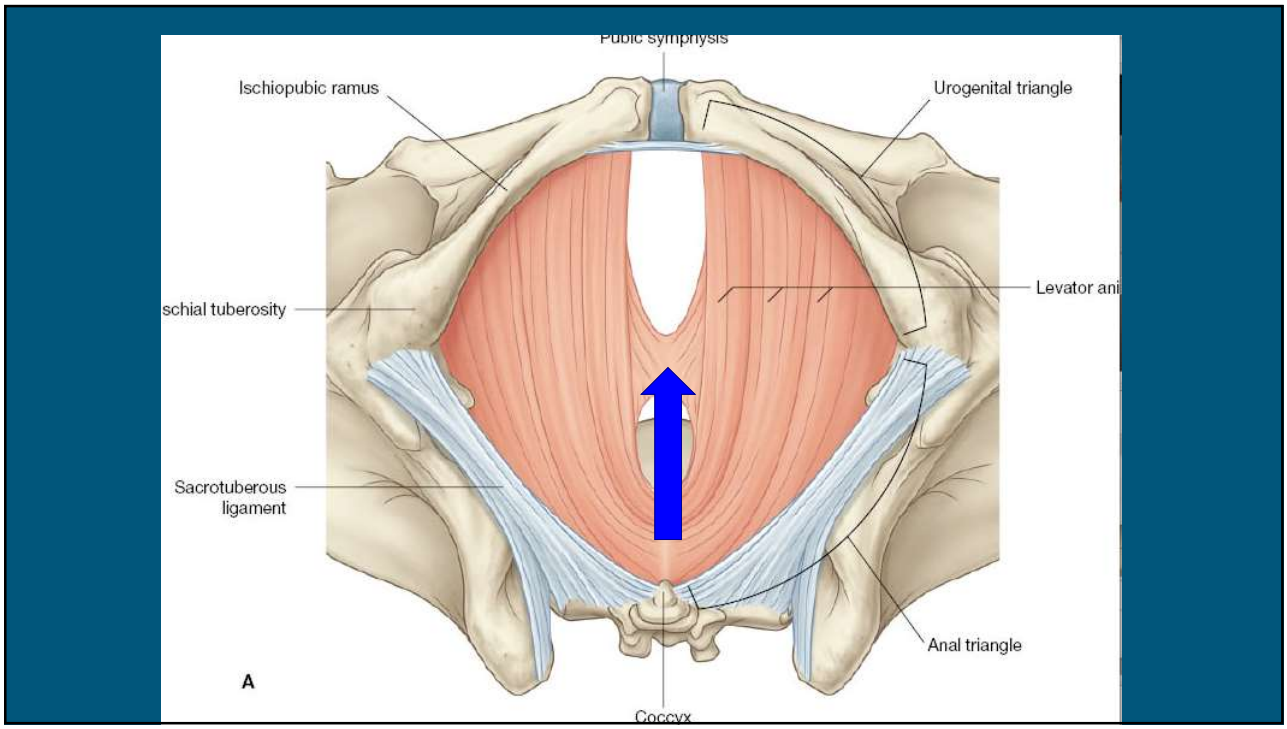
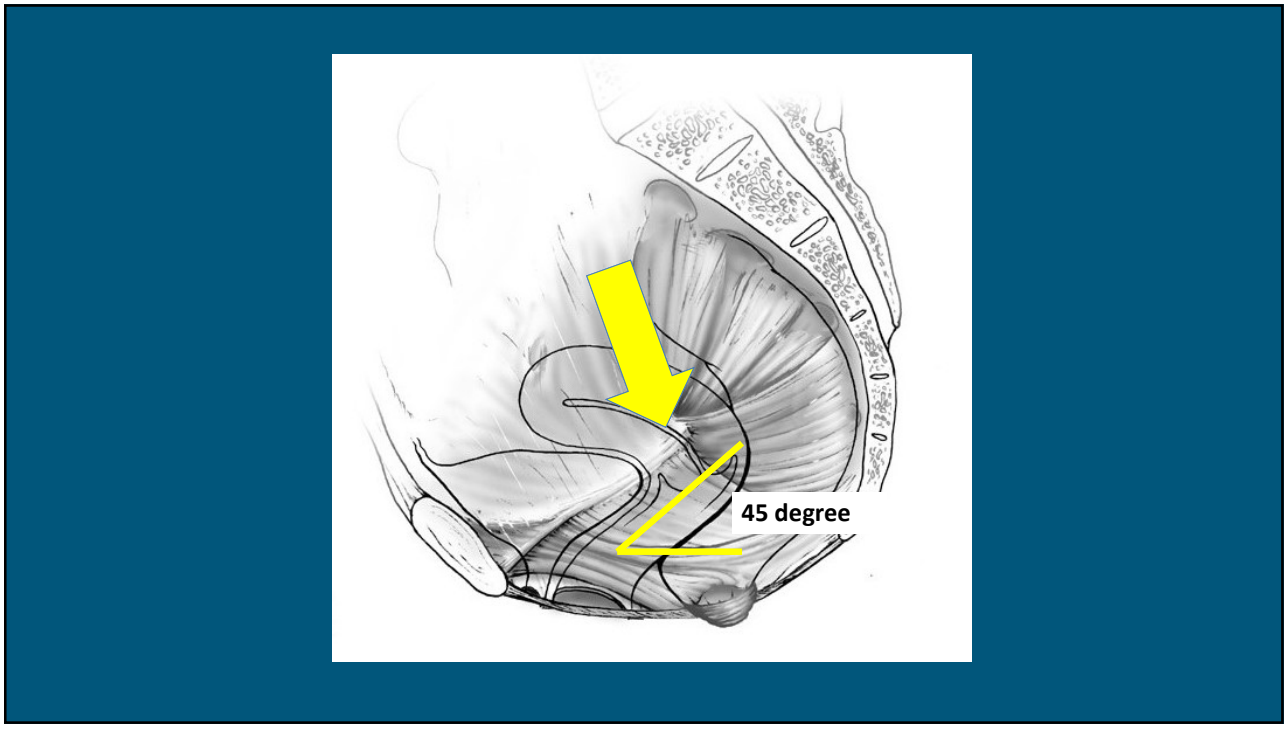
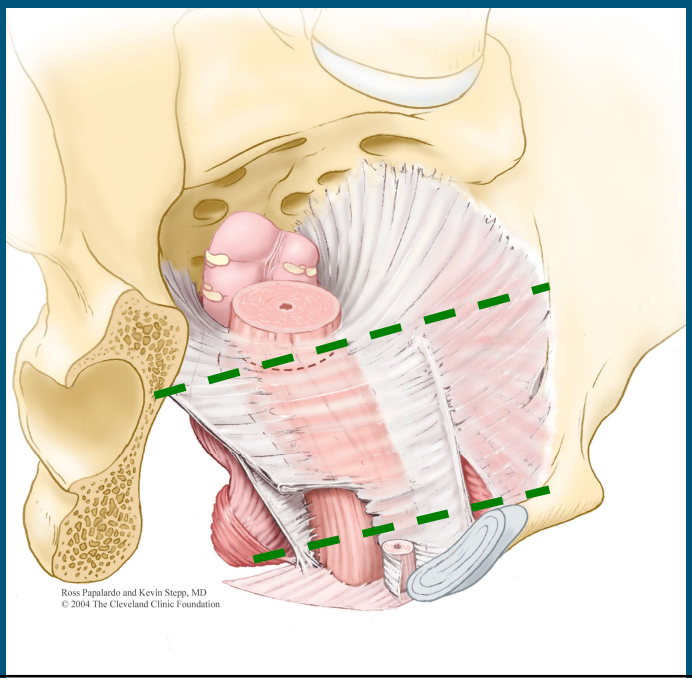
Levator ani muscles

- Provides support for pelvic organs
- "Fascia" is not responsible for primary support if muscles are normal







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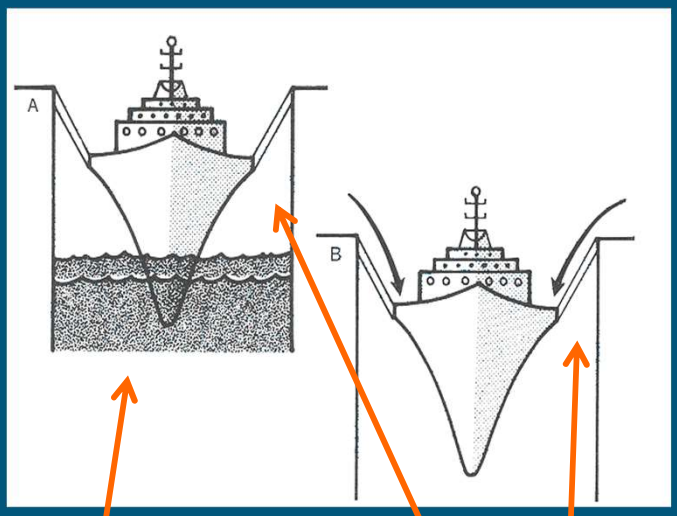
- **Thus** – if muscles are functioning normally
  - No fascia or ligaments are required except for stabilization
- **But** – if pelvic floor damaged or weakened
  - Organs must be supported by fascia and ligaments



Water - Pelvic floor muscles

Ropes - Fascial supports

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Prevalence of POP

Though the majority of adult women have POP it is only symptomatic in the vast minority

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Type of POP

- Cystocele — Anterior vag wall POP
- Enterocele — Apical POP
- Uterine prolapse — Apical POP
- Rectocele — Posterior vag wall POP

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History

- Symptoms of POP
  - Pelvic floor discomfort, heaviness
  - Vaginal bulge***
  - Dyspareunia
- Recurrent UTI
- Difficulty voiding***
- Difficulty defecating
- Incontinence
- How is patient bothered by prolapse

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Physical Exam

- Careful exam using a half-speculum
- Most important part of "diagnostic testing"
- Examine anterior and posterior walls, **apex/uterus**, perineal body
- Reduce prolapse and test for SUI – simple cystometrics
- Have patient stand and reexamine?

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Apex of Vagina

- Apical prolapse of any significance must be recognized
- An anterior and/or posterior repair leaving apical prolapse unrepaired is almost always doomed to fail

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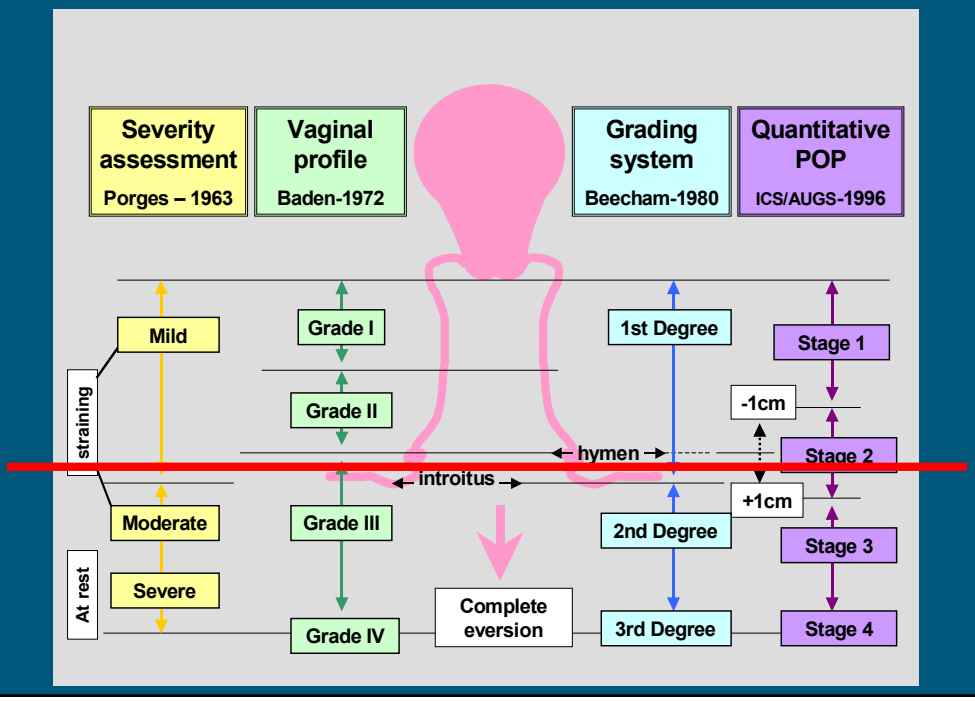
Symptoms of POP

- Symptoms markedly increase when the leading edge of the prolapse is beyond the hymenal ring ***
- Obstructive urinary symptoms and seeing or feeling a bulge are the most likely to be associated with POP***



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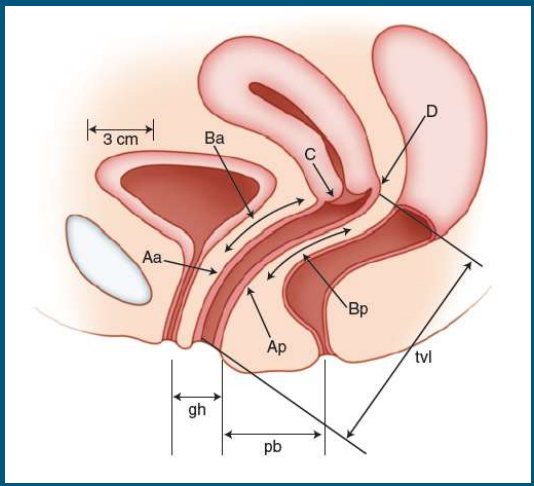
POPQ – important points***

- Ba – anterior wall furthest prolapse
- Bp – posterior wall furthest prolapse
- C – location of cervix or apex



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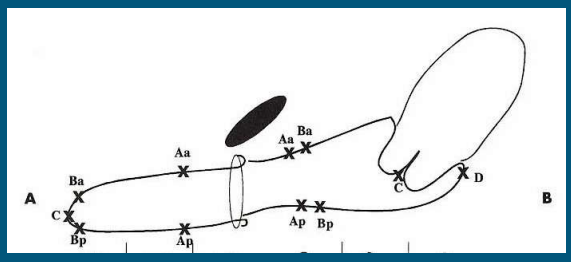

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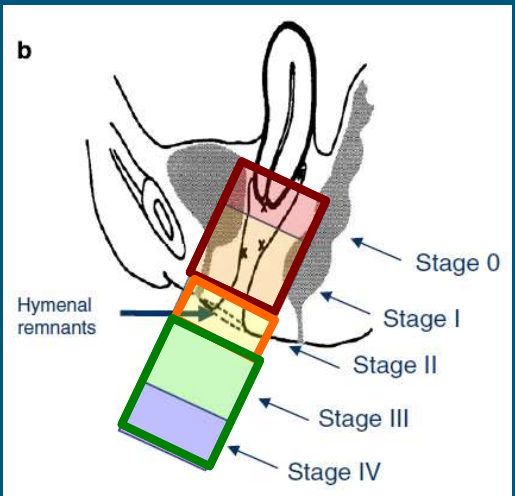
POP-Q ***

Stages – measurements of leading edge are in respect to hymenal ring
0 – perfect
1 – leading edge is -1
2 – leading edge is -1 to +1
3 – leading edge is +1 to 2 cm less than vaginal length
4 = leading edge within 2 cm of vaginal length



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Clinically Relevant Anatomy

What is normal in vaginally parous women?

- 497 women ≥ 18 yrs presenting for annual PAP and pelvic exam
- All had POP-Q in dorsal lithotomy position with maximal Valsalva effort or with coughing
- All Asymptomatic

Swift, S., The distribution of pelvic organ support in a population of female subjects seen for routine gynecologic health care. Am J Obstet Gynecol, 2000, 183:2

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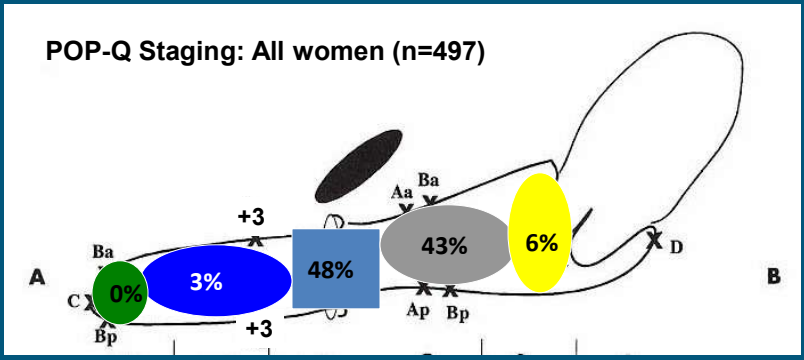
All Vaginally Parous Women



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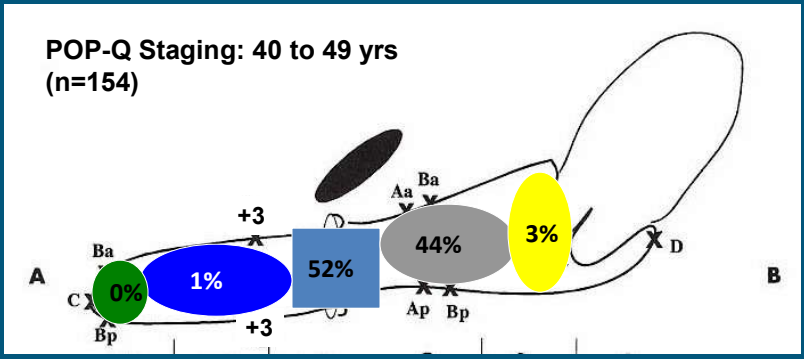
Clinically Relevant Anatomy
Ages 40-49



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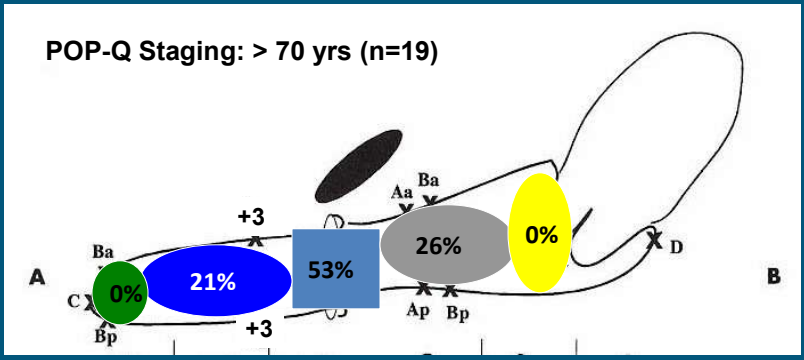
Clinically Relevant Anatomy
Age>70



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Is the patient symptomatic?

History

Is POP present?

Physical Exam

What type is it?

Physical exam/Imaging(rarely needed)

Is there associated incontinence?

History, exam, urodynamics

Appropriate Treatment

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POP Management Options

- Observation
- Pessary
- Surgery

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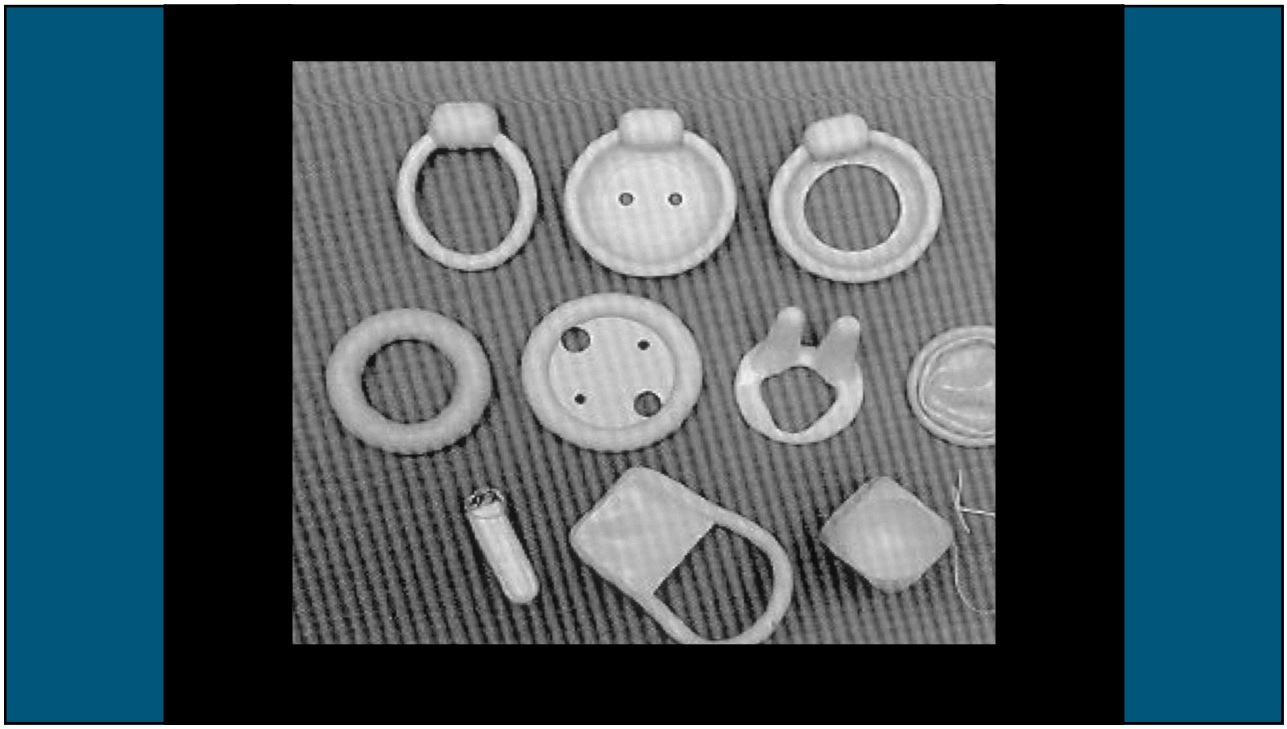
POP Management Options

- Observation
  - Most patients with asymptomatic POP
  - Patients with mild symptoms
- Pessary
  - Symptomatic patients
    - Not surgical candidate
    - Do not desire surgery
    - Prefer less invasive alternative



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Anterior Wall POP (Ba point)

- Different Fascial Defects
  - Midline
  - Paravaginal
- Different Repairs
  - Midline plication
  - Paravaginal
  - Mesh Augmented

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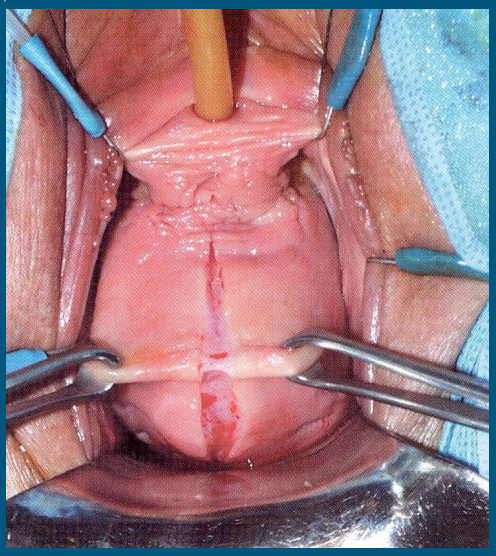
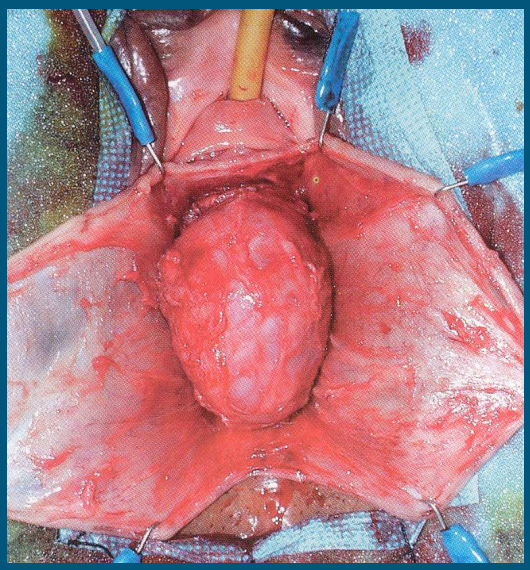
Plication - Initial incision and dissection





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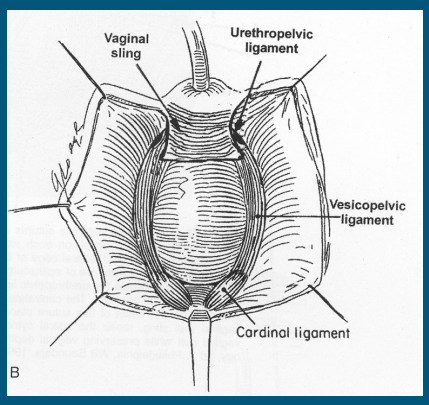
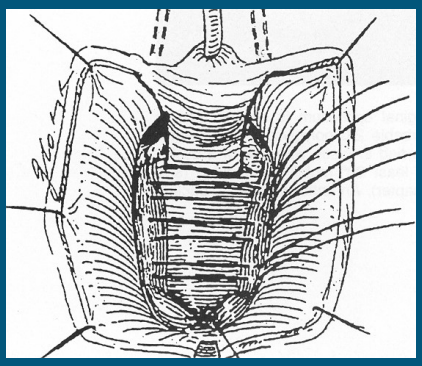
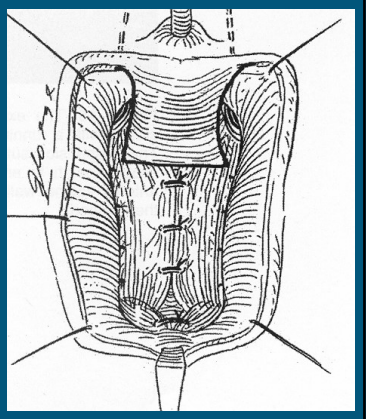
Plication







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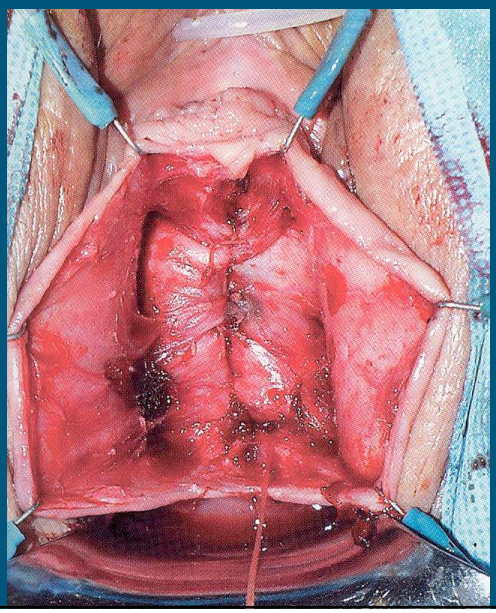

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MESH

- Wide pore polypropylene mesh
- Place in deeper layer than traditional dissection
- Better objective outcomes – less anatomic POP
- Subjective outcomes – about the same
- Dyspareunia – same
- BUT:
  - Extrusion – 10% (1/3-1/2 need surgery to remove)
  - Some serious complications – pain, perforation,…

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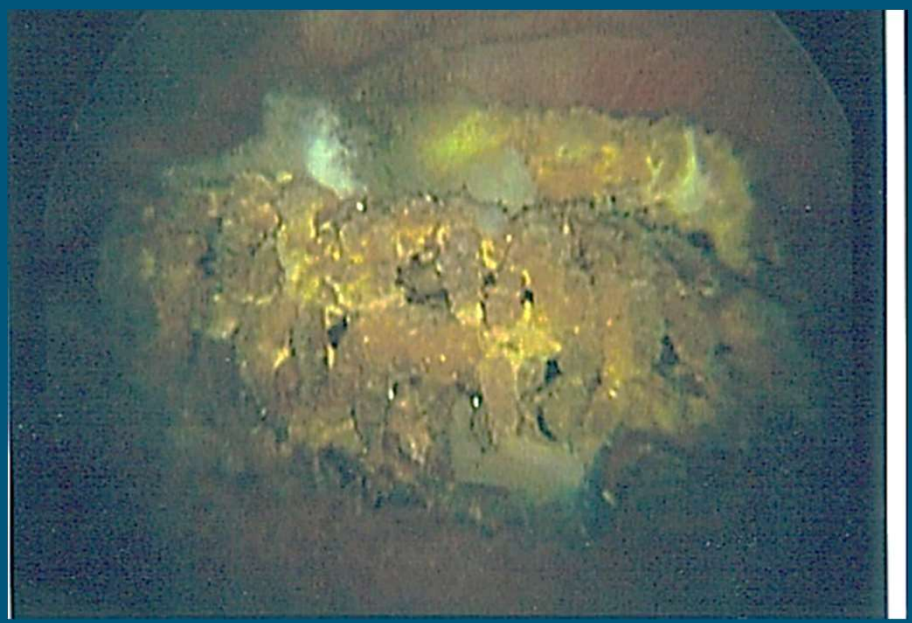
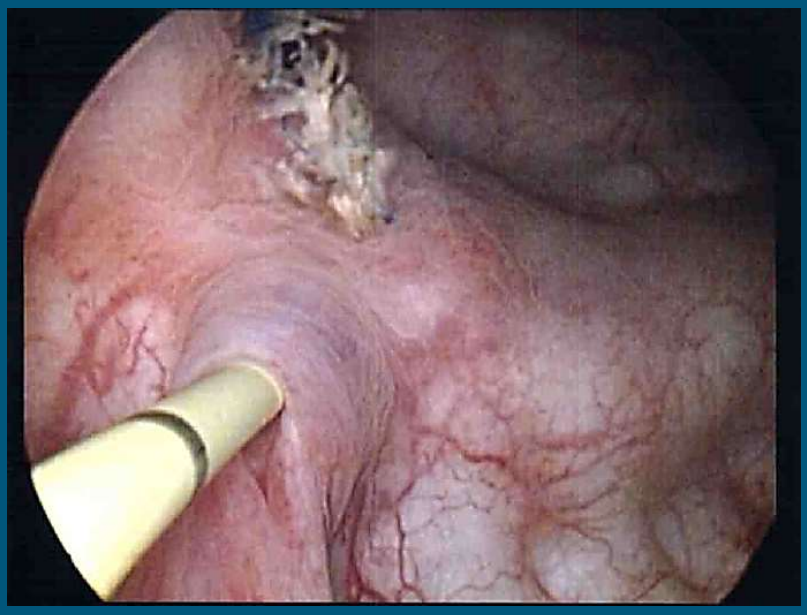
Therefore

- Mesh has gotten a terrible rap
- FDA has pulled from market
  - Kits not available in US
- Major legal cases - settlements

- Vaginally extruded mesh – if asymptomatic – does not necessarily require removal





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Treatment for Mesh in GU tract

- Endoscopic/laser removal – must get deep to avoid fragments remaining in GU tract
- Transabdominal (or lap/robotic)
  - if most comfortable
- Transvaginal – lower morbidity, but more challenging if not as familiar with vag surgery

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Repair of Apical POP (C point)

- If noted should be repaired
- Repair options
  - Transvaginal
    - Sacrospinous Ligament Suspension
      - Higher rate of de-novo cystocele
    - Uterosacral Ligament Suspension
      - Chance of ureteral obstruction
  - Transabdominal
    - Abdominal Sacrocolpopexy
      - Majority now done lap/robotically

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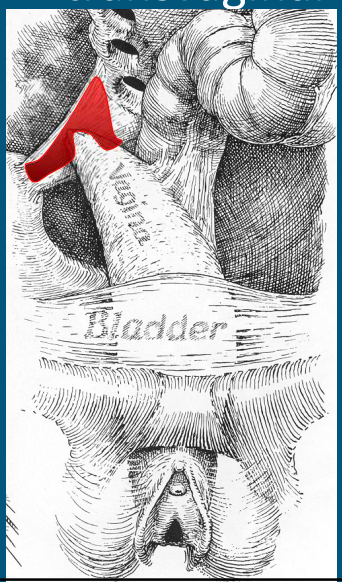
Sacrospinous fixation transvaginal



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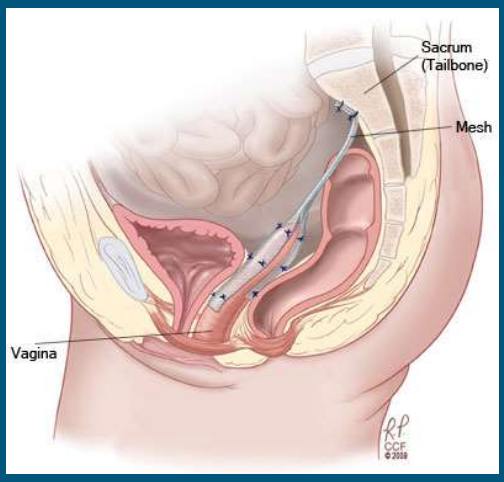
Abdominal Sacrocolpopexy

Suspend vaginal apex to longitudinal ligament over sacral promontory

- Anterior prolapse will typically resolve as well
  - Need to bring mesh further along anterior vagina



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Posterior Vaginal Wall (Bp point) Repair

- Typically rectocele repair
- No operation has been shown to have a higher efficacy rate than traditional fascial plication
  - "Splinting" resolves in majority of women
  - Dyspareunia resolves in majority of women
- Some have "de-novo" dyspareunia
- Posterior repairs have lowest recurrence rates of POP repairs

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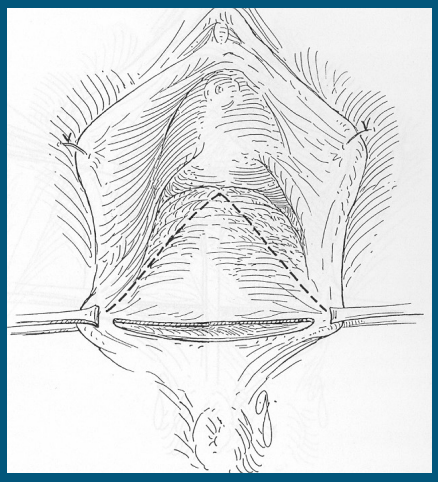

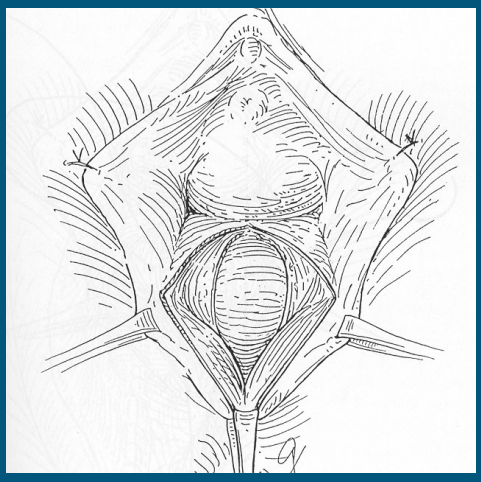

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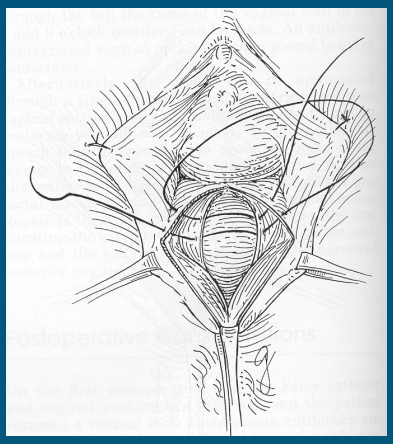
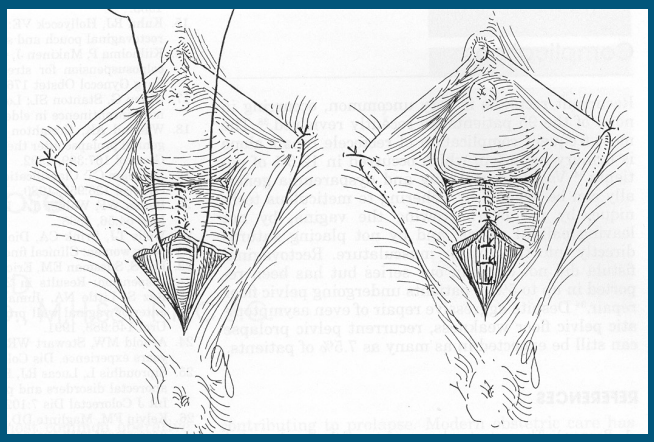
Plication





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POPQ and Repairs***

- Ba point prolapse – anterior repair
- C point prolapse – hysterectomy or apical repair
- Bp point prolapse – posterior repair
- Stress incontinence – add a sling (or alternative)

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Occult SUI***

- SUI that is only evident on prolapse reduction
- If doing surgery for POP and patient has or had SUI – sling
- If doing surgery for POP and when POP reduced can demonstrate SUI – sling
- If doing surgery for POP and cannot demonstrate SUI with POP reduction……
  - Recent studies have suggested px sling lowers rate of SUI development (OPUS trial) –
    - Had to do 6 slings to prevent one case of SUI

JT Wei, et al, NEJM, 2012

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POP

- Extremely common
- Majority asymptomatic – leave alone
- Address anterior, apical and posterior defects
- Apex – transvag or transabd approach
- Traditional posterior repair high efficacy
- Occult SUI

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Patient Positioning

- Intraoperative Lower Extremity Nerve Injury
  - Femoral, lateral cutaneous, obturator, sciatic, common peroneal
- Risk factors
  - Poor positioning
  - Lithotomy
  - Thin patients
  - Smoking
  - Trendlenburg position
  - OR time > 4 hours

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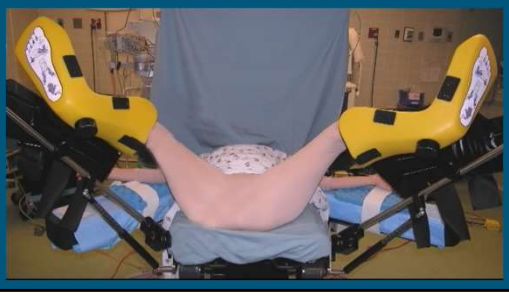
Neurologic Injury:
Positioning Mechanism of Injury
(don't do this)



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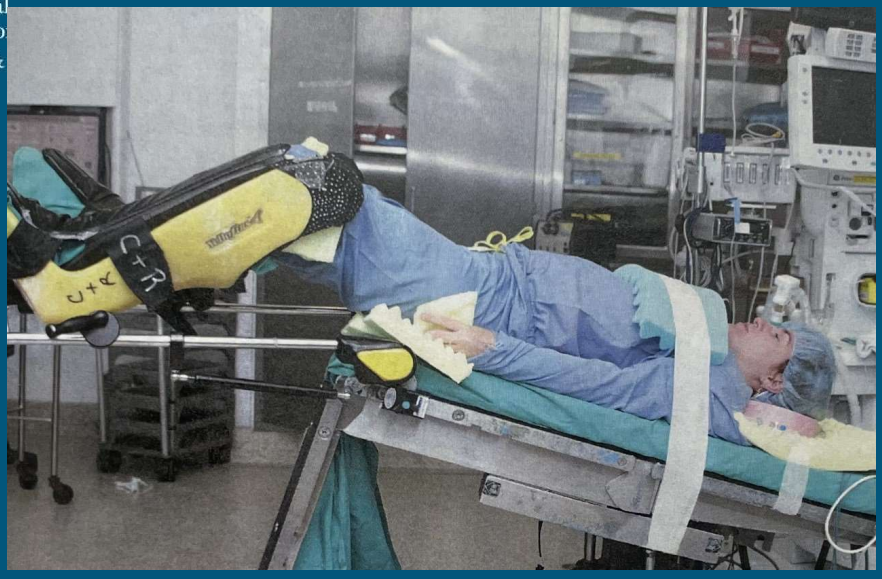

Appropriate positioning for robotic assisted surgery

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Avoiding Nerve Injury

- Avoid candy cane stirrups
- Make sure heel is in boot of stirrup
- Pad lateral aspect of knee
- Knee flexion 90-120 degrees
- Hip flexion < 60 degrees
- Thigh abduction < 90 degrees

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Vaginal Wall Masses

- Urethral Caruncle
- Urethral Prolapse
- Urethral Polyp
- Skene's Gland Cyst
- Prolapsing Ureterocele
- Urethral Diverticulum
- Urethral Malignancy
- Vaginal Wall Leiomyoma
- Vaginal Wall Cyst

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Urethral Caruncle

- Protrusion of urothelium at ventrum of urethral meatus as some of the periurethral skin atrophies
- Often asymptomatic
- When symptomatic
  - Hormonal cream
  - Excision

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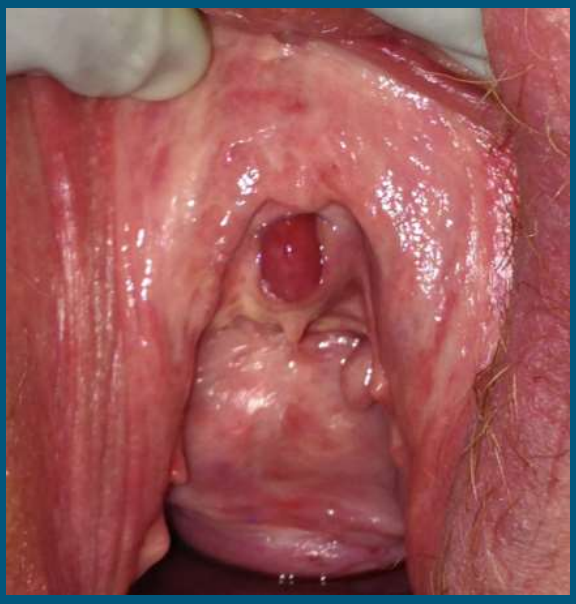
Urethral Caruncle



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Urethral Prolapse

- Circumferential prolapse of urethral mucosa
- Can become congested, ischemic, purplish

- Treatment
- Local estrogen cream
- Excision
  - Reapproximate prox urothelium to perimeatal skin

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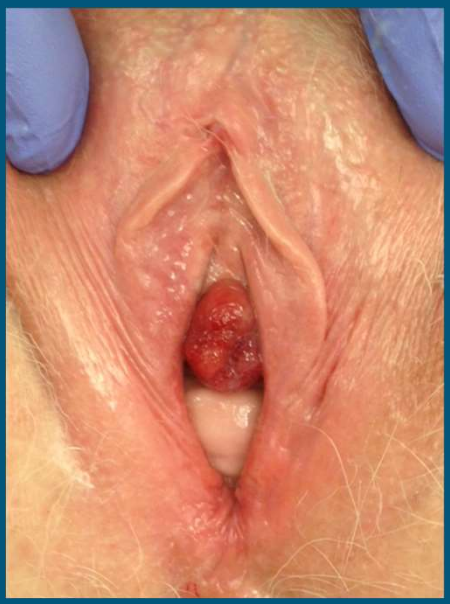

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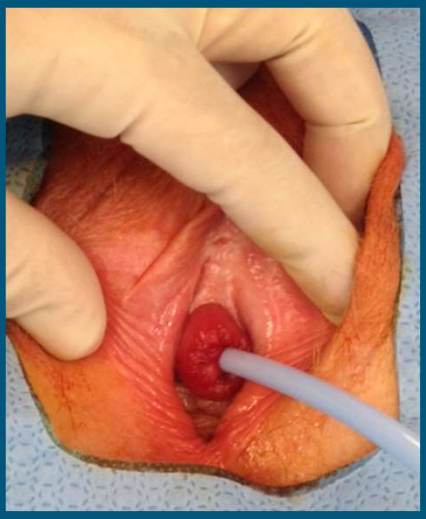

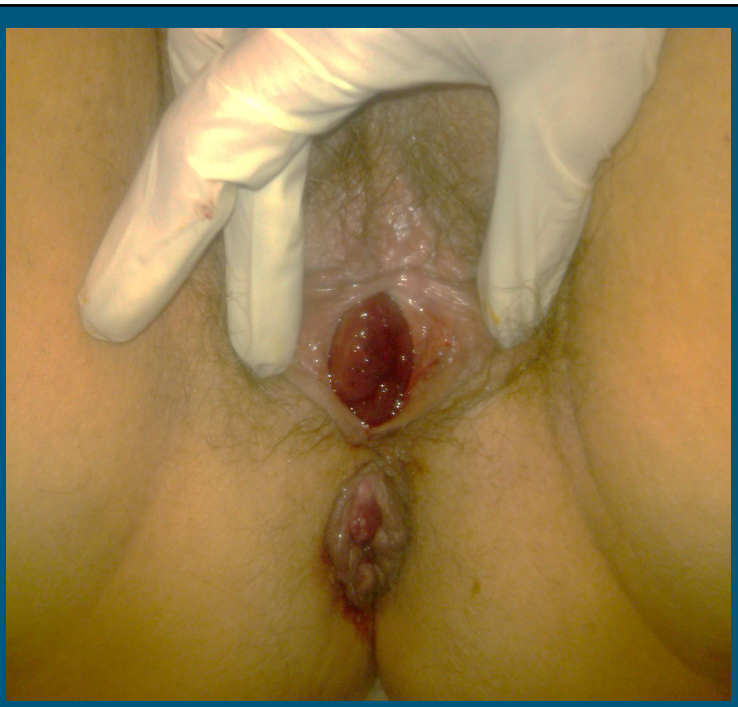

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Urethral Polyp

- Polyp of mucosa based on stalk from within urethra protruding at meatus
- Circumferentially no attachment at meatus

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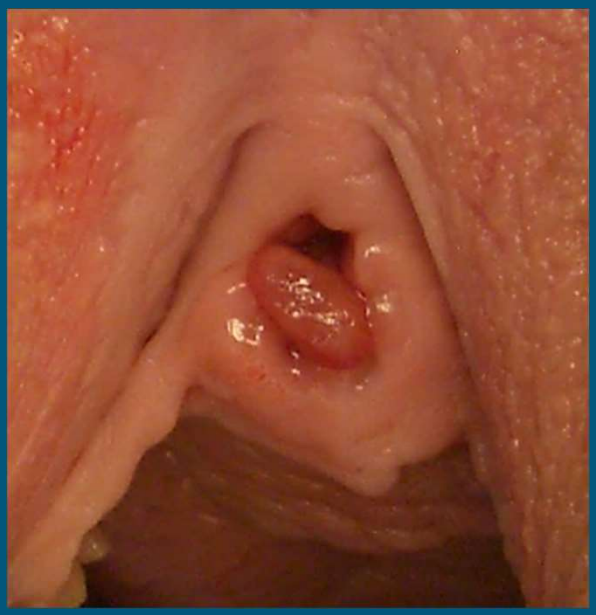
Urethral Polyp



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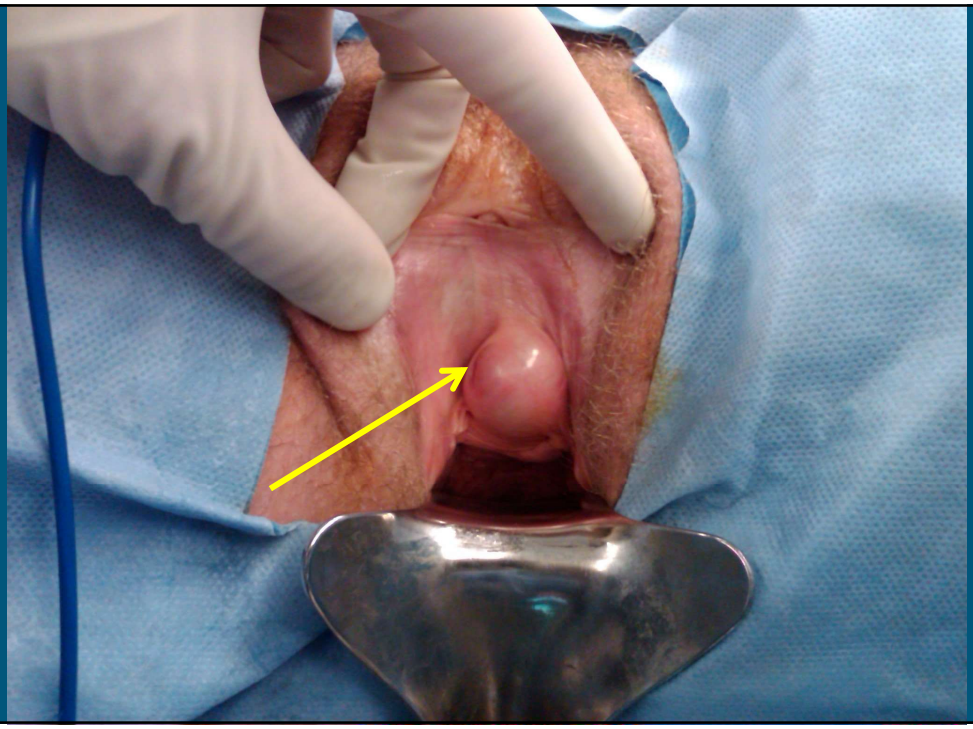
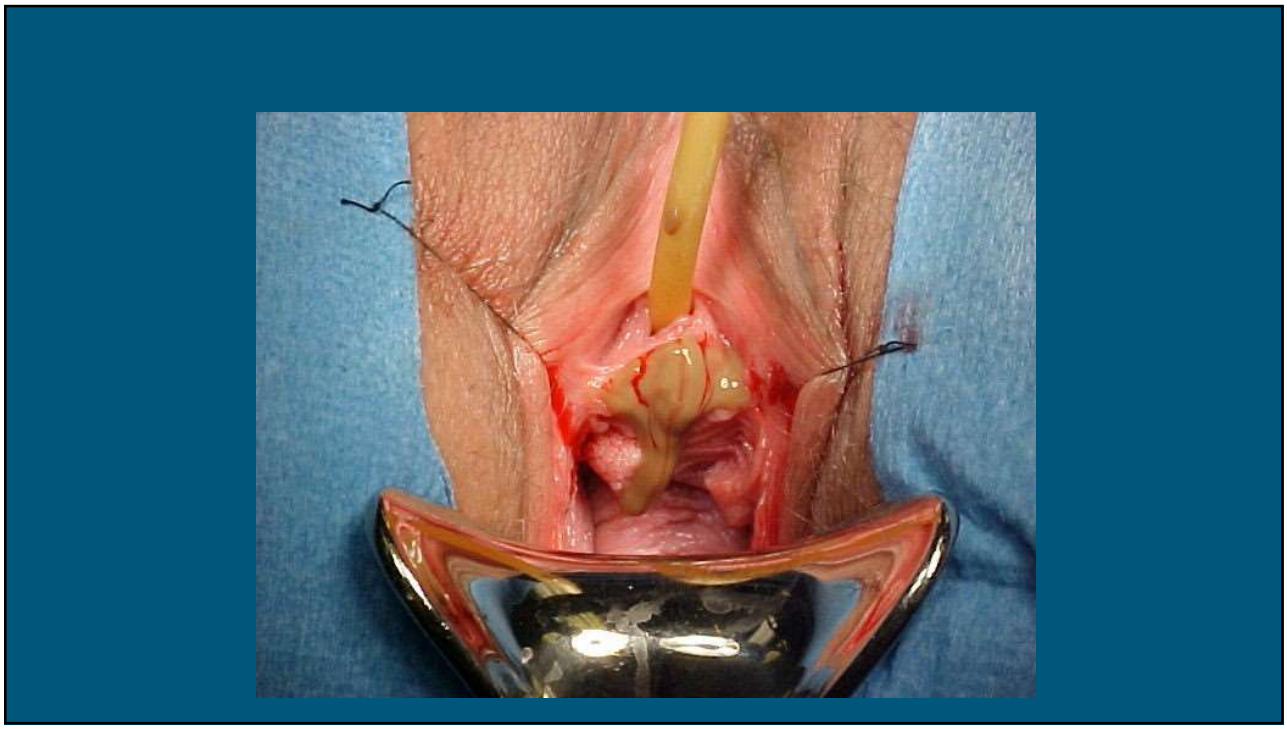
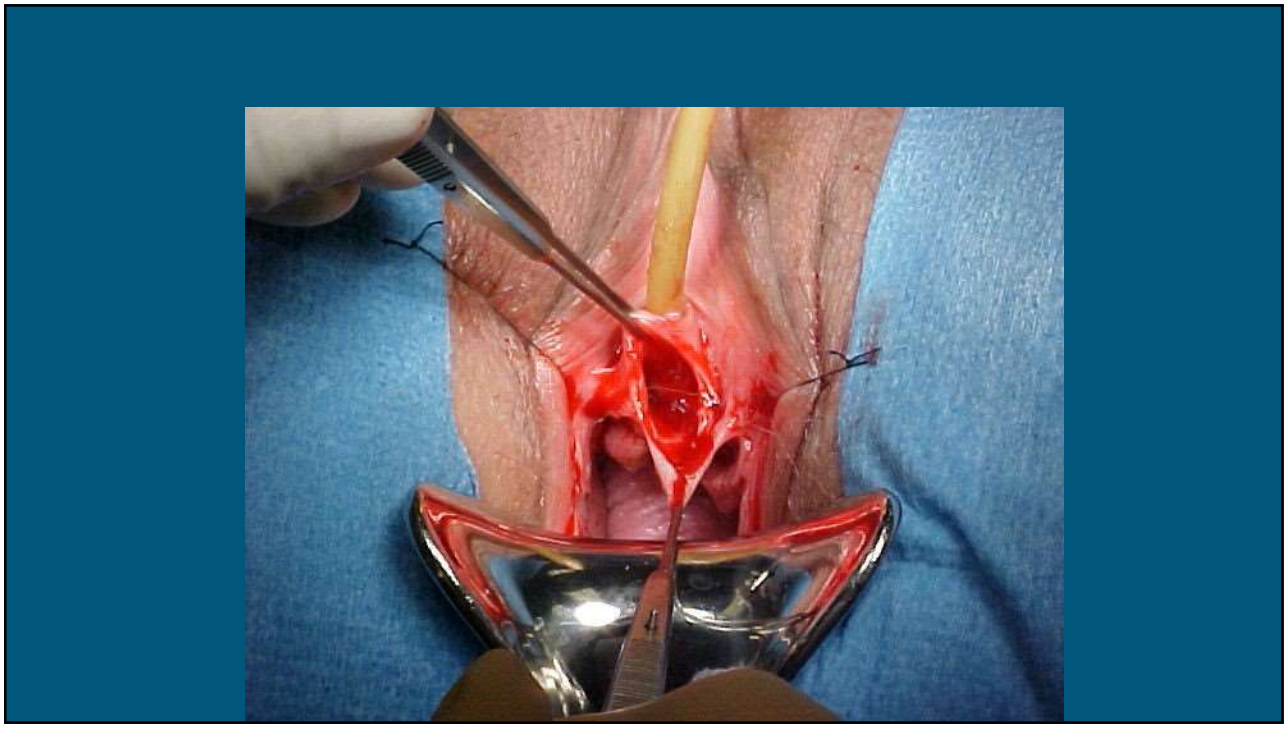
Skene's Gland Cyst

- Distal cystic structure
- Can become acutely infected
- Fluctuant mass
- As Skenes glands are lateral to urethral meatus usually pushes meatus to side causing eccentrically located meatus
- Can acutely drain
- Excise/Marsupialize







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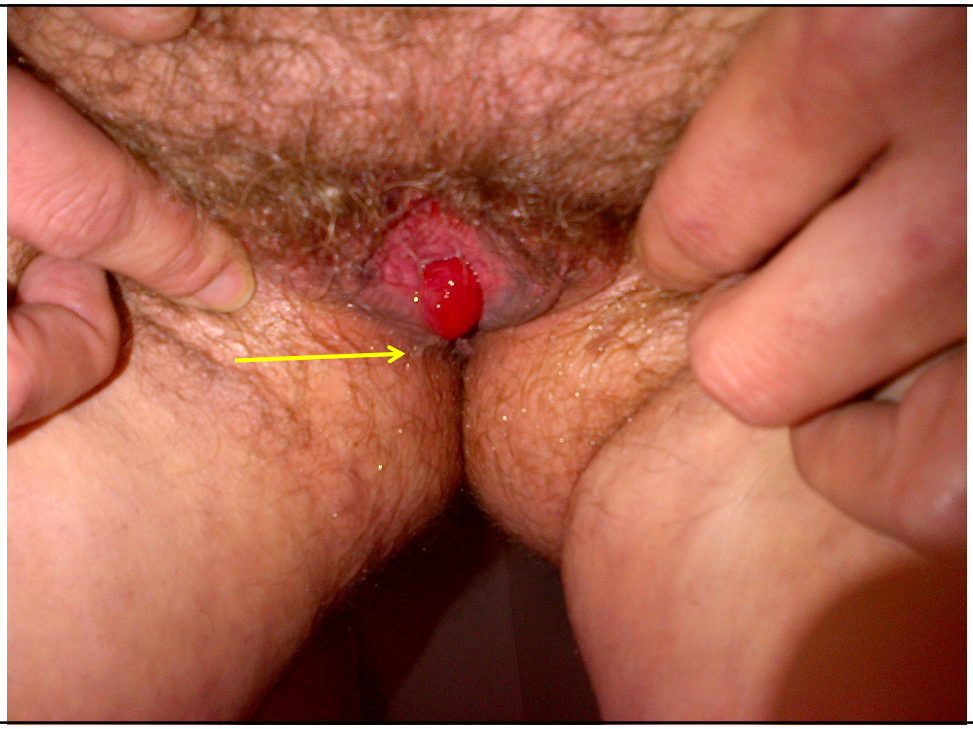
Prolapsing Ureterocele

- Both ectopic and orthotopic can enlarge and prolapse
- May cause urinary obstruction

- Treatment
  - Typically incision
  - In some very large may need excision



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Urethral Malignancy

- Hematuria
- Firm and irregular mass through vaginal wall
- Surgical/oncological treatment

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Vaginal Wall Leiomyoma

- Firm round rubbery vaginal wall mass
  - Not fluctuant
- May be completely asymptomatic
- Usually obvious on exam
- Has distinct (muscle-like) MRI characteristics
- Treatment
  - Surgical excision – usually shells out very easily

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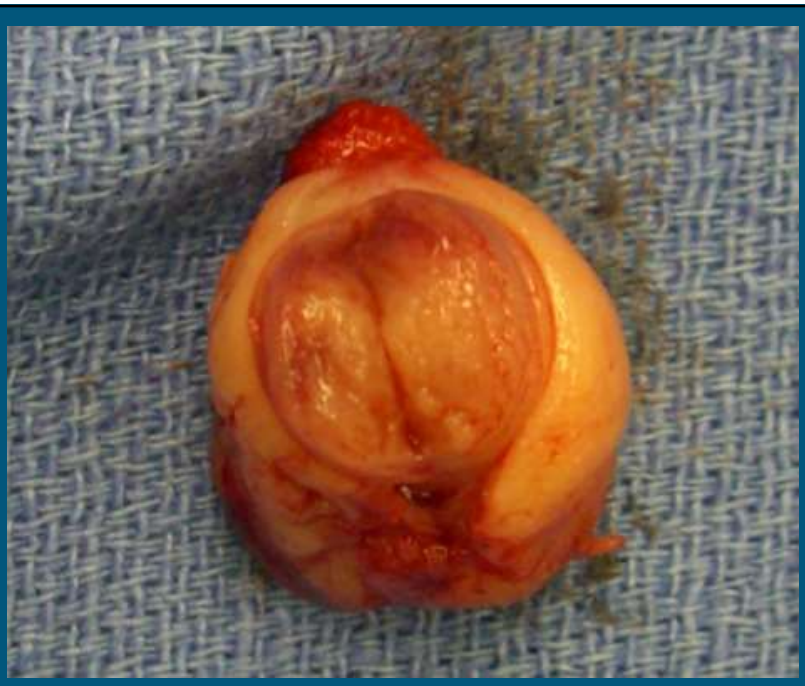

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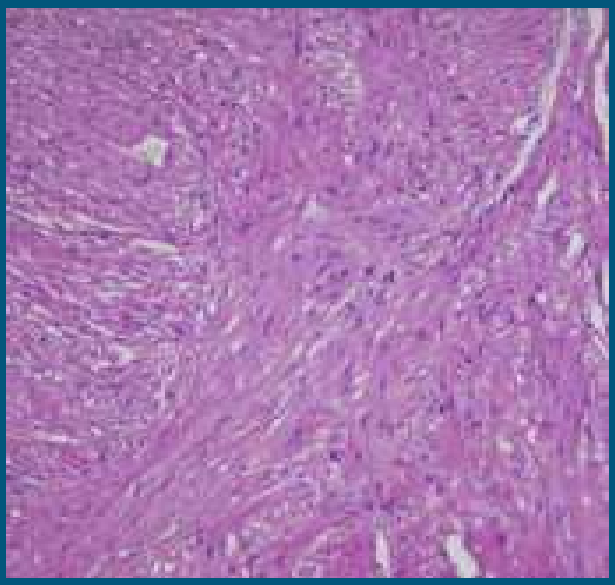

Path – intersecting fascicles of smooth muscle

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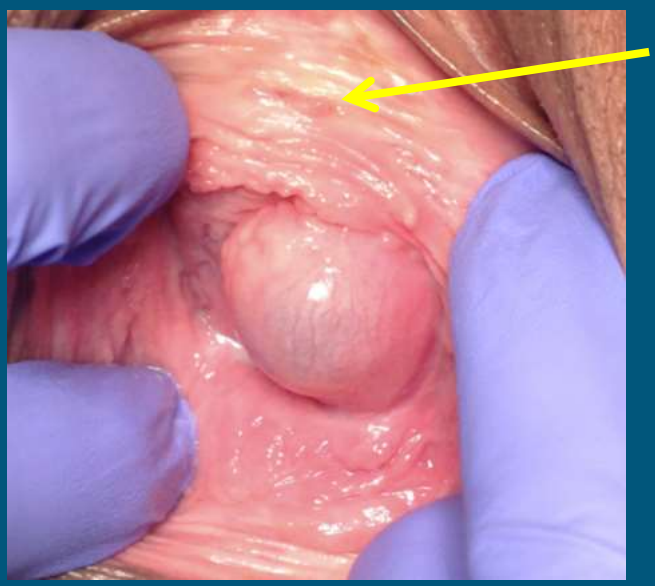
Vaginal Wall Cyst

- Fluctuant
- Nothing per meatus – no ostium to urethra
- ? Remnant of Gartner's duct…
- On MRI – similar to diverticulum but no connection to urethra and often not right next to urethra
- Treatment
  - Excision



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Urethral Diverticula

- Defect in the periurethral fascia causing an outpouching of mucosa
  - Repeated infections
  - Abscess formation within periurethral glands
  - Rupture into urethral lumen → outpouchings
- Typically located dorsally and laterally
- Most common in 3rd to 5th decades of life

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Presentation

- Three Ds - "Dysuria, Dyspareunia and Dribbling"
  - Overactive bladder complaints: urgency, frequency, incontinence, urethral pain
  - UTI
  - Purulent drainage per urethra
- However < 25% of patients actually present with 3Ds
- Diverse presentations, mimic other disorders
  - Think of when response to standard therapy fails
  - Atypical
    - Hematuria, retention
      - Large, stones, malignancy

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Evaluation

- History and physical exam
- Cystoscopy – look for ostia
- Radiographic evaluation
  - Voiding cystourethrography (VCUG)
  - Ultrasonography
  - MRI
- UA – clear urine prior to surgery

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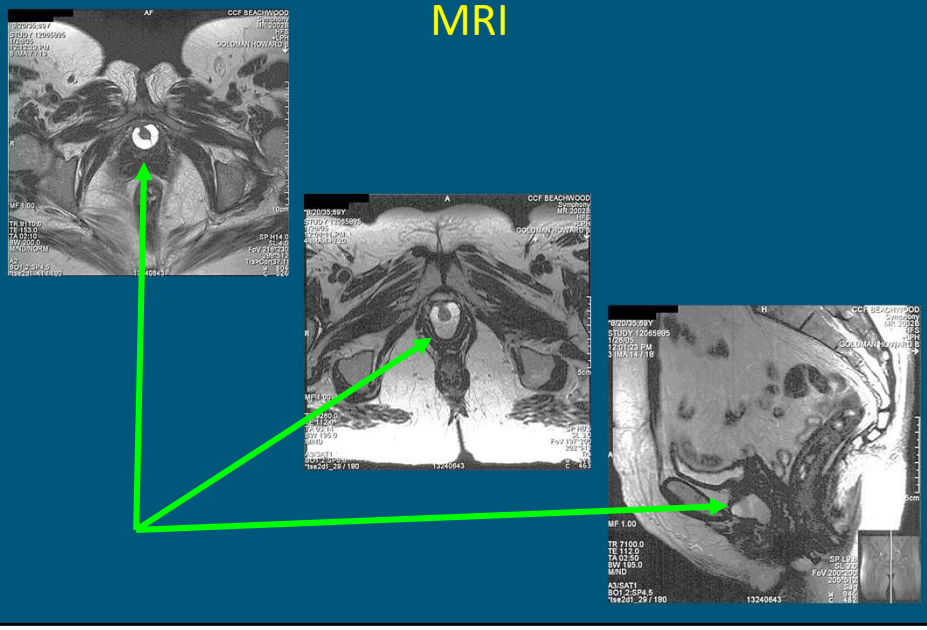
Magnetic Resonance Imaging

- Gold standard for diverticula
- T2 weighted
- Void small amount pre-study
- Bladder half or more full
- Mid/parasagittal images with coronal reconstructions

Urethral diverticulum
MRI



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Urethral Diverticula

- Management
  - Observe?
    - Very small and assymptomatic
      - Conservative treatment measures: antibiotics, anticholinergics, etc..
  - Surgery – symptomatic
    - Spence procedure
      - For very distal tics
      - marsupialize to vagina
    - Excision
    - SUI considerations

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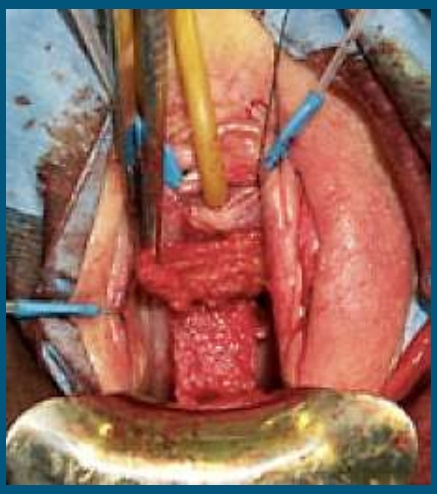
Martius flap

- If tissue quality is poor or difficult to get adequate closure
- Consider coverage with labial Martius flap
- Tunneled from labia into vaginal incision
- Blood supply***
  - Perineal/Labial branch of internal pudendal
  - External pudendal branch of femoral



Urethral Diverticula in 90 Female Patients: A Study With Emphasis on Neoplastic Alterations

Anil A. Thomas, Raymond R. Rackley, Una Lee, Howard B. Goldman, Sandip P. Vasavada and Donna E. Hansel*

From the Glickman Urological and Kidney Institute (AAT, RRRR, UL, HBG, SPV, DEH), Department of Anatomic Pathology (DEH) and Taussig Cancer Institute (DEH), Cleveland Clinic, Cleveland, Ohio

TABLE 2. *Pathological and radiographic findings*

	No. Pts (%)
Av cm diverticular size (range	1.7 (0.3–5.0)
Diverticular No.:	78
Single	73 (94)
Multiple	5 (6)
Diverticular location:	52
Proximal	16 (31)
Mid	25 (48)
Distal	11 (21)
Configuration:	77
Simple	51 (66)
Horseshoe	14 (18)
Circumferential	12 (16)
Pathological findings:	90
Normal urothelial tissue	16 (18)
Chronic inflammation	59 (66)
Acute inflammation	22 (24)
Squamous metaplasia	18 (20)
Nephrogenic adenoma	10 (11)
Erosion with granulation tissue formation	8 (9)
Dystrophic calcification	2 (2)
Intestinal metaplasia	5 (6)
Villous adenoma	1 (1)
Low grade dysplasia	1 (1)
High grade dysplasia	3 (3)
Invasive adenoca	5 (6)

8 (9%) with atypical findings

4/5 (80%) with Invasive adenoca had history of urinary retention

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SUI and Tics

- If has significant SUI consider concomitant sling
  - Autologous fascia
  - Do not put synthetic sling at same time as tic repair
- No preop SUI – no sling (though there is a low rate of de-novo SUI – proximal and larger tics)
- Mild SUI - ?? Fascial sling vs see what happens
  - Some resolve - ? scarring

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Vesicovaginal Fistulae

- Non-developed countries
  - Large obstetric fistulas – Obstructed labor
- Developed world
  - Iatrogenic
    - Gynecologic surgery
      - Abdominal hysterectomy 0.1-1.0%
      - Incontinence/prolapse surgery
  - Malignancy
    - biopsy before repair to r/o recurrent malignancy
  - Radiation
  - Foreign body
    - Retained pessary
  - Mesh complication
  - Trauma

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Presentation of Iatrogenic VVF

- Constant urinary leakage – 24/7
- Typically leaks all night as well
  - Rare cases of tiny VVF may not leak continuously
- Occasionally may present as sling failure
  - True etiology of leak was VVF all along
- Post XRT – may present months/years later

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Exam

- Speculum exam
- Look for fluid in vault
- With bivalve speculum look for ostia at cuff
  - If ? may place blue dye in bladder and pack vagina after some time/activity eval pack for blue color at apex
- Cystoscopy – look for ostia
- Imaging
  - cystogram
    - evaluate for VVF
  - must evaluate ureters for UVF
    - Up to 10% of VVF have associated UVF

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Timing of Repair

- Traditionally waited 3-6 months
  - Currently, successful outcomes with shorter wait
  - Serial exams
    - Maximal tissue recovery
- Foley catheter trial – 3-4 weeks
  - Some small fistula may spontaneously close
  - Leak should cease with catheter in bladder
- Repair

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Vaginal Vs Abdominal Approach

Most important factor is surgeon experience
First repair has best shot of success

Transvaginal

- Less morbidity
- No abdominal complications
- Can utilize Martius or peritoneal flaps

Transabdominal

- More morbidity
- More scarring
- Use omental/peritoneal flaps
- Obviate some of the morbidity issues with lap/robotic approach
- Now many doing robotically

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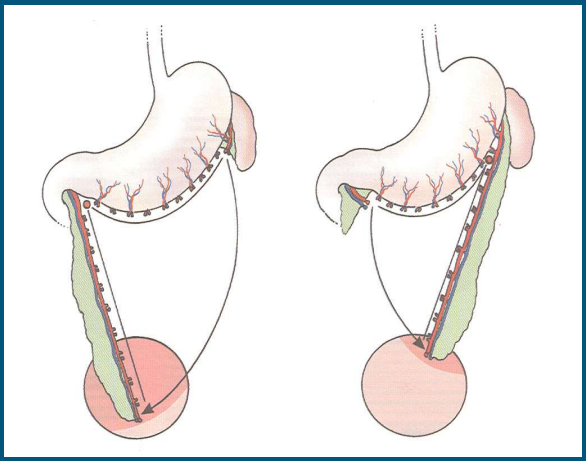
Omental Flaps***

Based on gastroepiploic arteries

Right side reaches further caudad



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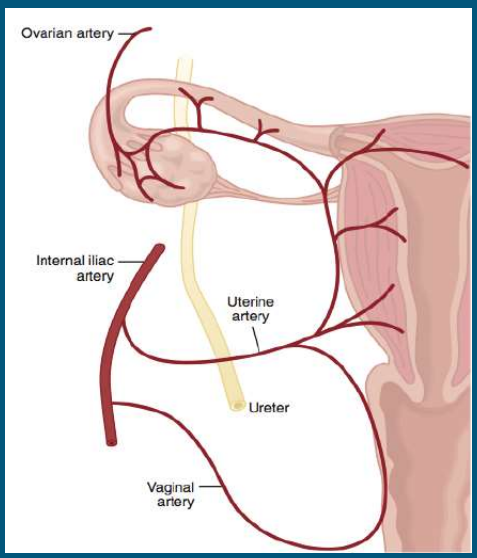
Ureterovaginal Fistula

- Most after benign gyn surgery



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Ureterovaginal Fistula

- Many present 5+ days post op with ileus/fever/pain/nausea/urine leak
- Diagnosis
  - Imaging – hydro/spill of contrast
  - Double dye test
    - Pyridium po and blue dye in bladder
    - Yellow – ureter; blue/green – bladder; yellow and blue - both
- Attempt stent - if stent likely will heal on own
  - If cannot stent – drain kidney with neph tube
  - Surgical reimplant

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Outline

- SUI/UI/OAB – Evaluation and Treatment
- Nocturia
- Fecal Incontinence
- Pelvic Organ Prolapse – Definitions/Treatment
- Urethral Diverticula
- Fistula

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Female Urology Q1:

A 48 y/o woman with refractory OAB. She failed PFPT and 2 medications. She has an occasional UTI. She has occasional fecal incontinence. Everything else being equal, the best third line therapy for her is:

A. PTNS
B. Botulinum toxin
C. Sacral neuromodulation

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Female Urology: Q2

An 83 yo woman who is not sexually active undergoes a midurethral sling for SUI. Postoperatively she is dry, is voiding well and is happy. At 3 month routine follow-up she is found to have a 1 cm midline exposure of the mesh. The next best step is to disclose your finding and:

A. Observation
B. Vaginal hormonal cream
C. Excision of exposed portion of sling
D. Revision surgery to cover exposed portion with vaginal skin

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Female Urology Q3

A 67 yo healthy woman notes a vaginal bulge one day when she goes to urinate right after working out at the gym. She is otherwise asymptomatic. She is seen by a urogynecologist who examines her with the following POP-Q noted.

Ba – 1, C – 6, D – 8, Bp -2, gh -3, pb 3

She comes to you for a second opinion.

She has no other symptoms but is terrified by this thing she felt

If this were your mother, your recommendation would be:

A. Observation
B. Anterior Repair
C. Anterior and posterior repair
D. Robotic sacrocolpopexy
E. None of the above

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Female Urology Q3b

If this were your mother's enemy, your recommendation would be:

A. Observation
B. Anterior Repair
C. Anterior and posterior repair
D. Robotic sacrocolpopexy
E. None of the above