

Female Urology "Potpourri"

~ Brian J. Flynn, MD

Female Urology/Urogynecology Potpourri

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Urinary Tract Infections (UTIs) in Women

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UTI Introduction

- 8 million visits to health care providers annually *
- lead to more than 1 million admissions
- more than \$1.6 billion annually in health care dollars
- wide spectrum of disease from mild cystitis to life-threatening urosepsis

* Gupta K, et al: *Ann Intern Med* 2001

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Catheter Associated UTI (CAUTI)

Saint, S. et. al. Ann Intern Med 2009;150:877-884

Table 2. Hospital-Acquired Conditions Not Eligible for Additional Payment*

- Effective 1 October 2008**
- Catheter-associated urinary tract infection
 - Decubitus ulcer (pressure ulcer)
 - Vascular catheter-associated infection
 - Various preventable "never events"
 - Foreign object retained after surgery
 - Air embolism
 - Blood incompatibility
 - Falls and trauma
 - Manifestations of acute glycemic control
 - Esophageal variceal hemorrhage
 - Hemodynamic hypotension/coma
 - Hyperglycemia, severe
 - Secondary diabetes with ketoacidosis or hyperosmolality
 - Deep venous thromboses or pulmonary embolism after certain orthopedic surgeries
 - Surgical site infections after certain surgical procedures
 - Mediastinitis after coronary artery bypass surgery
 - Certain orthopedic surgical site infections
 - Certain bariatric surgical site infections
- Considered for future implementation:**
- Ventilator-associated pneumonia
 - Staphylococcus aureus septicemia
 - Clostridium difficile-associated disease
 - Intraventricular hemorrhage
 - Legionnaire disease
 - Delirium

* Adapted from references 4 and 29–31.

Hospital-Acquired Conditions Not Eligible for Additional Payment

Catheter Associated UTI (CAUTI)

- UTI is the most common hospital acquired infection
- 1 in 5 patients in the hospital receive a Foley catheter
- 1 day of catheter use = 5% increase in bacteriuria
- CAUTI costs at least \$600 and each episode of urinary tract-related bacteremia costs at least \$2800
- Short-term catheterization was defined as up to and including 14 days

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CAUTI Microbiology

- 40% - E coli
- 30% - Pseudomonas aeruginosa,
- 30% -gram positives, staph/strep and Candida
- the investigators did not include fungal urinary tract infections as part of their study

Wagenlehner FM et al.: Int J Antimicrob Agents 2008

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CAUTI

Recommendations for Hospitals to Address the Centers for Medicare Medicaid Services Rule Changes Regarding Catheter-Associated Urinary Tract Infection

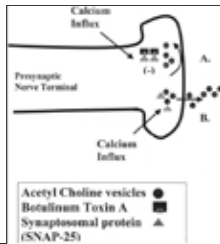
- Use only when medically indicated
 - retention or high risk of retention
 - monitoring of urinary output
 - incontinence associated with risk of skin breakdown
 - specific surgical procedures (RRP, cryo, reconstruction)
- Proper insertion techniques
 - training standards for insertion and managing catheters
 - hand hygiene, aseptic catheter insertion, and proper maintenance by using a closed urinary drainage system
 - daily review of necessity "reminders and stop orders"
 - Develop systems for removal of catheters without physician order

Saint, S. et. al. Ann Intern Med 2009

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**Management of Refractory OAB
Intravesical Botulinum Toxin (botox)**

- Botox is derived from the organism *C. botulinum*
- Inhibits the vesicular neuronal blockade up to 9 mos
- Increasing data on the benefits of botox in patients with
 - Non-neurogenic DO
 - Neurogenic DO
 - DSD
 - Interstitial cystitis?

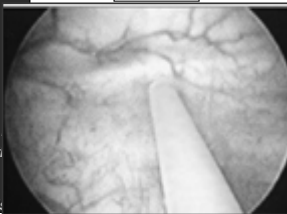


Schurch B, et al.: J Urol 2000
Smith CP and Chancellor MB: J Urol 2004

**Management of Refractory OAB
Intravesical Botulinum Toxin Type-A (botox)**

- Urethra
 - 100 units in 2-3 ml of NS
 - Collagen needle used to inject 3, 6, 9 and 12 o'clock positions in striated sphincter
- Bladder
 - 200-300 units in 30 ml of
 - Inject 30-40 sites within the detrusor, targeting the trigone, base of the bladder and lateral wall.

Technique



Schurch B, et al.: J Urol 2000
Smith CP and Chancellor MB: J Urol 2004

**Management of Refractory OAB
Intravesical Botulinum Toxin (botox)**

Open label pilot-study of 7 patients with refractory OAB that underwent detrusor injection with 150 units of botox

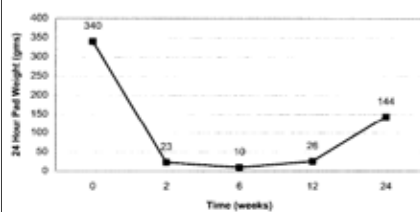


FIG. 4. Median 24-hour pad weights

Flynn, MK, Webster, GD and Amundsen, CL: J Urol 2005

Who is a candidate for intravesical Botox injection?

Typical Candidate

- MS, SCI, spina bifida patients
- Neurogenic OAB refractory to meds
- DSD

Other Potential Candidate

- Non-neurogenic OAB
- IC
- Parkinson's

As a Test

- Is the incontinence due to the bladder or a deficient outlet?
- Will they respond to bladder augmentation
 - Will they be able and willing to cath the urethra?
 - Will they be dry, or do they need a procedure on the outlet

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Who do I Implant

Characteristics

- Women respond better than men
- Younger patients (< 65) respond better than elderly
- Non-neurogenic do better than neurogenics
- Urge, frequency and urge incont. responds better than retention

Ideal Candidate

- Young female with urge, frequency, urge incontinence (without IC/PPP or neurologic condition) refractory to anti-muscarinics

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Management of Pelvic Organ Prolapse

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Anatomy of Vaginal Support POP Location ¹

- Anterior only 40%
- Anterior and apex 20%
- Posterior only 7%
- Posterior and apex 10%

- Anterior compartment involved 78%
- Highest failure in anterior compartment 30-70% ²⁻⁶

¹ Olsen et al. *Obstet Gynecol* 1997;89:501-506
² Shull et al. *Am J Obstet Gynecol* 1992;166:1764-1768
³ Holley et al. *South Med J* 1995;88:547-549
⁴ Samuelsson et al. *Am J Obstet Gynecol* 1999;180:299-305
⁵ Shull et al. *Am J Obstet Gynecol* 2000;183:1365-1373
⁶ Weber et al. *Int Urogynecol J Pelvic Fir Dysfunct* 2001;12:178-186

How are we doing with our current surgical procedures?

- 11.1% lifetime risk of surgery
- 29-40% patients require reoperation within 3 years^{1,2}
- 60% of the recurrences are at the same site³
- 32.5% of the recurrences are at a different site³

¹ Olson et al. *Obstet and Gynecol* 1997;89:501-506
² Marchionni et al. *J Reproduct Med* 1999;44:679-684
³ Clark et al. *Am J Obstet and Gynecol* 2003;189:1261-1267

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PROLIFT System: Early Outcome Data¹

Author	# Pts.	Mean Age	Site	Complications	Exposure	Length of Follow Up	"Success" (≤ Stage II)
Cosson M et al. (France)	90	65.3	A-1 T-89	Rectal perf.-1 Hemorrhage-2 VVF-1	9 (10%) S=5 (56%)	12 mo.	74 (81.6%)
Fallon BF et al. (France)	110	63.2	A-22 P-29 T-59	Cystotomy-1 Hematoma-2 Vd. Dysfcn.-6	5 (4.7%) S=2 (40%)	3 mo.	105 (95.3%)
Murphey M et al. (USA)	89	65	A-48 P-11 T-30	Cystotomy-2	0 (0%)	5 mo.	84 (94.4%)
Hinoul P et al. (France)	29	62	A-29	Cystotomy-1	2 (6.9%) S=N/A	6 mo.	28 (96.5%)
Withagen MJ et al. (Netherlands)	43	66	A-11 P-16 T-5	Cystotomy-2 Rectal perf.-1 Vd Dysfcn-1	2 (4.7%) S=N/A	6 mo.	35 (81.4%)

¹IUGA – Fallon - 2006 Abstracts all published in: *Int Urogynecol J* 2006;

PROLIFT System: Early Outcome Data^{1,2}

Author	# Pts	Mean Age	Site	Complications	Exposure	Length of Follow Up	"Success" (≤ Stage II)
Groenen MJC et al. (Netherlands) ¹	26	61	A-6 P-10 T-10	Vd.dysfcn-5	1 (3.8%) S=N/A	2 mo.	26 (100%)
Perscheier M et al. (Austria) ¹	80	N/A	N/A	Cystotomy-2 Hematomas-2	8 (10%) S=5 (50%)	N/A	N/A
Rivera JM et al. (USA) ²	82	63	P-19 T-63	Hematoma-1 Hemorrhage-1	7 (11.7%) S=N/A	3 mo.	Not well defined
Compiled Data	549	64	A-109 P-85 T-256	Cystotomy- 1.7% Rectal perf. 0.4% Hemorrhagic- 1.3% Void dysfcn- 6.7%	34 (6.2%) S=12 (2.6%)	6 mo.	81.4-100%

¹IUGA – Fallon - 2006 Abstracts all published in: *Int Urogynecol J* 2006;17(S.2):S212
²AUGS 2006 Abstract published in: *Int Urogyn J* 2006;17(S.3):S460

NICE Review



Systematic review of the efficacy and safety of using mesh or grafts in surgery for anterior and/or posterior vaginal wall prolapse

Xueli Jia, Cathryn Glazener, Graham Mowatt, Graeme MacLennan, Cynthia Fraser, Jennifer Burr

October 2007

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¹Jia x et al: *BJOG* 2008

NICE Review

- National Institute for Health and Clinical Excellence (NICE) report
- Provides national clinical guidelines in the UK
- Examined surgical repair of vaginal prolapse using mesh
- 199 page document
- Evaluated 446 reports - 49 studies selected
- 4589 patients in total

¹Jia x et al: *BJOG* 2008

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**Incidence of vaginal erosion following anterior prolapse repair with polypropylene mesh
Single vs. double layer vaginal wall closure**

Terlecki RT and Flynn BJ et al. AUGS 2009

75 cases of mesh reinforced anterior repair (anterior Prolift™) for cystocele performed by a BJF (2005-2008) were analyzed

Closure	Mean age (y)	Prior Repair (%)	Prior Hystx (%)	Mean LOS (d)	Mean DOC (d)	Mean F/U (mos)
SL	65	42	64	1.0	1.8	25
DL	63	59	67	1.2	2.8	10

Comparison of mesh extrusion rate following a single layer vaginal wall closure (n = 39) v. double layer closure (n = 36)

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Full-Thickness Vaginal Incision

- Identify the true vesicovaginal and rectovaginal spaces
- Consensus of experience- full thickness leads to lower extrusion rates
- 3-5 cm length with effort to keep incisions small
- Avoid the apex
- transverse incision

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**Incidence of vaginal erosion following anterior prolapse repair with polypropylene mesh
Single vs. double layer vaginal wall closure**

Terlecki RT and Flynn BJ et al. AUGS 2009

Outcome

Closure	POP Cure (%)	Erosion (#, %)
SL	97	6/39 (15%)
DL	97	0*

All vaginal wall extrusions were on the anterior incision

- 2 healed after office excision
- 4 required multiple OR excision, reclosure of vaginal incision

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**What to do with the opposite compartment?
Concomitant Repairs**

Anterior/Posterior Compartment

- Treat if
 - Prolapsed
 - Significant apical prolapse, large enterocele
- No prolapse in opposite compartment –No consensus
 - Treat with standard repair
 - Reinforced repair in lesser compartment
 - Leave untreated if asymptomatic

Perineal body

- Not advisable to treat asymptomatic perineal relaxation
- If symptomatic and there is laxity
 - repair separately "distal" to the mesh

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Urinary Tract Sling Erosion
Urethrolysis: Contemporary Outcomes

Study	No.	Type	Management	Outcome
Kobashi et al 1999	7/34	ProteGen	Sling removal Martius (4) Delayed PVS (6)	25/34 (74%) SUI
Clemens et al 2000	6/14	ProteGen	Sling removal Urethral repair or prolonged drainage Immediate PVS (1) Delayed PVS (1)	5/6 (83%) SUI
Golomb et al 2001	1/1	Autograft	Bilateral partial excision	1/1 Dry
Amundsen et al 2003	6/6	Nonsynthetic	Sling incision	6/6 Dry
	3/3	Synthetic	Sling removal Martius (2) Delayed PVS (1)	2/3 (67%) SUI

Polypropylene Bladder Erosion
Prevention/Diagnosis

Prevention

- Avoid tunneling the trocar if the retropubic space is scarred
- Meticulous intra-op cystoscopy (70° lens), inspect anterior wall at 2 and 11 o'clock
- Postop Foley for 3 days if bladder is perforated

Diagnosis

- ↓
- High index of suspicion in patients with
 - Hematuria, bladder pain, urgency, recurrent incontinence, adherent calculus to the bladder wall

Terlecki RT and Flynn BJ: AUA update series 2010

Polypropylene Bladder Erosion
Case Reports: Endoscopic Approach

Endoscopic Laser Excision *

- 3 patients had bladder erosion due to polypropylene mesh
- Eroded tape successfully excised, 355 µm holmium laser in 20 mins

* Giri, SK, et al: J Urol 2005

Suprapubic Assisted Endoscopic Excision †

- 1 patient underwent successful endoscopic excision
- 5 mm suprapubic trocar, 24 Fr transurethral nephroscope
- Forceps inserted through the trocar used to stretch the tape
- Endoscopic scissors inserted through the nephroscope used to excise the tape

† Jorion, JL: J Urol 2002

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Management of Urinary Tract Erosions
Synthetic Erosion

Combined Abdominal and Vaginal Explantation *

- 5 patients with polypropylene mesh erosion
 - 3 with urinary tract erosion underwent explantation
 - ALL required subsequent anti-incontinence surgery

* Sweat SD, McGuire EJ and Lightner DJ: J Urol 2002

Mesh Explantation and Concomitant Sling †

- 19 patients with polypropylene mesh erosion underwent explantation
 - 53% had recurrent SUI
 - 5 underwent simultaneous autologous or porcine dermis sling

† Starkman, JS, et al: J Urol 2006

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Institutional Sling Extrusion Data
April 2003-Present


Vaginal Wall extrusion and urinary tract erosion

Vaginal wall extrusion/pain

- retropubic tape 1 of 72 (1.4%)
- TVT-O, 4 of 190 (2.1%)
- TVT-S, 1 of 119 (0.8%)
- Biological PVS, 0 of 60
- AUS, 0 of 9

Urinary tract erosion

- retropubic tape 1 of 72 (1.4%)
- TVT-O, 1 of 190 (0.5%)
- TVT-S, 0 of 119
- Biological PVS, 0 of 60
- AUS, 0 of 9



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2010 SUFU Abstract: MANAGEMENT OF POLYPROPYLENE MESH COMPLICATIONS (VAGINAL WALL EXTRUSIONS AND URINARY TRACT EROSIONS) AFTER SURGERY FOR SUI AND POP
 Flynn BJ et al, Denver, CO

39 patients that underwent mesh explantation due to recurrent vaginal wall extrusions and/or urinary tract erosions performed by BJF (2003-2009) were analyzed

- treatment based upon CU algorithm for mesh complications
- patients classified as "simple" or "complex" graft complication
- simple graft complications treatment
 - in office partial mesh excision
 - OR excision, washout, and primary closure
- complex graft complications treatment
 - near total mesh excision, washout, repair of the urinary tract/vaginal wall, and concomitant placement of biological graft

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Polypropylene Mesh Complication Algorithm
Location and Severity

Minor (n = 17)	Severe (n = 22)
<p>Vaginal wall extrusion</p> <ul style="list-style-type: none"> Partial mesh excision Primary vaginal wall closure <p>Recurrent (n = 4)</p>	<p>Recurrent vaginal wall extrusion or urinary tract erosion</p> <ul style="list-style-type: none"> Abd/vag mesh explant Urethral/bladder repair Biological re-implant

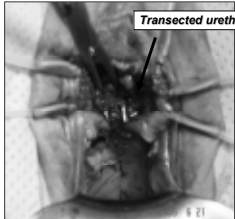
Terlecki RT and Flynn BJ: AUA update series 2010

Polypropylene Mesh Complication Algorithm
Operative Technique for Severe Graft Complication

- Abdominal/vaginal removal of mesh straps
- total explant of retropubic tapes, mini-slings
- removal of vaginal portion of TOT, prolapse mesh
- Urinary tract repair

↓

- Biological re-implant
 - autologous RF PVS for slings
 - allograft for prolapse kits
- 12 Fr foley (10-14 days) if urinary tract erosion



Transected urethra

* Flynn BJ et al: SUFU 2010

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Salvage Protocol

Near Total Mesh Explant, Washout, Re-implant with Biological

- Step 1: EUA, cysto, DRE, procto, CT scan in complex cases
- Step 2: Remove eroded mesh with 1 cm ring of vaginal epithelium
- Step 3: Complex cases continue explanting remaining body of the vaginal mesh
- Step 4: Repair defects in the viscera, consider flap if a fistula is present
- Step 5: Cysto to asses repair, r/o ureteral injury or residual FB
- Step 6: Irrigate with four solutions
 - bacitracin 50,000 units
 - gentamicin 80 mg in 1 l of 0.9% NS
 - 1/2 strength povidine-iodine, (500 ml)
 - 1/2 strength H2O2 (500 ml)
 - vancomycin 1 gm and gentamicin 80 mg, in 1 liter of 0.9% NS
- Step 7: Change gowns and gloves
- Step 8: Implant biological material
- Step 9: Close wound in 2 layers
- Step 10: Premarin vaginal pack
- Step 11: Treat with oral abx (based on culture results) for 1 month

Terlecki RT and Flynn BJ: AUA update series 2010

Management of Mesh Complications: Vaginal Wall Extrusions and Urinary Tract Erosions Results

Convalescence

- mean f/u, 14 mos.
- mean age, 55.5 yrs
- mean length of stay
 - simple <23 hrs
 - complex 2.4 days

Graft Complication Resolution

- Simple group, n = 17
 - trimming, n = 4
 - 1 of 4 (25%) successful
 - OR excision/reclosure, n = 13
 - 12 of 13 (92%) successful
- Complex group, n = 22
 - 21 of 22 (95%) successful

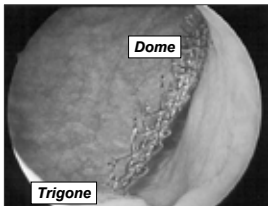
* Flynn BJ et al: SUFU 2010

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Management of Mesh Complications: Vaginal Wall Extrusions and Urinary Tract Erosions Continence Outcome

Post-operative

- 30 patients with data regarding pad usage
- 25 of 30 (83%) dry, 0 ppd
- 3 required sling lysis for prolonged retention
- 1 required prolapse repair
- 1 required urethroplasty
- 1 required Interstim for UUI



* Flynn BJ et al: SUFU 2010

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Management of Vesicovaginal Fistula (VVF)

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Transvaginal Repair of Primary and Recurrent Vesicovaginal Fistula (VVF)
Introduction

Terlecki RT and Flynn BJ et al: AUGS 2009

- Transabdominal management often with the use of flaps, has been advocated for recurrent fistulae
- It is our practice to approach all nonirradiated primary or recurrent, VVFs via a transvaginal approach on an outpatient basis and to avoid the morbidity of a Martius flap
- We aim to evaluate and compare the outcomes of transvaginal management of primary versus recurrent VVFs

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Transvaginal Repair of Primary and Recurrent Vesicovaginal Fistula (VVF)

Terlecki RT and Flynn BJ et al: AUGS 2009

31 cases (16 primary, 15 recurrent) of transvaginal VVF repair with cuff excision performed by a BJF (2002-2008) was analyzed

Etiology

- open abdominal hysterectomy (23)
- laparoscopic hysterectomy (2)
- robotic hysterectomy (2)
- transvaginal hysterectomy (2)
- mesh explant (1)
- obstetric trauma (1)
- 18 prior repairs in 15 recurrent cases all at outside centers
- 12 by a transvaginal approach and 6 transabdominally

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Transvaginal Repair of Primary and Recurrent Vesicovaginal Fistula (VVF)
Results

Parameter	Primary Repair	Secondary Repair
Patients (n)	16	15
Mean age (years)	42	42
Mean time to repair (days)	173	237
Mean fistula size (mm)	4.7	3.6
Mean BMI (kg/m ²)	30.8	28.8
Mean operative time (min)	157	143
Mean EBL (cc)	108	140
Mean LOS (days)	0.5*	0.1**
Mean catheterization (days)	22	21
Recurrence	0/16	0/15
Mean follow up (months)	25	30

Terlecki RT and Flynn BJ et al: AUGS 2009

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Transvaginal Repair of Primary and Recurrent Vesicovaginal Fistula (VVF)
Results

Outcome

- No significant differences between the treatment groups in any of the measured parameters
- No operative complications occurred in either group
- Dyspareunia limited to 3 patients from the primary group
- At a f/u of 25 (primary) and 30 (recurrent) months, no patient has had a fistula recurrence

Convalescence

- 5 patients observed less than 24 hours (3 social, 2 pain)
- 1 patient observed less than 24 hours (social)

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