W27: Female urethra: challenging scenarios

Workshop Chair: Paulo Palma, Brazil
30 August 2018 12:05 - 13:05

Start	End	Topic	Speakers
12:05	12:15	Primary obstruction of the bladder neck	Mauro Cervigni
12:15	12:25	Urethral stenosis: which approach for which patient?	Paulo Palma
12:25	12:35	Urethral diverticula	Cassio Riccetto
12:35	12:45	Urethral reconstruction in transgender patients	Ömer Acar
12:45	13:05	Discussion of challenge cases	Paulo Palma Cassio Riccetto Mauro Cervigni Ömer Acar

Aims of Workshop
To present a practical approach to female damaged urethra including strictures, diverticula, defunctionalized and tethered urethra in non-neurogenic and neurogenic scenarios. The learning process will be based on the discussion videos and clinical cases.

Learning Objectives
Objective 1- To diagnosis and treat primary bladder neck obstruction.
Objective 2- To select the proper technique for female urethra stenosis.
Objective 3- Awareness of the transgender urethra.

Learning Outcomes
At the end of the workshop the attendees should be able to diagnose and manage female urethra problems properly, should it be functional or anatomical. Select the proper technique for each patient and be aware of the transgender urethra.

Target Audience
urologists, gynecologists, urogynecologists

Advanced/Basic
Advanced

Conditions for Learning
This is a clinical oriented course addressing the female and transgender urethra based on clinical scenarios and surgical techniques.

Suggested Learning before Workshop Attendance
None.

Suggested Reading
https://www.ncbi.nlm.nih.gov/pubmed/28990728
World J Urol. 2017 Jun;35(6):991-995. doi: 10.1007/s00345-016-1947-7. Epub 2016 Oct 4.
Female urethral stricture: a contemporary series.
Spilotros M1, Malde S2, Solomon E2, Grewal M2, Mukhtar BM2, Pakzad M2, Hamid R2, Ockrim JL2, Greenwell TJ2.

Role of urodynamics in management of urethral diverticulum in females.
Lin KJ, Fan YH, Lin AT.
J Chin Med Assoc. 2017 Nov;80(11):712-716. doi: 10.1016/j.jcma.2017.07.003. Epub 2017 Aug 12

Select item 28660723 5.
Outcomes of treatment of stress urinary incontinence associated with female urethral diverticula: A selective approach.
Greiman A, Rittenberg L, Freilich D, Rames R, El-Zawahry A, Koski M, Rovner E.
Neurourol Urodyn. 2017 Jun 29. doi: 10.1002/nau.23334

Calculus in female urethral diverticulum eroded to the vagina.
Abrahão LM, de Toledo LGM, de Castro Cardoso SN.
Int Urogynecol J. 2017 Jul;28(7):1109-1110. doi: 10.1007/s00192-017-3308-5. Epub 2017 Mar 11

Other Supporting Documents, Teaching Tools, Patient Education etc
https://www.youtube.com/watch?v=1K5qViAdZ_w
https://www.youtube.com/watch?v=q67V0747u7Q&t=4s

Female urethral stenosis: which approach for which patient?

Paulo Palma, M.D., PhD
Professor & Chairman of Urology
Universidade Estadual de Campinas, UNICAMP, Brazil

The incidence of bladder outlet obstruction in women with LUTS varies from 2.7 to 8% and urethral stricture accounts for 4-13% of those with bladder outlet obstruction.
Diagnosis include irritative and obstructive voiding symptoms, painful or traumatic catheterization, elevated post residual volume.

On physical examination we can detect meatal stenosis and also difficult to introduce a sound 12F or up to 18Fr.
Imaging studies as voiding cystourethography disclose open bladder neck, relaxed sphincter and narrowed urethra.
Urodynamic evaluation typically shows high pressure and low flow and sometimes elevated PVR. Thera are various urodynamics patterns and some nomograms are available.

Selecting the proper approach foe each patient includes many aspects such as age, fragility status, patient´s compliance and preferences.

Urethral dilation is accepted as primary or chronic therapy with a success rate of 47% in a follow up of 43 months. Important to note that the success rate is 58% in naïve patients and drops to 27.2% in patients with prior dilations.
Surgical approach includes
1 Distal urethrectomy mainly for meatal stenosis
2 endoscopic urethrotomy for small stenosis as primary treatment
3 Labium minus graft for strictures over 2 cm
4 Vaginal flap urethroplasty
5 Buccal graft urethroplasty

In order to select the best technique for each patient we should take into account, patients need and expectations, length and localization of the stricture, age, surgeon expertise and preference.

The surgical treatment with flaps/grafts has the highest success rate; whereas less invasive procedures such as urethrotomy/meatotomy/dilations/self-catheterization should be reserved for short female urethra stenosis or women with high comorbidity.

References

Dorsal vaginal graft urethroplasty for female urethral stricture disease.

Petrou SP[1], Rogers AE, Parker AS, Green KM, McRoberts JW.

BJU Int. 2012 Dec;110(11 Pt C):E1090-5. doi: 10.1111/j.1464-410X.2012.11233.x. Epub 2012 May 17.

Contemporary surgical management of female urethral stricture disease.

Osman NI[1], Chapple CR.

Curr Opin Urol. 2015 Jul;25(4):341-5. doi: 10.1097/MOU.0000000000000186.

Urethral stricture in women

Escribano Patiño G[1], Husillos Alonso A, Rodriguez Fernandez E, Cancho Gil MJ, Hernandez Fernandez C.

Arch Esp Urol. 2014 Jan-Feb;67(1):129-37.

Urethral Diverticulum: Diagnosis and Treatment

Cássio Riccetto MD
Division of Urology, University of Campinas – UNICAMP, Sao Paulo, Brazil

The incidence of urethral diverticulum is around 0.6% among women with lower urinary tract symptoms. It is usually secundary from the infection of the periurethral glands resulting in dilation and coalescence, creating a sinus.

In general, patients with urethral diverticulum have recurrent urinary tract infection that may be associated with dyspareunia (10%) and urethral pain. Post-voiding urinary incontinence can occur in up to 25% of patients. In typical presentation, one can find a periurethral cystic tumor draining purulent secretion from the urethra during its finger pressure. The most common differential diagnoses include urethral caruncula, Skene's gland abscess, urethral prolapse, vaginal wall cysts, Gartner's duct cyst and urethral leiomioma. Although transvaginal and transperineal ultrasound usually demonstrate the diverticulum, magnetic resonance imaging is the most commonly used method in preoperative planning.

Most patients with urethral diverticulum need surgical treatment, and several procedures have been described. The endoscopic marsupialization technique uses the Collins knife to incise the diverticulum cervix and is reserved for the those located at the distal aspect of the urethra. Open marsupialization can also be used, since it does not cause damage to the midurethral continence mechanism.

Some authors recommend transvaginal excision with flap closure as the surgical treatment of choice for the diverticula of the mid and proximal urethra. This technique allows complete resection of the diverticulum and suture in three planes (urethal mucosa plus spongiosous tissue, pericervical “fascia” and vaginal wall) without tension. Surgery is performed wtih the patient placed in lithotomy position. Initially, a Foley 14F catheter is inserted into the urethra and a vaginal retractor is placed. Then, an inverted "U" incision is made with the apex over the distal urethra. The dissection of the vaginal flap toward the bladder neck is followed by a transverse incision in the pubocervical “fascia” exposing the diverticulum. Dissection of the diverticulum follows through the exposed circunference until the diverticular cervix is identified. The identification of the cervix of the diverticulum is imperative to ensure complete resection and prevention of recurrence.

After complete excision of the diverticulum, the urethral defect is closed vertically on the Foley 14Fr catheter using 5-0 polydioxanone suture. The periurethral fascia is transversally closed with 3-0 polyglactin suture. The interposition of a Martius flap between the urethra and the vaginal wall is recommended when closure in three planes is not possible or when the preservation of the pubocervical fascia seems to be inadequate. The third plan comprises the closure of the anterior vaginal wall, which is performed using 2-0 polyglactin suture. Patients should receive antimicrobials until the bladder catheter is removed, usually after 7-10 days postoperative. Anticholinergic agents could be used to prevent bladder contraction up to 24 hours.

If urethral diverticulum is associated with stress urinary incontinence, it can be treated with a sling, at the same time of diverticulectomy or later. Some authors recommend sling implant 3-6 months after diverticulectomy, in order to minimize the risk of infection, formation of fistula and erosion of the urethra through the sling.

In conclusion, urethral diverticulectomy requires surgeon’s patience and skill, as the primary correction offers a greater possibility of cure and, on the contrary, reoperation is routinely more laborious and usually requires a flap interposition.

Urethral Reconstruction in Transgender Patients

Ömer Acar

Gender dysphoria can be described as a discrepancy between the gender assigned at birth and gender identity. Individuals with gender dysphoria are becoming increasingly more accepted in society and therefore the number of patients who feel confident enough to seek gender confirmation surgery has increased substantially.

Genital reconstruction is the final step of an individual’s transition and requires an integrated multidisciplinary approach involving plastic surgeons, urologists, and gynecologists. Genital reconstructive surgery for transgender women and men may include labiaplasty, clitoroplasty, vaginoplasty and vaginectomy, phalloplasty or metoidioplasty, scrotoplasty, placement of penile/testicular prostheses, respectively.

Urethroplasty remains one of the most challenging and technically demanding part of transgender genital reconstruction. The relatively higher incidence (reaching 50% in some series) of urethral complications following gender confirmation surgeries (especially phalloplasty) highlights the importance of reconstructing a functional urethra with an adequate length and caliber in trans males and females.

Urethral reconstruction in female to male transgenders:

- Metoidioplasty:

Metoidioplasty can be used in trans females who want gender confirmation surgery without a complex, multi-staged surgical creation, of an adult-size and functional phallus. The native female urethra is lengthened to reach the tip of the glans, as in males, allowing voiding while standing. Several techniques can be employed for this purpose. The more widely accepted one is based on clitoral lengthening by dissection of the clitoral ligaments dorsally and the short urethral plate ventrally. Bulbar urethral reconstruction is then performed using part of the anterior vaginal wall and the proximal part of the urethral plate. To minimize complications following tubularized urethroplasty, a buccal mucosa graft is usually used as the dorsal half of the neourethra. Covering of the buccal mucosa graft is performed using either a longitudinal dorsal clitoral skin flap or a flap harvested from the inner surface of the labia minora.

- Phalloplasty:

Many options for phallic reconstruction have become available, with either pedicled flaps (abdominal flap, groin flap, anterolateral thigh flap) or free transfer flaps (radial forearm free flap and latissimus dorsi flap).
Reconstruction of the neo-urethra includes creation of the bulbar part by combining part of the anterior vaginal wall and the wide urethral plate. Further urethral lengthening is carried out using all available hairless genital skin (labia minora, dorsal clitoral skin), forming a new urethral opening in the first third of the neophallus.
The more widely utilized technique involves harvesting a radial forearm free flap. This flap is divided into two parts: a narrow inner part, which is rolled skin inwards to form a urethra, and the remainder, which is rolled skin outwards around the urethral flap to form the rest of the phallus. After detachment from the donor site, the neophallus is put into position; the blood vessels are anastomosed under microscope control to the femoral artery and long saphenous vein, and the cutaneous nerves are connected to a dorsal nerve of the clitoris, and to the ileoinguinal nerve. The proximal urethra is then formed from a tube of labia minora and vaginal epithelium around a catheter, and this tube is joined to the inner tube in the neophallus, resulting in a urethra that emerges from the tip of the neophallus.

Urethral reconstruction in male to female transgenders:

-Vaginoplasty:

Vaginoplasty involves the creation of a urethral opening between the neoclitoris and neovaginal introitus. Urethra is basically shortened to allow the urinary stream to face downward in the seated position. The simplest technique for urethral shortening is to divide the urethra in the proximal bulb and suture the urothelium direct to the skin. Another approach would be; spatulation of the urethra, and excision of some or all of the corpus spongiosum posterior to the urethral meatus. The latter approach usually achieves a more satisfactory direction of micturition but has a higher risk of bleeding that can result from having an increased length of spongiosum-based epithelium anastomosed to the skin.
In this part of the course; the contemporary surgical techniques that are used for urethral reconstruction in transgender individuals will be covered, giving particular emphasis on the morphological and functional outcomes, complication rates, tips and tricks to avoid complications and troubleshooting principles.

Take home message: Urethral reconstruction in transgender patients is technically challenging, exhibits differences with regard to the direction of transition with the urethroplasty of phalloplasty/metoidioplasty involving urethral mobilization-lengthening-anastomosis and the one employed within the context of vaginoplasty relying mainly on urethral liberation and shortening.

References:

1-) Selvaggi G, Bellringer J. Gender reassignment surgery: an overview. Nat Rev Urol. 2011 May;8(5):274-82. doi: 10.1038/nrurol.2011.46.
2-) Bizic MR, Stojanovic B, Djordjevic ML. Genital reconstruction for the transgendered individual. J Pediatr Urol. 2017 Oct;13(5):446-452.
3-) Dy GW, Sun J, Granieri MA, Zhao LC. Reconstructive Management Pearls for the Transgender Patient. Curr Urol Rep. 2018 Apr 11;19(6):36.

Paulo Palma

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Affiliations to disclose†:

Promedon Argentina- Speaker

† All financial ties (over the last year) that you may have with any business organization with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

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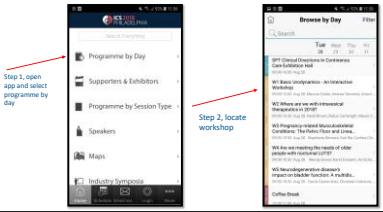

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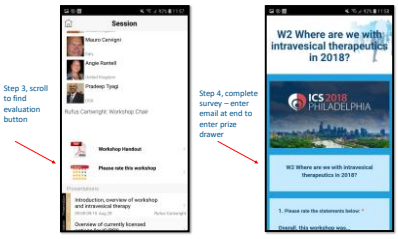

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- A full handout for all workshops is available via the ICS website.
- Please silence all mobile phones
- PDF versions of the slides (where approved) will be made available after the meeting via the ICS website so please keep taking photos and video to a minimum.
- If so I do recommend the **U scanner app**

Female urethra: challenging scenarios

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President of ALAPP
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Faculty

- **Paulo Palma (Chair)**
- **Mauro Cervigni**
- **Omer Acar**
- **Cassio Riccetto**

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  (Latim America Pelvic Floor Association)
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  Confederación Americana de Urologia

Programme

- **Primary obstruction of the bladder neck - Mauro Cervigni**
- **Urethral stenosis: which approach for which patient- Paulo Palma**
- **Urethral diverticula - Cassio Riccetto**
- **Urethral reconstruction in transgender patients – Omer Acar**

Discussion of challenge cases

Friendly reminder

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- You are welcome to this WS
- Please do not be shy
- We do appreciate interactivity
- So, feel free to ask questions or make comments when appropriate

Thank you

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Gemelli

Fondazione Policlinico Universitario Agostino Gemelli IRCCS
Università Cattolica del Sacro Cuore

PRIMARY OBSTRUCTION OF THE BLADDER NECK

Mauro Cervigni
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Affiliations to disclose†:

No Disclosure

Funding for speaker to attend:

- [ ] Self-funded
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ETIOLOGY OF FEMALE BLADDER OUTLET OBSTRUCTION

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Anatomical	
Extrinsic	Pelvic organ prolapse (POP)
	After anti-incontinence surgery
Intrinsic	Skene's gland cyst or abscess Urethral fibrosis or stricture Diverticulum Excessive bulking agent Other luminal causes
Functional	Primary bladder neck obstruction (PBNO)
	Dysfunctional voiding (DV)
	Folwer's syndrome
	Detrusor external sphincter dyssynergia (DSD)

Chia-Da Lin et al.LUTS (2016) 8, 30–37

DEFINITION AND EPIDEMIOLOGY

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- series have suggested that among women with voiding dysfunction, the incidence of **PBNO** ranges from **4.6 % to 8.7 %**
- **PBNO** is caused by a lack of relaxation of the smooth muscle at the bladder neck at voiding phase, resulting in obstruction of urinary flow

IN THE ABSENCE OF:

1) ***OTHER ANATOMIC OBSTRUCTION* (I.E. BPO, PROLAPSE)**
2) ***INCREASED STRIATED SPHINCTER ACTIVITY***

Nitti VW et al. . J Urol 1999; 161: 1535–4
Kuo HC et al. Urology 2005; 66: 1005–9

ETIOLOGY

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(not clear, several hypotesis)

- **related to fibrosis,hypertrophy, or abnormal configuration**
- **of the musculature**

Leadbetter G et al. J Urol. 1984;132:294–8.
Turner-Warwick R et al. . BJU Int. 1973;45:44–59.

- **functional etiology**

✓ In PBNO, the pressure at the bladder neck appears to remain elevated in comparison with intravesical pressure during voiding.

✓ striated muscle extends from the external sphincter to the bladder neck in these patients

Yalla S et al. J Urol. 1997;157:590–5.

✓ increased sympathetic activity at the bladder neck

Crowe R, et al. J Urol. 1995;154:1231–6.

CLINICAL PRESENTATION

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VOIDING SYMPTOMS
- Decreased force of stream
- Hesitancy
- Intermittent stream
- Incomplete emptying

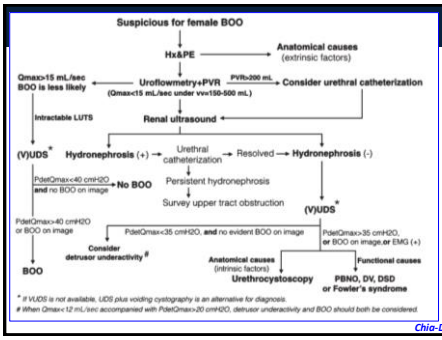
STORAGE SYMPTOMS
- Frequency
- Urgency
- Urge Incontinence
- Nocturia

OR A COMBINATION

the initial presentation may be urinary retention

NO SUBSTANTIAL DIFFERENCES BETWEEN MEN AND WOMEN
(women did report less pelvic pain than men)

Nitti V. Urol. 2005;7:S12–7.



ALGORITHM FOR DIAGNOSIS OF FEMALE BLADDER OUTLET OBSTRUCTION.

Chia-Da Lin et al.LUTS (2016) 8, 30–37

DIAGNOSIS

PBNO

diagnosis is a videourodynamic

the hallmarks of which are :

- relative high-pressure
- low-flow
- voiding with radiographic evidence of obstruction at the BN with relaxation of the striated sphincter and no evidence of distal obstruction

-some patients can actually present with a large PVR volume

Nitti V. Urol. 2005;7:S12–7.

in women, the pressure/flow criteria for PBNO are even less defined

according to the videourodynamic criteria :

- a detrusor contraction of any magnitude associated with radiographic evidence of obstruction at the bladder neck is adequate to diagnose PBNO

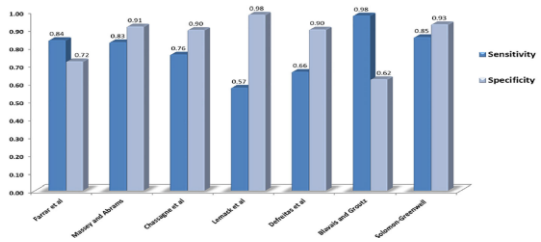
Nitti VW, et al. J Urol. 1999; 161:1535-1540

- Chassange et al proposed cut-off points for obstruction of 15 ml/s or less for qmax and greater than 20 cm H2O for detrusor pressure at maximum flow.

Chassange S, et al. Urology. 1998;51:408-411

- a simultaneous radiographic study is still needed to localize the obstruction and make a definitive diagnosis

The sensitivity and specificity of UDM definitions of female BOO



Neurourology and Urodynamics. 2017;9999:1–11.

Diagnosis and management of BOO in women by cause

Anatomic	Diagnosis	Treatment
Pelvic organ prolapse (POP)	Physical exam	Pessary Surgical reduction Urethrolysis for iatrogenic urethral obstruction
Following anti-incontinence surgery • Bladder neck fascial sling or mid-urethral sling • Retropubic bladder neck suspension • Burch procedure or MMK	Surgical history and physical exam	Simple sling incision Urethrolysis (transvaginally or transabdominally) Suture release and scar dissection (transvaginally or transabdominally) Supramaetal urethra release
Strictures or Fibrosis	History plus cystoscopy, MRI or cystography	Dilation, transurethral incision, or urethral reconstruction
Functional		
Primary bladder neck obstruction	High-pressure, low-flow voiding with a closed bladder neck, no abnormal activity, at the level of the urinary sphincter	Observation Alpha-blockers Clean Intermittent Catheterization (CIC) Transurethral incision of the bladder neck
Dysfunctional voiding	Failure of pelvic floor (possible external sphincter) relaxation during void Increased EMG activity during a voluntary void	Observation Pelvic floor physical therapy Medical management Valium Anticholinergics Amitriptyline Alpha-blockers Baclofen
Fowler's syndrome	External sphincter EMG pattern during void: complex repetitive discharges with bursts of deceleration	Sacral neuromodulation (SNM)
Neurogenic	Known neurologic disease and abnormal UDS/EMG activity during voiding	Baclofen CIC SNM Botox injections

Curr Opin Urol 2016, 26:334–341

TREATMENT

- observation
- clean intermittent catheterization ,
- alpha-blockers,
- botulinum toxin A (botox) injection at the bladder neck,
- neuromodulation
- transurethral incision of the bladder neck

OBSERVATION

- if the patient is not significantly bothered by the symptoms and does not have any concerning findings on evaluation
- followed closely with history and physical exam, noninvasive uroflow, and evaluation of postvoid residual.
- any concerning changes in these noninvasive evaluations should prompt further diagnostic testing and, possibly, further treatment

Hickling D et al. Curr Urol Rep. 2012;13:356–62.

ALPHA-BLOCKERS

- about 50–64% of women with PBNO responded well to alpha-blocker therapy.
- in these patients the flow rates increased, and the PVR volume decreased.
- alpha-blocker therapy should be tried before invasive therapy, as there are few side-effects and the efficacy of alpha-blocker therapy might suggest a good response to bladder neck incision.

Kumar A. et al. J Urol 1999; 162: 2061–5
Athanasopoulos A et al . Int Urogyn J 2009; 20:17–22.
Cisternino A et al. Urol Int 2006; 76: 150–3.

BOTOX INJECTION AT THE BLADDER NECK

- botox injection into urethral sphincter has been used in some studies, and the therapeutic effects of improvement in detrusor contractility or PVR were noted in women

kuo hc. urology 2007; 69: 57–61

- randomized prospective studies are still lacking, and the numbers of patients in these studies are small

NEUROMODULATION

- although sacral neuromodulatory therapy for lower urinary tract dysfunction seemed effective, the *management specific to PBNO is not reported.*

<u>neuromodulation and botox injection are alternatives and should be regarded as experimental trials</u>

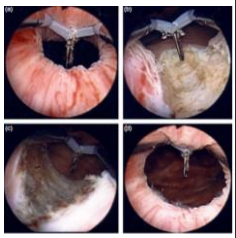
Sacco E, et al. NeurourolUrodyn 2014; 33: v142–6.
Peeters K et al . BJU Int 2014; 113: 789–94

TRANSURETHRAL INCISION OF THE BLADDER NECK

- transurethral resection or incision of the bladder neck usually provides definitive treatment for BPNO
- most authors make two incisions, usually at the 5 and 7 o'clock positions, while some make only one, usually in the midline

<u>complications</u>:
➢ *SUI* - in females

- the use of a pediatric resectoscope and Collins knife, and one bladder neck incision, might decrease the chance of SUI.



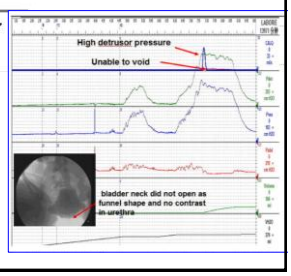
Kumar A et al. .J Urol 1999; 162: 2061–5.

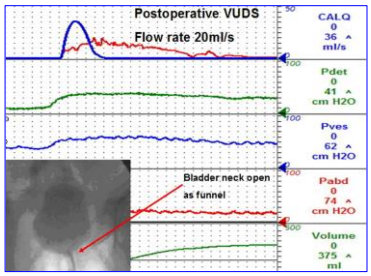
Female Urology

Bladder Neck Incision for Female Bladder Neck Obstruction: Long-term Outcomes

Peng Zhang, Zhi-jin Wu, Ling Xu, Yong Yang, Ning Zhang, and Xiao-dong Zhang

VIDEOURODYNAMIC STUDY IN A 36-YEAR-OLD WOMAN WITH PBNO





POSTOPERATIVE VIDEOURODYNAMIC STUDY

KEY POINTS

- Female BOO can result from various disorders, which can be separated into anatomic, functional and neurogenic causes
- Though many criteria have been proposed , a consensus is still lacking for an objective definition of female BOO
- To accurately diagnose and treat female BOO, a combination of presuure/flow data, imaging, and EMG should be utilized
- Studies investigating the role of urinary nerve growth factors and transvaginal ultrasound represent promising areas of research for diagnostic and management monitoring

Urethral stenosis: which approach for which patient?

Paulo Palma
Professor & Chairman of Urology @ UNICAMP
President of ALAPP
LATAM Pelvic Floor Dysfunction Society

Introduction

- **Incidence/prevalence**
- **Diagnosis**
- **Historic perspective of treatment**

Urethral dilation

Internal urethrotomy

Surgical treatment

Incidence/prevalency of stricture disease in women

- **Urologic disease in America 2008 (1)**
- **Office visits for female urethra stricture**
  186/100.000 or 0.19% 1992-2000
  7 times higher in women over 65 y
- **37 cases of true strictures 1965-2008**

Santucci R A, J Urol, 2008

Incidence/prevalency of stricture disease in women

- Bladder outlet obstruction in women

  2.7-8% of women with LUTS (1)
- Urethral stricture disease

  4-13% of BOO in women (2,3)

1 CarrLK. Urol Clin North Am, 1996
2 Groutz A. Neurourol and Urodyn, 2000
3 Kuo HC. Urology, 2005

Diagnosis of urethral stricture

- Hystory/Physical

Irritative/obstructive voiding symptoms
Painful, traumatic catheterization, traumatic delivery, car accident
Elevated Post Voided residuals

- VCUG

Open bladder neck,distal narrowed urethra

- Urodynamics

Obstructed on pressure/flow

VCUG

Primary Obstruction of the bladder neck

Urethral stenosis

Diagnosis of urethral stricture

- Cystoscopy
- Inability to pass a catheter

12 Gr (1)
14 Fr (2)
17 Fr (3)
18 Fr (4)
20 Fr (5,6)

1 Gomerly EA. Neurourol Urodyn, 2010
2 Smith AL. BJU Int, 2006
3 Blaivas J. J Urol, 2012
4 Petrou SP. BJU int, 2012
5 Bremen D. J Urol,1951
6 Montsuri F. Urol Int, 2002

Surgical approach to the urethra

- **No guidelines or recommendations on this at present**
- **Evidence would suggest either a dorsal or ventral approach**
- **Consider Martius flap if intend inserting a sling**
- **Consider sling at first operation if severely incontinent, otherwise I favour a two stage approach**

Number of female urethral stricture procedures 2014

- **Diagnosis of female urethral stricture: 35 712**
- **Procedures for female urethral strictures: 25 853**

urethral dilation
meatal excision
Vaginal flap urethroplasty
Labium minus graft
Buccal mucosal graft urethroplasty

AUA 2018

Urethral dilation for female uretral stricture

- **Primary or chronic therapy**
- **47% success rate with a mean F/U 43 months**

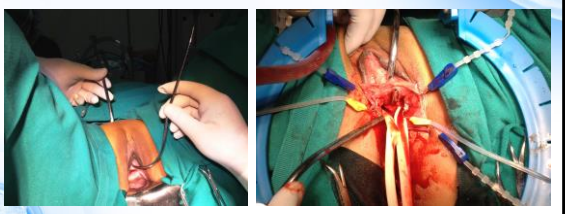
58% in patients without prior dilation vs
27.2% in patients with prior dilation

Orman N. Eur Urol, 2013

Distal urethrectomy

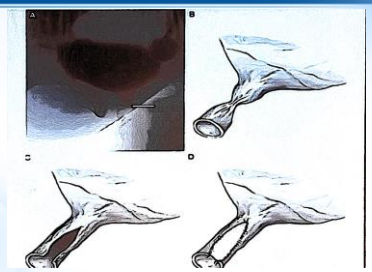

Distal urethrectomy


Stenosis post car accident

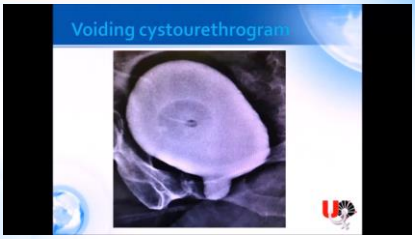


Traumatic not aligned urethral stricture

Grafts



Labium minus graft



15-3354
Female Urethral Stricture: More Common Than You Think
Marco Spilotros, Eskinder Solomon, Mahreen Pakzad, Rizwan Hamid, Jeremy Ockrim, Tamsin Greenwell, London, United Kingdom*

Urethral Stricture Treatment	n (%)	Cure Pain	Cure BOO	Cure LUTS	Urethral Dilatation	ISC
Urethral Dilatation	5 (25)	0%	60%	50%	20%	0%
Urethral Dilataton + ISC	5(25)	0%	0%	0%	40%	80%
BMG Urethroplasty + MFP*	11(35)	82%	91%	18%	0%	0%
Dorsal Onlay Vaginal Urethroplasty	5(10)	100%	100%	20%	0%	0%
Urethrotomy	1(5)	0%	100%	0%	0%	100%
Total	27					

* Martius Fat Pad

AUA, 2016

Conclusions

- Consider urethral dilation for the elderly unfit patients
- **Urethroplasty/Meatoplasty**
  Effective
  Durable results
- Vaginal flap/labium minus
  simple
- Buccal mucosa
  If diseased or limited vaginal tissue
  Ideal for long strictures

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WS 27 - Female Urethral Diverticula

Cassio Riccetto
Female Urolgy Division
University of Campinas – UNICAMP
Brazil

Division of Urology
University of Campinas - Unicamp – Brazil

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Affiliations to disclose†:

None

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

- [ ] Self-funded
- [ ] Institution (non-industry) funded
- [X] Sponsored by: Astellas Pharma Brazil

Female Urethral Diverticulum

A urethral diverticulum in the female is a variably sized urine-filled periurethral cystic structure adjacent to the urethra and connected to it by an ostium

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Female Urethral Diverticulum

- True prevalence still undetermined
- 0.6% of women with lower urinary tract symptoms
- Few studies and small casuistics
- Evidence level 4 / 5

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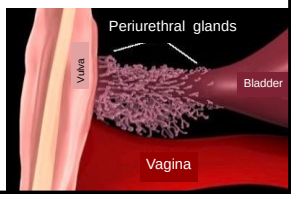
Pathophysiology

Infection of periurethral glands
↓
Edema and obstruction of ducts
↓
Abscess
↓
Erosion /drainage to urethral lumen
↓
diverticulum
↓
Enlargement due to recurrent infection



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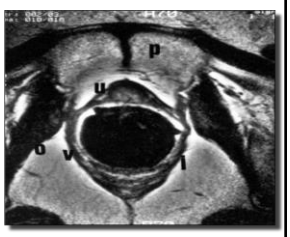
Anatomical landmarks

Urethra is suspended from the pelvic sidewall (tendinous arc) by the urethropelvic ligament.

- Abdominal side: endopelvic fascia
- Vaginal side: periurethral fascia



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Types

Normal urethra

Types

Incipient diverticulum

Types

Saddlebag like

Types

Circunferential and/or
multiloculated presentation

Clinical presentation

- 3 “Ds” : dysuria, dyspareunia and dribbling (postvoid)
- Since assyntomatic (up to 20%) to very debilitating and painful vaginal mass
- Anatomic variations ensure that each case is unique

Leach & Beck. In Palma P, Uroginecologia Ilustrada, 2007

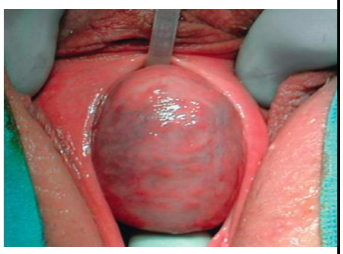
Clinical presentation

- Dysuria (up to 50%)
- Recurrent UTI (up to 40%)
- Dyspareunia (up to 25%)
- Postvoiding urinary leakage (up to 10%)
- Urgency
- Voiding dysfunction
- Hematuria
- Purulent urethral discharge

Leach & Beck. In Palma P, Uroginecologia Ilustrada, 2007

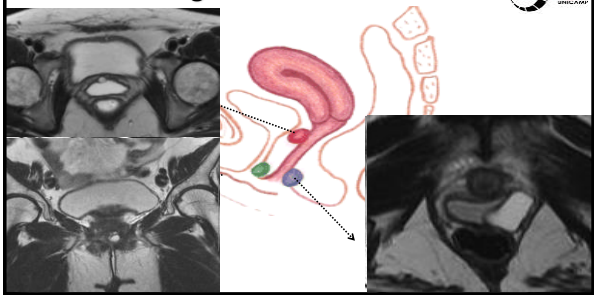
Differential diagnosis

- Urethral caruncula
- Skene gland abscess
- Urethral prolapse
- Ectopic ureter/ureterocele
- Vaginal wall cyst
- Urethral leiomyoma
- Vaginal carcinoma



Leach & Beck. In Palma P, Uroginecologia Ilustrada, 2007
Rovner, E Bladder and Female Urethral diverticulaSurgery for vesicovaginal fistula, In: Wein, Kavoussi, Novik, Partin Peters editors. Campbell-Walsh Urology. 10th ed. Philadelphia: WB Saunders; 2012
Arquivo pessoal Cassio Riccetto.

Differential diagnosis



Diagnosis

- Physical examination

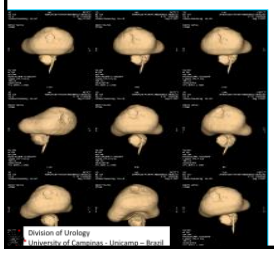
Diagnosis

- Voiding cystourethrography

Davis / Trattner double balloon catheter

Diagnosis

- 3D Tomography



Diagnosis

- Magnetic Resonance Imaging

Pre treatment work up

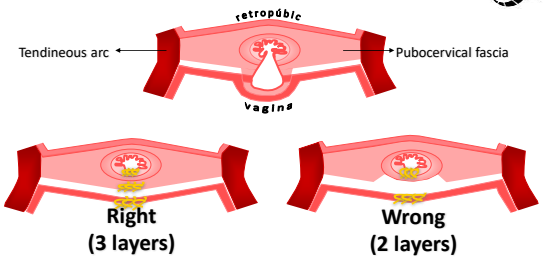
- Topic estrogen stimulation
- Cystoscopy (neck)
- (Video) urodynamics (optional)
  - Complaint of SUI: 33%

Treatment

- Transvaginal excision and urethroplasty
- Expectant
- Marsupialization

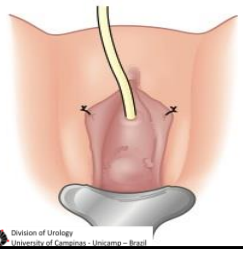
  - Few information regarding the natural history of untreated UD
  - Risk of malignization (adenocarcinoma)

Transvaginal excision



Treatment

- Preoperative exposure

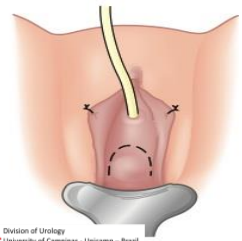


weighted vaginal speculum and/or Scott retractor

Drawings: Campbell's Urology 11 ed.pag.2166

Treatment

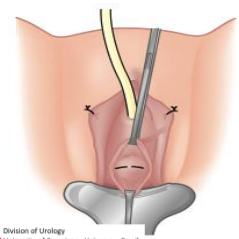
- Vaginal wall: inverted "U" incision

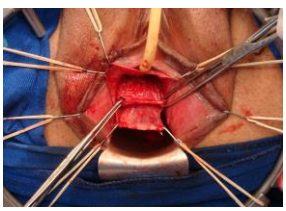


Drawings: Campbell's Urology 11 ed.pag.2166

Treatment

- Pubocervical fascia: transverse incision

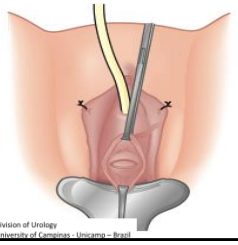


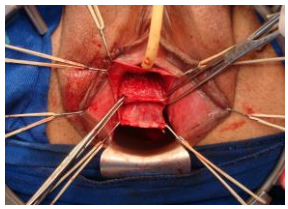


Drawings: Campbell's Urology 11 ed.pag.2166

Treatment

- Pubocervical fascia: transverse incision





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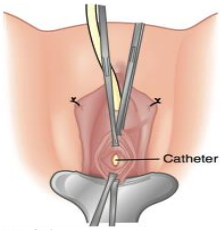
Drawings: Campbell's Urology 11 ed.pag.2166

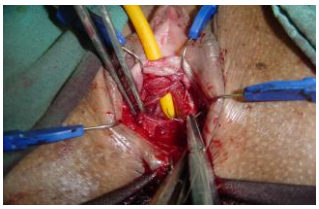
Treatment

- Dissection of the diverticulum

Treatment

- Urethral suture: 1st layer ininterrupted 5.0 PDS





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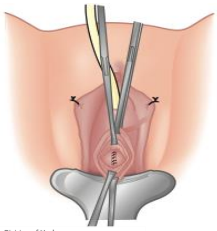
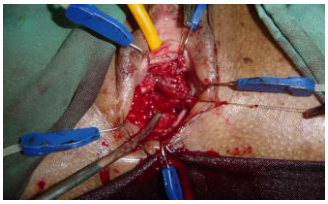
Treatment

- Urethral suture: interrupted 5.0 PDS stitches





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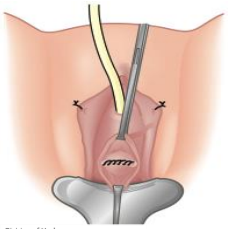
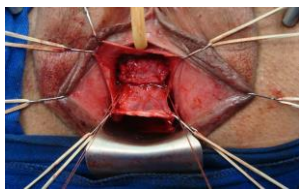
Treatment

- Pubocervical fascia suture





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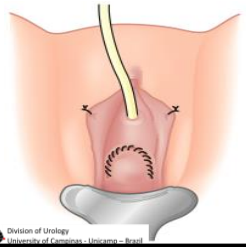
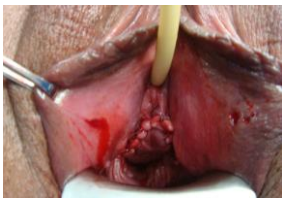
Tratamento

- Vaginal wall suture





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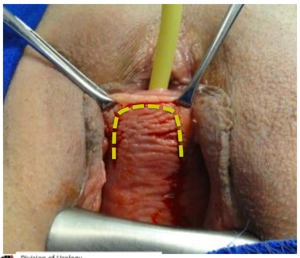
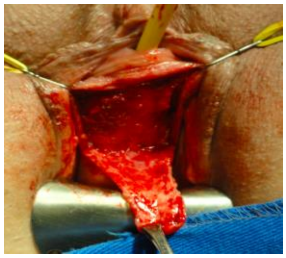
Treatment

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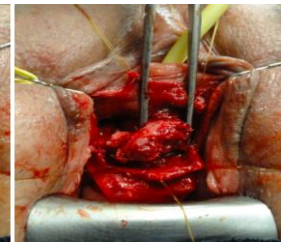
Treatment

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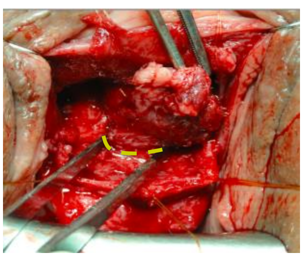
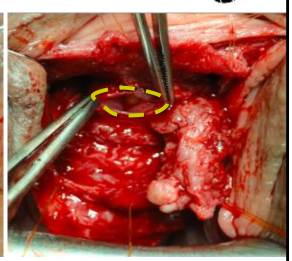

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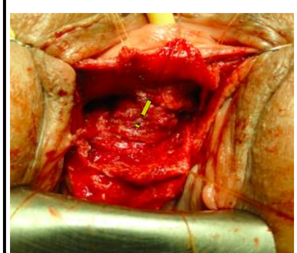
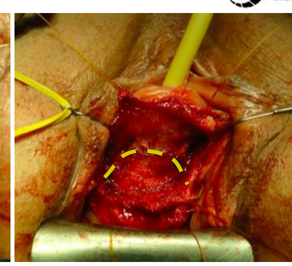

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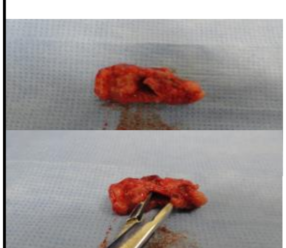
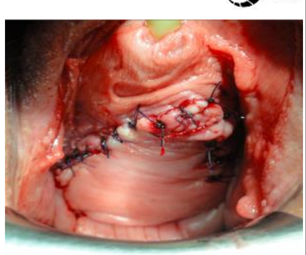
Treatment

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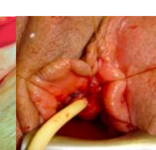
Treatment

- Martius flap?
- Suprapubic cystostomy?
- Simultaneous sling?
- Suprameatal incision?

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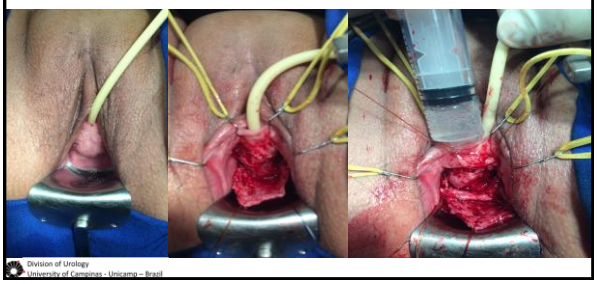
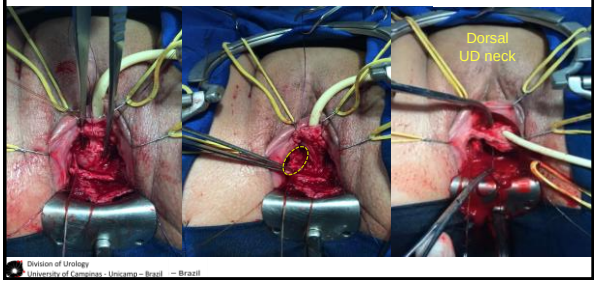
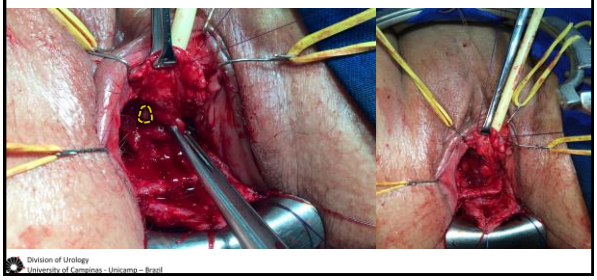
Suprameatal approach + Martius flap



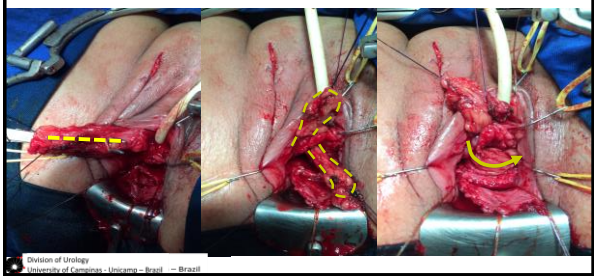
Suprameatal approach + Martius flap



Suprameatal approach + Martius flap



Suprameatal approach + Martius flap



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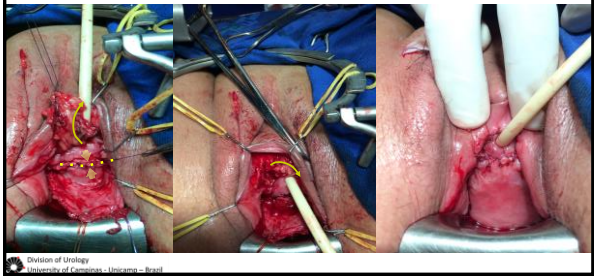

Post-operative care

- Urethral catheter: 14 Fr, silicon, 10 days
- Prophylactic antibiotic: until catheter withdrawal

Complications

- Stress urinary incontinence: up to 20%[1]
- Urethrovaginal fistula (0.9% -8.3%)[2]
- Urethral stenosis (0% -5.2%)[2]
- Recurrent diverticulum (1% -25%)[2]
- Recurrent UTI (0% -31.3%)[2]
- Hypospadia[2]
- Vaginal stenosis (dyspareunia)[2]

1) Ljunqvist L, Peeker R, Fall M. J Urol Jan 2007 177: 219 – 224.
2) Rovner E Bladder and Female Urethral diverticulaSurgery for vesicovaginal fistula, In: Wein, Kavoussi, Novik, Partin Peters editors. Campbell-Walsh Urology. 10th ed. Philadelphia: WB Saunders; 2012.

Take home messages

- Suspect and actively search for a urethral diverticulum in all patients with LUTS without a definite cause
- Success of surgical treatment: adequate dissection and reconstruction of anatomical planes

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Thank you !

cassioriccetto@gmail.com

Urethral Reconstruction in Transgender Patients

Omer Acar, MD, FEBU
Genital Reconstruction Fellow
University of Illinois at Chicago, Department of Urology

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OMER ACAR, MD

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Gender Dysphoria

- A discrepancy between the gender assigned at birth and gender identity
- Incidence of GD: 1:60,000 (trans ♀ x4 > trans ♂)
- Individuals with GD are becoming increasingly more accepted in society
- More patients seek gender confirmation surgery

WPATH WORLD PROFESSIONAL ASSOCIATION for TRANSGENDER HEALTH

Genital Reconstruction in Transgender Patients

- MtF:
  - ➢Vaginoplasty
- FtM:
  - ➢Metoidioplasty
  - ➢Phalloplasty

Urethroplasty is an integral part of transgender genital reconstruction

Genital Reconstruction in Transgender Patients

- MtF:
  - ➢Vaginoplasty
- FtM:
  - ➢Metoidioplasty
  - ➢Phalloplasty

Urethral Reconstruction – Penile Inversion Vaginoplasty

- Penile disassembly
- Excising some or all of the spongiosum posterior to the urethral meatus
- Reduction and spatulation of the isolated urethral "tube"
- Formation of an urethral opening (urethrostomy)

Urethral Reconstruction – Penile Inversion Vaginoplasty

Urethral Complications – Penile Inversion Vaginoplasty

- **Meatal stenosis:**
- Rare (2-3%)
- Late (>2-3 mos)

- Decreased force of urine, dribbling, retention

- Revision surgery (meatoplasty)
- CIC – long term (minority)

Genital Reconstruction in Transgender Patients

- MtF:
  - Vaginoplasty

- FtM:
  - Metoidioplasty
  - Phalloplasty

Techniques for FtM genital reconstruction

Surgical technique	Limitations	Benefits
Metoidioplasty (metaoidioplasty)	Short phallus, not capable of sexual penetration, does not always enable voiding while standing	Easy technique; reduced risk of complication; quick recovery time
Phalloplasty		
Radial forearm flap	Urinary tract problems; multiple stages; stiffener or permanent erection if bone is used; donor-site morbidity	Possible ability for sexual intercourse; possibly, best cosmetic result in penile reconstruction?
Anterolateral thigh flap	No long-term follow-up available; possibly similar limits to radial forearm flap	Easy to hide the donor-site disfigurement
Fibula flap	No long-term follow-up available in the past few years; possibly similar limits to radial forearm flap	Easy to hide the donor-site disfigurement; no need for an inflatable erection device
Latissimus dorsi flap	No long-term follow-up available; urinary tract not reconstructed; muscle or erection function questionable; donor-site morbidity; sexual and tactile sensitivity not reported	No need for an inflatable erection device
Suprapubic flap	Cosmetic appearance unsatisfactory; donor-site morbidity possible; urinary tract problems; fully or only partially sensate; stiffener or erection possible? Multiple stages	Easy technique

Selvaggi G. & Bellringer J., Nat. Rev. Urol., 2011

Genital Reconstruction in Transgender Patients

- MtF:
  - Vaginoplasty

- FtM:
  - Metoidioplasty
  - Phalloplasty

Metoidioplasty

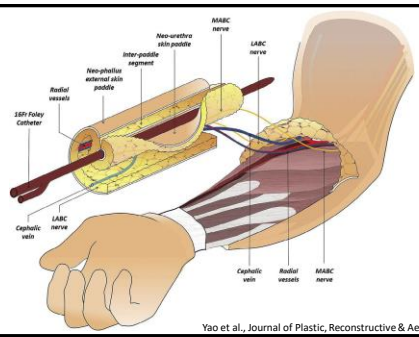
- A relatively small phallus not capable of penetrative intercourse
- Micturition in the standing position possible
- Native urethra is lengthened to reach the tip of the neo-glans

Metoidioplasty – Technique & Outcomes

- Standing urination - 94%
- Erections - 100%
- Urethral fistula - 17%
- Urethral stricture - 9%
- Overall satisfied - 93%

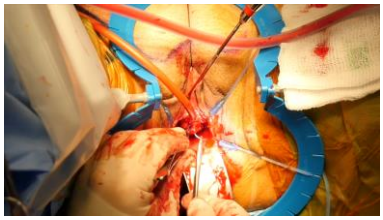
Genital Reconstruction in Transgender Patients

- MtF:
  - ➢ Vaginoplasty
- FtM:
  - ➢ Metoidioplasty
  - ➢ Phalloplasty

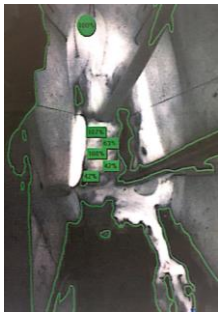


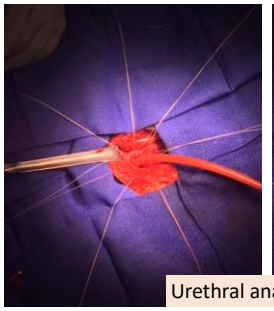
Yao et al., Journal of Plastic, Reconstructive & Aesthetic Surgery, 2018

Urethral Reconstruction - RFFF



Fluorescence angiography






Urethral anastomosis



Overall Complications – RFFF Phalloplasty

Table 3 Aggregate study size and selected outcome parameters for all studies reviewed.

Technique	N	Complete flap loss % (# of patients)	Partial flap loss % (# of patients)	Urethral fistula % (# of patients)	Urethral stricture % (# of patients)	Donor site complications % (# of patients)
Radial forearm free flap	925	1.5% (14)	7.4% (68)	29.6% (274)	8.2% (76)	Incomplete FTSG take requiring re-graft: 2.7% (25) Decreased strength/ sensation: 2.6% (24)
Fibular osteocutaneous flap	135	1.5% (2)	11.9% (16)	9.6% (13)	17% (23)	*nr*
ALT flap	8	0% (0)	12.5% (1)	37.5% (3)	12.5% (1)	*nr*
Latissimus dorsi flap	61	0% (0)	1.6% (1)	3.3% (2)	0% (0)	Skin graft loss at donor site: 1.6% (1)
Scapular free flap	35	2.9% (1)	0% (0)	8.6% (3)	0% (0)	*nr*
Suprapubic phalloplasty	26	0% (0)	3.8% (1)	*na*	*na*	*nr*

Yao et al., Journal of Plastic, Reconstructive & Aesthetic Surgery, 2018

Urethral Complications – RFFF Phalloplasty

- Most common reason for additional surgery;
  - Urethral fistula;
    - Possible healing with urinary diversion only
    - Excision + flap interposition + non-overlapping multi-layer closure
  - Urethral stricture;
    - Type of repair dependent upon multiple factors…
    - EPA, one stage or staged augmented, perineal urethrostomy, meatotomy/meatoplasty

CONCLUSIONS - I

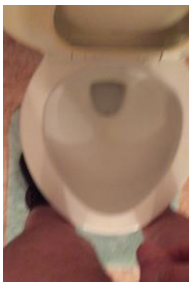
ICS 2018 PHILADELPHIA

- Increasing demand for gender confirming surgery
- Genital reconstruction as the last step of transitioning
- Urethroplasty is a key component of transgender genital reconstruction
- MtF: urethral liberation, shortening, spatulation and integration into neo-introitus

CONCLUSIONS - II

ICS 2018 PHILADELPHIA

- FtM: native urethral lengthening, tubularization and anastomosis (in RFFF phalloplasty)
- Urethral complications are not uncommon, may necessitate revision surgery
- Transgender genital (urethral) reconstruction requires a multidisciplinary team approach



THANK YOU VERY MUCH
FOR YOUR ATTENTION…!

History

DML, a 67 year old lady
Stress Urinary incontinence for 10 years and totally incontinent for 3 years

The referral letter just gynecological surgery 40 years ago and colpocleisi 10 years as well as 3 failled procedures, vaginal and abdominal, TOT 3 years ago. UTI last year

UD

Failled attempt for difficult to find urethral meatus (sic)

Physical examination

Athrofic gentalia, difficult to examine due local pain, no meatus identified.

Management

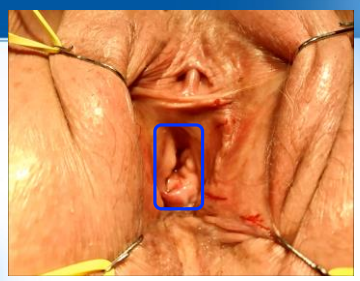
What to do?

CT

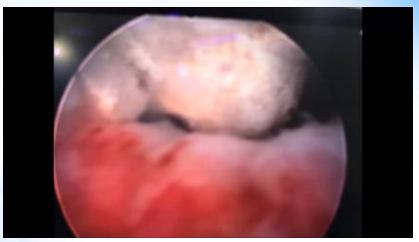
Management

Physical examination under anesthesia

Cystolithotomy



Megaurethra



Follow up

- PO 20, incontinence gretly improved
- Mild SUI