W35: Confirmation Surgery in Gender Dysphoria: current state and future developments

Workshop Chair: Ervin Kocjancic, United States
15 September 2017 14:00 - 15:30

Ervin Kocjancic, MD (Department of Urology, University of Illinois at Chicago, USA)
Loren S. Schechter, MD, FACS (Plastic Surgery, Chicago, USA)

Start	End	Topic	Speakers
14:00	14:05	Introduction	Ervin Kocjancic
14:05	14:15	The Multidisciplinary Nature of Gender Confirmation Surgery and the Standards of Care (WPATH, version 7)	Loren Schechter
14:15	14:30	Basic of cis male and female anatomy for gender confirmation surgery	Ervin Kocjancic
14:30	14:40	Metaidoioplasty	Loren Schechter
14:40	15:00	Phalloplasty: what flap for what patient	Loren Schechter
15:00	15:10	Possible strategy for urethral reconstruction and related voiding dysfunctions	Ervin Kocjancic
15:10	15:15	Voiding dysfunction after phalloplasty surgery	Ervin Kocjancic
15:15	15:25	Vaginoplasty: what are the current available options	Loren Schechter
15:25	15:30	Questions	All

Speaker Powerpoint Slides

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Aims of Workshop

The surgical care of individuals suffering from gender dysphoria has undergone rapid transformation over the last several years. While not all individuals with gender dysphoria need or desire surgery, many do. With an increased recognition as to the importance of surgical therapy, coupled with improved access to care, more individuals are seeking surgery.

Congruent genitalia allow an individual to experience harmony between their body and their self identity, appear nude in social situations without violating taboos (ie health clubs, physician offices, etc…), and have legal identification concordant with their physical appearance.

The World Professional Association for Transgender Health (WPATH) developed the The Standards of Care to help provide "the highest standards" of care for individuals. The Standards of Care state that the overarching treatment goal is "…lasting personal comfort with the gendered self, in order to maximize overall health, psychological well-being and self-fulfillment." Toward this end, gender confirmation surgery helps to provide the appropriate physical morphology and alleviate the extreme psychological discomfort of the patient.

This course will cover the state-of-the-art in gender confirmation surgery. Topics covered will include the multi-disciplinary nature of care, The Standards of Care (WPATH, SOC, version 7) as well as the various genital surgical procedures. This will entail a description of the preoperative, intraoperative, and post-operative management of individuals undergoing both transfeminine and transmasculine surgical procedures. In addition, both prevention and management of complications will be addressed.

The transfeminine genital surgery lecture will include vaginoplasty, both penile inversion and intestinal vaginoplasty approaches will be discussed. This topic covers clitoroplasty, labiaplasty (for both labia majora and minora), urethroplasty, and dissection of the vaginal space.

The transmasculine procedures include metoidioplasty (lengthening of the hormonally hypertrophied clitoris) and phalloplasty (radial forearm and anterolateral thigh flap techniques). Within these lectures, construction of the perineal and penile urethra will be described, as well as scrotoplasty, glansplasty, and the staged placement of testicular implants and penile prostheses. Strategies to minimize and prevent complications will be reviewed. In addition, secondary procedures such as mons lift/reduction will also be discussed.

Learning Objectives

To inform about indications, surgical possibilities and limits of confirmation surgery in gender dysphoria (transsexualism) male to female and female to male. The delegates will familiarise with the possible voiding dysfunction commonly associated with the above mention procedures as well as sexual dysfunction.

Learning Outcomes
-Familiarise the current definitions of the WPATH
-Learn how to properly manage individuals with gender dysphoria
-Familirise with the common surgical techniques used for the confirmation surgery
Recognize and treat the frequent voiding dysfunction associated with the gender confirmation surgery

Suggested Learning before Workshop Attendance
www.wpath.org.

Suggested Reading
1. An Update on the Surgical Treatment for Transgender Patients. Colebunders B, Brondeel S, D'Arpa S, Hoebeke P, Monstrey S. Sex Med Rev. 2016 Sep 10. pii: S2050-0521(16)30032-4. doi: 10.1016/j.sxmr.2016.08.001. [Epub ahead of print] Review. PMID: 27623991
2.Gender Confirmation Surgery: A New Frontier in Plastic Surgery Education. Schechter LS, Cohen M. Plast Reconstr Surg. 2016 Oct;138(4):784e-5e.

Other Supporting Documents, Teaching Tools, Patient Education etc

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Affiliations to disclose†:

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Colopast
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Medtronic
Cogentix

† 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
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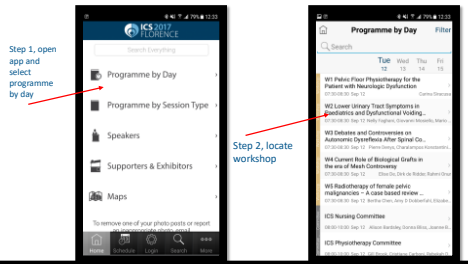

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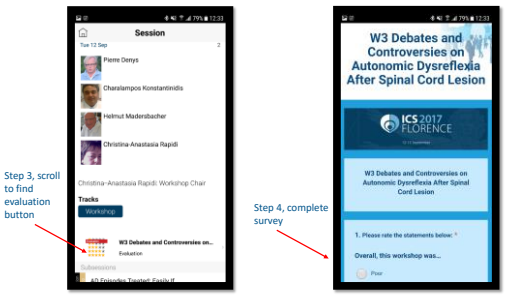

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Gender Dysphoria

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Gender dysphoria (GD; Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) is characterizedby a marked discrepancy between one's birth-assigned sex and one's gender identity and expression and isassociated with immense bodily and emotional distress

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Gender Nonconformity

Extent to which a person's gender identity, role, or expression differs from cultural norms

Only some gender nonconforming people experience gender dysphoria at some point in their lives

Gender Dysphoria

Discomfort or distress caused by a discrepancy between a person's gender identity and their sex assigned at birth

Long transitioning process

To facilitate this change, many patients seek surgery so that their bodies resemble their chosen gender.

Gender reassignment surgery refers to all surgical procedures that a patient wishes to receive to resemble the appearance of the opposite gender.

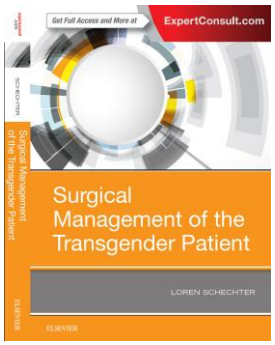
Sex reassignment surgery is part of gender reassignment surgery and refers only to the reconstruction of the genital area.

Currently, the guidelines on gender reassignment are published by the

World Professional Association for Transgender Health (WPATH),

and the standards of care are updated regularly and available for download from the WPATH website

INTRODUCTION
ERVIN KOCJANCIC
14:05
THE MULTIDISCIPLINARY NATURE OF GENDER CONFIRMATION SURGERY AND THE STANDARDS OF CARE (WPATH, VERSION 7)
LOREN SCHECHTER
14:15
BASIC OF CIS MALE AND FEMALE ANATOMY FOR GENDER CONFIRMATION SURGERY
ERVIN KOCJANCIC
14:30
METAIDOIOPLASTY
LOREN SCHECHTER
14:40
PHALLOPLASTY: WHAT FLAP FOR WHAT PATIENT
LOREN SCHECHTER
15:00
POSSIBLE STRATEGY FOR URETHRAL RECONSTRUCTION AND RELATED VOIDING DYSFUNCTIONS
ERVIN KOCJANCIC
15:10
VOIDING DYSFUNCTION AFTER PHALLOPLASTY SURGERY
ERVIN KOCJANCIC
15:15
VAGINOPLASTY: WHAT ARE THE CURRENT AVAILABLE OPTIONS



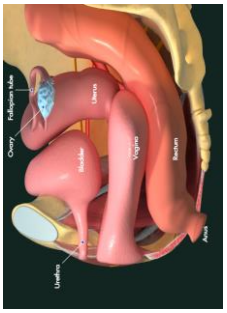
Vaginal Anatomy For Urologist

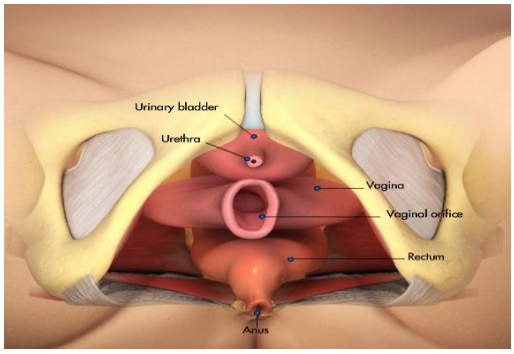
ERVIN KOCJANCIC
Director of Pelvic Health and Reconstructive Urology
Department of Urology
University of Illinois at Chicago

Why anatomy?

- Familiarize with normal pelvic anatomy
- Understand the patho-physiology of pelvic surgery
- Select the most rational procedure

Pelvic organs





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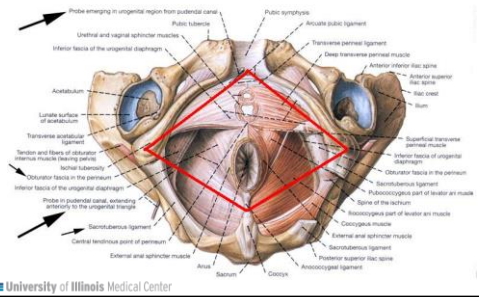
Pelvic floor

Perineum with Pudendal Canal Probe, Female



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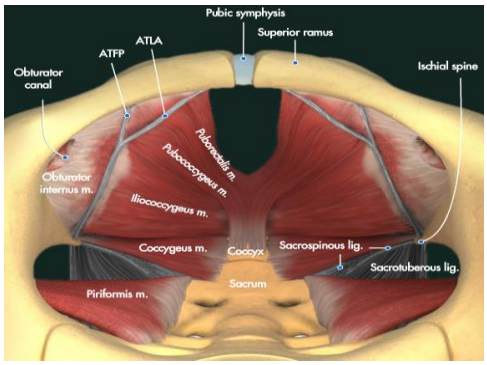

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The Uro-Genital diaphragm

- Deep Transverse penireal muscle
- Superficial Transverse Pernienal muscle
- Ischio cavernous muscle
- Bulbo- cavernous muscle

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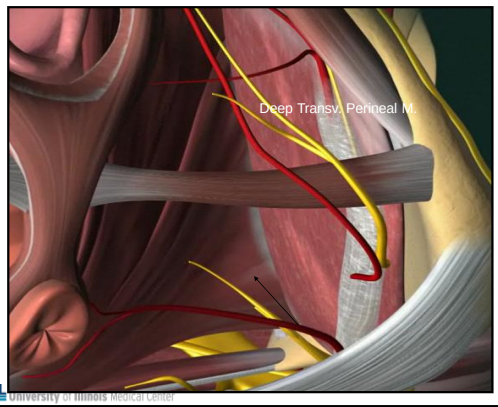

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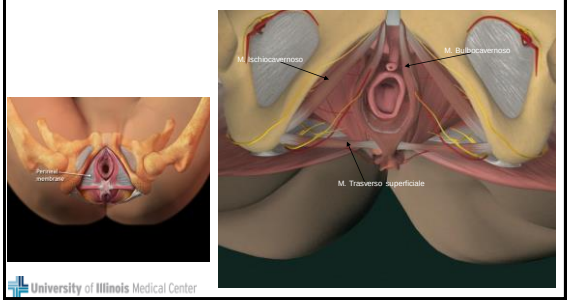

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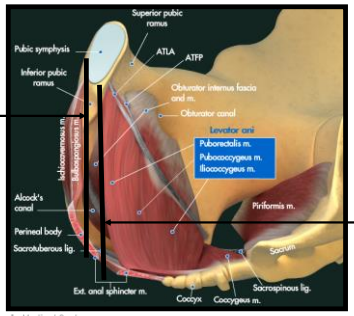
Pelvic floor

Perineum



Pelvis

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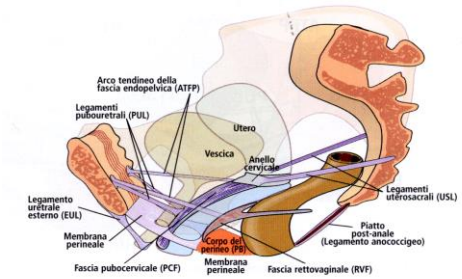
Suspension mechanism



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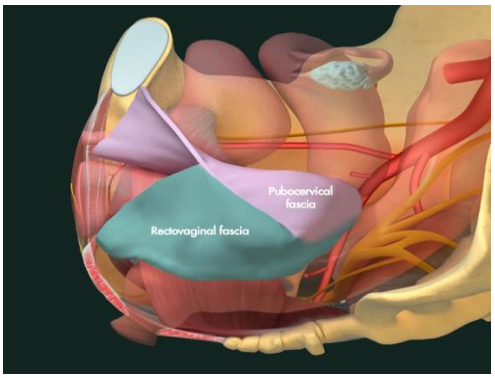

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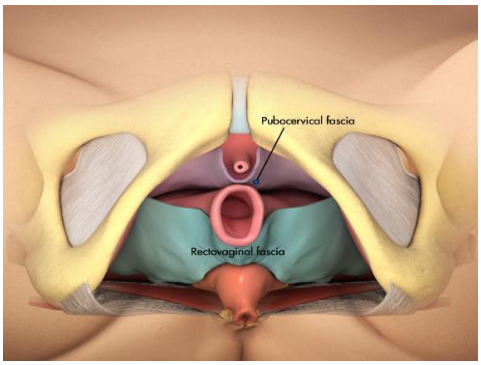

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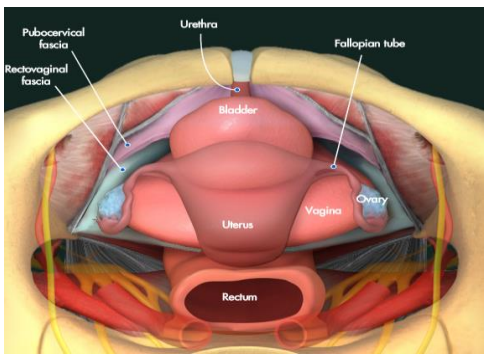

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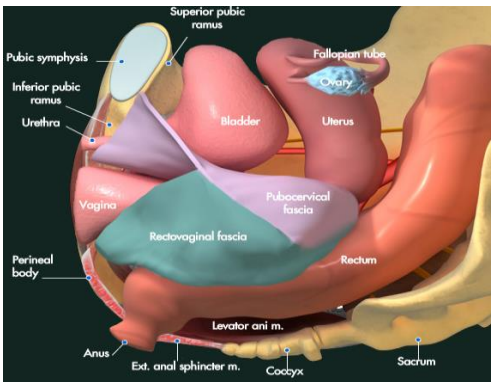

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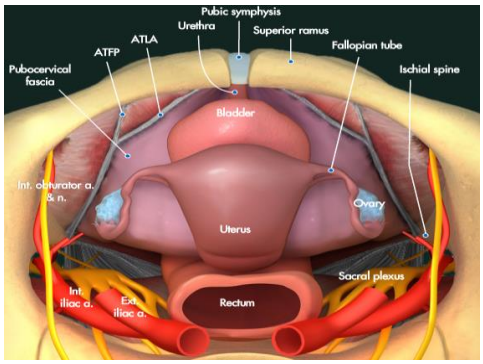
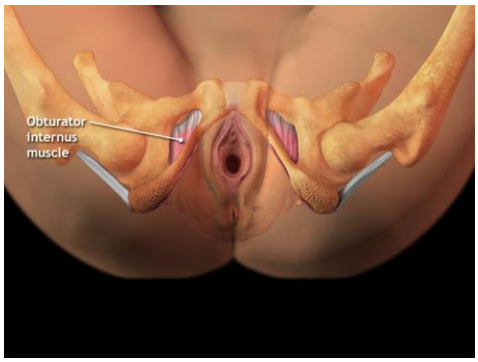
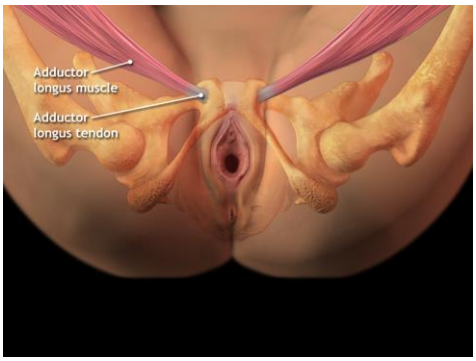
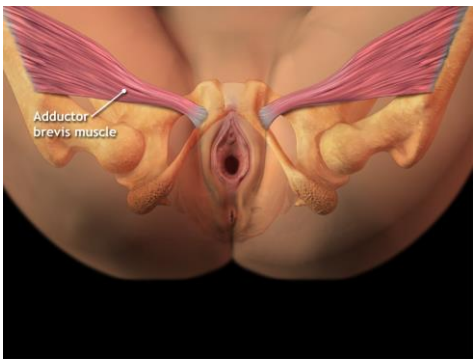


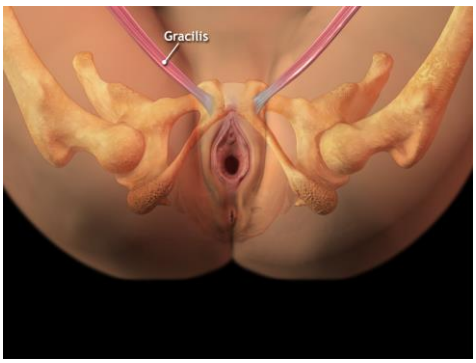
Pelvic floor

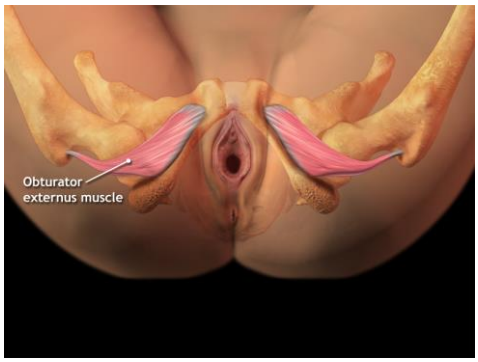
External muscles











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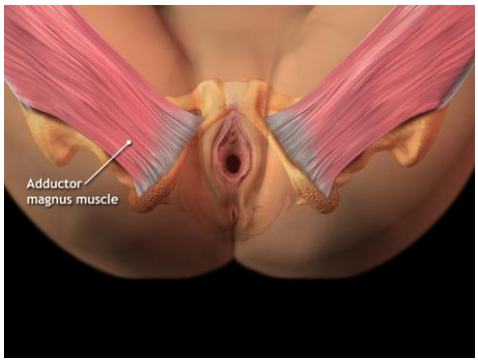

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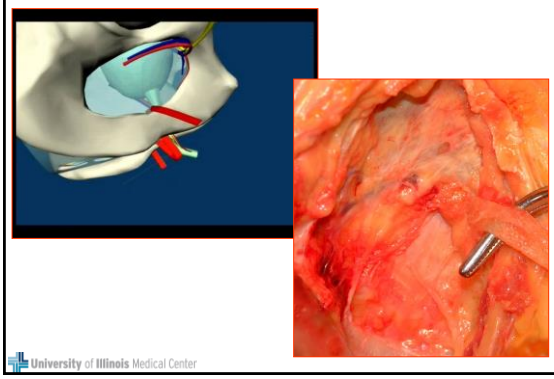
Obturator Foramen



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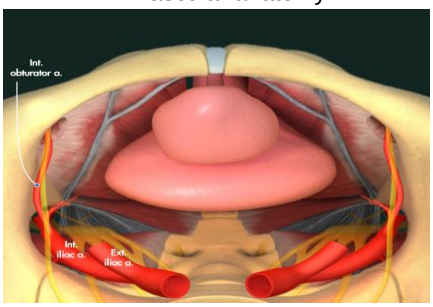
Pelvic floor
Vascular anatomy



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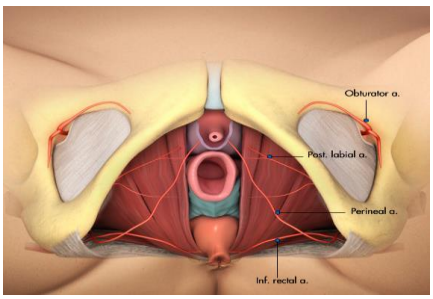
Vascular anatomy



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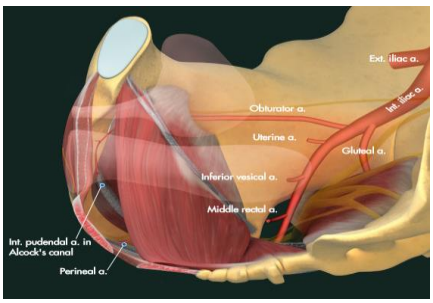

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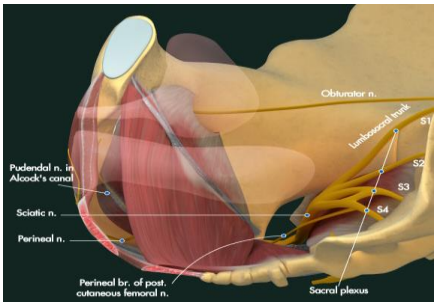
Pelvic floor
Nerve anatomy



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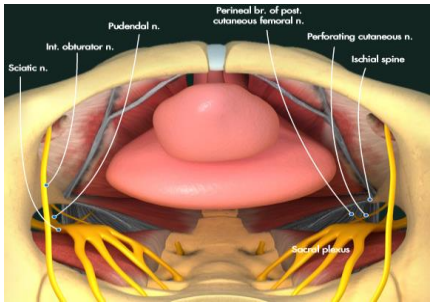
Pelvic floor
Nerve anatomy



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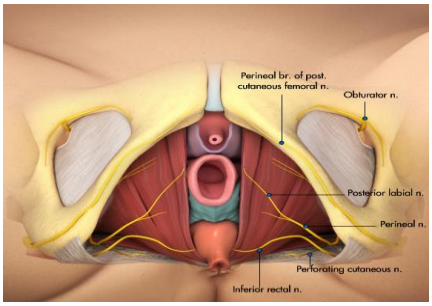
Pelvic floor
Nerve anatomy



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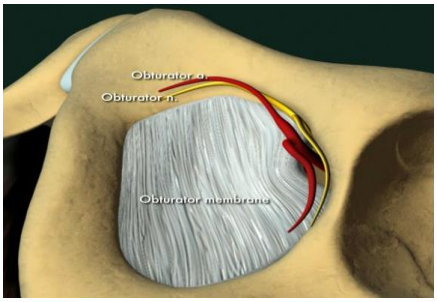
Pelvic floor
Nerve anatomy



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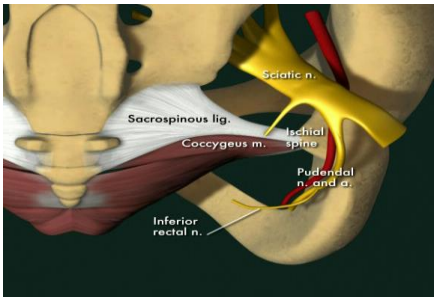
Pelvic floor
Nerve anatomy



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Ischial spine

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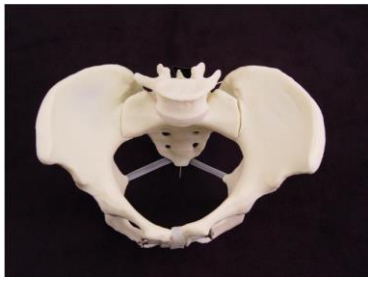

The ischial spines are the narrowest part of the pelvis, are typically 11 cm apart

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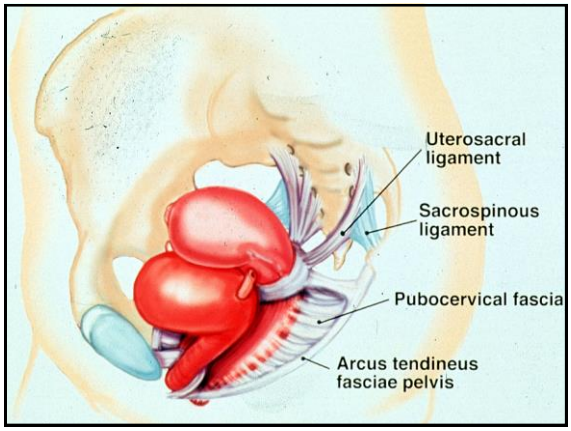
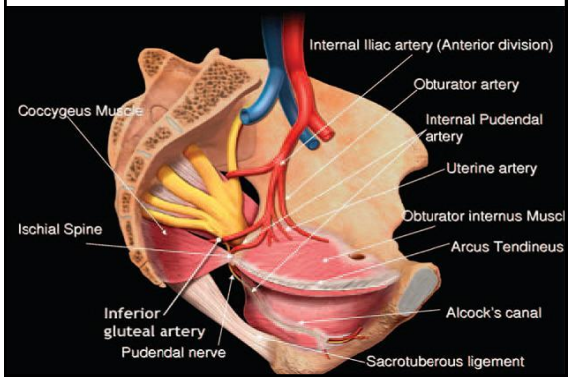


Relevant Structures



Pudendal Nerve

Sacrum

Stay Medial

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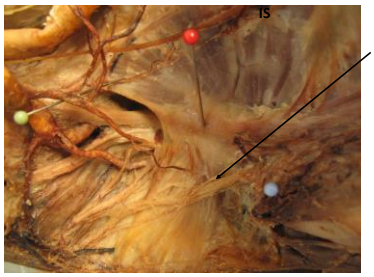
Levator ani nerve

Sacrum

Pubis



N. Levator ani

Located 2 finger breast Medial to the spine

Possible role in De novo anterior POP

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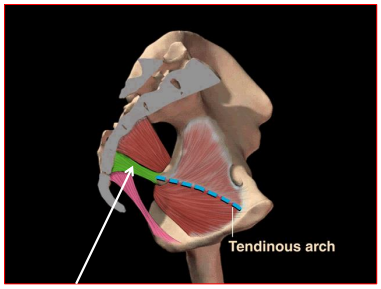
"White Line" & Sacrospinous Ligament



Sacrospinous Ligament

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Surgical Anatomy

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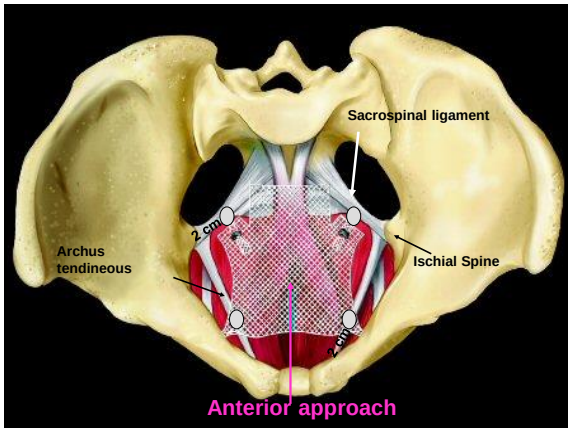

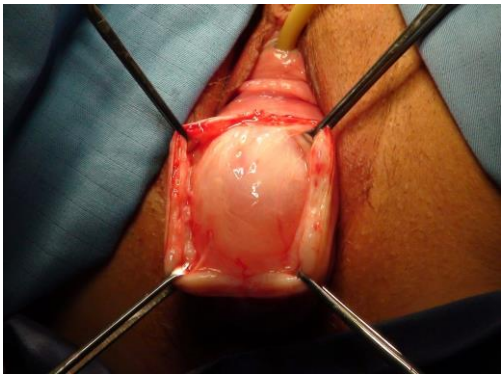

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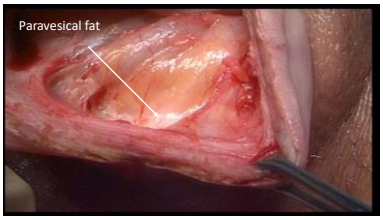

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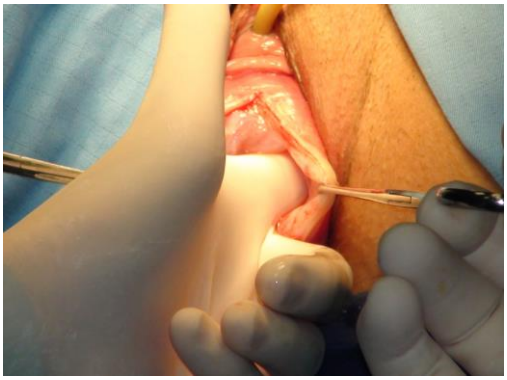

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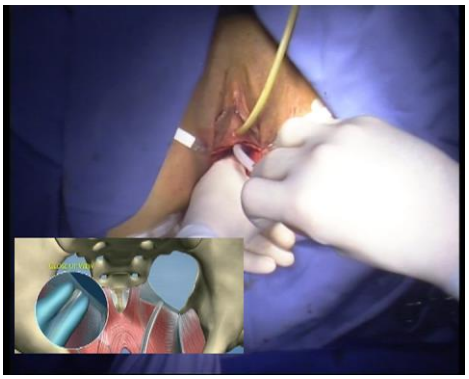

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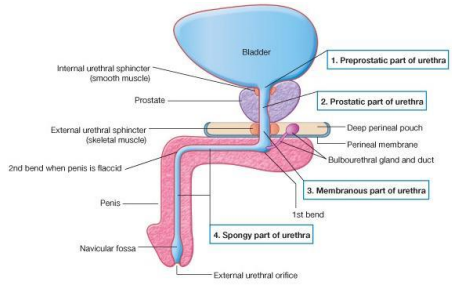
Male Pelvic anatomy



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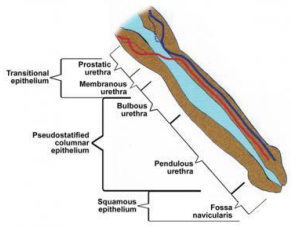

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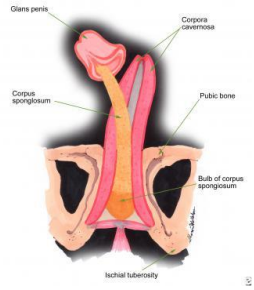

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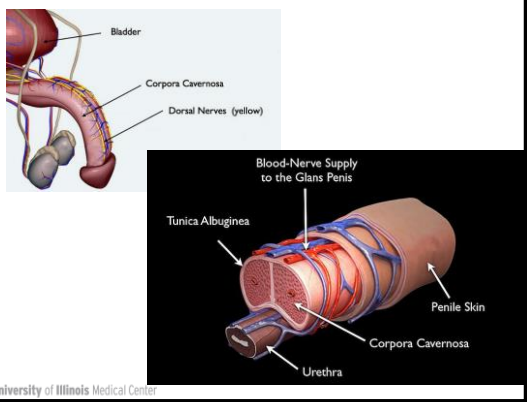

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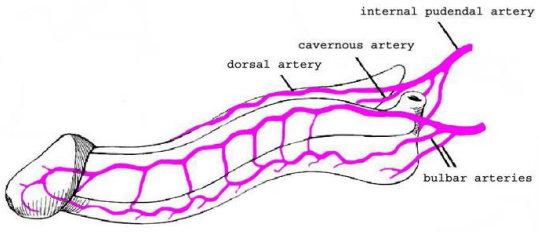

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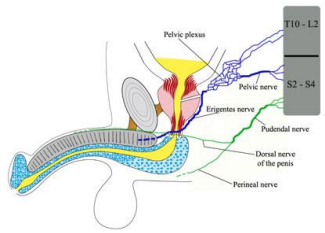

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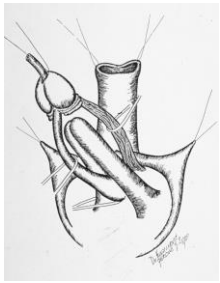
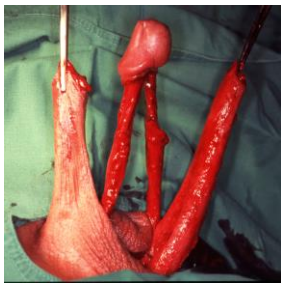

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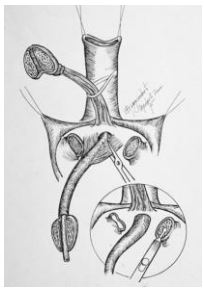
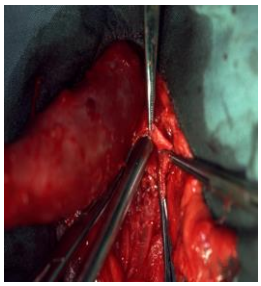

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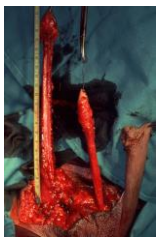
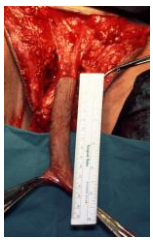

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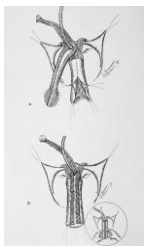

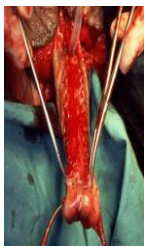

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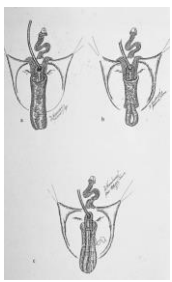
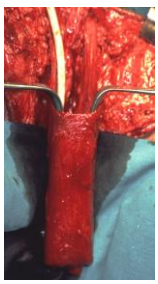
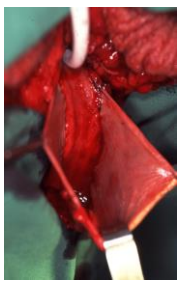

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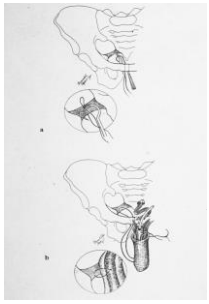

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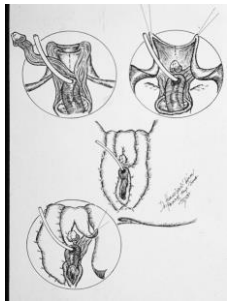

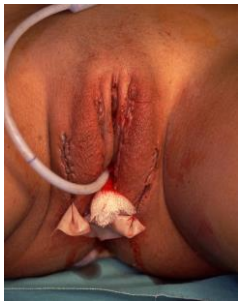

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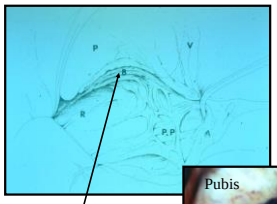

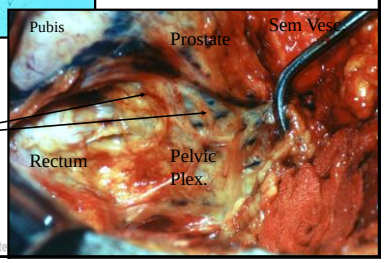

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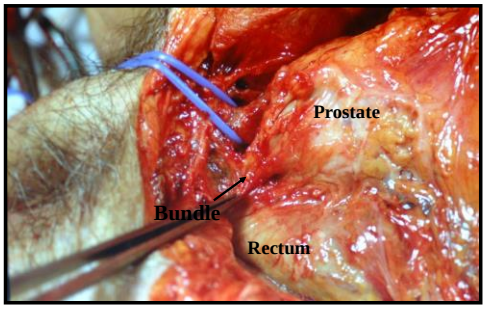
N-V Bundle ad apex Prostate



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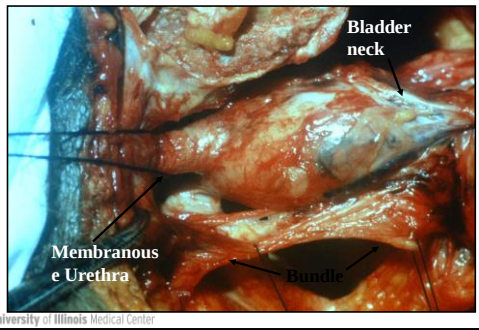

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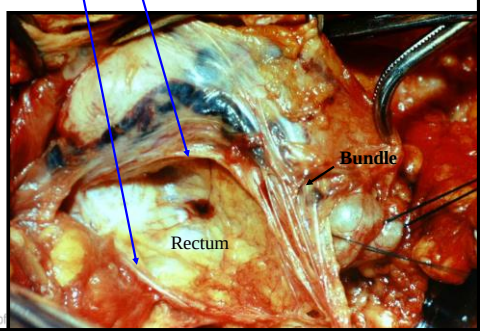
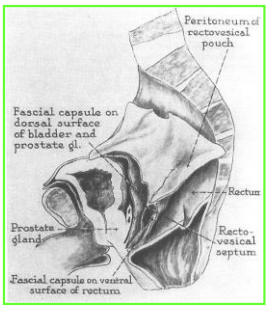
Incision of Endopelivc Fascia



University of

Cunéo e Veau (1899)

"The fascia described Denonvilliers originates form the fusion of two peritoneal folds that delimitates the peritoenum – rectum-vescicl pouch in embrio



CUNEO B., VEAU V.
De la signification morphologique des aponévroses périvésicales.
J. Anat. Paris, 35 : 235, 1899.

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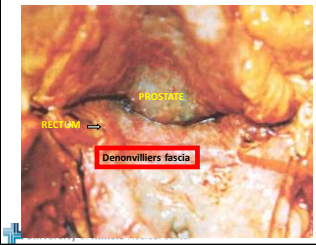
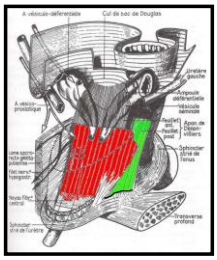
TRIANGULAR FASCIA Tthat separates the seminal trigone and the prostate from the rectum





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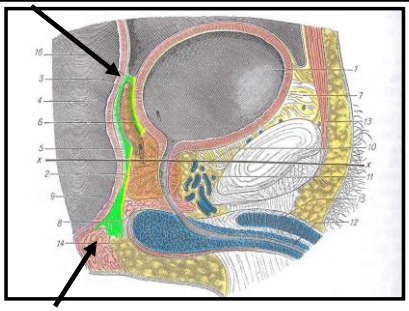
Sup. Margin: recto vescical pouch



Inf. Margin : fasciae perinealis media

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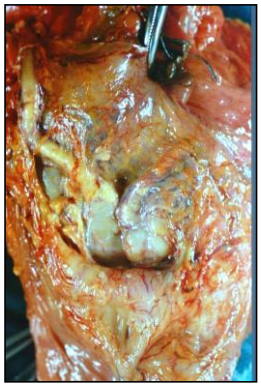

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Albert Einstein

"There is nothing that is a more certain sign of insanity than to do the same thing over and over and expect the results to be different."

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Know your anatomy before start dealing with Pelvic Medicine!

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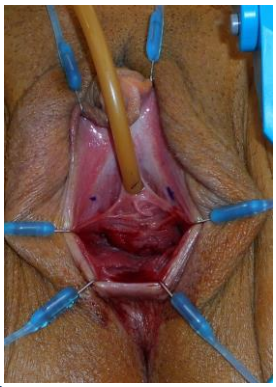
Urethral lenghtening

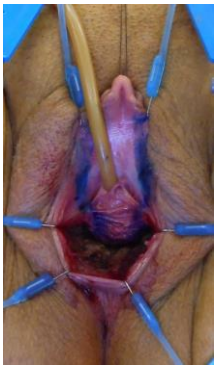
Dr. Kocjancic

Urethral reconstruction

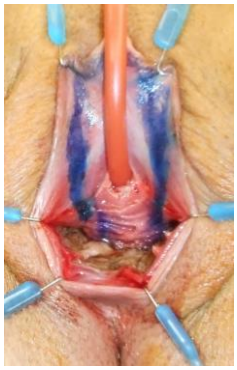


Perineal exposure:

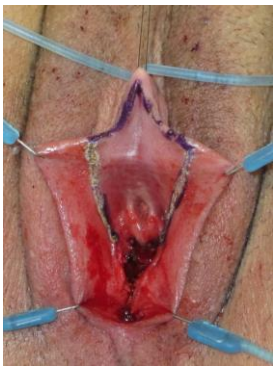
Vestibulum and vagina will form proximal urethra



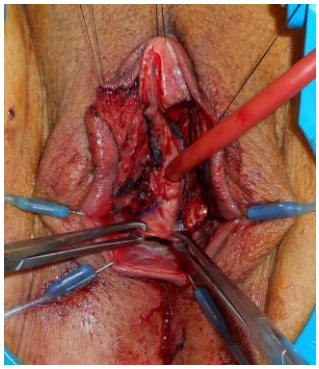
Marking of membranous urethra & vaginal flap



Vaginectomy entails removal of epithelium with preservation of muscular layer



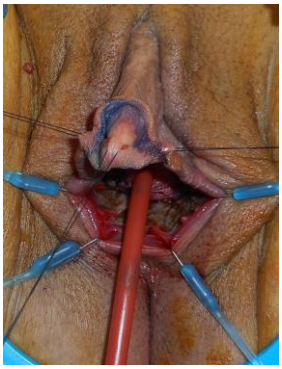
Vestibular incisions extend on to ventral clitoris



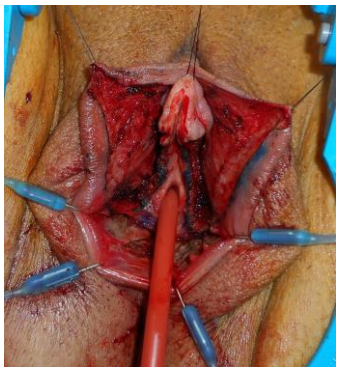
Elevation of vaginal flap & tubularization of vestibulum

Extension of incision on to ventral clitoris

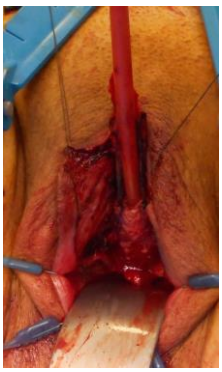
Vestibulum remains attached dorsally to corporal bodies



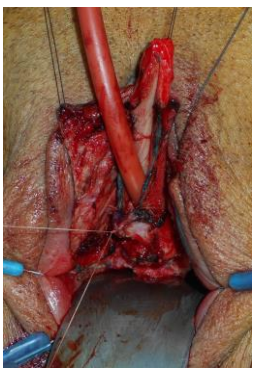
Incision for clitoral degloving



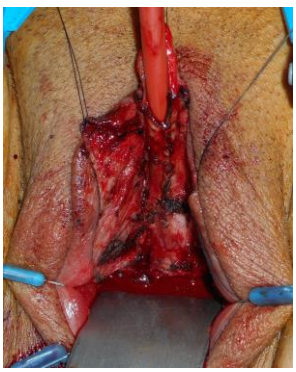
Clitoris degloved



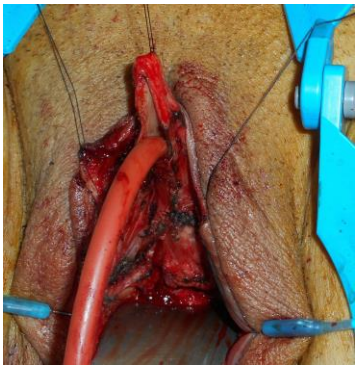
Vaginal flap reflected dorsally for construction of proximal urethra



Tubularization of vestibulum



Construction of membranous urethra



Membranous urethra constructed with vaginal flap and vestibulum

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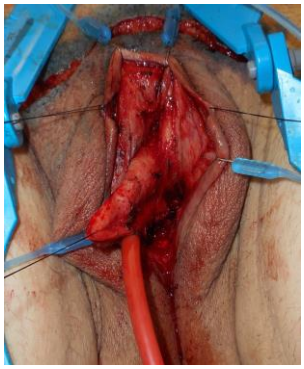

Clitoris de-epithelialized

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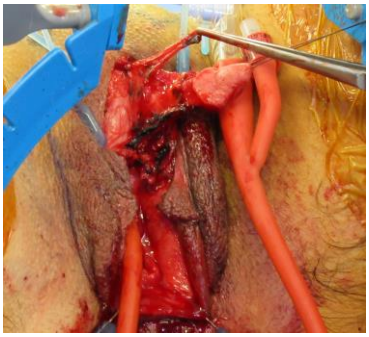

Preparation of dorsal clitoral nerve
-nerve harvested on ipsilateral side of forearm flap (contralateral to vascular anastomosis)

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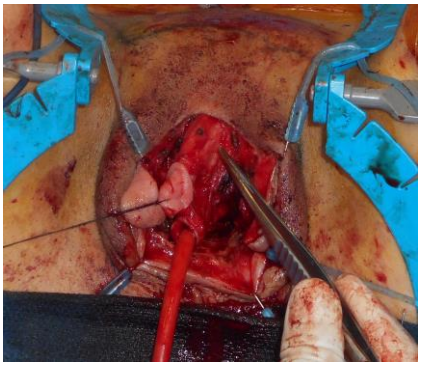


Relationship of clitoral nerve, urethra, and glans clitoris

University of Illinois Medical Center

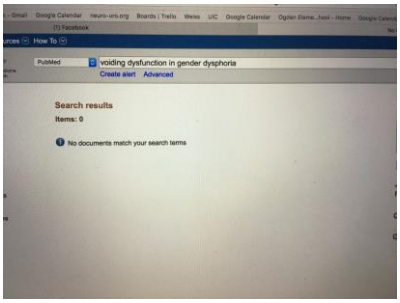
Dr. Schechter

Perineal Markings

University of Illinois Medical Center

Urethral Complications & voiding dysfunctions

ERVIN KOCJANCIC
Lawrence S. Ross Professor Urology
Vice Chair of Department of Urology
Director of Pelvic Health and Reconstructive Urology
University of Illinois at Chicago



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Indian J Plast Surg. 2013 May-Aug; 46(2): 283–293.
doi: 10.4103/0970-0358.118606

Phalloplasty: The dream and the reality

Mamoon Rashid and Muhammad Sarmad Tamimy[1]

European Urology
European Urology 44 (2003) 611–614

Urethroplasty in Female-to-Male Transsexuals

Dorothea Rohrmann, Gerhard Jakse*
Urological Clinic, University Clinic Aachen, Pauwelsstrasse 30, D-52057 Aachen, Germany
First published online 22 July 2003

58% of patients with a newly constructed urethra develops fistulae and/or stricture

Location Fistulae

- Anastomosis phallic and bulbar urethra (majority)
- Between the bulbar and the female urethra

Location Stricture

- Anastomosis phallic and bulbar urethra (majority)
- Between the bulbar and the female urethra

Urethral Fistulae

- Suprapubic abdominal flaps: 55% fistula rate
- Local Flaps: 15 – 22% fistula rate
- Pedicled flaps (ALTF): < 10%

Typical location: Junction of the neo-urethra and Native Urethra

Urethral Stricture

- Suprapubic abdominal flap 64%
- RFFF 31%
- Mean stricture length 3.5cm
- Stricture location:
  - Anastomosis (most common)
  - Meatus
  - Multiple sites
  - Phallic urethra

Reconstructive Urology

Long-term outcome of forearm flee-flap phalloplasty in the treatment of transsexualism

Albert Leriche, Marc-Olivier Timsit, Nicolas Morel-Journel, André Bouillot, Diala Dembele and Alain Ruffion
Department of Urology, Henry Gabrielle Hospital, University of Lyon I, Lyon, France
Accepted for publication 14 September 2007

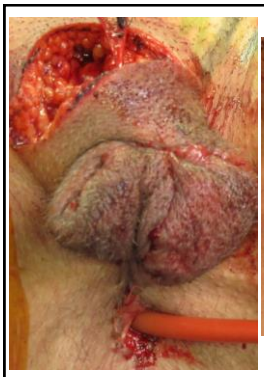
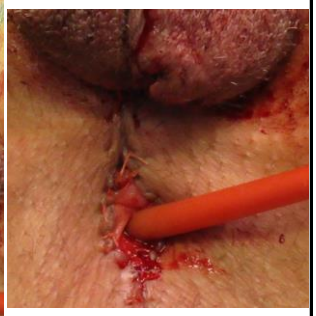
1986 – 2002:
56 phalloplasty with Radial forearm
Tube in tube distally; tabularized vaginal urethral lengthening prox.
68% received an IPP
1 Plastic surgeon 1 Urologist

TABLE 1
Complications of the flap, prosthesis and urethra

Complication	*N* (%)
Flap	
Loss	3
Cephalic vein thrombosis	1
Arterial ischaemia	1
Infection	5
Distal limited necrosis	2
Haematoma	2
Total	14 (25)
Prosthesis and urethra	
Urinary fistula requiring perineal urethrostomy	7
Urinary fistula with conservative treatment	8
Urinary retention	3
Prosthesis change	8
Prosthesis explantation	3
Total	29 (55)

Conclusion …

- Urethroplasty plays a major role in overall morbidity …
- Half of late complications were urethral strictures and urinary fistulae
- Most common area of urethral complications at the distal anastomosis
- Perineal urethrostomy reccomended

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Urethral Stricture

- Suprapubic abdominal flap
  64%
- RFFF
  31%
- Mean stricture length
  3.5cm
- Stricture location:
  - Anastomosis (most common)
  - Meatus
  - Multiple sites
  - Phallic urethra

Stricture recurrence rate after various treatment is up to 61.9%

Lumen N, Monstrey S, Goessaert AS, Oosterlinck W, Hoebeke P. Urethroplasty for strictures after phallic reconstruction: A single-institution experience. Eur Urol. 2011;60:150–8

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Therapeutic Advances in Urology

Fasciocutaneous flap reinforcement of ventral onlay buccal mucosa grafts enables neophallus revision urethroplasty

Stelios C. Wilson*, John T. Stranix*, Kiranpreet Khurana, Shane D. Morrison, Jamie P. Levine and Lee C. Zhao

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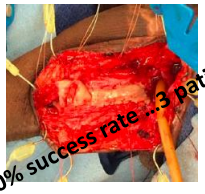
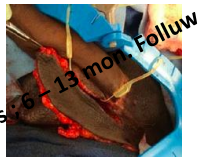


100% success rate …3 patients ; 6 – 13 mon. Folluw up

BMG

+

Flap

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Urethral lengthening

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Urethral Reconstruction

Single or staged approach

I. Pendulous urethra	II. Fixed urethra:
Prelamination	Local Vagina
Prefabrication	Labial flap
Tube – in Tube	
Separate flaps	

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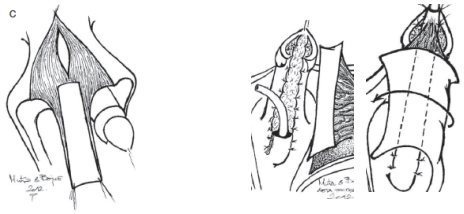
Comparison of Two Different Methods for Urethral Lengthening in Female to Male (Metoidioplasty) Surgery

Miroslav L. Djordjevic, MD, PhD and Marta R. Bizic, MD
Department of Urology, School of Medicine, University of Belgrade, Belgrade, Serbia
DOI: 10.1111/jsm.12108



Group I:
Buccal mucosa + Dorsal clitoral skin

Group II:
Buccal mucosa + Labbia minora flap

Table 1 Comparison of two different methods for urethroplasty in metoidioplasty

Group	Number of patients	Voiding while standing	Minor complications	Fistula	Stricture
I	49	43	17	7	3
II	158	147	42	9	3
Z-test		−2.36	1.10	1.97	*
$\alpha = 0.05$		$P < 0.05$	$P > 0.05$	$P < 0.05$	*

conclusions …

- Urethral reconstruction remains a great challenge…
- Buccal mucosa graft and labia minora flap appears to provide advantages
- Permanent follow –up is necesary as urethral complications can occur many months or years post.op

The role of colpocleisis with urethral lengthening in transsexual phalloplasty

Ralph R. Chesson, MD,[c] David A. Gilbert, MD,[a] Gerald H. Jordan, MD,[b] Steven M. Schlossberg, MD,[b] Gerald T. Ramsey, PhD, and Deborah M. Gilbert, RN[a]
Norfolk, Virginia

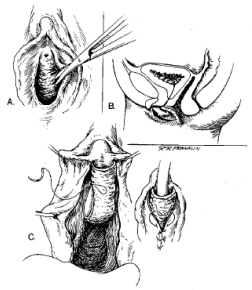
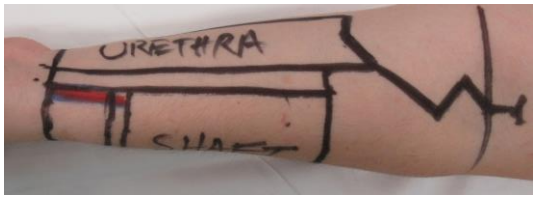


Fig. 1. **A** and **B**, Anterior wall of vagina is preserved while rest of vaginal mucosa is removed. **C**, This mucosa is rolled up to provide extension of urethra to base of clitoris. Labia minora are then sutured in the midline and urethra is closed over for healing phalloplasty.

- Extension of the urethra to the clitoris using vaginal mucosa reduces greatly the risk of Urethral Fistula formation
- Colpolcaisis offers a great vascular support for the anastomosis site
- Performed as a stage procedure



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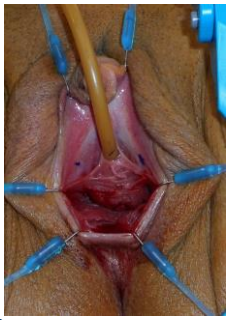
Vestibular neo-urethra



Perineal exposure:

Vestibulum and vagina will form proximal urethra

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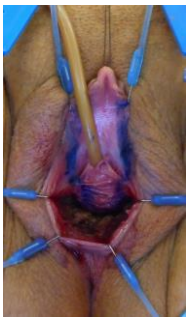
Vestibular neo-urethra



Marking of membranous urethra & vaginal flap

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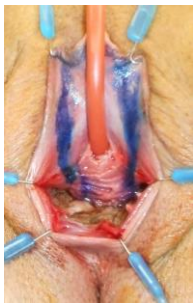
Vestibular neo-urethra



Vaginectomy entails removal of epithelium with preservation of muscular layer

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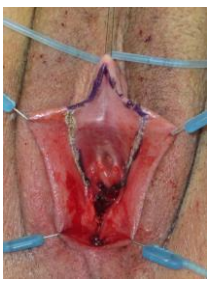
Vestibular neo-urethra



Vestibular incisions extend on to ventral clitoris

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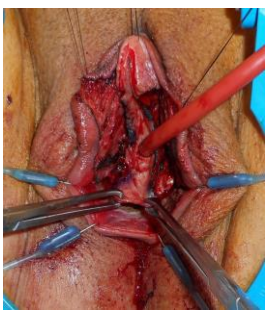
Vestibular neo-urethra



Elevation of vaginal flap & tubularization of vestibulum

Extension of incision on to ventral clitoris

Vestibulum remains attached dorsally to corporal bodies

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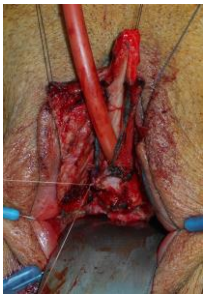
Vestibular neo-urethra



Tubularization of vestibulum

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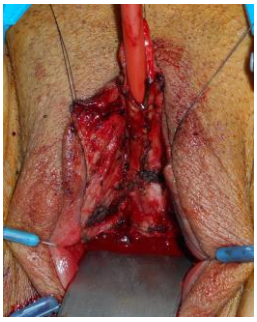
Vestibular neo-urethra



Construction of membranous urethra

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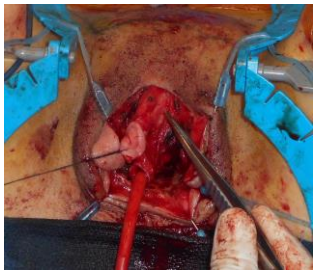
Vestibular neo-urethra



Relationship of clitoral nerve, urethra, and glans clitoris

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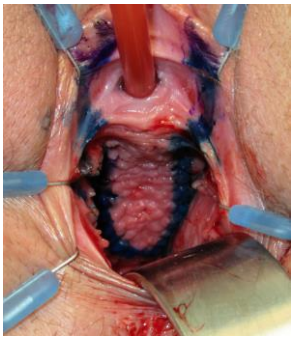
Vaginal flap



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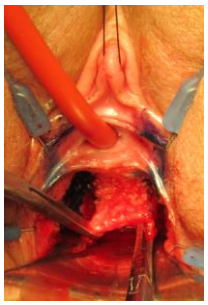
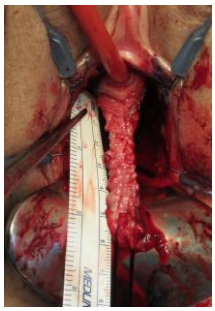
Vaginal flap





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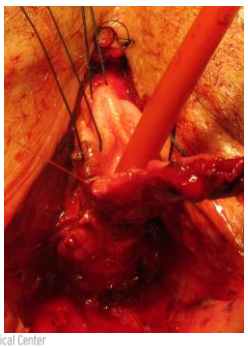
Vaginal flap



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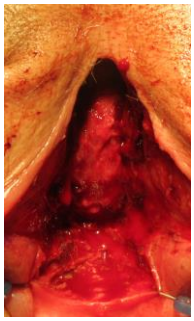
Vaginal flap



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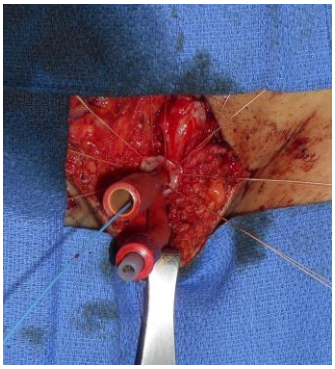

Construction of membranous urethra & clitoral fixation

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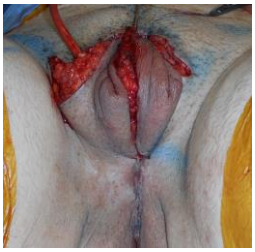

Scrotum Closure

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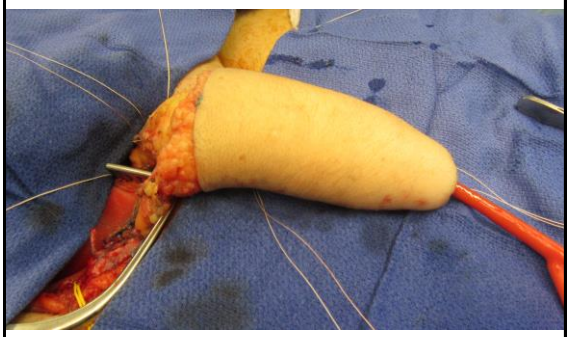

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Surgery for Urethral Stricture Disease after Radial Forearm Flap Phalloplasty – Management Options in Gender Confirmation Surgery

UI Health

THE CENTER FOR GENDER CONFIRMATION SURGERY

Neha R. Malhotra[a], Nikita Abhyankar[a], Valerio Iacovelli[a,b], Loren Schechter[a,b], Ervin Kocjancic[a,b]

[a]University of Illinois at Chicago, College of Medicine, Department of Urology, [b]Center for Gender Confirmation Surgery, Louis A. Weiss Memorial Hospital

Introduction

- Increasing requests for phalloplasty
- Urethral complications are not uncommon, including stricture or fistula
- Ongoing need for assessment of techniques and outcomes

Methods

- Study design: Retrospective cohort study of urethral complications following radial forearm flap phalloplasty
  - Two institutions
  - January 2015 to July 2016
  - Multidisciplinary team: Plastic Surgeon and Reconstructive Urologist
- Eight patients undergoing urethroplasties for stricture after radial forearm flap phalloplasty
- Mean time to diagnosis 12 weeks (+/- 8 weeks)
  - Based on symptomatic complaints
- Underwent retrograde urethrogram, antegrade or retrograde urethroscopy
  - Anastomotic strictures most common

Type & Location of Urethral Stricture	
Native Urethra-Neourethral Anastomosis	6 (75%)
Neourethra only	2 (25%)
Inflammatory Polyp	1 (12.5%)
Hair bearing	1 (12.5%)

Results

Figure 2. Buccal mucosa on-lay graft

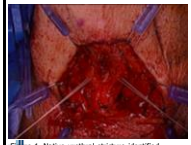

Figure 1. Native-urethral stricture identified

- Options for urethroplasty
  - One or two staged
  - With or without buccal mucosa

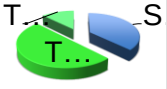

Figure 3. Distribution of urethroplasties by type

- Three month follow-up
  - Three recurrent strictures (37.5%)
  - 2 treated with laser incision
  - 1 repeat urethroplasty

Conclusions

- Urethral reconstruction may require additional procedures
- Results suggest traditional techniques are viable treatment options
- Single versus two stage urethroplasty with buccal mucosa may be helpful in the management of urethral strictures and fistulas after phalloplasty

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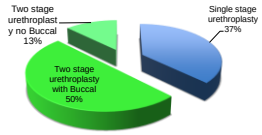
Table 1. Location of Urethral Stricture	
Native Urethra-Neourethral Anastomosis	6 (75%)
Neourethra only	2 (25%)
Inflammatory Polyp	1 (12.5%)
Hair bearing	1 (12.5%)



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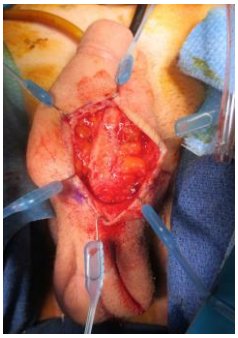

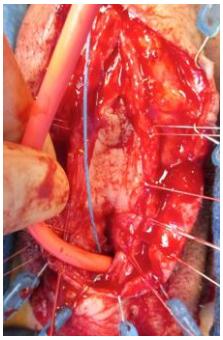

Dorsal Buccal mucosa graft

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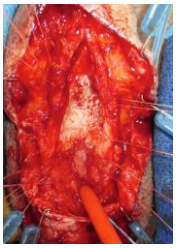

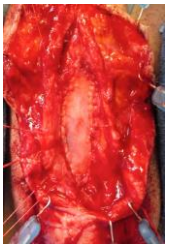

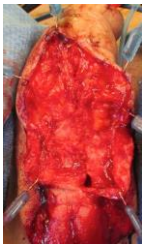

Ventral buccal mucosa graft, & layered closure

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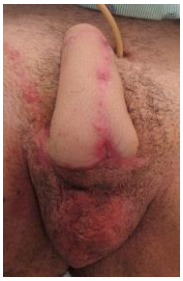

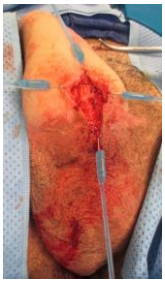

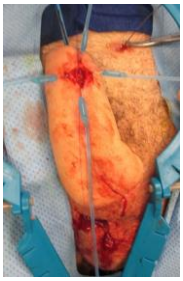

Fistula repair

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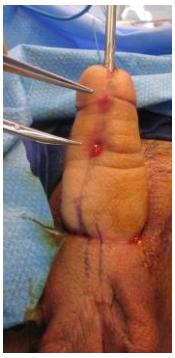

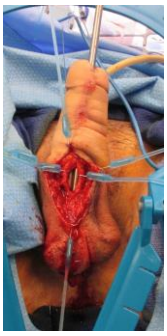

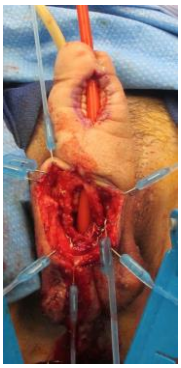

Repair of

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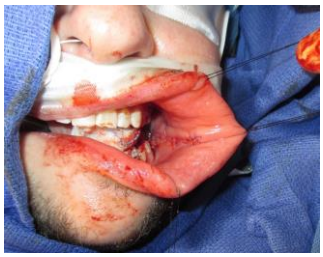
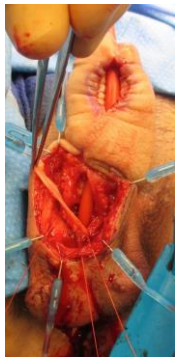
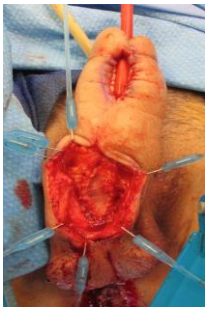
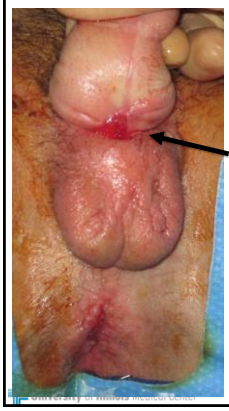




Harvest & placement of

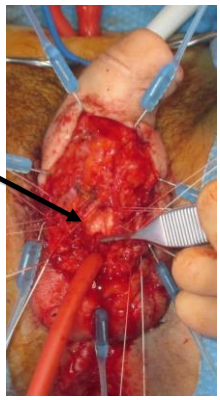


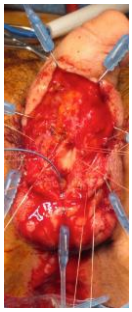
Insert of buccal mucosa

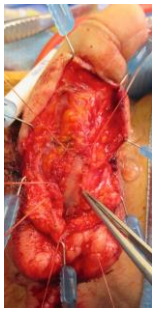


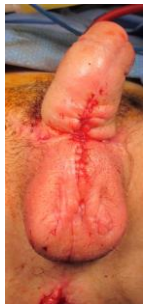
Urethral fistula/stricture

Anastomosis of penile and membranous urethra

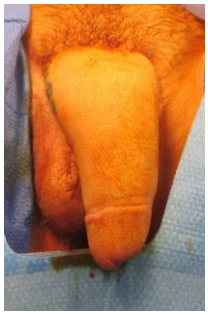


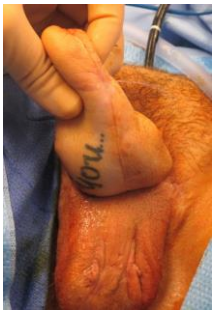




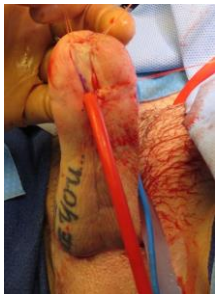


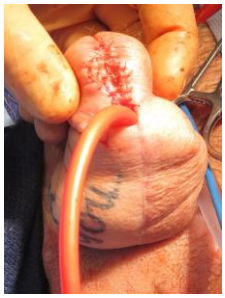
Repair of urethral stricture/fistula with buccal mucosa





Urethral fistula/meatal stenosis





Buccal mucosa graft

Conclusion

- Urethral reconstruction may require additional procedures
- Results suggest traditional techniques are viable treatment options
- Single and two stage urethroplasty with buccal mucosa are both viable options in the management of urethral strictures and fistulas after phalloplasty

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Gender Confirmation Surgery
ICS, Florence, Italy
September 15, 2017

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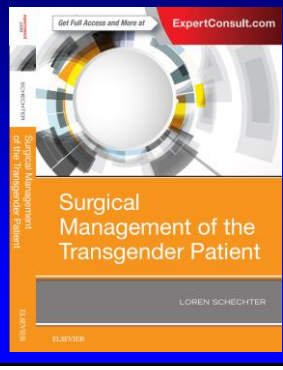
THE CENTER FOR GENDER CONFIRMATION SURGERY

Disclosure



The Multi-Disciplinary Nature of Care & The Standards of Care

WPATH Vision Statement

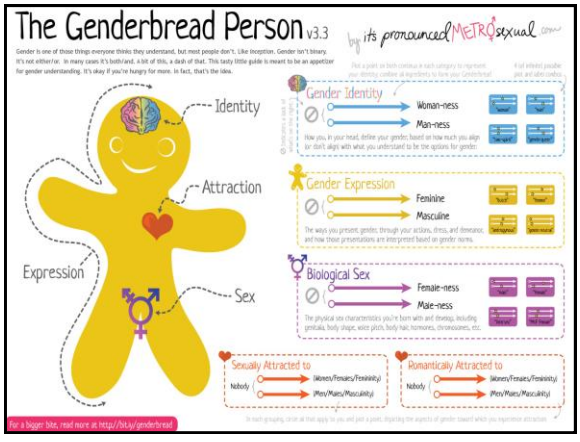
Respect, dignity, and equality for transgender, transsexual, and gender variant people in all cultural settings

WPATH GEI Programs

Increase access to competent and compassionate care for transsexual, transgender, and gender nonconforming people worldwide

World Professional Association for Transgender Health (WPATH)
Global Education Initiative (GEI) certified course

WPATH Global Education Initiative



Gender Dysphoria: Varying degrees of dissatisfaction with anatomic gender & desire to possess secondary sexual characteristics of opposite sex

Goal of Therapy: Lasting personal comfort with gendered self in order to maximize psychological well-being & self-fulfillment

Radial forearm phalloplasty

The Standards of Care for Gender Identity Disorders, Seventh Version, WPATH

Gender confirmation surgery provides appropriate physical morphology & alleviates extreme psychological discomfort

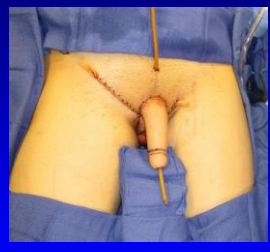
Postop vaginoplasty

"*adjusting the mind to the body*" is not an effective treatment
(Meyer, et. al 2001)

"*adjusting the body to the mind*" is the best way to assist severely gender dysphoric persons
(Cohen-Kettenis 1984)

Congruent Genitalia

- Experience harmony between body & self-identity
- Allow individual to appear nude without violating social taboos (health club, physician office, etc…)
- Legal identification (passport)



Radial forearm phalloplasty, scrotoplasty, glansplasty with vaginectomy and urethral lengthening

Transgender is not a diagnosis

The distress of gender dysphoria might be diagnosable and for which treatments are available

Gender dysphoria can be alleviated through treatment (hormonal, psychotherapy, & surgery): many individuals find a gender role & expression comfortable for them (even if different from sex assigned at birth or prevailing norms & may or may not require body modification)

The Endocrine Society Clinical Guidelines: 2009

Transsexual persons seeking to develop the physical characteristics of the desired gender require a safe, effective hormone regimen

American Psychiatric Association: 2012

The manual will diagnose transgender people with "Gender Dysphoria" which communicates the emotional distress that can result from "a marked incongruence between one's experienced/expressed gender and assigned gender." This will allow for affirmative treatment and transition care without the stigma of disorder

World Health Organization: 2014

Eliminating forced, coercive, and other involuntary sterilization across the globe. This specifically includes any requirement that transgender people undergo any surgeries that might impact their reproductive ability in order to have their gender identity recognized

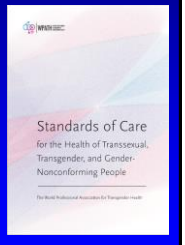
American Medical Association: 2014

Transgender people shouldn't have to have surgery to change their birth certificates

Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People, Version 7

E. Coleman, W. Bockting, M. Botzer, P. Cohen-Kettenis, G. DeCuypere, J. Feldman, L. Fraser, J. Green, G. Knudson, W. J. Meyer, S. Monstrey, R. K. Adler, G. R. Brown, A. H. Devor, R. Ehrbar, R. Ettner, E. Eyler, R. Garofalo, D. H. Karasic, A. I. Lev, G. Mayer, H. Meyer-Bahlburg, B. P. Hall, F. Pfaefflin, K. Rachlin, B. Robinson, L. S. Schechter, V. Tangpricha, M. van Trotsenburg, A. Vitale, S. Winter, S. Whittle, K. R. Wylie & K. Zucker

- Intended to provide flexible direction for the treatment of transgender individuals
- Individual centers may vary (hormonal therapy & real-life test)
- Not intended as barrier to surgery…identify patients who would benefit from surgery



First version published in 1979

Beginning version 8

wpath.org

SOC v Informed Consent Model

Emphasis on role of mental health professionals in alleviating dysphoria and facilitating change in gender role

Versus

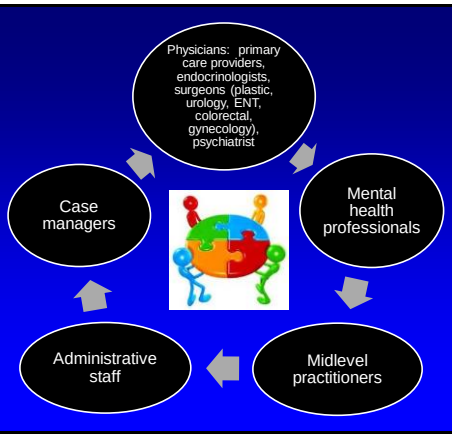
Focus on obtaining informed consent as the threshold

Language (EPATH)

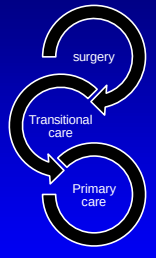
- Avoid language which has the intention (or likely effect) of stigmatizing or pathologizing gender and bodily diversity
  - Stigmatizing and pathologizing language (ie "disordered" or "abnormal") should be avoided
  - Use affirmative language (ie "gender and bodily diversity")
  - Use "cisgender"

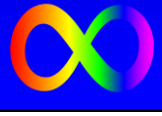
Referral for Surgery

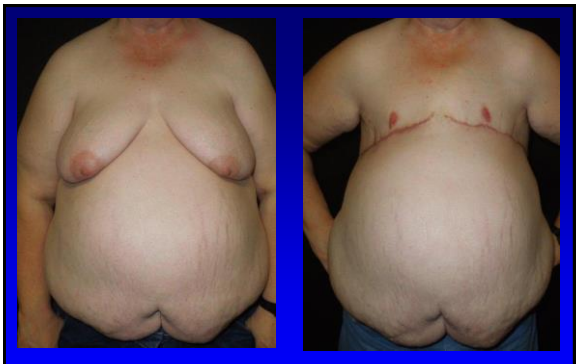
- Patient's personal and treatment history
- Progress
- Eligibility
  - Legal age of majority
  - Ability to make informed decision & provide informed consent
- Two referrals who provide independent assessment
  - One referral for chest/breast surgery
  - No letter for other surgical procedures (ie face)



Spectrum of Care







Obesity & Smoking

SRS: Sex reassignment surgery
GCS: Gender confirmation/affirmation surgery

MtF (transfeminine)

- Vaginoplasty
- FFS (facial feminization)
  - Brow lift (hair advancement), frontal bone reduction (burring v. osteoplastic +/- onlay graft), mandible reduction (angle and/or chin), rhinoplasty, malar implant, lip shortening and/or augmentation, hair transplantation
- Tracheal shave (thyroid chondroplasty)
- Breast augmentation
- Body contouring
  - Liposuction, lipofilling

FtM (transmasculine)

- Phalloplasty: with or without urethral lengthening, includes scrotoplasty, staged placement of testicular implants & penile prosthesis
  - Radial forearm, ALT, MLD
- Metoidioplasty: with or without urethral lengthening, includes scrotoplasty, staged placement of testicular implants
- Chest Surgery: subcutaneous mastectomy with chest contouring
  - Double incision v. short scar
- Body Contouring
  - Pectoral implants
- Facial Masculinization
  - Thyroid cartilage, forehead, nose, chin

Surgical Goals

- Successful cosmetic & functional result with minimal complications

* A technically proficient surgical procedure is only one determinant in the overall therapeutic process

Single-stage vaginoplasty: penile disassembly & inversion with limited scrotoperineal flap, urethral flap, & clitoroplasty

Radial forearm phalloplasty, scrotoplasty, glansplasty, vaginectomy, urethral lengthening, & mons resection

Metoidioplasty with testicular implants and vaginectomy

Elagabalus: Roman Emperor (204-222)

Eunuch: Castrated man (Greek *eune*: bed *ekhein*: to keep)

Hijra: Third sex Removal of penis, testes, & scrotum

Saint Joan of Arc

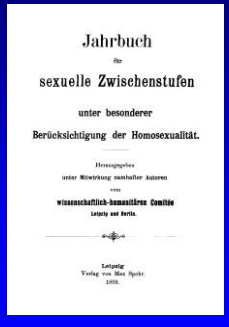
Castrati

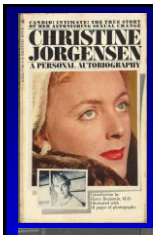
1 in 12,000 cis-men 1 in 100,000 cis-women

More men than women seek gender confirmation surgery (1:3 women to men)

History

Magnus Hirshfeld, Berlin





December 1, 1952 New York Daily News

"Ex-GI Becomes Blonde Beauty"

In Denmark, Christine Jorgensen had become the recipient of the first sex change

Harry Benjamin, MD
The Transsexual Phenomenon, 1966

Dr. Schechter & team, Chicago, IL

Dr. Renee Richards

1975: "SRS"

1976: Denied entry into US Open by USTA

1977: New York Supreme Court ruled in her favor

1977 US Open: Lost in doubles finals to Martina Navratilova

Gold medal: Decathalon
1976 Olympic Games,
Montreal, Canada

Chicago, November
12, 2015

History of Phalloplasty:

1936: Bogoraz (Russia): tubed abdominal flap & rib cartilage (no urethra)

1946: Sir Harold Gilles

Father of modern plastic surgery

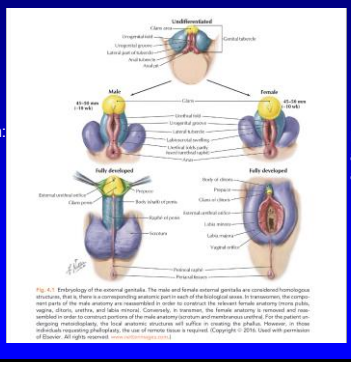
Laurence Michael Dillon

13 surgeries (tubed abdominal flap)

1980's: Chang/Hwang: radial forearm tube-within-a-tube

-Single stage reconstruction with vascularized urethra

Indifferent stage: 4th week
Distinguishing characteristics: 9th week
Differentiation complete: 12th week



Male

Masculinization: androgens produced by fetal testes

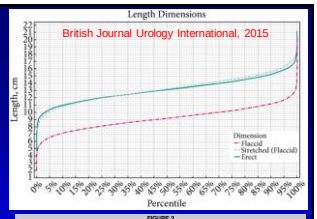
Female

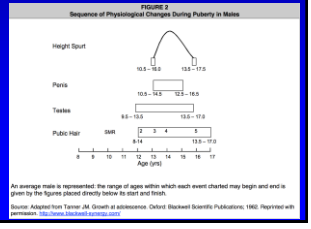
Feminization: absence of androgens

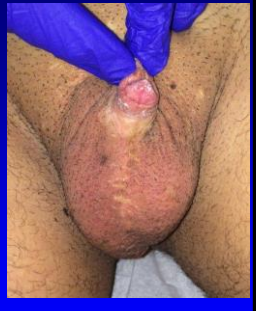
Abnormally small phallus: 2 std deviations below mean
< 6 cm flaccid
< 9.5 cm on stretch

Microphallus: 2.5 std deviations below mean
<5.2 cm flaccid
< 8.5 cm on stretch

Maximum growth of penis between 12-16 yrs







Perineal hypospadias and cryptorchidism

Radial forearm phalloplasty

Metoidioplasty

Staging Approaches

- Single stage: mastectomy, hysterectomy/oophorectomy, vaginectomy, phalloplasty
- Two-Stage:
  - a) Mastectomy & hysterectomy/oophorectomy
  - b) Vaginectomy & phalloplasty
  - Or
  - a) Mastectomy
  - b) Hysterectomy/oophorectomy + vaginectomy & phalloplasty
- Three-stage:
  - Mastectomy
  - Hysterectomy/oophorectomy
  - Vaginectomy & phalloplasty

*most common approach
-nature of referrals
-scheduling/coordination

Non-Genital Surgery

- Hysterectomy & oophorectomy
  - Fertility preservation (egg or embryo preservation)
  - Discomfort associated with gynecologic care
  - Eliminate risk of female reproductive tract disease
  - Minimally invasive
    - Laparoscopic or robotic
  - Removal of cervix
- Genital surgery 3 months following hysterectomy

The Standards of Care

TABLE 1A: EFFECTS AND EXPECTED TIME COURSE OF MASCULINIZING HORMONES*

Effect	Expected onset†	Expected maximum effect†
Skin oiliness/acne	1–6 months	1–2 years
Facial/body hair growth	3–6 months	3–5 years
Scalp hair loss	>12 months‡	Variable
Increased muscle mass/strength	6–12 months	2–5 years§
Body fat redistribution	3–6 months	2–5 years
Cessation of menses	2–6 months	n/a
Clitoral enlargement	3–6 months	1–2 years
Vaginal atrophy	3–6 months	1–2 years
Deepened voice	3–12 months	1–2 years

*Adapted with permission from Hembree et al (2009). Copyright 2009, The Endocrine Society.
†Estimates represent published and unpublished clinical observations.
‡Highly dependent on age and inheritance; may be minimal.
§Significantly dependent on amount of exercise.

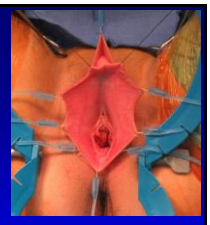
Metoidioplasty v. Phalloplasty

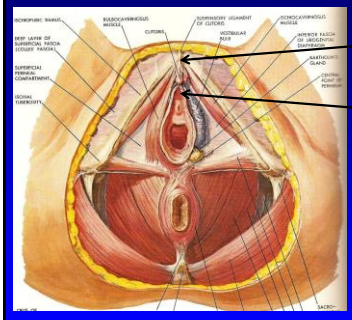
- Lengthen clitoris
- Urination while standing
- Minimize donor site
- No penetrative intercourse

- Urination while standing
  - Urethral morbidity
- Penetrative intercourse
- Donor site & surgical risks

Conversion of metoidioplasty to phalloplasty

Metoidioplasty: clitoral virilization





Release suspensory ligament of clitoris

Release ventral chordae (urethral plate)

Urethral tubularization

Skin closure

Scrotoplasty

Metoidioplasty: Outcomes/Techniques

Long-term outcome of metaidoioplasty in 70 female-to-male transsexuals

Hage, et. al.

Ann Plast Surge 2006; 57 312-316

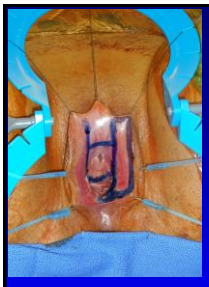
TABLE 1. Distribution of the Number of Events per Patient

	No. Events per Patients						
	0	1	2	3	4	5	Total
Primary scrotoplasty	6	17	10	9	4	1	47
Secondary scrotoplasty	1	5	8	6	0	0	20
No scrotoplasty	1	0	1	0	1	0	3
All	8	22	19	15	5	1	70

Number of events per patient is after metaidoioplasty in our series of 70 patients (All), in the subgroup of 47 patients in whom scrotoplasty was performed primarily in combination with metaidoioplasty, in the subgroup of 20 patients in whom scrotoplasty was performed secondarily, and in the subgroup of 3 patients in whom no scrotoplasty was performed in combination or after metaidoioplasty. The reported events consisted of immediate postoperative complication, urethral fistula, urethral stricture, loss of testicular prostheses, and dislocation of a testicular prosthesis.

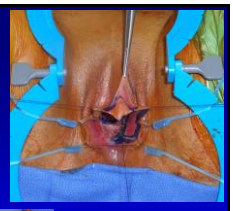
Length of stay: 10 days

Complications:		Outcomes:
Immediate	33%	Average of 2.6 procedures per patient
Fistula	37%	
Stricture	36%	
Prosthesis		11.4% “uneventful”
• Loss	31%	
• Dislocation	49%	17% subsequent phalloplasty

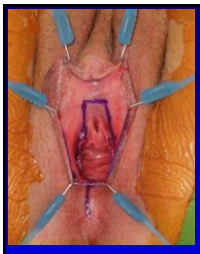


Bilateral labia minora flaps, rectangular vestibular lining flap, & vaginal flap

Clitoral degloving incision



Placement of buccal mucosa

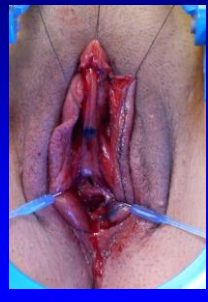


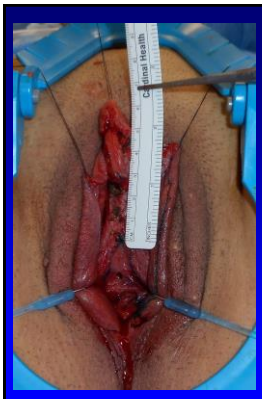
Rectangular vestibular lining flap

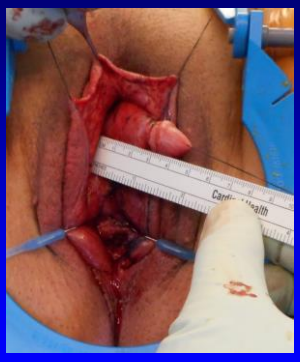
Bilateral labia minora flaps

Vaginal flap

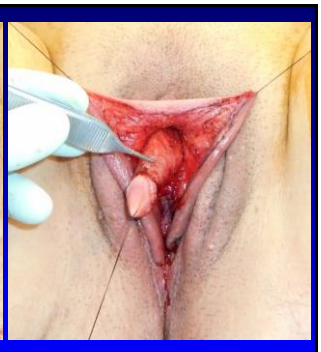
Release of Chordae





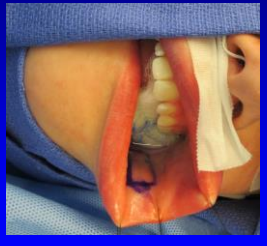


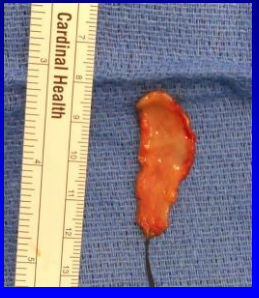
Release of ventral chordae and elevation of bilateral labia minora flaps

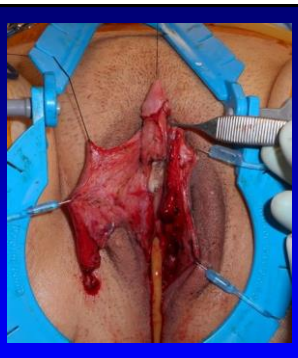


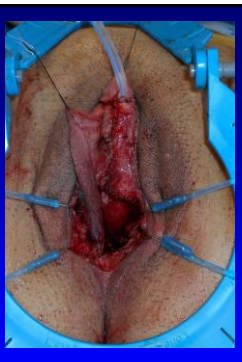
Clitoral degloving

Buccal mucosa harvest

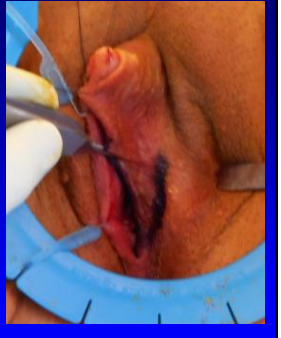


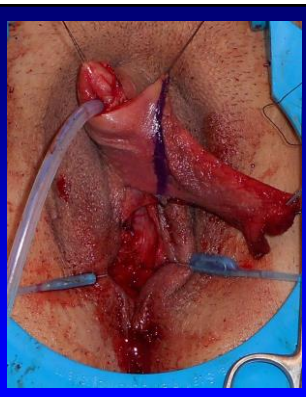






Placement of buccal mucosa, tubularization of urethra (creation of perineal urethra)



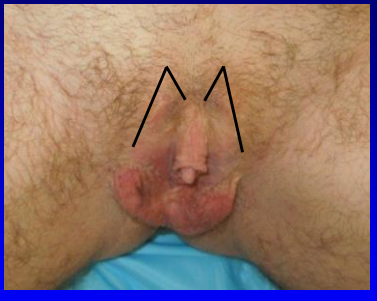


Skin closure

Secondary Scrotoplasty

Remote fill expander

Medium testicular implant:
15 cc saline (2.7 x 4 cm)



Retrodisplacement of labia
majora for secondary scrotoplasty

Metoidioplasty with second stage scrotoplasty, mons lift, and placement of testicular implants

Mons Resection

Staged procedure performed 3 months following metoidioplasty

Removal of skin and fatty tissue overlying pubis

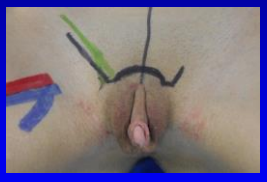
Mons: fatty tissue overlying pubic bone which forms the vulva and divides into the labia majora

Mons resection with fixation of Scarpa's fascia to anterior abdominal wall

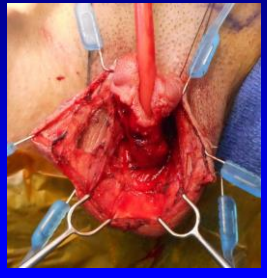
Metoidioplasty, mons reduction, scrotoplasty, testicular implants

Metoidioplasty with urethral lengthening, scrotoplasty, & testicular implants

Conversion of Metoidioplasty to Phalloplasty

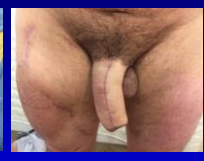


Isolation of Urethra & Clitoral Nerve



Phalloplasty

Single Stage: RFAFF phalloplasty, scrotoplasty, glansplasty, vaginectomy, urethral lengthening



Multi-Stage: ALT phalloplasty, scrotoplasty, vaginectomy, staged debulking, urethral lengthening & glansplasty

Multi-Stage: MLD phalloplasty, scrotoplasty, vaginectomy, staged debulking, urethral lengthening & glansplasty

TABLE 6.1
Comparison of phalloplasty techniques

	RFAFF (Radial Forearm Free Flap)	ALT	MLD
Donor site	–	+/–	+
Urethra	+	+/–	+/–
Glans	+	–	–
Sensation	+	+	–
Prosthesis	–	+/–	+
Stages	2	2 (plus debulking)	3
	Donor site visibility Vascularized urethra in single stage Preoperative depilation Refined glans Lateral and medial antebrachial cutaneous nerve	Donor site concealed but requires graft May require second flap for urethra due to bulk Preoperative depilation Secondary glans shaping Lateral femoral cutaneous nerve May require secondary debulking procedures	Direct closure of donor site possible Second flap for urethra with staged urethral reconstruction Less refinement Insensate May require secondary debulking procedures

Alternative Flap Choice

Combined flaps (ALT + SCIP or RFAFF), Prelamination of urethra, Osseocutaneous flaps (Fibula, Forearm), Groin flaps, Gracilis flap/functional muscle , Abdominal flaps

*Regardless of technique, phalloplasty surgery requires a commitment to managing complications

Schechter, Surgical Management of the Transgender Patient

Phalloplasty: Outcomes/Techniques

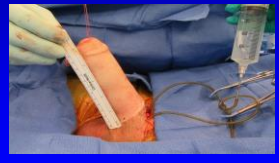
Questionnaire sent to 200 individuals-----150 responses received

- 79 patients (52%) requested phalloplasty
  - Voiding (99%)
  - Scrotum (96%)
  - Glans (92%)
  - Rigidity (86%)
  - Appealing look ("wearing tight swim suit" (91%) or nude (81%))
- Mean length of desired phallus: 13 cm (range 5 cm-25 cm)
- 71 (48%) did not want phalloplasty
  - Number of operations (32%)
  - Risk of surgical failure (44%)
  - Not pleased with aesthetic result (42%)

Phalloplasty in female-to-male transsexuals: what do our patients ask for? Hage, Ann Plast Surg 1993; 30: 323-326

Phalloplasty Goals

- Aesthetic phallus
- Tactile & erogenous sensation
- Void while standing
- Minimal morbidity (including donor site)
- Aesthetic scrotum
- Ability to experience sexual satisfaction



Radial forearm phalloplasty: placement of 3 piece, 2 cylinder hydraulic penile prosthesis

Penile reconstruction: is the radial forearm flap really the standard technique, Monstrey, PRS 124: 510, 2009

RFF Phalloplasty

	Overall (%)	1992–1997 (%)	1997–2001 (%)	2001–2007 (%)
No.	287	59	62	167
Flap-related				
Anastomotic revision	34 (12)	8 (13.6)	7 (11.2)	19 (11.3)
Complete flap loss	2 (0.7)	1 (1.7)	1 (1.6)	0
Marginal partial necrosis (13 additional operations)	21 (7.3)	6 (10)	5 (8)	10 (6)
Urologic				
Early fistula (closing spontaneously)	51 (17.7)	12 (20)	12 (19.4)	27 (16.1)
Stricture treated conservatively	21 (7.3)	5 (8.4)	5 (8)	11 (6.5)
Fistula/stricture requiring urethroplasty (97 additional operations)	52 (18.1)	12 (20)	12 (19.4)	28 (16.7)
Various				
Minor pulmonary embolism	3 (1)	1 (1.7)	2 (3.2)	0
Regrafting of defect on arm	2 (0.7)	1 (1.7)	1 (1.6)	0
Nerve compression (early cases)	2 (0.7)	2 (3.3)	0	0
Delayed wound healing in groin area (four additional operations)	32 (11.1)	9 (15.2)	7 (11.2)	16 (9.6)
Erectile prosthesis (130 prostheses)				
No.	130	21	32	77
Revision surgery	58 (44.6)	13 (62)	16 (50)	29 (37.6)
Incapacity to perform sexual intercourse	26 (20)	6 (28.5)	7 (22.6)	13 (17)

Tactile sensation: 100%

Postoperative patients who were sexually active: 100% achieve orgasm

Ultimately, all patients able to void (52 patients required 97 procedures)

Penile reconstruction: is the radial forearm flap really the standard technique, Monstrey, PRS 124: 510, 2009

RFF Phalloplasty: Outcomes/Techniques

Urologic

- Urologic complications 41%
  - Other series up to 80%
- All patients ultimately able to void
- Most complications at "neo-urethra and native urethra," not along flap urethra

Flap

- Anastomotic revision 11.3%
- Partial flap necrosis 7.2%
  - Larger flaps
- No longer operate on smokers

- 56 patients who had radial forearm phalloplasty

  -Mean number of surgical procedures: 6
- 3 flap failures (5%)
  -1 flap failure at 7 weeks post-op
- 19 (34%) patients had urethroplasty
  -7 patients (37%) required perineal urethrostomy a mean of 72 months after surgery

Penile reconstruction with the radial forearm flap: an update
Doornaert, Handchir Mikrochir Plast Chir 2011; 43: 208-214

Long-term outcome of forearm free-flap phalloplasty in the treatment of transsexualism, Leriche, BJU International 101, 1297-1300, 2008

Male anatomy

Radial forearm phalloplasty

Average Male Dimensions:

Flaccid: 8.6-9.3 cm (3.4-3.7 in)

Erect: 12.9-14.5 cm (5.1-5.7 in)

Circumference: 8.8-10 cm (3.5-3.9 in)

Flap Dimensions:

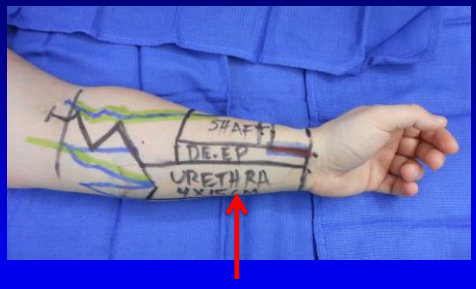
Approximately (distal wrist crease to elbow flexion crease) 21-23 cm

Flap length: 13-17 cm

Recipient site (pubis) to femoral vessels approximately 9 cm*

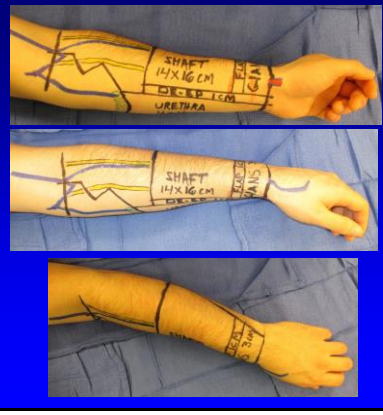
*Issue: arterial pedicle length

Radial Forearm Phalloplasty



Single stage reconstruction of urethra ("tube-within-tube")

-May require preop electrolysis
-Urethra 4 cm in width
-Volar positioning of urethra



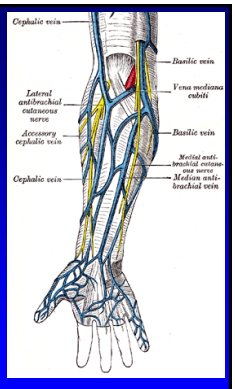
Medial & lateral antebrachial cutaneous nerves, cephalic & median cubital/median antebrachial cutaneous vein, radial artery

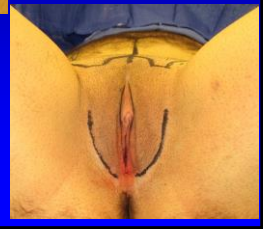
-lateral antebrachial cut. n. ⟹ ilioinguinal n.

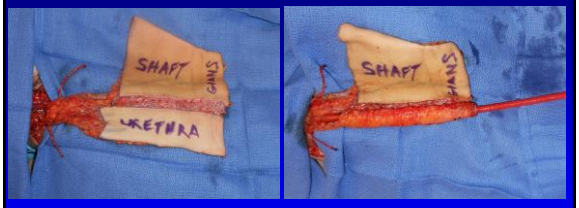
-medial antebrachial cut. n. ⟹ dorsal clitoral n.

-venous anastomoses:
-cephalic vein ⟹ great saphenous vein
-median antebrachial cutaneous vein ⟹ superficial epigastric vein/superficial circumflex vein

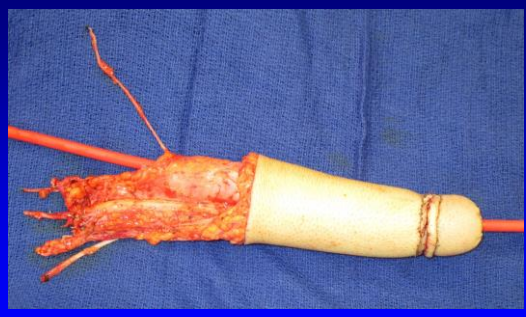
-radial artery ⟹ femoral artery





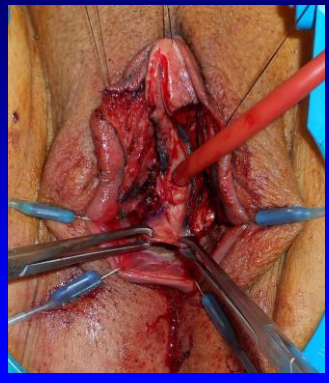


Design of urethra and shaft



Design of phallus

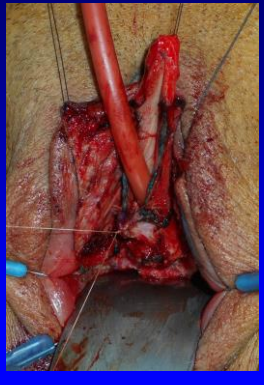
Marking of membranous urethra & vaginal flap



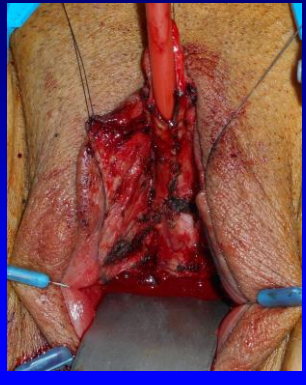
Elevation of vaginal flap & tubularization of vestibulum

Extension of incision on to ventral clitoris

Vestibulum remains attached dorsally to corporal bodies

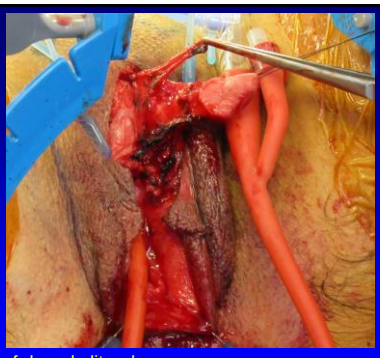


Proximal urethra constructed with vaginal flap and vestibulum

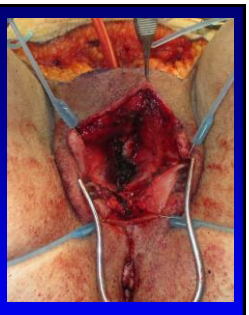


Construction of perineal urethra

Clitoris de-epithelialized



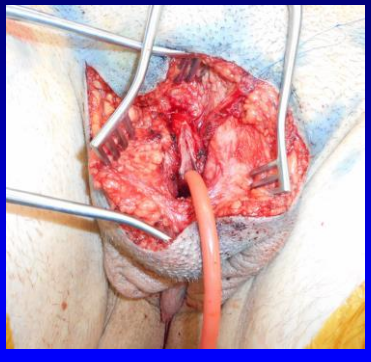
Preparation of dorsal clitoral nerve
-nerve harvested on ipsilateral side of forearm flap (contralateral to vascular anastomosis)



Clitoral-urethral construct transferred subcutaneously into position at pubic symphysis

Layered closure of superficial muscles over urethra

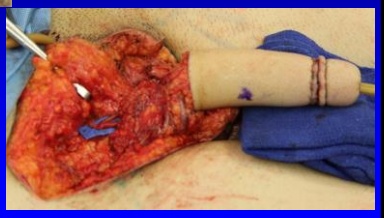
Excision of labia minora & colpocleisis



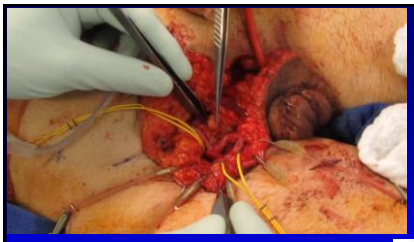
Fixation of de-epithelialized clitoris to pubic symphysis

Scrotoplasty with medial transposition of labia majora

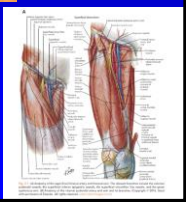
Closure of scrotum



Urethral inset, vascular anastomoses, neurroraphies



Construction of AV loop between great saphenous vein and femoral artery

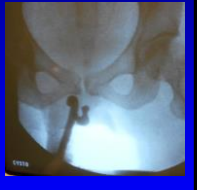


Flap Monitoring

Distal urethral anastomosis

2

Path of flow following urethral reconstruction



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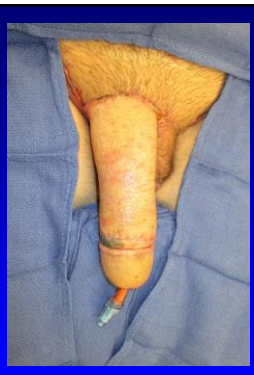
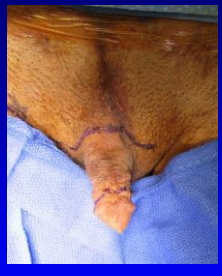
Proximal urethral anastomosis



Preop ALT phalloplasty: exstrophy & microphallus

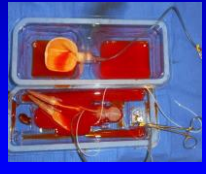


ALT phalloplasty: retention of sensate glans & corpora cavernosa with nerve coaptation to ilioinguinal nerve

Insertion of testicular implants

Penile Prostheses

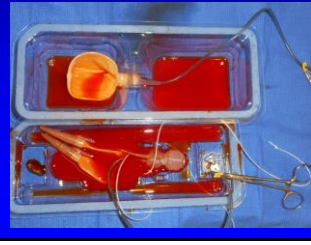
- 129 patients (185 prostheses)
  - 41.1% underwent removal or revision
  - Infection: 11.9%
  - Protrusion: 8.1%
  - Leak: 9.2%
  - Dysfunction rate: 13%
  - Malposition rate: 14.6%

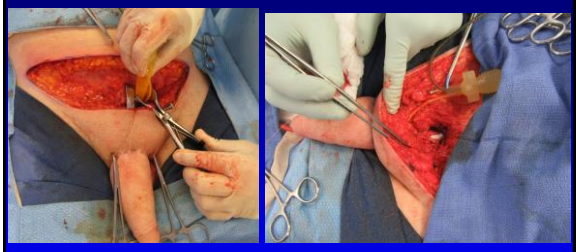


Erectile implants in female-to-male transsexuals: our experience in 129 patients, Hoebeke, European Urology, 57 (2010) 334-341

Malleable prosthesis with 2 rods

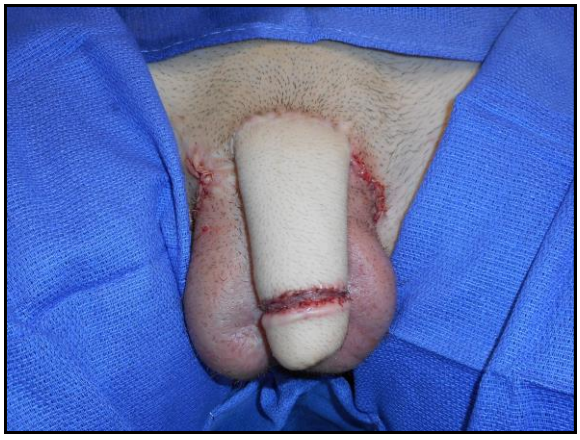
3 piece hydraulic prosthesis with 2 cylinders





Placement of 3 piece, hydraulic penile prosthesis, 2 cylinder (with ADM wrap) in conjunction with mons lift

Testicular implants and revision glansplasty



Activating penile prosthesis

Sexual and Physical Health After Sex Reassignment Surgery

Table IV. Sex Life Before and After SRS

	Male-to-female			Female-to-male		
	Before	After	p	Before	After	p
Sexual satisfaction (N)	29			21		
Satisfied (%)	48.3			76.2		
Neutral (%)	27.5			4.8		
Unsatisfied (%)	24.2			19.0		
Comparison of sex life (N)	29			21		
Improvement (%)	75.8			75.0		
Unchanged (%)	10.3			15.0		
Worsening (%)	13.8			10.0		
Sexual arousal (N)	29	32		15	23	
(Very) often (%)	17.2	46.9		40.0	60.9	
Never–sometimes (%)	82.8	53.1	.016	60.0	39.1	*ns*
Frequency masturbation (N)	29	31		15	23	
(Very) often (%)	34.5	32.3		20.0	78.3	
Never–sometimes (%)	65.5	67.7	*ns*	80.0	21.7	.023
Orgasm during masturbation (N)		23			19	
(Almost) always (%)		65.2			94.7	
Never–sometimes (%)		33.8			5.3	
Change in orgasmic feelings (%)		79.2		73.7		
Secretion during excitement (%)		64.3				
Secretion during orgasm (%)		76.0				

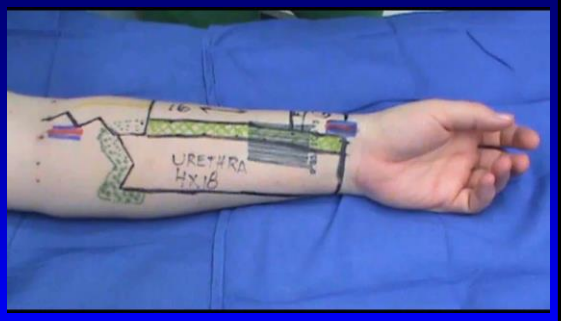
Note. p value of difference before and after SRS, McNemar test; χ^2 test for between-group differences after SRS.

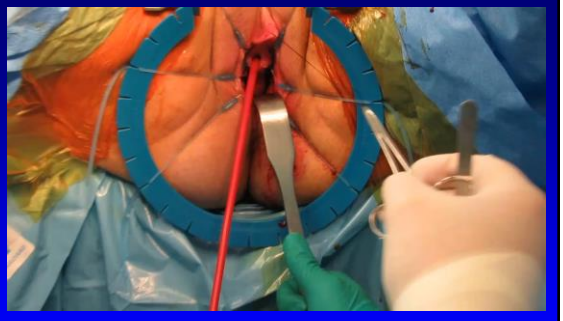
107 Dutch transsexuals contacted by questionnaire: 55 responded

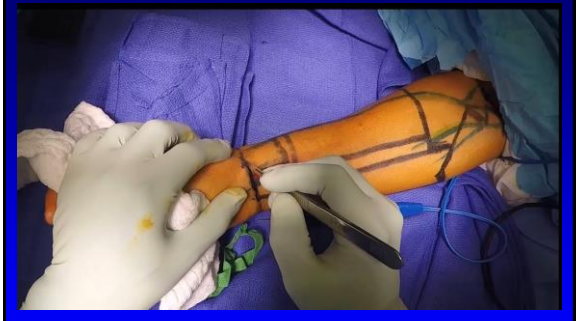
- 23 participated
- 15 declined

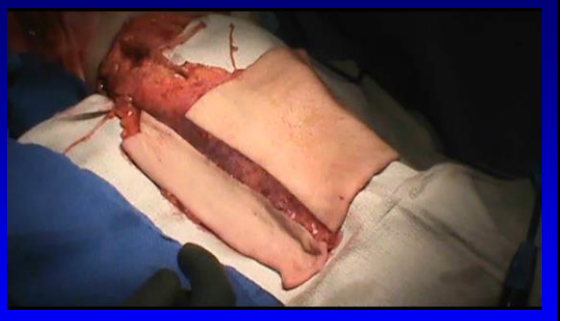
- 75% improvement in sex life
- 10% worsened sex life
  - Pain, lack of sensation, difficulty relaxing
- Masturbate more after surgery
  - 95% "always" orgasm
  - More powerful & shorter orgasm
- Pre-surgery: clitoral stimulation (not vaginal intercourse)
- Post-surgery: intercourse

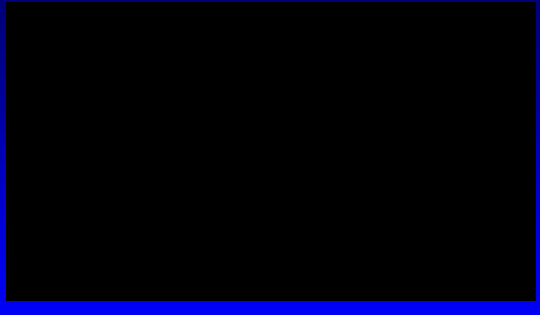
DeCuypere, Archives of Sexual Behavior, Vol. 34, No 6, December 2005 pp 679-690







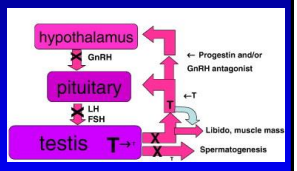




Vaginoplasty

Feminization Through Hormonal Therapy

- Suppression of androgen effects
  - Suppress GnRH or GnRH antagonists
  - Suppress production of luteinizing hormone
  - Interfere with testosterone production, metabolism, or receptor binding
- Induction of female physical characteristics
  - Estrogen acts through direct stimulation of receptors in target tissue



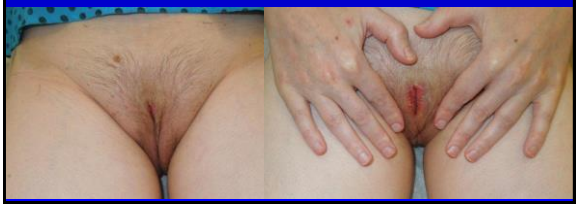
Hormonal Therapy

- Redistribution of body fat
- Decreased muscle mass
- Softening of skin
- Decreased libido
- Breast growth: may continue for 2 years
- Hair: slow progression of male pattern baldness & facial hair becomes finer

Miss Universe Canada 2012

Single Stage Vaginoplasty: Functional & Aesthetic Requirements

- Natural appearance
- Sensate clitoris with clitoral hooding
- Adequate depth & introital width for intercourse
- Smooth, graded, & contiguous appearance to labia majora
- Moist appearance to labia minora/vestibulum
- Lubrication for intercourse



Measurement and aesthetics of the mons pubis in normal weight females

Evidence Based Medicine:

•Study anatomy

•Incorporate findings into gender confirmation surgery

28 female measurements:

- normal weight female volunteers n=15
  Cadavers n=13

Age range:

- volunteers: 26-53 yrs (mean 35+/- 8.4)
- cadavers 60-95 yrs (mean 82 +/-9.5)

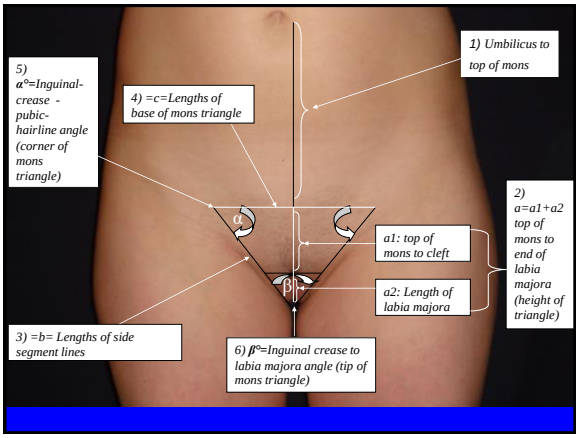
BMI:

- 18-26 (mean 21 +/- 2.4)

Seitz I A, et. al. Measurements and aesthetics of the mons pubis in normal weight females Plast Reconstr Surg. 2010;126(1):46e–48e

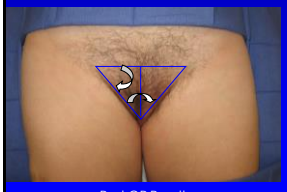
Aesthetics of the mons pubis

Fatty tissue over the pubic bone which forms the vulva and divides into the labia majora

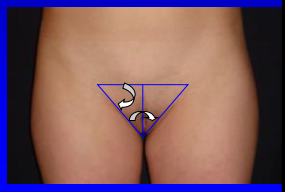


Surgical Application

Creating the mons aesthetic subunit in gender confirmation surgery



Post OP Result



Cis female mons

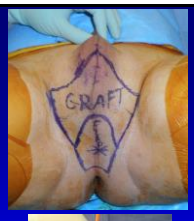
Surgical Decision-Making

- Penile disassembly with inversion & scrotoperineal flap
  - Full-length scroto-perineal flap
  - Limited scrotoperineal flap
- Penile disassembly with inversion & FTSG
  - Scrotal FTSG
  - Abdominal and/or inguinal FTSG
- Intestinal transposition
  - Large intestine
    - Sigmoid v. right colon
  - Small intestine

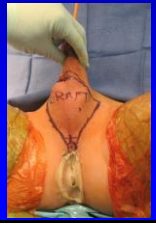
Considerations

- Patient goal (ie vaginal intercourse)
- Penile length
- +/- Circumcision
- Primary v. revision

Full-length scrotoperineal flap



Elevation of scrotoperineal flap



Limited scrotoperineal flap

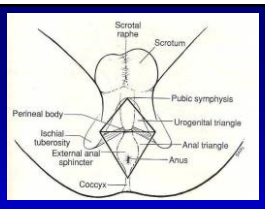
Full-thickness skin graft from scrotum for augmentation of vaginal depth

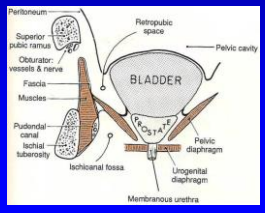
Preoperative Process

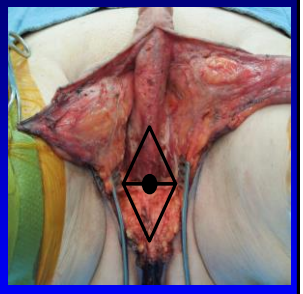
- Patient expectations (appearance & function)
- Informed consent
- Hair removal
  - Electrolysis v. laser
- Management of hormones
  - Cessation 2 weeks prior to surgery
- Bowel preparation

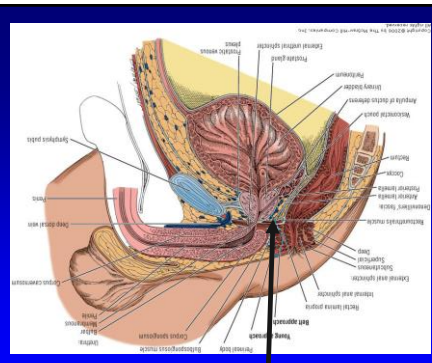
*Obesity and smoking

- Penile/perineal skin → vaginal lining
- Glans penis → clitoris
- Urethra → vestibular lining & labia minora
- Scrotum → labia majora
- Skin grafts → additional vaginal depth

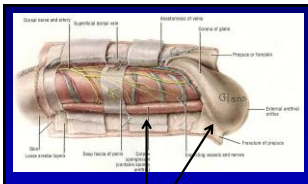




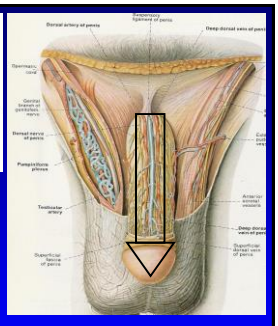




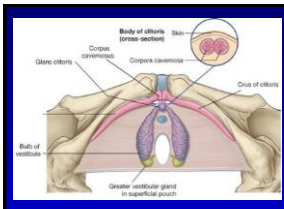
Neovagina dissected anterior to Denonvillier's fascia

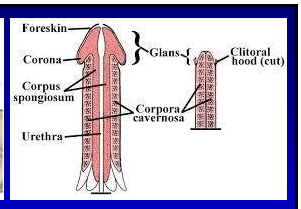


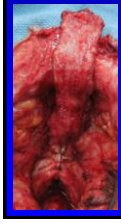
Corpus spongiosum: glans penis



Dissection of glans: dorsal neurovascular pedicle (incorporation of Bucks' fascia)

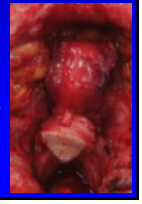






Construction of clitoris placed on corporal bodies to provide engorgement in addition to sensation

*Erection of clitoris: parasympathetic innervation of paraurethral glands (prostate), greater vestibular glands (bulbourethral glands), & enlargement of bulb



4 Goals for the clitoris and vestibulum:

- Clitoral hooding
- Sensate neo-clitoris
- Moist appearance to labia minora/vestibulum
- Engorgement

Penile inversion vaginoplasty

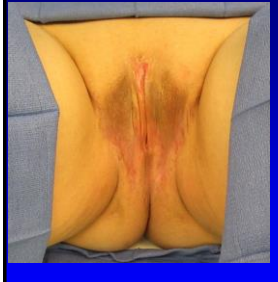
6 weeks status-post vaginoplasty

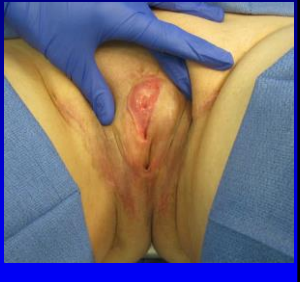
Penile inversion vaginoplasty

Penile inversion vaginoplasty

Penile inversion vaginoplasty

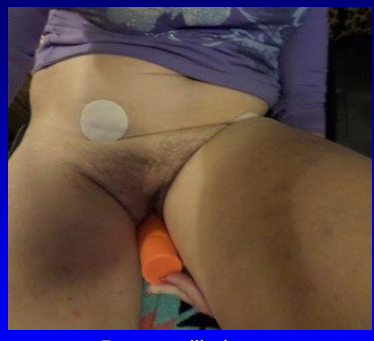
Penile inversion vaginoplasty





Penile inversion vaginoplasty

Penile inversion vaginoplasty



Post op dilation

Post-operative Instructions

- Dilation
  - Post-op day # 10
  - 3 times daily for 2 weeks (then 4x/day for 3 weeks, then 2x/day for 10-12 weeks weeks, then daily for 6-8 weeks, then 3-4x/week)
  - Relaxation (pelvic physical therapy)
- Intravaginal washing
  - 1-2x/week
- Vaginal intercourse
  - 8 weeks after surgery
  - Lubrication
- Follow-up
  - Annual speculum and prostate exam

Complications

Rectal Injury/fistula
: Creation of vaginal cavity

Urethral stream abnormalities
: Meatal stenosis, position of meatus

Stenosis
: Dilation, incomplete dissection, flap or graft loss

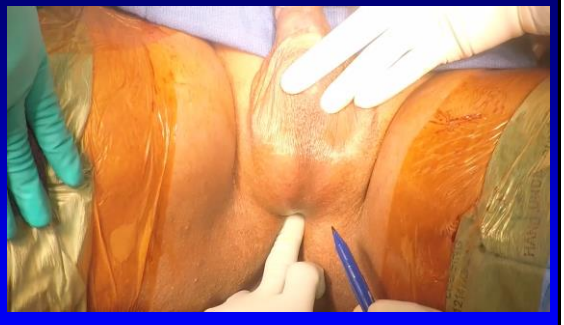
Pain/bulging
: Retained erectile tissue

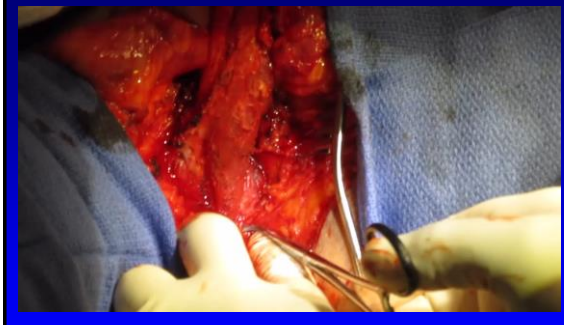
Prolapse

Scarring & loss of sensation

Other (compartment syndrome, blood transfusion, delayed healing, intravaginal hair growth, drainage)

Regret
: Preoperative assessment





What Options Remain After Failed Penile Inversion Vaginoplasty?

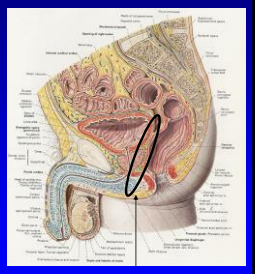
Underwent vaginoplasty 30 years ago, unable to have vaginal intercourse

Stenotic vaginal cavity with multiple attempted revisions involving skin grafts-inadequate vaginal depth & dissatisfaction

Intestinal Vaginoplasty Sigmoid & Right Colon

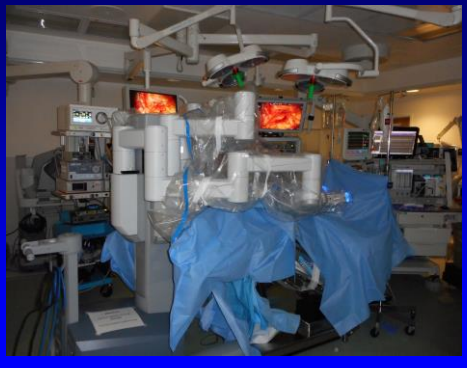
- Revision procedure for inadequate vaginal length
  - Creation of 12-15 cm vaginal cavity
- Moist vaginal lining
  - Non-secretory (mucus-producing goblet cells)
- Combined intra-abdominal & perineal procedure

*Attempted revision with perineal approach and skin grafts limited by visibility and potential for rectal/urethral injury

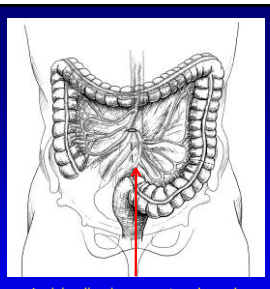


Plane of dissection between rectum & bladder

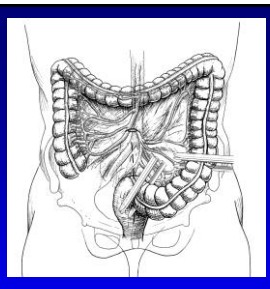
Clemente Atlas of Anatomy



Hybrid approach: laparoscopic mobilization and robotic dissection

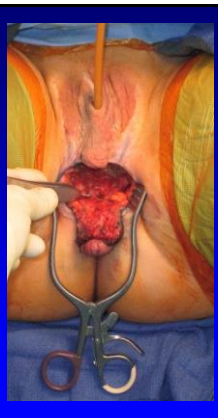


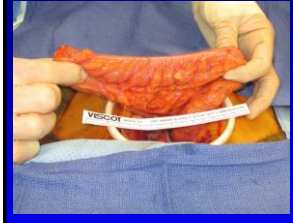
Incision line in mesentery-based on inferior mesenteric and superior hemorrhoidal vessels

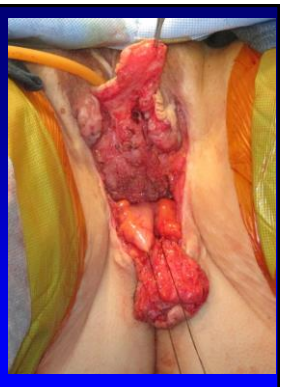


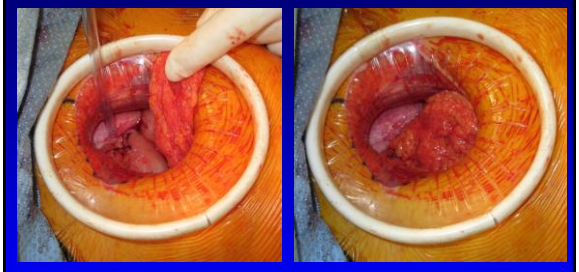
Division of sigmoid colon

Vascularized intestinal transplant with sigmoid colon (12-15 cm length)

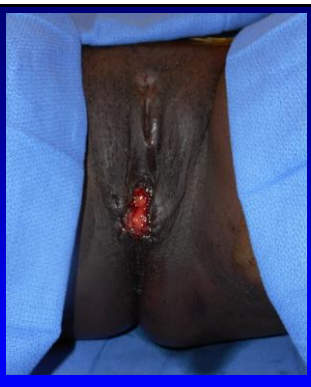




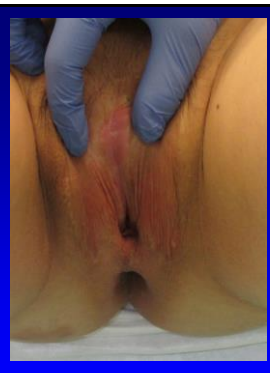




Separation of bowel anastomosis from distal vaginal cuff with interposition of omentum



Intestinal vaginoplasty



Results

- Vaginal depth 12-15 cm
- Adequate vaginal lubrication for intercourse (without need for lubrication)
- Intermittent drainage
- Intermittent bleeding
- Diversion colitis (steroid enema)
- GI diseases (malignancy)

Review of 1563 Vaginoplasty Patients

26 studies (1461 penile inversion, 102 intestinal vaginoplasty)

Results:

Mean vaginal depth: 10 cm – 13.5 cm

Complications:
Introital stricture: 12% (4.2% – 15%)
Vaginal stricture: 7 % (1% - 12%)
Partial necrosis: 2.7% - 4.2%
Wound dehiscence: 12% - 33 %
Genital pain: 3% - 9%

Rectovaginal fistula: .8%-17%

Satisfaction:

Depth: 76% - 100 %

Appearance: 90% - 100%

Improvement in quality of life: 7.9 (scale -10 – 10)

Happiness: 8.7 (scale 0 – 10)

Life is easier: 83.1%

Regret: 0 (6% "some regret")

Outcome of vaginoplasty in male-to-female transgenders: a systematic review of surgical techniques, Horbach, et. al., Journal of Sexual Medicine, 2015; 12: 1499-1512

Clinical Review & Education

JAMA Surgery | Review

What Surgeons Need to Know About Gender Confirmation Surgery When Providing Care for Transgender Individuals
A Review

Jens U. Berli, MD; Gail Knudson, MD; Lin Fraser, EdD; Vin Tangpricha, MD, PhD; Randi Ettner, PhD; Frederic M. Ettner, MD; Joshua D. Safer, MD; Julie Graham, MFT; Stan Monstrey, MD; Loren Schechter, MD

WPATH Global Education Initiative

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THE JOURNAL OF
SEXUAL MEDICINE

Gender Confirmation Surgery: Guiding Principles

Loren S. Schechter, MD, FACS,[1] Salvatore D'Arpa, MD, PhD,[2] Mimis N. Cohen, MD,[3] Ervin Kocjancic, MD,[4] Karel E. Y. Claes, MD,[5] and Stan Monstrey, MD, PhD[5]

ABSTRACT

Background: At this time, no formal training or educational programs exist for surgeons or surgery residents interested in performing gender confirmation surgeries.

Aim: To propose guiding principles designed to aid with the development of formal surgical training programs focused on gender confirmation surgery.

Methods: We use expert opinion to provide a "first of its kind" framework for training surgeons to care for transgender and gender nonconforming individuals.

Outcomes: We describe a multidisciplinary treatment model that describes an educational philosophy and the institution of quality parameters.

Results: This article represents the first step in the development of a structured educational program for surgical training in gender confirmation procedures.

Clinical Implications: The World Professional Association for Transgender Health Board of Directors unanimously approved this article as the framework for surgical training.

Strengths and Limitations: This article builds a framework for surgical training. It is designed to provide concepts that will likely be modified over time and based on additional data and evidence gathered through outcome measurements.

Conclusion: We present an initial step in the formation of educational and technical guidelines for training surgeons in gender confirmation procedures. **Schechter LS, D'Arpa S, Cohen MN, et al. Gender Confirmation Surgery: Guiding Principles. J Sex Med 2017;XX:XXX–XXX.**

Key Words: Gender Confirmation Surgery; Phalloplasty; Metoidioplasty; Vaginoplasty; Gender Surgery Fellowship

Conclusions

- Surgery is a proven therapy for patients with gender dysphoria
- Optimal outcomes occur in multi-disciplinary clinics
- Additional outcomes research to identify potential risk factors and objective grading method for post-operative results

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