Caring For Gender Diverse Patients IN YOUR PRACTICE

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American Academy of PAs

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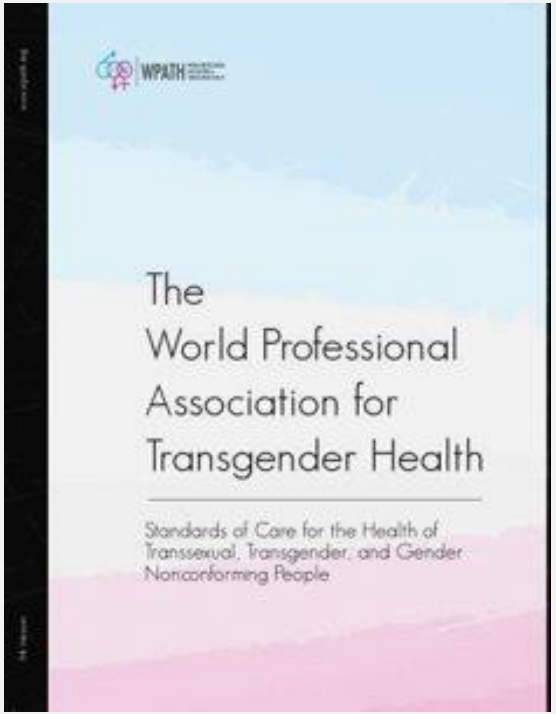
SPEAKER DISCLOSURES

- Data within this presentation may not be relevant to clinical situations that differ from the citation from which the data was drawn.
- The ultimate judgment concerning the propriety of any course of conduct must be made by the clinician after consideration of each individual patient situation.
- This Presentation Includes **Off-Label Uses of All Pharmaceutical Products**. Use is consistent with the following:
    - Jaffe JM, Gorton GN, Menkin DM, Debb Dunn,PAC, MBA et al. Gender affirming hormone therapy prescriber guidelines. **TransLine.** Published April ,4 2019
    - Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An **Endocrine Society Clinical Practice Guideline**. J Clin Endocrinol Metabol. 2017;102(11):3869-3903.
    - UCSF, Center of Excellence for Transhealth, **Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People**, 2nd Ed, 2016 (colloquially referred to as the UCSF guidelines)
    - Coleman E, Bockting W, Botzer M, et al. **Standards of care for the health of transsexual, transgender, and gender-nonconforming people**. Version 7. Int J Transgenderism. 2012;13(4):165-232.
    - Olson J, Garofalo R. **The peripubertal gender-dysphoric child: puberty suppression and treatment paradigms**. Pediat Ann. 2014;43(6):e132-e137.

MEDICAL NECESSITY

"The medical procedures attendant to [gender transition] are not "cosmetic" or "elective" or for the mere convenience of the patient. These [interventions] are ***not optional in any meaningful sense but are understood to be medically necessary*** *… not experimental … decades of both clinical experience and medical research show they are essential to achieving well-being for the [trans] patient."* - WPATH



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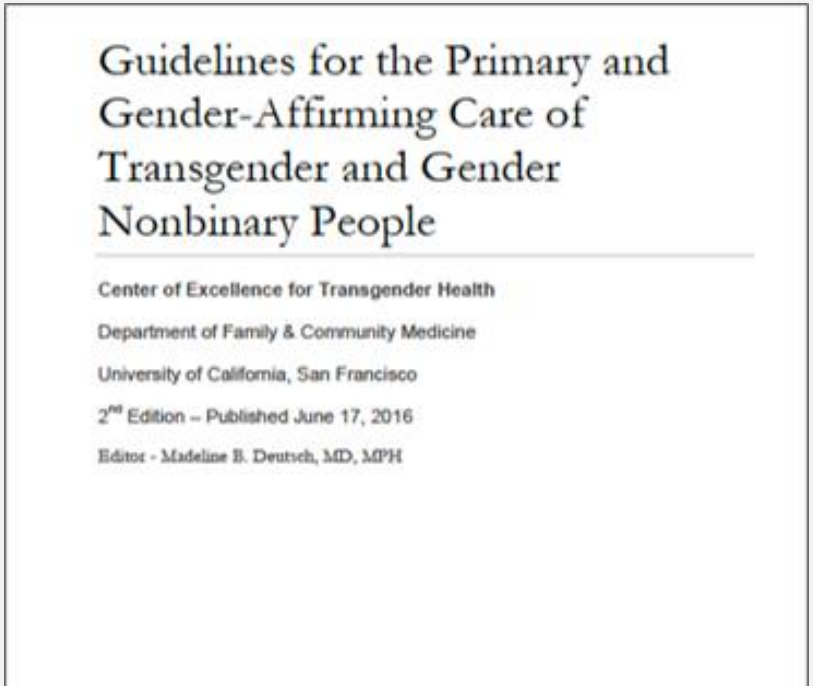
- American Medical Association/2008
- US Endocrine Society
- American Psychiatric Association
- American Psychological Association/2008
- American Academy of Family Physicians/2007
- National Commission of Correctional Health Care
- American Public Health Association
- National Association of Social Workers
- American College of Obstetrics and Gynecology
- American Society of Plastic Surgeons
- World Health Organization

MEDICAL EFFECTIVENESS

- 2016, UCSF's Center of Excellent for Transgender Health



Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People

Center of Excellence for Transgender Health

Department of Family & Community Medicine

University of California, San Francisco

2nd Edition – Published June 17, 2016

Editor - Madeline B. Deutsch, MD, MPH

- 2017, The Endocrine Society

CLINICAL PRACTICE GUIDELINE

Endocrine Treatment of Gender-Dysphoric/ Gender-Incongruent Persons: An Endocrine Society* Clinical Practice Guideline

Wylie C. Hembree,[1] Peggy T. Cohen-Kettenis,[2] Louis Gooren,[3] Sabine E. Hannema,[4] Walter J. Meyer,[5] M. Hassan Murad,[6] Stephen M. Rosenthal,[7] Joshua D. Safer,[8] Vin Tangpricha,[9] and Guy G. T'Sjoen,[10]

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*Cosponsoring Associations: American Association of Clinical Endocrinologists, American Society of Andrology, European Society for Pediatric Endocrinology, European Society of Endocrinology, Pediatric Endocrine Society, and World Professional Association for Transgender Health.

Objective: To update the "Endocrine Treatment of Transsexual Persons: An Endocrine Society Clinical Practice Guideline," published by the Endocrine Society in 2009.

Participants: The participants include an Endocrine Society–appointed task force of nine experts, a methodologist, and a medical writer.

Evidence: This evidence-based guideline was developed using the Grading of Recommendations, Assessment, Development, and Evaluation approach to describe the strength of recommendations and the quality of evidence. The task force commissioned two systematic reviews and used the best available evidence from other published systematic reviews and individual studies.

Consensus Process: Group meetings, conference calls, and e-mail communications enabled consensus. Endocrine Society committees, members and cosponsoring organizations reviewed

INTERVENTIONS

SOCIAL TRANSITION

Adopting gender-affirming hairstyles, clothing, nickname, gender pronouns, restrooms, etc.
COMPLETELY REVERSIBLE
ANY AGE

PUBERTY BLOCKERS

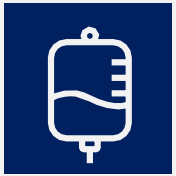
Gonadotropin-releasing hormone/GnRH analogs
COMPLETELY REVERSIBLE
STAGE NOT AGE

HORMONE THERAPY

AFAB: Testosterone
AMAB: Estradiol
+ anti-androgen
PARTIALLY REVERSIBLE
+/- ADOLESCENTS + ADULTS

SURGICAL

"Top" Surgeries
"Bottom" Surgeries
Facial, Tracheal Shave
NOT REVERSIBLE
+/- ADOLESCENTS + ADULTS



Affimed gender -> indistinguishable psyc.

OLSON et al

2015

2009

RYAN et al

Family acceptance -> resilience & psyc. well-being

2016

2016

Mult gender transitions + support = ☺

EHRENSAFT

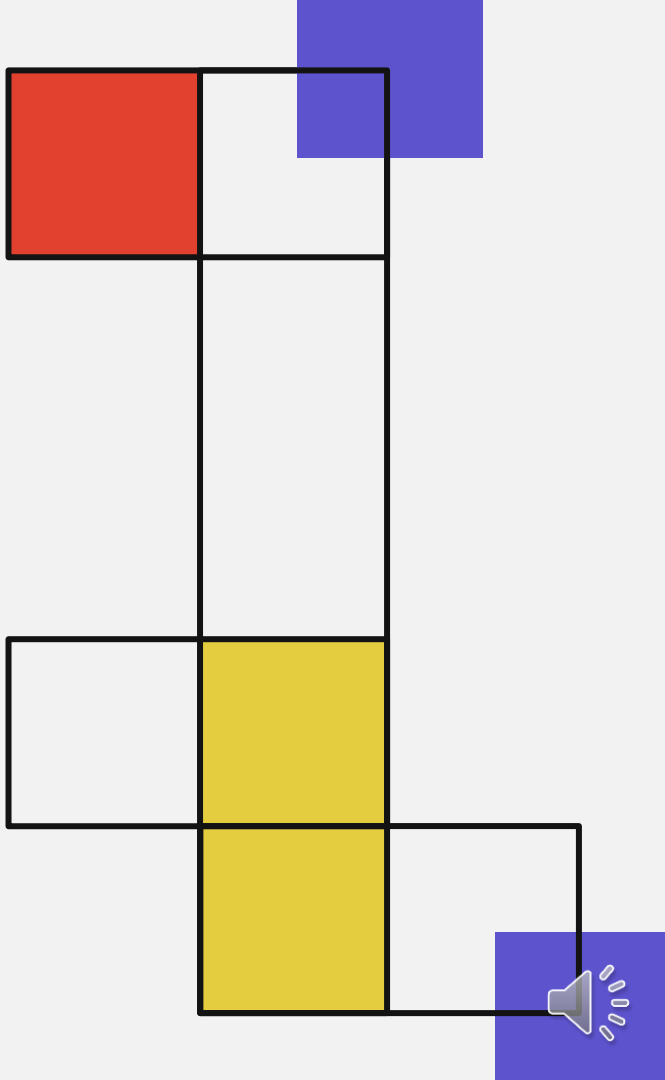
EHRENSAFT

Lack of support in key developmental areas = ☹

DATA

31% of respondents [transgender adults in the US] identified as nonbinary

—JAMES et al, 2016



RENEE: F, AMAB

ROBERT: M, AFAB

PHARMACOLOGY

- **Initial spike in LH, FSH** followed by desensitized pituitary
- LH & FSH secretion suppressed
- Suspends germ cell maturation

GnRH Analog

Transhealth=Primary Care

Pediatr Ann. 2014 Jun;43(6):e132-7. doi: 10.3928/00904481-20140522-08.

The peripubertal gender-dysphoric child: puberty suppression and treatment paradigms

Johanna Olson, Robert Garofalo

PMID: 24972421 DOI: 10.3928/00904481-20140522-08

Abstract

Gender-nonconforming youth are emerging at increasingly younger ages, and those experiencing gender dysphoria are seeking medical care at, or sometimes even before, the onset of puberty. Youth with gender dysphoria are at high risk for depression, anxiety, isolation, self-harm, and suicidality at the onset of a puberty that feels wrong. Medical providers would benefit from understanding interventions that help gender-nonconforming children and youth thrive. The use of gonadotropin-

LAB RESULTS

Pre-pubertal = 0.26-3.0
Tanner 2 = 1.8–3.2

FSH 2.4

Pre-pubertal = 0.2-0.3
Tanner 2 = 0.2–4.9

LH 0.9

Tanner 2 = 9.8-14.5

Tot T 12.7

FORMULATIONS

Leuprolide Depot
Injected monthly
<25 kg -> 7.5 mg
25-37.5 kg -> 11.25 mg
37.5+ kg -> 15 mg
Depot Q3Mo
11.25 mg
20 mg

Histrelin 50 mg
“pellet”, slow release
Implanted SC upper arm
Provider competence
Office visit, local anesthesia
Replaced 12->36 months

GnRH Analogs

LAB RESULTS

Pre-pubertal = 0.26-3.0 Tanner 2 = 1.8–3.2	FSH 0.209
Pre-pubertal = 0.2-0.3 Tanner 2 = 0.2–4.9	LH 0.280
Tanner 2 = 9.8-14.5	Tot T 3.5

Debb Dunn PA-C, MBA

INFORMED CONSENT

1. Informed Consent is when an adult gives permission (consent) to make an adult decision for themselves.
2. Letters from a therapist are not required for treatment, including hormone therapy. Nobody must “approve” the patient’s medical transition.
3. This model of care preserves patient autonomy and gives non-binary people more freedom to decide for themselves which parts of medical transition they undergo.

MEDICAL TRANSITION

Hormone therapy must be individualized based on a patient's goals, the risk/benefit ratio of medications, the presence of other medical conditions, and consideration of social and economic issues.

https://www.wpath.org/publications/soc

WPATH: CRITERIA FOR HORMONE THERAPY

1. Persistent, well-documented gender dysphoria
2. Capacity to make a fully informed decision and to consent for treatment
3. Age of majority in a given country (18 years)
4. If significant medical or mental health concerns are present, they must be reasonably well controlled

WPATH standards of care (2007)

FEMINIZING HORMONE TREATMENT GUIDELINES

FEMINIZING THERAPY: THERAPEUTIC GOALS

1. Testosterone level < 50- 75 ng/dL (normal cis-female range)
2. Estradiol level 50 – 350 ng/ dl (mean of premenopausal range)
3. No established hormonal reference ranges, treat per clinical response emotionally and physically

Gender Affirming Hormone Therapy Guidelines Transline 2019

Table 2. Laboratory monitoring for hormonal therapy

Test	Comments	Baseline	3 months*	6 months*	12 months*	Yearly	PRN
* In first year of therapy only ** Used to calculate bioavailable testosterone; monitoring bioavailable testosterone is optional and may be helpful in complex cases (see text)							
BUN/Cr/K+ (CMP)	Only if spiro used	X	X	X	X	X	X
Lipids	No evidence to support monitoring at any time; use clinician discretion	Based on USPSTF guidelines					X
A1c or glucose	No evidence to support monitoring at any time; use clinician discretion	Based on USPSTF guidelines					
Estradiol	Test estradiol levels if suspect the dose is high	X					X
Total Testosterone		X	X	X	X		X
Sex Hormone Binding Globulin (SHBG)**	Only if not able to obtain optimal hormone level						
CBC		X	X	X	X		X
Prolactin	Only if symptoms of prolactinoma	X					

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Trans Feminine: Exogenous Estrogen Dosing

Medication	Start/Usual Dose	Typical Max Dose	Frequency	Pros	Cons	Notes
Intramuscular or Subcutaneous[1] **(Estradiol Valerate = Delestrogen or Estradiol Cypionate = Depo-Estradiol)**	Valerate: 5mg - 10mg (0.25mL – 0.5mL of 20mg/mL solution) Cypionate: 1.25mg - 2.5mg (0.25mL – 0.5mL of 5mg/mL solution)	Valerate: 20mg (1mL of 20mg/mL solution or 0.5mL of 40mg/mL solution) Cypionate: 5mg (1mL of 5mg/mL solution)	Weekly[2]	• Less frequent administration • Systemic effect, avoids first pass effect on liver; however when at peak circulating levels of estrogen, amount delivered to liver may be higher than other modes of delivery • Peak of injectable may help better suppress endogenous hormone production	• Peak/trough fluctuation effect • Self-injection or frequent in-office injections • Needle Use	• Valerate formulated in castor oil (use if allergic to cottonseed) and is typically used with weekly dosing. The national shortages of the injectable formulation, especially generic Estradiol Valerate, from August 2016 through the finalization of this protocol have made availability sporadic. • Cypionate is formulated in cottonseed oil (use if allergic to castor oil) and is typically a quarter of the dose of valerate and can be given at every two week intervals rather than weekly due to the longer half life.
Estradiol Patch **(Vivelle Dot)**	0.1mg - 0.2mg (1-2x 0.1mg patches)	0.4mg (4x 0.1mg patches)	Bi-weekly or per manufacturers recommendation	• No needle use • Less fluctuation in levels • No first pass metabolism	• Adhesive irritation, can fall off with sweat[3] • Daily application • May be expensive if not covered by insurance	• Preferred method for those with increased risk of DVT/PE/CVD • For those who have had DVT/PE/CVD, shared clinical decision-making to resume low-dose (0.05mg) transdermal estrogen may be done, but it should be administered with continuous anticoagulation.
Estradiol Oral **(Estrace)**	2mg - 6mg (1-3x 2mg tablet)	8mg (4x 2mg tablets daily)	Daily	• No needle use • Less fluctuation in levels	• Daily dose • First pass metabolism	• Single or divided doses dependent on preference; if on higher dose of 6-8mg, would recommend dividing to decrease first pass and hepatotoxicity. • Some providers recommend sublingual administration to attempt to bypass first pass metabolism, but it is unclear how much is actually absorbed sublingually vs. swallowed. • Consider switch to injectable if not seeing results with oral.
Premarin Oral	1.25mg - 2.5mg (1-2x of 1.25mg tablet)	5mg (4x 1.25mg tablets daily)	Daily	• No needle use • Less fluctuation in levels	• Daily dose • Rarely used & not preferred due to higher thrombogenic risk compared to estradiol • Difficult to monitor estrogen level as it may not reflect true serum levels related to dose. • May be expensive if not covered by insurance • First pass metabolism	•

Trans Feminine: Medications to Supplement Estrogen

Anti-Androgens	Start/Usual Dose	Typical Max Dose	Frequency	Pros	Cons	Notes
Spironolactone Oral **(Aldactone)**	100mg - 300mg (1-3x 100mg tablets)	400mg (4x 100mg tablets)	Daily	• Inexpensive • Very effective to decrease endogenous testosterone levels	• Potential risk of hyperkalemia • Diuretic effect can result in fatigue, dehydration side effects • Erectile dysfunction[5]	• Single or divided doses dependent on preference
Finasteride Oral **(Propecia or Proscar)** **As adjuvant anti-androgen**	5mg (1x 5mg tablet)	5mg (1x 5mg tablet)	Daily	• • Slows and prevents balding due to androgenic alopecia and decreases other secondary sexual hair growth in youth		• Used as adjuvant because decreases DHT but not Testosterone • Can use alone (without estrogen) if goal is only for partial feminization
Dutasteride Oral **(Avodart)** **As adjuvant anti-androgen**	0.5mg (1x 0.5mg tablet)	0.5mg (1x 0.5mg tablet)	Every 3 days	• Slows and prevents balding due to androgenic alopecia and decreases other secondary sexual hair growth in youth • Can take every 3 days rather than every day with Finasteride	• May be expensive and not typically covered by insurance	• Same as Finasteride Notes
Leuprolide Acetate IM **(Lupron, Eligard)**	11.25mg (1 IM shot of 1.25mg/1.5mL dilutant)	22.5mg (2 IM shots of 11.25mg/1.5mL dilutant)	Every 3 months	• GnRH receptor agonist, very effective • For Teens: Best option for puberty suppression; can use either alone or with exogenous hormones • For Adults: Especially beneficial if can't use spiro and/or on a lower estrogen dose and/or having difficulty suppressing endogenous hormone production	• May be expensive if not covered by insurance • Not ideal for long-term use due to bone density loss[6]	
Histrelin Pellet **(Vantas)**	50mg	50mg	Every 1 year	• See Leuprolide Acetate Pros	• More invasive, requires minor surgery to implant • May be expensive if not covered by insurance • Not ideal for long-term use due to bone density loss[6]	
Less Frequently Used Anti-Androgens	**Start/Usual Dose**	**Typical Max Dose**	**Frequency**	**Pros**	**Cons**	

Table 1. Hormone preparations and dosing (Grading: T O M)				
	Doses	Initial	Maximum	Comments
Progesterone				
Medroxyprogesterone acetate (Provera)	2.5,5, 10 mg	5 mg qhs	5-10 mg qhs	The risks of using progestogens in transgender women are likely minimal or even absent
Micronized progesterone Prometrium	100 mg	100 mg	200 mg qhs	Can cause weight gain and/or moodiness
Premarin (Estrogen)	.0375, .05 mg	.06, .09 mg	1.25 mg	Increased risk of VTE

FEMINIZING HORMONE REGIMENS

PA DUNN'S SUGGESTIONS FOR Prescribing Feminizing Hormones:

1. Start / Initial:
    a. Estrace 2 mg once per day
    b. Spironolactone 50-100 mg — once per day
2. Follow up in 4-6 weeks:
    a. Increase the dose: estrace 4 mg and spiro 100 - 200 mg
3. Follow up in 4-6 weeks:
    a. Increase the dose estrace 6 mg — continue spiro 200 mg
4. Follow-up in three months:
    a. If still experiencing dysphoria, increase estrace to 8 mg

FEMINIZING, continued

1. Delestrogen injectable:
    1. Start at delestrogen 2.5 - 5 mg weekly if just starting
    2. Start at delestrogen 10 mg weekly if switching from tablets
2. Follow-up in 4-6 weeks:
    a. Increase the dose to 8- 10 mg weekly
    b. Rarely prescribe over 10 mg weekly, the levels come back very high, but you can increase to 20 mg weekly

PROGESTERONE

1. Prometrium 100 mg – once tab once per day
    a. Follow-up in 6 weeks to check mood
    b. Increase to Prometrium 200 mg if still needed for the treatment of dysphoria
2. Provera
    a. Start Provera 2.5 mg once per day
    b. Follow-up in 4-6 weeks to check mood
    c. Increase to Provera 5 mg if needed for the treatment of dysphoria

APPROXIMATE DOSE EQUIVALENT CHART: Feminizing Hormones

Injectable	Transdermal Patch	Oral	Pellets (2 pellets per 25 mg injected weekly)
5mg weekly (0.25mL of 20 mg/mL solution)	0.05 mg	2 mg	300 mg (4x 75 mg pellets)
7.5 mg weekly (0.375mL of 20 mg/mL solution)	0.1 mg	4 mg	450 mg (6x 75 mg pellets)
10mg weekly (0.5mL of 20 mg/mL solution)	0.2 mg	6 mg	600 mg (8x 75 mg pellets)
20 mg weekly (0.5mL of 40 mg/mL solution)	0.4 mg	8 mg	900 mg (12x 75 mg pellets)

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FEMINIZING EFFECTS of Estrogen Therapy

EFFECT	ONSET[a]	MAXIMUM[a]
Redistribution of body fat	3 – 6 months	2 – 3 years
Decrease in muscle mass and strength	3 – 6 months	1 – 2 years
Softening of skin/decreased oiliness	3 – 6 months	Unknown
Decreased libido	1 – 3 months	3 – 6 months
Decreased spontaneous erections	1 – 3 months	3 – 6 months
Male sexual dysfunction	Variable	Variable
Breast growth	3 – 6 months	2 – 3 years
Decreased testicular volume	3 – 6 months	2 – 3 years
Decreased sperm production	Unknown	> 3 years
Decreased terminal hair growth	6 – 12 months	> 3 years[b]
Scalp hair	No regrowth	n/a
Voice changes	None	n/a

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MEDICAL RISKS of Estrogen Therapy

1. **Venous thromboembolism / clotting risk**
2. Hypertension and/or edema
3. Weight gain
4. Migraine headaches
5. Coronary artery disease
6. Cerebrovascular disease
7. Hypertriglyceridemia
8. Elevated liver enzymes
9. Cholelithiasis
10. Macroprolactinoma or hyperprolactinemia
11. Breast cancer risk

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MASCULINIZING HORMONAL TREATMENT GUIDELINES

MASCULINIZING THERAPY: Therapeutic Goals

1. Recommended mid-cycle draw reference ranges vary:
    a. Fenway: 300-700ng/dl
    b. Endocrine Society: 400-700ng/dl
    c. UCSF's: 350-1100ng/dl
    d. Chase Brexton: 200- 1000
2. Estradiol level < 30 (postmenopausal range)
3. No established reference range, some treat per clinical response
4. Consider reducing testosterone dose if hematocrit > 50% and HOLD therapy with hematocrit > 53%

Gender Affirming Hormone Therapy Guidelines Transline 2019

Trans Masculine: Exogenous Testosterone Dosing

Medication	Start/Usual Dose	Absolute Max Dose	Frequency	Pros	Cons	Notes
Intramuscular or Subcutaneous **(Testosterone Cypionate or Testosterone Enanthate) 200 mg/ml**	25-50 mg	80-100 mg	Weekly	Comparatively less frequent administration Peak of injectable may better suppress endogenous hormone production	Peak/trough fluctuation effect Self-injection/needle use or frequent in-office injections	Cypionate formulated in cottonseed oil (use if allergic to sesame) Enanthate formulated in sesame oil (use if allergic to cottonseed) Enanthate has slightly shorter half-life than cypionate
Patch **(Androderm)**	2 mg-4 mg (2 mg and 4 mg patches)	6-8 mg (2x 4 mg patches)	Daily	No needle use Less fluctuation in levels Good for more gradual effects	Slower to stop menses and may not fully stop at lower doses Adhesive irritation, falling off with sweat Daily application Expensive if not covered by insurance	Androderm no longer manufactures 2.5 mg or 5 mg patches
Topical Gel **(Androgel, Axiron, Testim)**	20 mg-60 mg Androgel 1% is 12.5mg/actuation so need 2-5 pumps respectively Androgel 1.62% is 20.25 mg/actuation so need 1-3 pumps respectively Axiron is 30 mg/actuation so need 1-2 pumps respectively Testim is 50 mg/5g so need 2.5g-5g respectively	100 mg Androgel 1% is 12.5 mg/actuation so need 8 pumps Androgel 1.62% is 20.25 mg/actuation so need 2-5 pumps Axiron is 30 mg/actuation so need 3-3.5 pumps Testim is 50 mg/5g so need 10g	Daily	No needle use Less fluctuation in levels Good for more gradual effects More titratable dose	Slower to stop menses and may not fully stop at lower doses Risk of transferring to others/pets so must instruct how to apply per package insert Daily application Expensive if not covered by insurance	

Gender Affirming Hormone Therapy Guidelines Transline 2019

PA DUNN'S SUGGESTIONS for Starting Masculinizing HRT

1. Start:
    a. Testosterone cypionate 25 mg weekly
2. Follow-up in 4-6 weeks:
    a. Increase the dose testosterone 50 mg weekly
3. Follow-up in 4-6 weeks:
    a. Increase dose of testosterone to 80 mg weekly
4. Follow-up in three months
    a. Can increase to 100 mg weekly

APPROXIMATE Dose Equivalent Chart Testosterone

Injectable	Transdermal Patch	Transdermal Gel	Compounded Testosterone Cream	Pellets (2 pellets per 25 mg injected weekly)
50 mg weekly (0.25mL of 200 mg/mL solution)	2 mg	25 mg	12.5 mg	300 mg (4x 75 mg pellets)
75 mg weekly (0.375mL of 200 mg/mL solution)	1 mg + 2 mg or 4 mg	37.5 mg	25 mg	450 mg (6x 75 mg pellets)
100 mg weekly (0.5mL of 200 mg/mL solution)	6 mg	50 mg	50 mg	600mg (8x 75 mg pellets)
200 mg weekly (1mL of 200 mg/mL solution)	10 mg	100 mg	100 mg	900 mg (12x 75 mg pellets)

Gender Affirming Hormone Therapy Guidelines Transline 2019

MASCULINIZING EFFECTS of Testosterone

EFFECT	ONSET[a] (months)	MAXIMUM[a] (years)
Skin oiliness/acne	1 – 6	1 – 2
Facial/body hair growth	6 – 12	4 – 5
Scalp hair loss	6 – 12	variable
Increased muscle mass/strength	6 – 12	2 – 5
Fat redistribution	1 – 6	2 – 5
Cessation of menses	2 – 6	n/a
Clitoral enlargement	3 – 6	1 – 2
Vaginal atrophy	3 – 6	1 – 2
Deepening of voice	6 – 12	1 – 2

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MEDICAL RISKS OF TESTOSTERONE

- **Erythrocytosis (hematocrit > 50%)**
- **Severe liver dysfunction (transaminases > 3x upper limit)**
- Weight gain with body fat redistribution
- Hypertension and edema
- Coronary artery disease
- Cerebrovascular disease
- Possible risk of breast or uterine cancer
- Migraine headaches
- Metabolic problems → dyslipidemia, diabetes, sleep apnea
- Behavior changes → aggression, increased libido, mood swings

UCSF: Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People

REFERENCES

- TransLine Guidelines for Gender Affirming Hormones: https://translinezendesk.com
- WPATH Standards of Care Verse 7: https://www.wpath.org/publications/soc
- UCSF Transgender Care: Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People https://transcare.ucsf.edu/guidelines

Surgical Management of Gender-Diverse Patients

Kayla McLaughlin PA-C
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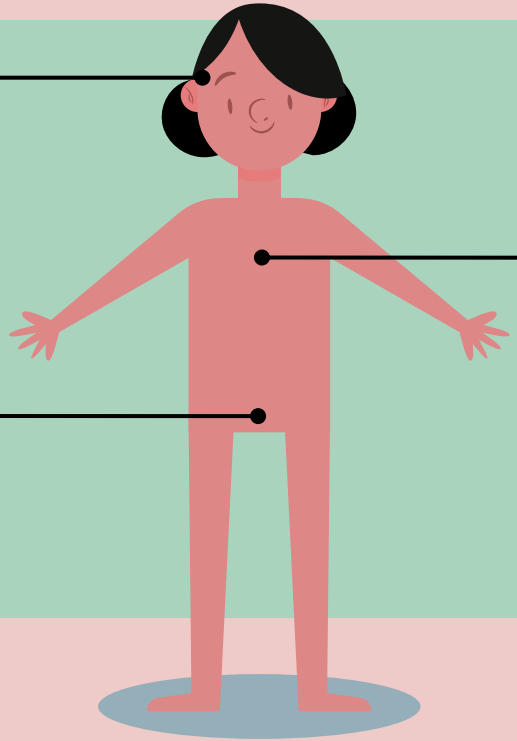
FEMINIZING PROCEDURES

Facial Surgeries

- Facial Feminization
- Tracheal Shave
- Vocal Cord Surgery



Top Surgery

- Breast Augmentation

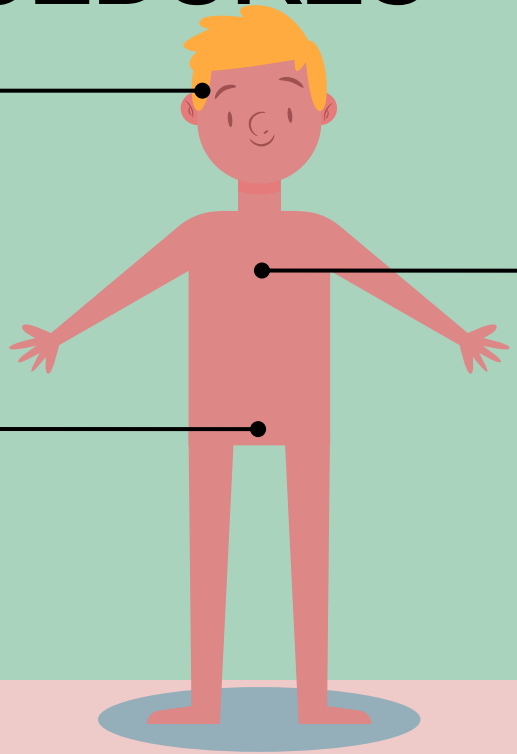
Bottom Surgeries

- Orchiectomy
- Full Depth Vaginoplasty
- Zero Depth Vaginoplasty

MASCULINIZING PROCEDURES

Facial Surgeries

- Facial Masculinization

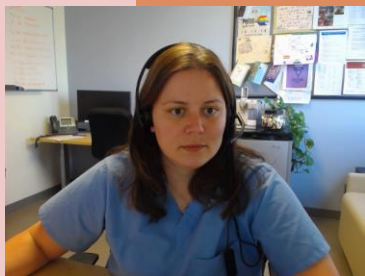


Top Surgery

- Masculinizing Mastectomy

Bottom Surgeries

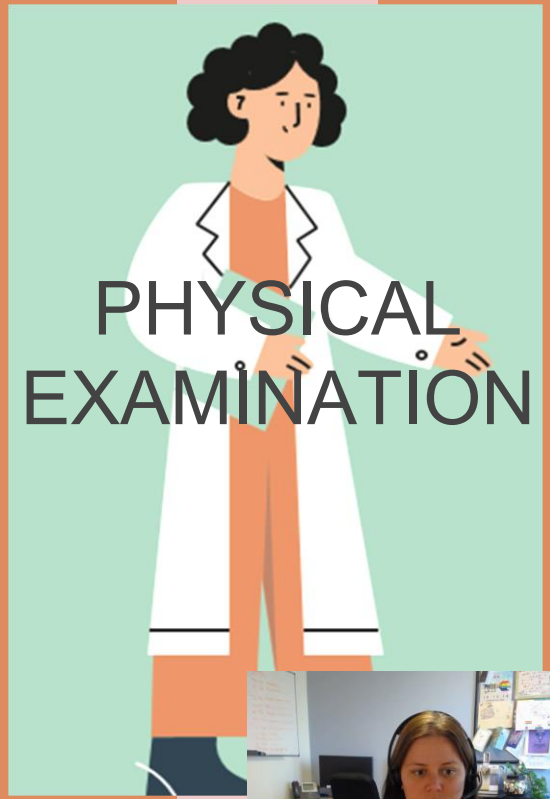
- Hysterectomy/Oophorectomy
- Simple Metoidioplasty
- Complex Metoidioplasty
- Phalloplasty



CASE ONE

Renee is a 20-year-old transgender female who presents to Department of Plastic Surgery for gender-affirming genitourinary surgery consult. **She** was referred to the department by her primary care provider. She socially transitioned at prior to puberty, initiated puberty suppression at age 10.8, and began hormone therapy at age 13. Her family and friends are supportive.

PHYSICAL EXAMINATION



ROS

No F/C/N/V
No chest pain/SOB
No bleeding tendency
No h/o stroke/TIA/DVT/PE

HEART AND LUNGS

Cardiac: RRR
Lungs clear to ausculation

GU EXAM

Not circumcised
Urethral meatus patent
Testes absent
Hair present
No lesions or excoriations
+ scrotal skin

LABS

Recent estrogen levels within normal limits (<200pg/mL)
Lipids WNL

VITALS

BMI 31
BP 115/70
HR: 75 bpm

TIMELINE TO SURGERY

CONSULT

Meet the team, review goals

1st Appointment

HAIR REMOVAL

Genital hair removal completed by electrolysis

12 months

TIME OFF

Arrange time off
Arrange FMLA/Disability

3 months prior

SURGERY DAY

VAGINOPLASTY GOALS

VAGINAL DEPTH

Proportionate to the patient's height. Limited by the peritoneal reflection

SENSATION

Preservation of the neurovascular bundle to optimize post-op sensation/ability to orgasm

URINARY FUNCTION

Patients should be able to easily sit and urinate without spray or malfunction

APPEARANCE

Vulva and vagina should be aesthetically similar to cisfemale vaginas

GENDER AFFIRMATION

The primary goal of this surgery is to affirm the patient's gender. Surgical team should honor pronouns, etc.

MINIMIZE RISK

Medical and mental health conditions should be reasonably well controlled. **NO NICOTINE!**

VAGINOPLASTY TECHNIQUES

Penile Inversion Vaginoplasty

Penile and scrotal skin are used to line the vaginal canal. Results in a skin-lined canal. Most widely used technique.

Vulvoplasty

No vaginal canal is made, does not require a vaginal lining.

Intestinal or Sigmoid

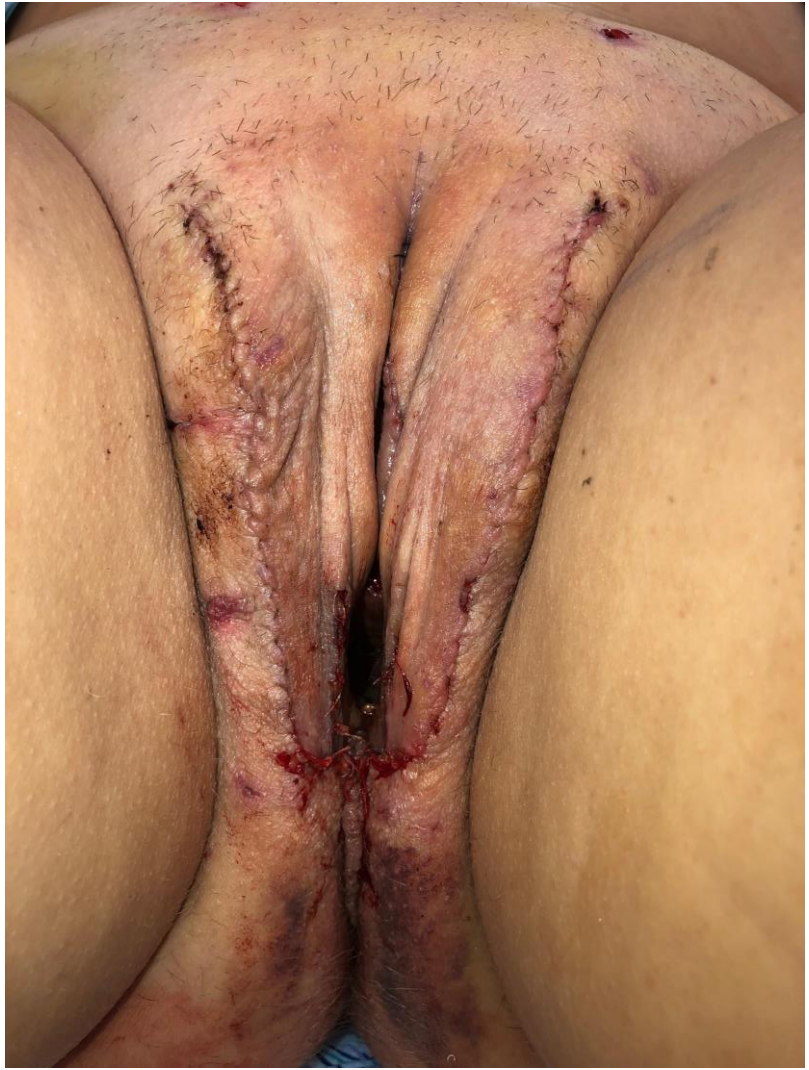
A section of sigmoid colon is used to line the vaginal canal. Typically done laparoscopically. Can result in excess, foul smelling mucous.

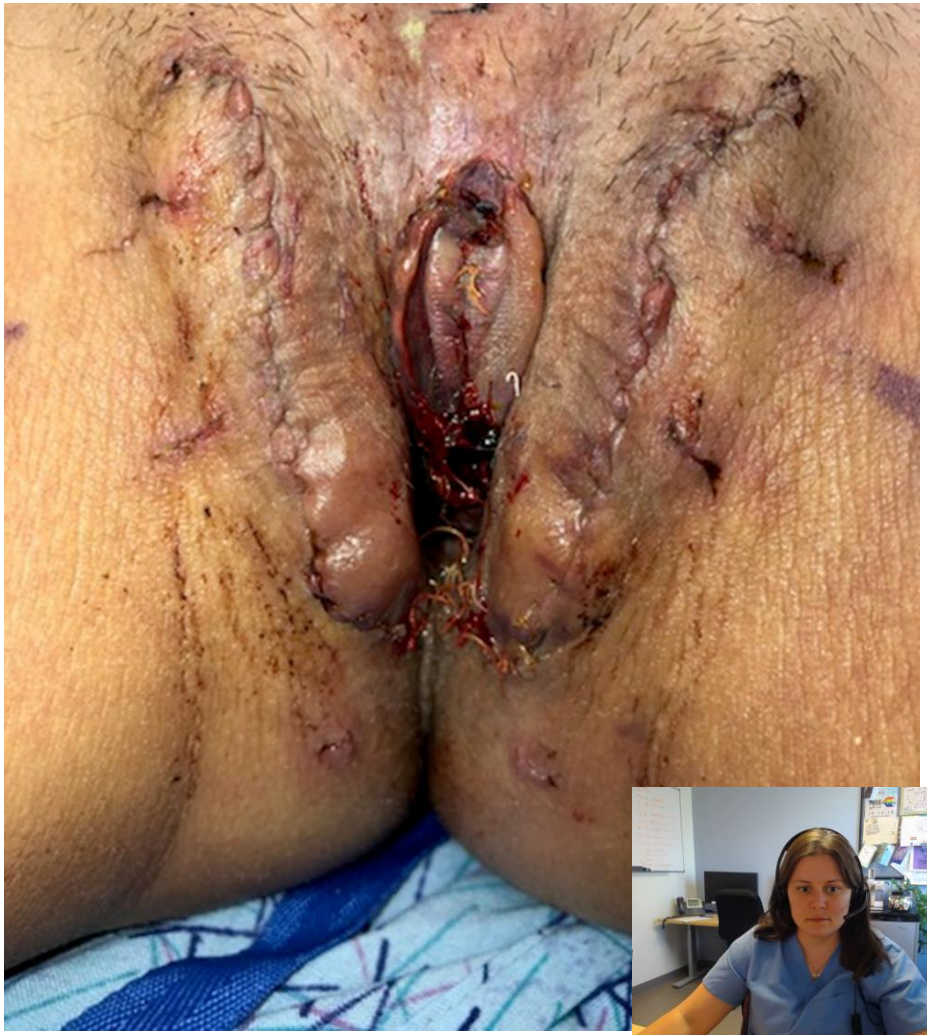
Peritoneal Pull Through

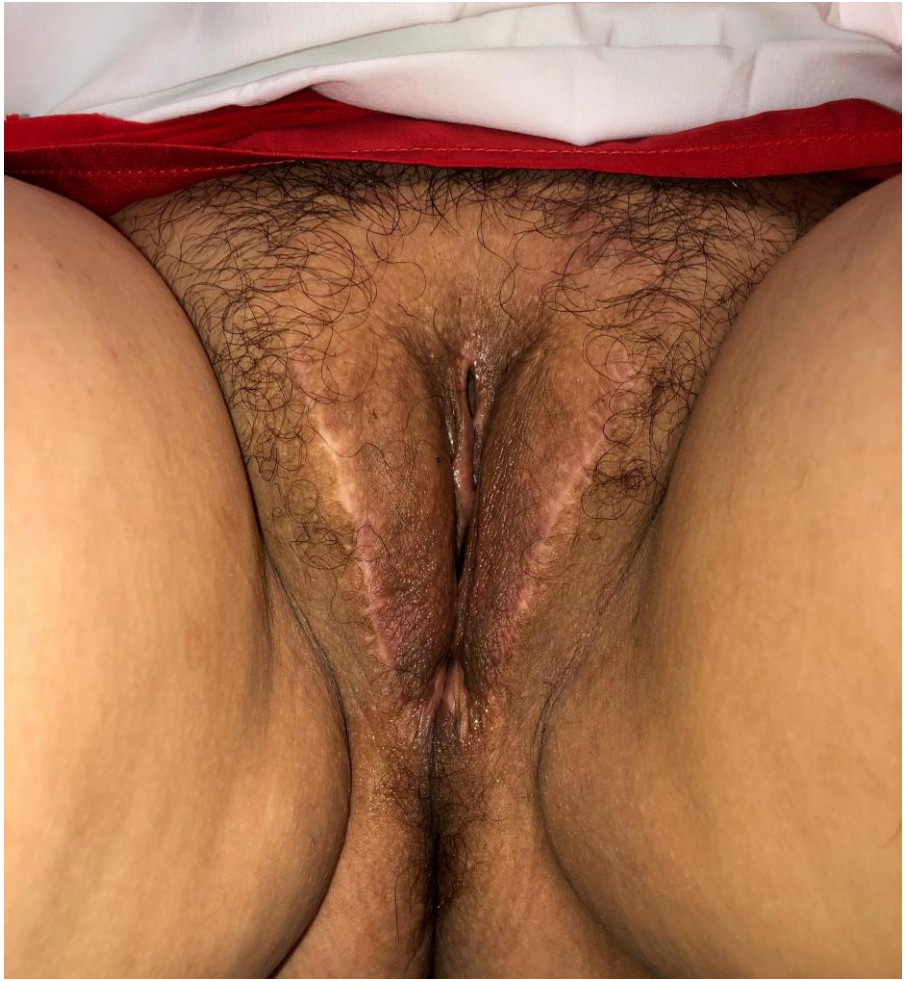
A segment of peritoneum is used to line the vaginal canal. May produce lubrication. Often used in patients with little penile/scrotal skin.

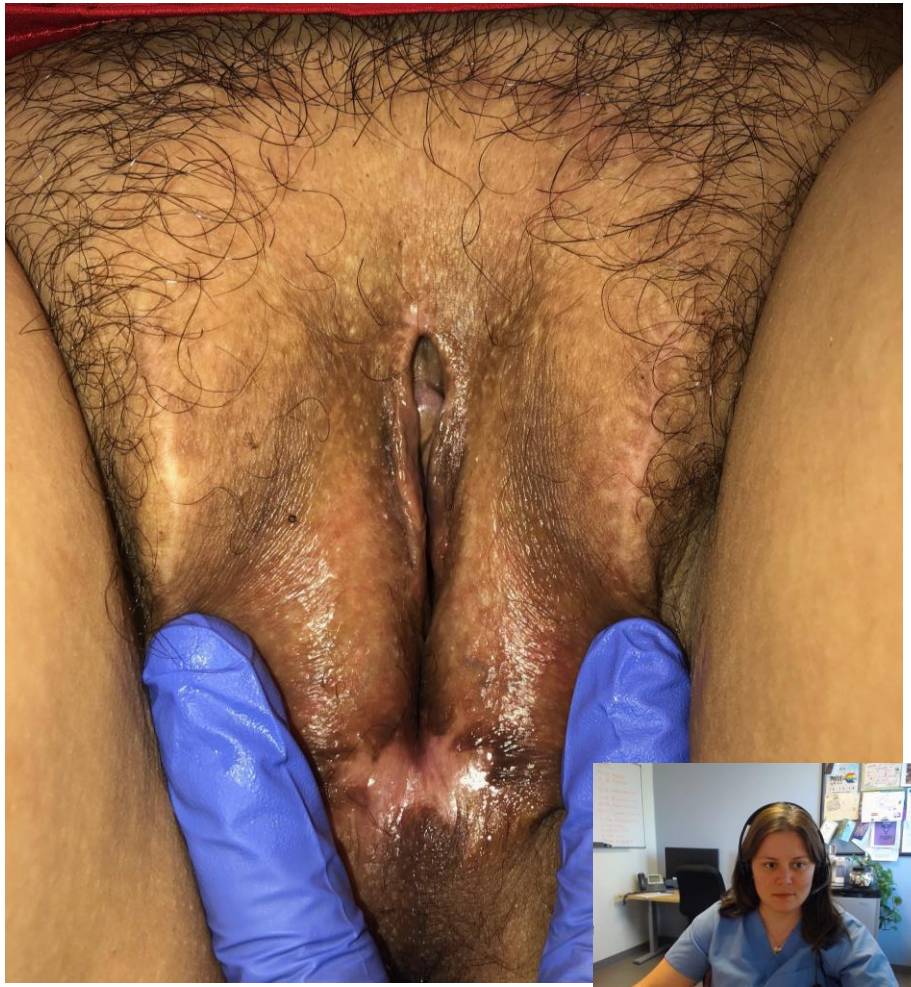
VAGINOPLASTY CONSIDERATIONS

- No menstruation
- Vagina is not self lubricating
- Not possible to get pregnant
- Condoms should be used for intercourse
- Dilation is a lifelong commitment
- Some scarring may be visible
- Results in permanent sterility









COMPLICATIONS

Vaginal Prolapse: Very uncommon, but possibility that vaginal canal could prolapse (come out of vaginal opening). Important to follow discharge instructions (no lifting over 5 pounds, bearing down).

Fistula: Hole or opening that joins two canals that are not typically joined. May heal by itself or may require additional surgeries to close the opening.

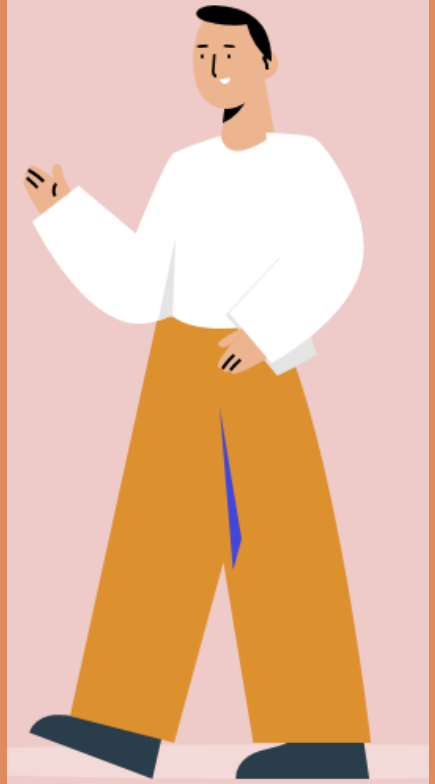
Granulation Tissue: New connective tissue and tiny blood vessels that form at the base of a wound. Looks like pink/beefy tissue that bleeds easily.

POST OPERATIVE COURSE

Renee successfully underwent vaginoplasty surgery. She needed a urethroplasty revision approximatley 6 months after surgery to redirect her urinary stream. She dilates daily and has been able to achieve orgasms through intercourse without pelvic pain. After a year of post-surgical follow-up, her care is transferred to her local gynecology office.

ABOUT ROBERT

Robert is a 30-year-old transgender male. He begin his social transition at age 18yo. He is on injectable testosterone.



CASE 2

PHALLOPLASTY TIMELINE

CONSULTS

Plastic surgery/Urology
Gynecology

FIRST STAGE PHALLOPLASTY

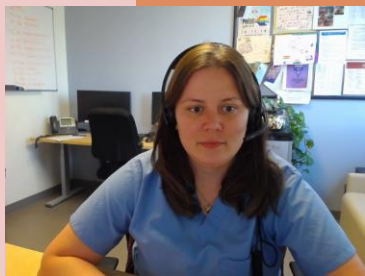
Hysterectomy with oophorectomy
Vaginectomy
Urethral lengthening
Simple scrotoplasty
Suprapubic catheter placement

SECOND STAGE PHALLOPLASTY

Full thickness skin graft taken from donor site to make phallus
Urethral and neurovascular anastomosis
Complex scrotoplasty
Split thickness skin graft to cover donor site
Suprapubic catheter placement

THIRD STAGE PHALLOPLASTY

Penile implant for erections
Testicular implants
Glansplasty



SURGERY DAY

PHALLOPLASTY GOALS

PENETRATIVE INTERCOURSE

Phallus should be of length appropriate to achieve intercourse

SENSATION

Anastamosis of clitoral nerve to donor site nerve to provide erogenous sensation

URINARY FUNCTION

Ability to stand to urinate without dribbling, leaking, or narrow stream

APPEARANCE

Penis and scrotum should be similar to cismale genitals in appearance

GENDER AFFIRMATION

The primary goal of this surgery is to affirm the patient's gender. Surgical team should honor pronouns, etc.

MINIMIZE RISK

Medical and mental health conditions should be reasonably well controlled. **NO NICOTINE!**

POTENTIAL DONOR SITES

RADIAL FOREARM FREE FLAP

A near circumferential full thickness skin graft taken from the forearm with accompanying NAV. Requires hand OT or PT.

PEDICLED ANTEROLATERAL THIGH FLAP

Pedicled flap taken from either thigh. Typically, too thick to make the phallus and urethra in one stage.

ABDOMINAL FLAP

Free flap taken from the abdomen. Not recommended due to minimal sensation.

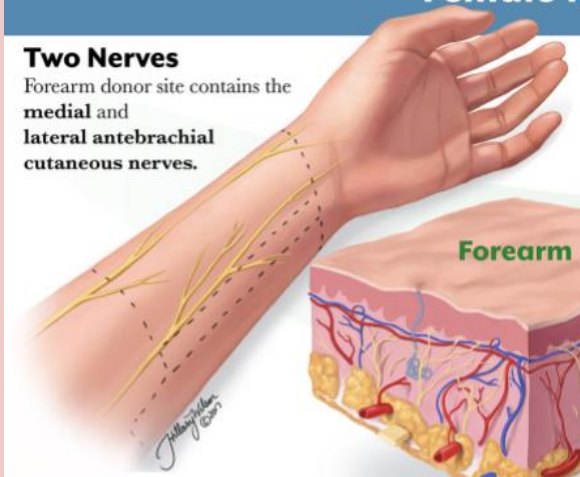
LATISSIMUS DORSI FLAP

Free flap taken from the upper back. Also not recommended due to minimal sensation.

Female to Male Phalloplasty Tube-in-Tube Forearm vs Thigh Flap

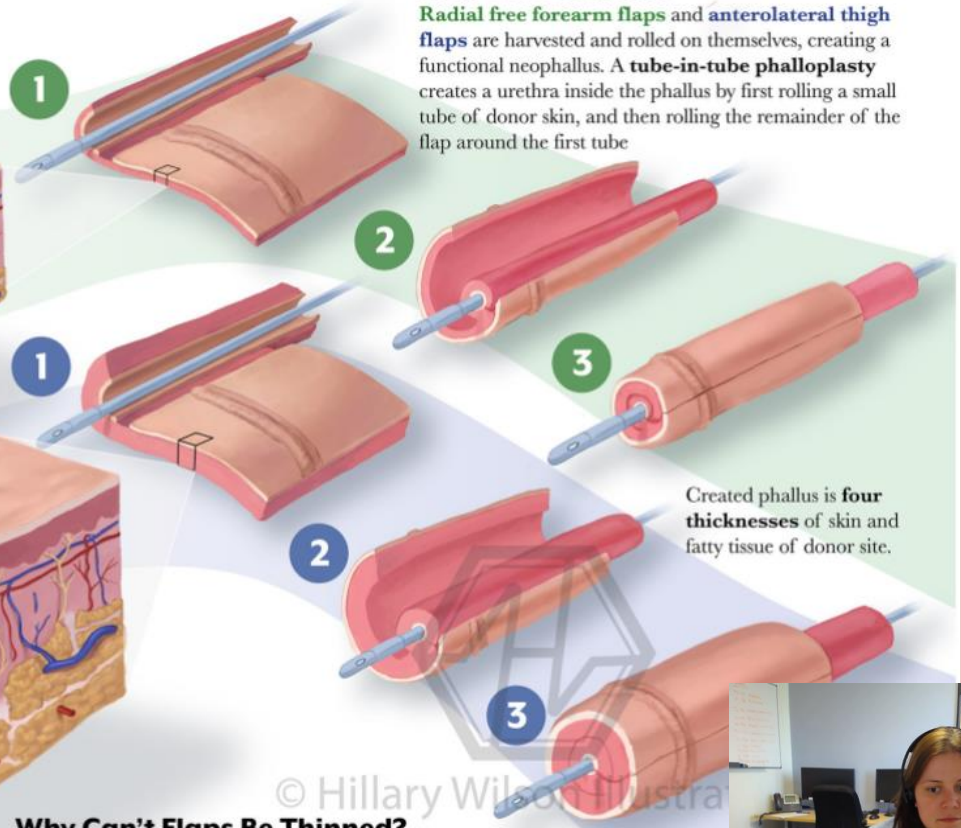
Two Nerves

Forearm donor site contains the **medial** and **lateral antebrachial cutaneous nerves.**

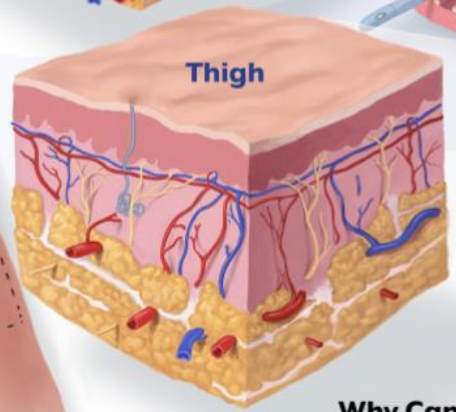


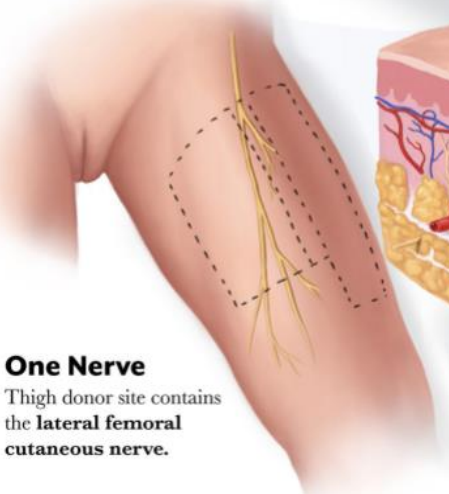
How Does It Work?

Radial free forearm flaps and **anterolateral thigh flaps** are harvested and rolled on themselves, creating a functional neophallus. A **tube-in-tube phalloplasty** creates a urethra inside the phallus by first rolling a small tube of donor skin, and then rolling the remainder of the flap around the first tube



Created phallus is **four thicknesses** of skin and fatty tissue of donor site.





One Nerve

Thigh donor site contains the **lateral femoral cutaneous nerve.**

Why Can't Flaps Be Thinned?

Because nerves, blood vessels, and connective tissue run through the fat, removing the fat would remove these important structures.

RISKS AND COMPLICATIONS

DEHISCENCE

Opening of a wound along an incision line. May require additional graft to repair.
Strict activity precautions post-operative.

INFECTION

IV antibiotics while recovering inpatient to cover both skin and urinary infections. By mouth antibiotics for the duration of indwelling catheter.

BLEEDING

Not uncommon to have bleeding/oozing from the urethral meatus. Active bleeding requires urgent medical attention.

URETHRAL STRICTURE

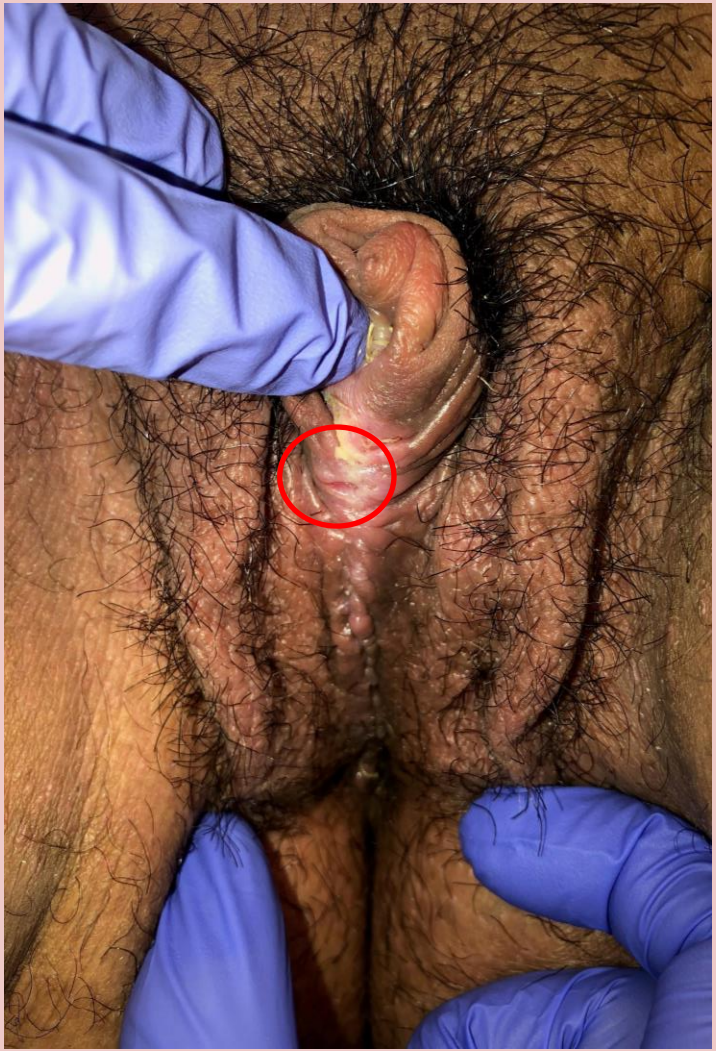
Scar in the urethra which narrows or blocks the urinary stream. Often requires surgical repair. Can occur anywhere along the urethra.
Inability to urinate requires immediate medical attention.

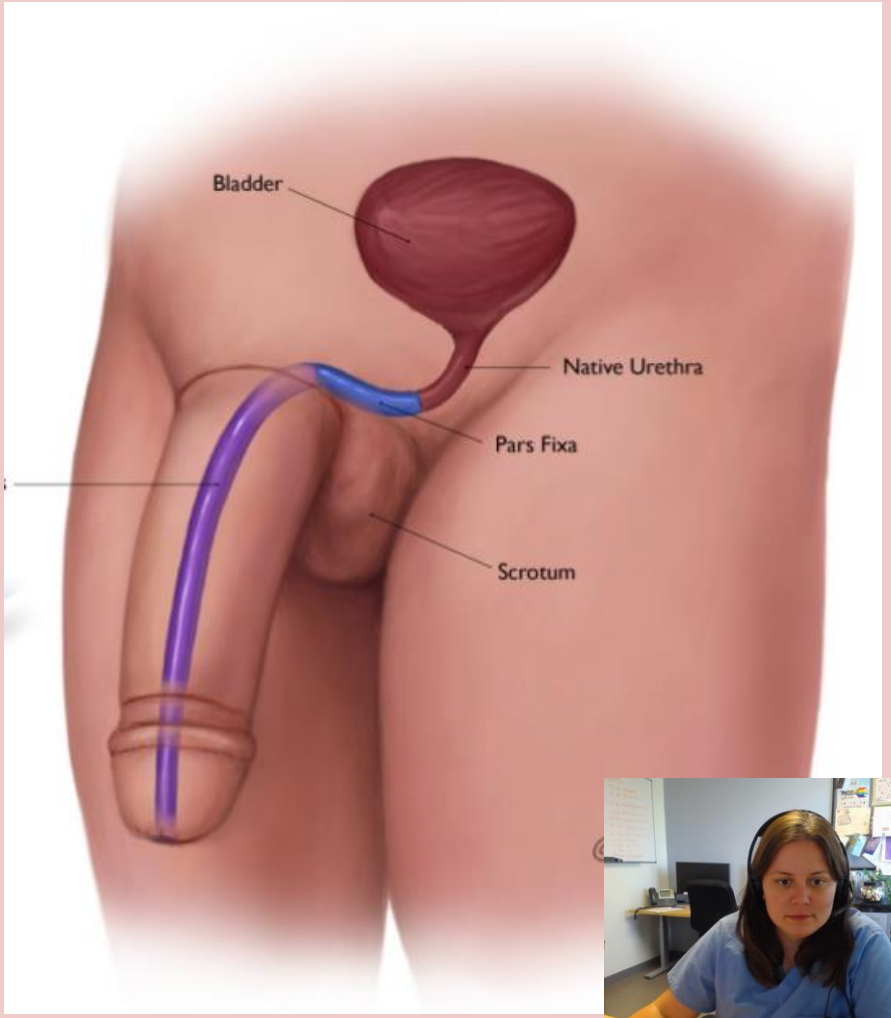
FISTULA

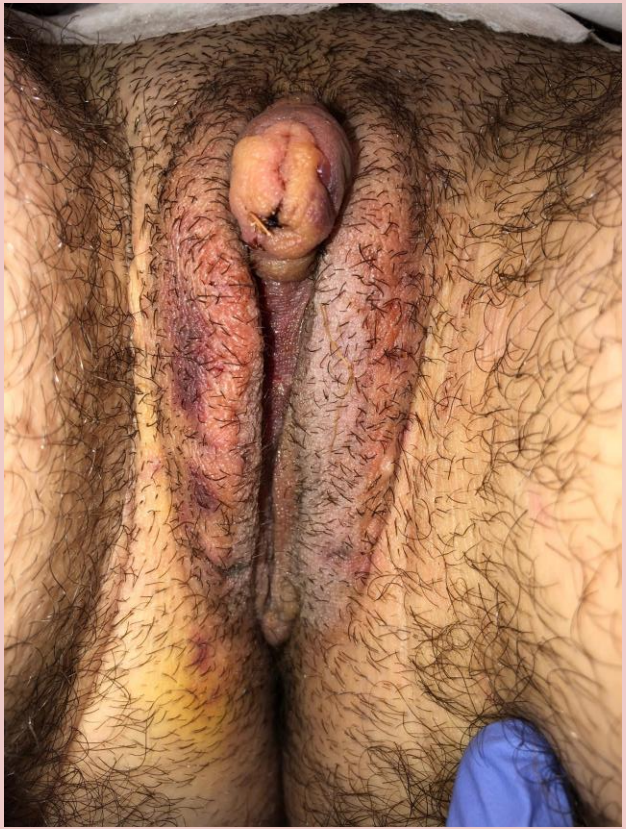
Hole or opening between the urethra and another area, results in split urine stream.
May require additional surgery to repair.

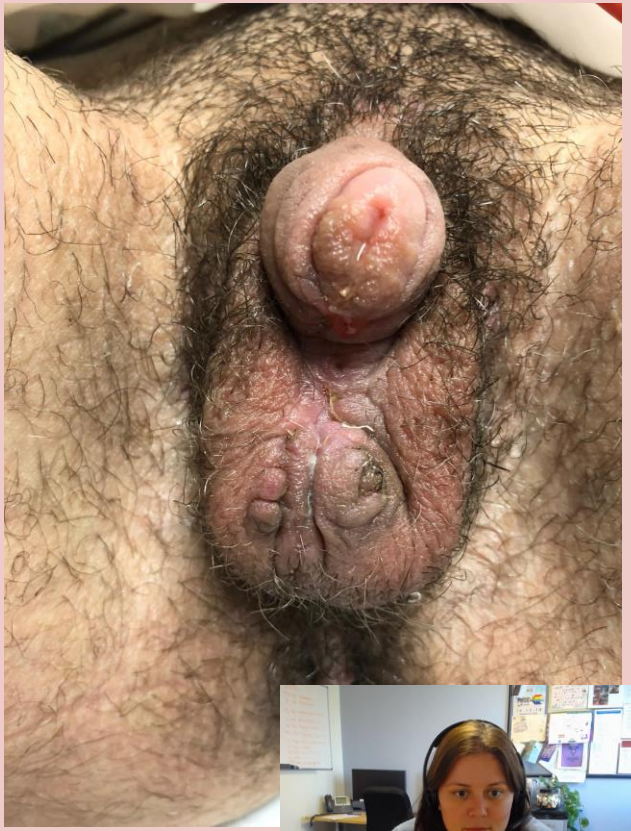
GRAFT LOSS

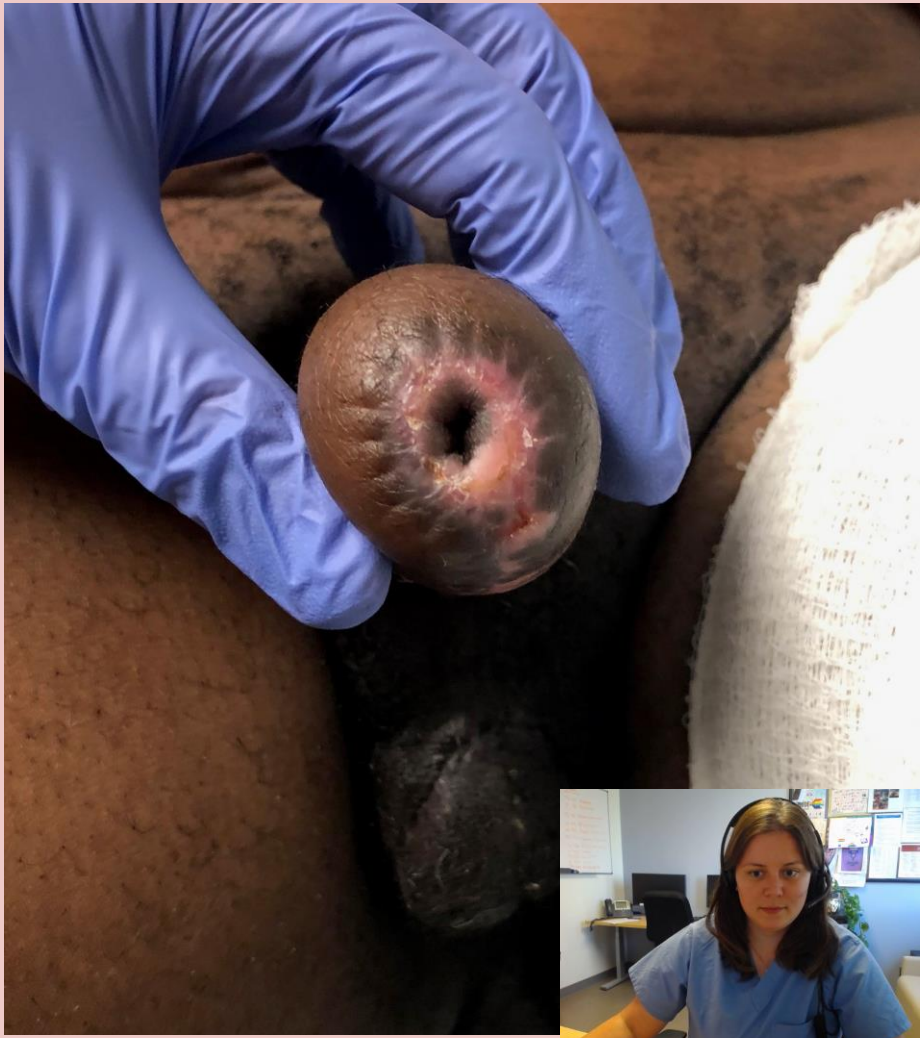
Patients are bed bound and supine for at least 6 days after surgery. Doppler pulses taken hourly for 72 hours. First sign of vascular compromise, return to OR.




Bladder
Native Urethra
Pars Fixa
Scrotum







POST OPERATIVE COURSE

Robert undergoes successful RFFF phalloplasty. He attends physical therapy for his hand for 3 months after surgery. Approximately 6 months after phalloplasty he develops a urethral stricture that requires cystoscopy and dilation. One year after his phalloplasty, he has a penile implant inserted to facilitate erections.

There is a small but significant body of relevant research on transgender medical care that translates well into clinical practice.

Your transgender patient's care may include social transition, pubertal suppression, masculinizing or feminizing hormone therapy, and surgical interventions.

Gender affirming treatment objectives are to improve quality of life by reducing distress and improving function.

TAKE HOME POINTS

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ADDITIONAL INFO

THANK YOU