Gender Affirming Surgery

Vaginoplasty

A summary for health care providers

rainbow health ontario
santé arc-en-ciel ontario
SHERBOURNE HEALTH

Gender Affirming Surgery

Vaginoplasty

A summary for health care providers

This summary provides information to facilitate the discussion of gender affirming surgery between Ontario health care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION

A surgery to create a vulva and vaginal canal involving the removal of the testes and erectile tissue and the inversion of penile and scrotal skin.

INTENDED RESULTS

- Align anatomy with gender identity
- Reduction in gender dysphoria and/or gender incongruence
- Improve mental health and well being
- Genitals with sexual sensation and to maintain the ability to have an orgasm
- Ability to have receptive vaginal sex (if vaginal canal created)
- Shorter urethra and ability to urinate seated without assistance or maneuvering
- No longer have to 'tuck' genitals

If no previous orchiectomy:

- Eliminates main source of endogenous testosterone production and its effects
- Stop taking androgen-blockers
- Some patients may be able to decrease estrogen dose

ALTERNATIVE TREATMENT OPTIONS

- "Tucking" genitals
- Orchiectomy +/- scrotectomy
- Vulvaplasty (vaginoplasty without creating vaginal canal)

SIDE EFFECTS

- **Irreversible**
- **Permanent infertility** (no longer producing sperm)
- Side effects of low testosterone may include **negative impacts on libido, energy, and mood**

SURGICAL TECHNIQUES AND OPTIONS

Vaginoplasty includes:

- Removal of testes if not previously done in a stand-alone orchiectomy procedure
- Deconstruction of the penis (separated into its parts: glans penis, blood vessels and nerves, urethra, skin, erectile tissue)
- Vulvar structures including a mons, labia, clitoris, clitoral hood and urethral opening are created using scrotal, penile and urethral tissue
- The clitoris is made from a small portion of the glans which remains connected to the penile dorsal nerves and blood vessels.
- The vestibule, the space between the urethral opening and the clitoris, is created with urethral mucosa tissue.
- Space for the vaginal canal is made between the genitourinary tract (bladder, prostate, urethra) and the rectum. The prostate is untouched and remains in place.
- The inner walls of the vagina are lined with skin from various tissues (depending on the type of vaginoplasty),

COMMON TECHNIQUES

PENILE INVERSION VAGINOPLASTY (PIV)

Penile inversion vaginoplasty (PIV) is the most common surgical technique, and is the procedure offered in Ontario and Quebec. Space for the vagina is dissected from outside the body between the genitourinary tract and the rectum. The skin from the shaft of the penis, typically augmented with a graft of scrotal skin, is inverted and used to line the newly created vagina. The average canal depth is between 8-11cm. The dimensions of the vaginal canal (length and width) are anatomy dependent and there is variability from person to person.

VULVAPLASTY (VAGINOPLASTY WITHOUT CANAL)

If a vaginal vault is not a primary goal, or there are concerns about a patient's ability to maintain post-operative dilations, vulvaplasty should be considered. The appearance is generally identical to vaginoplasty with canal. A shallow vaginal dimple makes the appearance of a canal without one being present. This procedure has less complications and a faster recovery than PIV. It does not allow for receptive vaginal sex and would exclude future penile inversion vaginoplasty.

ALTERNATIVE TECHNIQUES

Occasionally, there may be insufficient tissue to line the vaginal canal and an alternative vaginal lining must be sought. These techniques may also be used for revision surgery in the case of major complications such as vaginal stenosis.

PIV WITH SKIN GRAFT

This procedure is identical to penile inversion with the use of additional skin from the thigh or lower abdomen to additionally line the canal and augment canal dimensions. The area where the skin is taken will have a scar. This is available in Canada.

PERITONEAL VAGINOPLASTY

The use of peritoneum (a tissue lining the abdomen) to line the vaginal canal. In this procedure the peritoneum is taken from the abdomen, generally with a robotic-assisted laparoscopic procedure. Usually, there is not enough peritoneum to line the total canal and alternative tissues (i.e. scrotal, penile, regional skin grafts) are often required. This is not currently available in Ontario.

BOWEL FLAP VAGINOPLASTY

The use of a segment of bowel to line the vaginal canal. The rectosigmoid or ileal segments of intestine are common. Harvesting a segment of bowel is an invasive procedure that is associated with increased risk for bowel complications. This is not currently available in Ontario.

POTENTIAL RISKS/COMPLICATIONS COMMON TO MOST SURGERIES

Risks are increased with smoking, immunosuppressant drugs, clotting disorders, conditions that impair healing, BMI <18.5 or >30

General Surgical Risks

- Bleeding, if excessive may require blood transfusion
- Deep Vein Thrombosis, Pulmonary Embolism (blood clots in legs, lungs)
- Injury to surrounding anatomical structures (organs, nerves, blood vessels)
- Hematoma (collection of blood)/seroma (collection of fluid)
- Infection/abscess (collection of pus)
- Wound dehiscence (wound opening), delayed healing
- Nerve damage, loss of sensation, hypersensitivity, neuropathic (nerve) pain
- Chronic pain
- Scarring (can be prominent especially if history of keloid)
- Dissatisfaction with appearance/function
- Need for revision(s)
- Post-operative regret

General Anesthetic Risks

- Respiratory failure
- Cardiac failure/arrest
- Death
- Damaged teeth
- Aspiration pneumonia
- Nausea/vomiting

SURGICAL RISKS AND COMPLICATIONS OF VAGINOPLASTY

Vaginal canal complications

- **Vaginal stricture or stenosis**. This means significant narrowing or closure of the vaginal canal.
  - Vaginal stenosis occurs at the level of the vaginal canal leading to loss of canal depth and function
  - Introital stenosis occurs at the level of the vaginal entrance (introitus). Without accompanying vaginal stenosis, this will leave a vaginal space in the pelvis beyond the area of narrowing/closure referred to as a ‘vaginal remnant’
- **Vaginal remnant secondary to introital stenosis:** fluid can accumulate in the vaginal space and without a way to drain can lead to abscess formation, pain, fistula formation or other complications
- **Partial or complete graft or flap necrosis**
- **Prolapse of the vagina** (vaginal canal falls out of its original position)
- **Hair growth inside the vagina** (if not permanently removed prior to surgery)
- **Vaginal symptoms** (i.e. discharge, malodour, itching)

SURGICAL RISKS AND COMPLICATIONS OF VAGINOPLASTY, CONT'D

Urological complications

- **Urethral meatal stricture/stenosis:** narrowing/blockage of the urethral meatus (urethral opening), causing difficulty voiding
- **Urethral stricture/stenosis:** narrowing/blockage of the urethra, causing difficulty voiding
- **Urinary incontinence**
- **Overactive bladder**
- **Fistula formation:** Urethro-vaginal (between the urethra and the vaginal canal) or urethro-cutaneous (between the urethra and the outside skin)

Rectal complications

- **Rectal injury:** may require a diverting stoma (bowel opening on abdomen)
- **Recto-vaginal fistula:** unwanted connection between rectum and vagina allowing gas, discharge or feces to exit through the vagina

Other Risks

- Hypergranulation (overgrowth of healing tissue) is a common complication frequently occurring in areas of wound healing, where urethral mucosa was used or inside the vaginal canal
- Functional concerns or dissatisfaction with size, shape or positioning anatomy (ie. vagina, clitoris, urethra, labia)
- Hypertrophic scarring
- Loss of sensation, loss of sexual function, inability to orgasm
- Compartment syndrome and nerve injury of the upper or lower extremities (associated with positioning during surgery)

Revision Surgery

Additional surgeries after vaginoplasty are relatively uncommon. However, some complications do require surgery and patients should be prepared in case this is needed.

- **Rectal-vaginal fistula**: This complication typically requires the creation of a diverting stoma (bowel is diverted to your abdomen and covered with a bag to collect stool) until closure of the fistula is verified. If the fistula is addressed during the initial surgery, a diverting stoma may be established concurrently until confirmation of fistula repair through imaging at a later stage. In cases where a rectal-vaginal fistula is identified after the primary surgery, scheduling a diverting stoma as a subsequent procedure is warranted. A third surgical intervention will involve tissue relocation from another site (i.e. muscle from the thigh) to facilitate fistula closure. Following successful confirmation of fistula repair, a subsequent surgery for stoma reversal will be performed. This can take 2 years or longer.

- **Vaginal Stenosis or vaginal graft loss**: If there is significant loss of depth and function of the vaginal canal, then revision surgery may be recommended. Tissue taken from elsewhere will be required to line the vaginal canal. This can include skin from the lower abdomen, thigh, back, peritoneum, or bowel.

PRE-OPERATIVE CARE

PRE-SURGICAL CONSIDERATIONS

- Consider working through pre-surgical workbooks as available on Provincial Health Service Authority Trans Care BC website: https://www.transcarebc.ca/surgery/vagina-vulva-construction
- Ensure a thorough discussion about surgical options, including surgical technique (vaginoplasty vs vulvaplasty) and location of surgery
- Pre-surgical decision making of **vulvaplasty vs. vaginoplasty** should include: option for receptive vaginal sex, ability and commitment to perform vaginal dilation (+/- douching), access to a safe environment and resources to perform vaginal dilations. If a canal is created, consistent and frequent dilations are necessary to keep it open and prevent complications (i.e. vaginal remnant), particularly during the first year. It is essential that the patient understand and commit to this requirement and that the conditions to accomplish this are in place.
- If very little genital skin is present (i.e. due to early puberty blockers) penile inversion vaginoplasty may not be possible. Consideration should be given to early referral to a surgical centre for genital skin assessment
- Consider referral to the Sherbourne Health's Acute Respite Care (ARC) Program for post-operative care if socially isolated, under-housed or homeless
- **Fertility counselling** +/- sperm banking
- Post-orchiectomy continuous exogenous sex hormone is recommended to address the increased risk of osteoporosis and additional morbidity as long as deemed medically safe and beneficial
- **Smoking cessation,** including cannabis, is necessary before and after surgery to optimize wound healing and minimize serious complications
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- Weight can significantly impact surgical options and contribute to complications, regardless of whether it's on the higher or lower end. Weight stigma also remains a prevalent issue. It's essential to have comprehensive discussions about weight implications. While BMI is an imperfect measure of fat and tissue perfusion, it can correlate with surgical outcomes. Thorough physical examinations are vital before surgery to assess eligibility and discuss options and risks.
- If vulvaplasty:
  - Hair removal not generally recommended
  - Recovery time typically 6-8 weeks
- If vaginoplasty:
  - If hair-bearing skin is used to line the canal, **permanent hair removal with electrolysis or laser should be considered**
  - Post-operative dilation schedule can be physically demanding and require a significant time commitment. Dilation frequency can initially be up to 4 times daily. **Ensuring stability and the capacity to care for oneself after surgery is crucial for a good surgical outcome**

PRE-OPERATIVE CARE

PRE-SURGICAL CONSIDERATIONS, CONTINUED

- Regular sitz baths and douching may also be recommended by the surgical centre
- Due to the frequency of dilation of three times daily for the first three months, many patients require this time off from work. Some may require more time, depending on patient factors in healing and the type of work
- A serious complication such as rectal-vaginal fistula may prolong recovery considerably. It may take over a year until the patient is able to have surgery to close the fistula and reverse the stoma. Patients should consider complications when deciding between vaginoplasty and vulvaplasty or when deciding on timing for vaginoplasty

- Need to reduce activities and appreciate the importance of supportive person/community/team to assist with daily activities such as self-care, grooming, meal preparation, laundry, etc. in the post-operative period
- Need for regular follow up with care providers during post-operative period. Complications including hypergranulation and wound separation are common. Patients should consider the need for regular visits with a health care provider, especially in the first three months after surgery, when deciding on time for surgery. Being able to access post-operative care when needed is essential for an optimal outcome
- The vulva will approach its final appearance at approximately 6-12 months and total healing for this surgery is generally 12-18 months
- Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect

IMMEDIATE PRE-OPERATIVE CARE

ANESTHESIA WILL DISCUSS:

- Which medications to stop and when
- Anesthetic approach and risks
- Pain control measures
- Patients should ask their surgeon if there are any additional fees that are not OHIP covered

Hospitals tend to have standard pre-operative processes which may include:

- Pre-admission visit to review health history and provide teaching (pre/post-op care)
- Anesthesia and/or medicine consult may be required, depending on health history

POST-OPERATIVE CARE

IMMEDIATE POST-OPERATIVE CARE

- Vaginal packing/stent (to keep the vaginal cavity open) and urinary catheter are in place for the first week
- Once the packing/stent is removed, dilations begin in order to keep the canal open
- Without regular vaginal dilations, there is a significant risk for vaginal and introital stenosis leading to loss of depth, function and further complications
- Sitz baths and douching may be part of the post-operative routine depending on the surgical centre
- Follow surgeon's instructions on frequency and duration of dilations, douching, sitz baths, and dressing care
- Most surgical centers require **at least 3 dilations daily for the first three months, 15 - 25 minutes each time.**
- Each surgical centre's recommendations can be found on their websites
- In Canada, surgical dilators are obtained from 'Soul Source.' Patients are given a set of 3. If lost, these can be purchased from soulsource.com or urbasics.ca and they are called "GRS Vaginal Trainers."
- Attention should be paid to the dilator size and depth as indicated by the colour and the number of dots located on the dilator inserted into the canal
- Activity: short walks of 10 minutes or less to avoid pressure on the incisions until they are healed (4-8 weeks)
- Medications: a course of oral antibiotics is often prescribed to minimize chance of infection, stool softeners are often used to assist with constipation, and routine pain medications

IMMEDIATE POST-OPERATIVE SIDE-EFFECTS

- Pain: controlled with medications, rest and ice
- Bruising can occur from the abdomen to lower thigh and can take approximately 4-6 weeks to resolve
- Labial swelling, can take up to 6-12 weeks to resolve, occasionally taking longer
- A small amount of loss of depth (~1-2cm) may occur as the canal heals and the swelling is reduced
- Bleeding after surgery is expected. Common sites include the areas constructed with urethral mucosa (ie. vestibule), inside the vaginal canal and from areas of wound healing (commonly the posterior forchette)

POST-OPERATIVE CARE

IMMEDIATE POST-OPERATIVE SIDE-EFFECTS, CONT'D

- Spraying with urination is common and usually improves over time (typically within three-six months)
- Brown/yellow vaginal discharge can occur for the first six-eight weeks
- Mental health effects: Surgery can be a stressful event and may have an immediate negative impact on mental health. Ensuring good support and care are in place following surgery is an important aspect of planning

INTERMEDIATE POST-OPERATIVE CARE

- Financial costs. There are considerable costs associated with the aftercare of vaginoplasty such as: lube, dilators, hygiene supplies and the cost of travel to and from the surgical centre/health care providers.
- Sex:
  - Exploration of the clitoris and erogenous sensations should start 8-12 weeks after surgery with intentional arousal at 12 weeks if orgasm is a goal
  - Receptive sex can begin after 12 weeks in accordance with the patient's goals and when they are ready. Although water-based lube is recommended for dilation, alternatives such as silicone lube can be used for skin-to-skin activity

LONG-TERM MEDICAL CARE

- Dilations will need to continue daily for at least a year and then weekly on an ongoing basis. Regular dilation for the first year is crucial to maintain the vaginal dimensions and prevent complications.
- Receptive sex is not considered a substitute for dilation
- Scarring typically fades within the first year
- Numbness: sensation tends to gradually return, usually within the first year as the nerve endings heal.
- Given that orchiectomy would be performed before or in conjunction with this procedure, please also refer to all long-term care described on the orchiectomy sheet.

ONGOING CARE INSTRUCTIONS FOR THE PROVIDER

- Gynecologic symptoms after vaginoplasty are anticipated. This can include - but is not limited to - bothersome malodour and discharge. Management of these symptoms may differ than the approach taken for the natal vagina. For example, bacterial vaginosis is not a pertinent diagnosis in this context, given the distinct nature of the neovaginal microbiome. No standardized treatment has yet been identified. Taking a broad view to consider the many factors impacting vaginal health (i.e. lube, sex, dilation, hormones, antibiotics, smoking) is important
- Douching may be proposed to address the bothersome symptom, considering douche bottle and solution
- New or ongoing concerns from the vaginal canal should be evaluated. Most surgeons consider it safe to examine the inside of the canal at 12 weeks after surgery
- Trauma-informed and patient-centred approach to the exam should be undertaken.
- Use of a finger before the insertion of an instrument can be informative. A clear disposable anoscope (“a clear dilator”), rather than a speculum, may facilitate patient comfort and ease of the exam
- Hair inside the vaginal canal can be removed with alligator forceps or equivalent instrument. Permanent hair removal strategies after surgery may not be available
- Hypergranulation may be treated with silver nitrate or topical corticosteroids
- Neovaginal STIs: see UCSF Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender-Nonconforming People for more information
- UTIs should be treated as complicated and the presence of the prostate taken into account
- Prostate exams, when indicated, can be conducted vaginally
- The need for surgical revision should be discussed with the surgeon. Aesthetic revisions may not be publicly funded
- In Ontario, funding for revisions can be applied for through the Ministry of Health via completion of the Prior Approval for Funding of Sex Reassignment Surgery form

REFERENCES

Berger, L. E., Lava, C. X., Spoer, D. L., Huffman, S. S., Martin, T., Bekeny, J. C., Fan, K. L., Lisle, D. M., & Del Corral, G. A. (2024). The effect of obesity on vaginoplasty outcomes. Annals of Plastic Surgery. de Blok, C. , Wiepjes, C., Nota N, van Engelen, K., Adank, M., Dreijerink, K., Barbe, A., Konings, I., Heijeer, M. (2019) Breast cancer risk in transgender people receiving hormone treatment: nationwide cohort study in the Netherlands. British Medical Journal. 365:l1652 doi:10.1136/bmj.l1652

Bustos, S., Bustos, V., Mascaro, A., Ciudad, P., Forte, A., Del Corral, G., Manrique, Oscar J. (2021) Complications and Patient-reported Outcomes in Transfemale Vaginoplasty: An Updated Systematic Review and Meta-analysis. Plastic and Reconstructive Surgery - Global Open 9(3):p e3510. | DOI: 10.1097/GOX.0000000000003510

Centre of Excellence for Transgender Health, Department of Family and Community Medicine, University of California San Francisco. Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender-Nonconforming People; 2nd edition. Deutsch MB, ed. June 2016. Available at http://transhealth.ucsf.edu/guidelines.

Ferrando, C. A. Gynecologic Care of Transgender and Gender-Diverse People. (2024). Obstetrics and Gynecology. 1;143(2):243-255. doi: 10.1097/AOG.0000000000005440. Epub 2023 Nov 15. PMID: 37963404.

GRS Vaginal Trainers [internet]. Soul Source. [cited Feb 14 2024]. Available from https://www.soulsource.com/collections/grs-vaginal-trainers

Hallarn J, Bauer GR, Potter E, Wilcox H, Newfeld J, Krakowsky Y, Ravel J, Prodger JL. (2023) Gynecological concerns and vaginal practices and exposures among transfeminine individuals who have undergone vaginoplasty. Journal of Sexual Medicine. 31;20(11):1344-1352.

Kloer C, Parker A, Blasdel G, Kaplan S, Zhao L, Bluebond-Langner R. (2021) Sexual health after vaginoplasty: A systematic review. Andrology. 9(6):1744-1764. doi: 10.1111/andr.13022. Epub 2021 May 10. PMID: 33882193.

Swan, J., Phillips, T. M., Sanders, T., Mullens, A. B., Debattista, J., & Brömdal, A. (2023). Mental health and quality of life outcomes of gender-affirming surgery: A systematic literature review. Journal of Gay & Lesbian Mental Health, 27(1), 2–45. https://doi.org/10.1080/19359705.2021.2016537

Transgender Care BC [Internet]. [cited 2024 Feb. 14]. Available from: https://www.transcarebc.ca/

Vaginoplasty [Internet]. GRS Montréal. [cited 2024Feb14]. Available from: https://www.grsmontreal.com/en/surgeries/male-to-female/1-vaginoplasty.html

Vaginoplasty Guidebook [internet]. Women's College Hospital. [cited 2024Feb14]. Available from: https://www.womenscollegehospital.ca/care-programs/surgery/transition-related-surgery

DISCLAIMER

The information provided here is generalized and is not medical advice. It is recommended that all patients have a pre-operative consultation with their surgeon to receive individualized information including the specific surgeon's technique,
complication rates and recommendations. This is a dynamic document that is subject to change, as the knowledge of gender affirming surgeries changes.

ACKNOWLEDGEMENT

This document was created by clinicians at Sherbourne Health and Women's College Hospital, using up to date literature as well as information adapted from the Transgender Health Information Program of British Columbia, the GRS Montreal Clinic, and the Gender Identity Clinic at the Centre for Addiction and Mental Health.

Published September 20 2024

WCHRI
WOMEN'S COLLEGE HOSPITAL
Healthcare | REVOLUTIONIZED

rainbow health ontario
SHERBOURNE HEALTH