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Gender-affirming surgical care in British Columbia

Being able to access medically necessary gender-affirming surgeries close to home with the support of a multidisciplinary medical team can maximize the health and well-being of transgender and gender-diverse people.

ABSTRACT: A variety of gender-affirming surgical procedures are available to transgender and gender-diverse individuals in BC. Care throughout the entire surgical journey is shared by a multidisciplinary team of surgical specialists and allied health care providers. Upper body gender-affirming surgeries include breast construction, chest construction with subcutaneous mastectomy and male chest contouring, and gender-affirming breast reduction. Lower body gender-affirming surgeries include orchiectomy, vaginoplasty, penectomy, metoidioplasty, phalloplasty, hysterectomy, and bilateral salpingo-oophorectomy. Surgeons are encouraged to follow the World Professional Association for Transgender Health criteria for patient eligibility for these surgeries. All these procedures have associated risks, and all are covered by British Columbia's Medical Services Plan. Some complementary procedures are funded by Trans Care BC. In addition, facial and neck procedures such as facial feminization, tracheal shaving, and voice surgery may be performed. However, the World Professional Association for Transgender Health does not specify eligibility criteria for these procedures, and they are not currently covered by MSP. Surgeons and physicians should take an individualized approach to providing gender-affirming patient care in order to maximize surgical outcomes and prioritize specific harm-reduction strategies.

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The goal of gender-affirming surgical care is to maximize the health and well-being of transgender and gender-diverse individuals.[1] While not all these individuals seek surgical interventions as part of their journey, many find surgery an important and key component of their transition. In September 2019, the Gender Surgery Program BC, located within Vancouver Coastal Health, became Western Canada's first and only centre to perform lower body gender-affirming surgeries for transgender and gender-diverse individuals. The multidisciplinary team of surgical specialists and allied health care providers provide shared care throughout the entire surgical journey. This program builds upon the existing gender-affirming surgical services offered throughout the province to provide patients with access to safe surgical care close to home. In addition to the Gender Surgery Program BC, Trans Care BC has established a network of transgender-inclusive surgical providers throughout the province and within all health authorities who offer upper body surgery, orchiectomy, and hysterectomy.[2]

In BC, gender-affirming surgical care largely follows the direction and guidance of the World Professional Association for Transgender Health (WPATH). Current guidelines for surgical standards of care are summarized in the Table.[1] Not all transition services are currently covered by the provincial Medical Services Plan; procedures that are considered an insured service for transgender individuals are listed in the Table. In addition, an individual's gender identity is often not binary and may exist along the gender spectrum. As a result, patients may seek some surgical interventions and not others as part of their journey. The following procedures are broadly classified based on anatomic location. Each procedure is an individual choice that may aid a patient to move along the gender spectrum.

Chest and breast procedures

Breast construction (augmentation mammoplasty)

In BC, augmentation mammoplasty is considered to be medically necessary for transgender women who have insufficient breast tissue growth following 18 months of feminizing hormone therapy.[3,4] Prosthetic implants are the mainstay for enhancing the size and symmetry of the chest. Criteria for MSP coverage include

insufficient breast growth (less than an AA cup size) or asymmetrical growth of more than 1.5 cup sizes following 18 months of continuous hormone therapy. Women can also be considered for augmentation mammoplasty if hormone therapy is medically contraindicated and they have a less than an AA breast cup **[Table]**.

Specific complications with augmentation mammoplasty are rare but include capsular contracture (scar tissue formation around the implant); implant migration, rupture, or exposure; altered sensation; and anaplastic large cell lymphoma.[5-7] Surgeons in BC are encouraged to follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Chest construction with subcutaneous mastectomy and male chest contouring

A subcutaneous mastectomy with male chest contouring involves the removal or reduction of breast tissue and skin to construct a flatter, more sculpted masculine chest. It can be performed with or without nipple and areola resizing and repositioning.[8] Chest binding, often used by

TABLE. World Professional Association for Transgender Health guidelines for gender-affirming surgery (adapted).[1]

Type of surgery*	Persistent, well-documented gender dysphoria	Capacity to make a fully informed decision and to consent to treatment	Age of majority in given country (18 years in Canada)	If significant medical or mental health concerns are present, they must be well controlled	One year of hormone therapy (unless contra-indicated)	One year of living congruently with gender identity	Referrals required	MSP coverage
Breast/chest construction/ breast reduction	✓†	✓	✓	Reasonably well controlled	Optional		One from surgical readiness assessor	Yes, if: • Hormone therapy is contraindicated for individuals • Insufficient breast growth (< AA cup size) (with 18 months of hormone therapy) • Asymmetrical growth of > 1.5 cup size (with hormone therapy)
Orchiectomy	✓	✓	✓	✓	✓		Two from surgical readiness assessor	Yes
Vaginoplasty/ vulvoplasty/ oenectomy	✓	✓	✓	✓	✓	✓	Two from surgical readiness assessor with gender-affirming surgery assessment‡	Yes
Chest construction	✓	✓	✓	Reasonably well controlled	Optional		One from surgical readiness assessor	Yes
Hysterectomy and bilateral salpingo-oophorectomy	✓	✓	✓	✓	✓		Two from surgical readiness assessor with gender-affirming surgery assessment	Yes
Metoidioplasty	✓	✓	✓	✓	✓	✓	Two from surgical readiness assessor with gender-affirming surgery assessment	Yes
Phalloplasty	✓	✓	✓	✓	✓	✓	Two from surgical readiness assessor with gender-affirming surgery assessment	Yes

* Facial feminization, tracheal shaving, and voice surgery are not included because WPATH has no specific recommendations, and the procedures are not covered by MSP.

† "✓" indicates a suggested guideline for that surgery.

‡ Individual surgeon practices vary. Not all surgeons require two assessments.

Adapted from the WPATH Standards of Care guidelines.

transgender men, may lead to the loss of skin elasticity; therefore, significant excess skin may need to be removed to create a more aesthetically appealing chest.[3] This surgery can be an important step for transgender men and nonbinary individuals who feel more comfortable with a flat chest or who restrict their activities and social engagement due to body and binder discomfort.[3] Subcutaneous mastectomy and chest contouring is covered by MSP, and a centralized wait list is managed by Trans Care BC.[3] Complications specific to this surgery include hematoma or seroma, loss of nipple grafts due to necrosis, change in nipple or areolar sensation, asymmetry or contour abnormalities requiring secondary revisions, and visible scarring.[3,8] Surgeons are encouraged to follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Gender-affirming breast reduction

Gender-affirming breast reduction uses surgical principles to reduce chest tissue volume and nipple size. Many nonbinary patients seek breast reduction to feel more affirmed, reduce the need for chest binders, and facilitate clothing choices. This procedure uses similar incision patterns to a standard breast reduction. It is covered by MSP, regardless of chest volume.

Genital procedures

Orchiectomy

Orchiectomy involves the removal of the testes and spermatic cord to prevent testicular hormone (i.e., testosterone) and sperm production. This procedure reduces the required dose of feminizing hormones and the need for androgen-blocking medications.[4] Based on patient goals, orchiectomy can be completed independently (with or without scrotectomy) or combined with penile inversion vaginoplasty. Orchiectomy results in permanent sterilization; therefore, sperm banking is suggested for individuals who are interested in future fertility. This procedure is performed in BC and is covered by MSP. Surgeons are encouraged to follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Vaginoplasty

Vaginoplasty is the surgical creation of a vaginal cavity and external vulva (consisting of an anatomic clitoral complex and labial complex). The preferred surgical technique is the penile inversion vaginoplasty, which uses the penile and/or scrotal tissue to create the neovagina.[3] In revision cases or for patients with a technically challenging anatomy, a pedicled colosigmoid transplant or peritoneal vaginoplasty can be offered as an alternative.[3] Orchiectomy can be completed prior to or during the vaginoplasty procedure. Permanent hair removal of tissue used for vaginal cavity construction is required to avoid hair growth within the vaginal lining. Perineal and scrotal electrolysis for hair removal is funded by Trans Care BC. Vaginal dilation is required postoperatively to maintain the depth and width of the vaginal cavity. Educational sessions are provided postoperatively, and dilators are funded by Trans Care BC. Pelvic floor physiotherapy preoperatively and postoperatively is thought to enhance the surgical outcomes for vaginoplasty patients. Surgical risks include urethral stricture, vaginal stenosis, partial or complete inversion flap loss, hypergranulation tissue, vaginal prolapse, cosmetic dissatisfaction, reduced erogenous sensation, vesicovaginal or rectovaginal fistula, pelvic pain, and postoperative voiding dysfunction.[2,6] Penile inversion vaginoplasty completed in BC is covered by MSP. Surgeons at the Gender Surgery Program BC who offer this procedure follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Minimal depth vaginoplasty

Minimal depth vaginoplasty, also referred to as vulvoplasty, is similar to vaginoplasty but a vaginal canal is not created. Instead, a shallow vaginal depression is created when constructing the external genital structures.[2,5] This procedure may be preferred in medically complex patients or individuals who do not wish to have a vaginal cavity. Minimal depth vaginoplasty has the same inclusion criteria and similar complication profile as vaginoplasty (but less risk of stenosis and fistula).

Penectomy

Penectomy involves removal of the penis. While more commonly performed as part of a penile inversion vaginoplasty, some individuals may choose penectomy as a stand-alone procedure.

Metoidioplasty

Metoidioplasty involves the creation of masculine genitalia from existing clitoral and labial tissues. This begins with hormonal enlargement of the clitoris (virilization), followed by surgical release of its attachment ligaments to create a phallus that is 4 to 6 cm long, and removal of the vagina. The labia majora are mobilized to create the scrotum.[3] Testis implants and reduction of residual labial tissue adjacent to the penis are completed approximately 6 months after the initial procedure. While metoidioplasty extends the urethra externally, standing urination cannot always be ensured due to differences in patient anatomy.[2] Moreover, it is unlikely that individuals undergoing metoidioplasty will be able to engage in penetrative intercourse because the surgery does not permit internal placement of an erectile device.[3] Compared to phalloplasty, metoidioplasty is considered a less invasive procedure, and is preferred by transgender and nonbinary individuals whose priorities are maintaining erogenous sensation over neophallus size, and avoiding additional scarring from distant donor sites.[3] This procedure is covered by MSP. Complications include urethral strictures and fistula, superficial wound infection or hematoma, breakdown of the vaginectomy closure, and persistent vaginal tissue.[9] Surgeons at the Gender Surgery Program BC who offer this procedure follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Phalloplasty

Phalloplasty is a lengthy, multiphase surgery performed to construct a neophallus. This procedure is the most complete genitoperineal transformation for transmasculine individuals, since it most closely approximates the appearance, size, and function of a cisgender phallus. It employs one of two techniques to create the neophallus from the patient's skin: pedicled flaps (from regional areas, typically the anterolateral thigh, groin, or abdomen) or free flaps (tissue from a remote location, such as the forearm).[3] Many of these donor sites can contain nerves that can be coapted to the clitoral nerve in order to maintain sensation. The gold standard for phallic reconstruction uses the radial forearm free flap.[3] Permanent hair removal of the tissue used to reconstruct

the penile urethra is required to avoid urinary blockage, stone formation, and urinary tract infection. Donor site hair removal for the urethra is covered by MSP. Similar to metoidioplasty, the testosterone-enlarged clitoris is released, and the labia majora are used to create the scrotum. If desired, testicular implants and semi-rigid or inflatable erectile implants may be inserted during follow-up procedures. Phalloplasty is often completed in transgender and gender-diverse individuals who prioritize a cisgender-appearing neophallus, the ability to urinate while standing, and the capacity for penetrative intercourse.[5] Potential drawbacks of this procedure include the visible forearm scar at the donor site, the multistage nature of the procedure, the prolonged operative time, and the high complication rates. This procedure is covered by MSP. Phalloplasty has a total complication rate of up to 80%, which comprises mostly urethral issues. Common complications include urinary stricture, stenoses and fistula, partial/total flap (neophallus) necrosis, and donor-site morbidities.[10,11] Surgeons at the Gender Surgery Program BC who offer this procedure follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Facial and neck procedures

Facial feminization

Facial feminization procedures usually focus on altering prominent facial angles of the cheeks (enhancing the malar region), forehead (smoothing of supraorbital bossing), nose (adjusting the glabellar angle), and jaw (reducing the gonial angle), and making adjustments to the hairline and areas surrounding the eyes, ears, and lips.[3] WPATH does not specify eligibility criteria for facial feminization surgery, and the procedures are not currently covered by MSP.

Thyroid chondroplasty (tracheal shave)

Thyroid chondroplasty involves reducing or reshaping the laryngeal prominence of the thyroid cartilage. The procedure is done under general anesthetic, or local anesthetic with sedation through an incision across a naturally occurring neck skin crease.[3] WPATH does not specify eligibility criteria for tracheal shaving, and the procedure is not currently covered by MSP.

Voice surgery

Voice surgery is used to raise vocal pitch because feminizing hormone intervention does not affect the adult voice (unlike testosterone, which deepens vocal pitch). The stigma associated with transitioning patients who have a deep voice can cause extreme distress. Various surgical techniques can be employed to raise the vocal pitch, including shortening the vocal cords, increasing the tension across vocal cords, or reducing vibrating vocal cords, in addition to vocal therapy.[3] Currently, these procedures are not covered by MSP, and only a limited number of surgeons in Canada offer voice surgery. WPATH states that for maximum benefit, the patient should consult with a voice and communication specialist preoperatively and postoperatively.[1]

Other procedures

Hysterectomy and bilateral salpingo-oophorectomy

Hysterectomy (removal of the uterus) can be completed independently or with oophorectomy (removal of the ovaries) and salpingectomy (removal of a fallopian tube). Complete hysterectomy (removal of the uterus and cervix) is required if the individual is considering future metoidioplasty or phalloplasty. Oophorectomy and salpingectomy can be completed prior to further lower body gender-affirming surgery but are not required. If the individual is considering future fertility, egg harvesting may be considered prior to oophorectomy. Complications specific to this surgery include damage to surrounding tissues, including ureters, bladder, small bowel, rectum, and blood vessels.[5] For patients who are seeking either a metoidioplasty or phalloplasty, it is recommended that a hysterectomy be completed 4 to 6 months prior to other lower body gender-affirming surgery to reduce the complications of the vaginectomy component of the procedure. Hysterectomy with or without bilateral salpingo-oophorectomy is covered by MSP. Surgeons are encouraged to follow the WPATH guidelines for patient inclusion criteria **[Table]**.

Summary

Although the evidence-based guidelines for the WPATH Standards of Care should be met, clinical departures can arise based on a patient's unique anatomical, social, or psychological situation. Individualized surgical consultation can provide educational information that helps guide patients in their decision-making and surgical planning process. Experienced health professionals should take an individualized approach to patient care in order to prioritize specific harm-reduction strategies and maximize surgical outcomes.[1] ■

Competing interests

None declared.

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