

Surgery

Introduction

Gender-affirming surgery (GAS) refers to a constellation of procedures designed to align one's body with their gender identity. Recognizing the diverse and heterogeneous community of individuals who identify as transgender and gender diverse (TGD), gender-affirming surgical interventions may be categorized along a spectrum of procedures for individuals assigned male at birth (AMAB) and assigned female at birth (AFAB).

In appropriately selected transgender and gender diverse individuals, the current literature supports the benefits of gender affirming surgery (GAS). While complications following GAS occur, many are minor and/or treated with local care on an outpatient basis (Gaither et al., 2018; Morrison et al., 2016). In addition, complication rates are consistent with those of similar procedures performed for different diagnoses (i.e. non gender-affirming procedures).

In individuals assigned female at birth (AFAB), **subcutaneous mastectomy** ('top surgery' or 'chest contouring surgery') has been studied by *prospective* (Agarwal et al., 2018; Frederick et al., 2017; Top & Balta, 2017; van de Grift, Elaut, et al., 2017; van de Grift et al., 2016), *retrospective* (Bertrand et al., 2017; Claes et al., 2018; Esmonde et al., 2019; Lo Russo et al., 2017; Marinkovic & Newfield, 2017; Poudrier et al., 2019; Wolter et al., 2015; Wolter et al., 2018), and *cross sectional* cohorts (Olson-Kennedy et al., 2018; Owen-Smith et al., 2018; van de Grift, Elaut, et al., 2018; van de Grift, Elfering, et al., 2018). The efficacy of top surgery has been demonstrated in multiple domains, including a consistent and direct increase in health-related quality of life, a significant decrease in gender dysphoria, and a consistent increase in satisfaction with body and appearance. Additionally, rates of regret remain very low, varying from 0-4%. While the effect of top surgery on additional outcome measures such as depression, anxiety, and sexual function also demonstrated a benefit, the studies were of insufficient strength to draw definitive conclusions. Though further investigation is needed to draw more robust conclusions, the evidence demonstrates that top surgery is a safe and effective intervention.

In individuals assigned male at birth (AMAB), fewer studies have been published regarding gender-affirming breast surgery ('**breast augmentation**'): 2 *prospective* studies (Weigert et al., 2013; Zavlin et al., 2018), one *retrospective* cohort (Fakin et al., 2019), and 3 *cross sectional* cohorts (Kanhai et al., 2000; Owen-Smith et al., 2018; van de Grift, Elaut, et al., 2018). All of the studies reported a consistent and direct improvement in patient satisfaction including general satisfaction, body image satisfaction, and body image following surgery. Owen-Smith demonstrated a positive trend towards improvement on the scores of both depression and anxiety with increasing levels of gender-affirming interventions. However, there was no statistical comparison between individuals who underwent top surgery with any other group.

Gender affirming vaginoplasty is the most frequently reported gender affirming surgical intervention; 8 *prospective* studies (Buncamper et al., 2017; Cardoso da Silva et al., 2016; Kanhai, 2016; Manero Vazquez et al., 2018; Papadopulos, Zavlin, et al., 2017; Tavakkoli Tabassi et al., 2015; Wei et al., 2018; Zavlin et al., 2018), 15 *retrospective* cohorts (Bouman et al., 2016; Buncamper et al., 2015; Hess et al., 2016; Jiang et al., 2018; LeBreton et al., 2017; Manrique et al., 2018; Massie et al., 2018; Morrison et al., 2015; Papadopulos, Lelle, et al., 2017; Raigosa et al., 2015; Salgado et al., 2018; Seyed-Frootan et al., 2018; Sigurjonsson et

al., 2017; Simonsen et al., 2016; Thalaivirithan et al., 2018), and 3 *cross sectional* cohorts have recently been reported ((Castellano et al., 2015; Owen-Smith et al., 2018; van de Grift, Elaut, et al., 2018). Different assessment measurements were used, but the results of all studies consistently reported both a high level of patient satisfaction (78-100%) as well as satisfaction with sexual function (75-100%). This was especially evident when using more recent surgical techniques. Gender affirming vaginoplasty also demonstrates a low rate of complications and a low incidence of regret (0-8%).

Recent literature reflects the increased clinical interest in **metoidioplasty and phalloplasty**: 4 *prospective* cohorts (Garaffa et al., 2010; Stojanovic et al., 2017; Vukadinovic et al., 2014), 6 *retrospective* cohorts (Cohanzad, 2016; Garcia et al., 2014; Simonsen et al., 2016; van de Grift, Pigot, et al., 2017; van der Sluis et al., 2017; Zhang et al., 2015), and 4 *cross-sectional* studies (Castellano et al., 2015; Owen-Smith et al., 2018; van de Grift, Elaut, et al., 2018; Wierckx et al., 2011) review the risks and benefits of these procedures.

In terms of urinary function, between 75 and 100% of study participants were able to void while standing. In terms of sexual function, between 77 and 95% of study participants reported satisfaction with their sexual function. Most of these studies report high overall levels of postoperative satisfaction (range: 83-100%), with higher rates of satisfaction in studies involving newer surgical techniques. Two prospective and two retrospective cohorts specifically assessed regret following surgery: no transgender men experienced regret. While study limitations were identified, the reported results were consistent and direct.

In recent years, **facial GAS** (FGAS), primarily termed “facial feminization”, has received increased attention, and current literature supports its benefits. Eight recent publications include 1 *prospective* cohort (Bellinga et al., 2017), 2 *retrospective* cohorts (Capitan et al., 2014; Raffaini et al., 2016) and 2 *cross-sectional* studies (Ainsworth & Spiegel, 2010; van de Grift, Elaut, et al., 2018). All of the eight studies clearly demonstrated that individuals were very satisfied with their surgical results (between 72% and 100% of individuals) (Ainsworth & Spiegel, 2010; Bellinga et al., 2017; Capitan et al., 2014; Morrison et al., 2020; Noureai et al., 2007; Raffaini et al., 2016; van de Grift, Elaut, et al., 2018). Additionally, individuals were significantly more satisfied with the appearance of their face compared to individuals who had not undergone surgery. 1 prospective, international, multicenter, cohort study found that FFS significantly improves quality of life both mid- and long-term (Morrison et al., 2020). The results were direct and consistent, but somewhat imprecise because of certain study limitations. While gender-affirming facial surgery for AFAB individuals is an emerging field, current limited data points towards equal benefits in select patients. Future studies are recommended.

Representative surgical interventions include:

AMAB: facial feminization surgery, breast augmentation, body contouring procedures, orchiectomy, vaginoplasty (with/out depth), and aesthetic procedures, and procedures designed to prepare individuals for surgery (ie hair removal).

AFAB: facial masculinization surgery, chest surgery, hysterectomy/oophorectomy, metoidioplasty (including placement of testicular prosthesis), phalloplasty (including placement of testicular/penile prostheses), body contouring procedures, aesthetic procedures, and procedures designed to prepare individuals for surgery (ie hair removal).

It is important that surgeons understand the indication(s) and the timings for GAS. This is especially important when caring for adolescents (see adolescent chapter for more details).

It is important that the surgeon and the patient participate in an informed consent process based upon a shared decision-making approach which includes: 1) a multidisciplinary approach, 2) an understanding of the patient's goals and expectations, 3) a discussion regarding the surgical options, risks, and benefits, 4) an informed plan for aftercare. (See assessment chapter)

Appropriate after care is essential for optimizing outcomes (Buncamper et al., 2015; Lawrence, 2003), and is important that patients are informed as to the post-operative needs (including local wound care, activity restrictions, time off from work or school, etc...). In addition, it is important that the surgeon is available to provide and facilitate post-operative care and/or referral to specialty services. This may include the need for ongoing support (i.e., both caregiver as well as primary care and/or mental health professionals), as well as the need for routine primary care (i.e., breast/chest cancer screening urologic/gynecologic care, etc...).

With the increase in the number of gender-affirming surgical procedures (Ross, 2017; Shen et al., 2019), additional training, tracking outcomes, and continuing medical education for surgeons are necessary (Schechter et al., 2017).

Summary of Recommendations

Statement 1: We recommend that surgeons who perform gender affirming surgical (GAS) procedures should have the following credentials:

- A. Training and documented supervision in gender affirming procedures.
- B. Maintain an active practice in gender affirming surgical procedures.
- C. Knowledge about gender diverse identities and expressions.
- D. Continuing education in the field of gender affirming surgery
- E. Track surgical outcomes.

Statement 2: We recommend that surgeons, prior to breast augmentation or mastectomy, should assess trans and gender diverse people for risk factors associated with breast cancer.

Statement 3: We recommend that surgeons, during the preoperative process, should inform trans and gender diverse people undergoing gender-affirming surgical procedures as to aftercare requirements, travel and accommodations, and the importance of post-operative follow up.

Statement 4: We recommend that surgeons should consider gender affirming surgical interventions in trans and gender diverse people (adults and adolescents) seeking these interventions when there is evidence:

- A. Of well-documented (according to local contexts) persistent gender incongruence.
- B. That the individual fulfills diagnostic criteria prior to gender affirming surgical interventions in regions where a diagnosis is necessary to access health care.
- C. That other possible causes of apparent gender incongruence prior to gender affirming surgical interventions have excluded.
- D. That any mental health conditions which could negatively impact the outcome of gender affirming medical interventions have been assessed, with risks and benefits discussed, before a decision is made regarding the intervention.

- E. That any physical health conditions which could negatively impact the outcome of gender affirming surgical interventions have been assessed, with risks and benefits discussed, before a decision is made regarding the intervention.
- F. That the capacity to consent for the specific gender affirming surgical intervention has been assessed.
- G. That the capacity to understand the effect of gender affirming surgical interventions on reproduction has been assessed and reproductive options have been explored with the individual prior to the gender affirming surgical interventions.

Statement 5: We recommend that surgeons should, prior to gonadectomy in trans and gender diverse people, confirm that reproductive options have been discussed.

Statement 6: We suggest that surgeons should consider offering gonadectomy to trans and gender diverse adults when there is evidence that they have tolerated a minimum of 6 months of hormone therapy, unless HRT or gonadal suppression is clinically not indicated and inconsistent with the patient's desires, goals or expressions of individual gender identity.

Statement 7: We suggest that surgeons should consider genital gender-affirming procedures in trans and gender diverse adults seeking these interventions when there is evidence that the individual has been stable on their current treatment regime (which may include at least 6 months of hormone treatment, or a longer period if required to achieve the desired surgical result, unless hormone therapy is either not desired or is medically contraindicated).

Statement 8: We recommend that surgeons should consider gender affirming surgical interventions in trans and gender diverse adolescents when there is evidence that a multi-disciplinary approach, including mental health and medical professionals, have been involved in the decision-making process.

Statement 9: We recommend that surgeons should consult a comprehensive, interdisciplinary team of professionals in the field of trans gender health when trans and gender diverse people request individually customized (previously termed "non-standard") surgeries as part of gender affirming surgical intervention.

Statement 10: We suggest that surgeons caring for transgender men and gender diverse people who have undergone metoidioplasty/phalloplasty encourage lifelong urological follow-up.

Statement 11: We recommend that surgeons caring for transgender women and gender diverse people who have undergone vaginoplasty encourage follow-up with their primary surgeon, with a primary care physician, or with a gynaecologist. (Delphi Statement)

Statement 12: We recommend that patients who regret their gender related surgical intervention are managed by an expert multi-disciplinary team.

Statement 1:

We recommend that surgeons who perform gender affirming surgical (GAS) procedures should have the following credentials:

- A. Training and documented supervision in gender affirming procedures.**
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- C. Knowledge about gender diverse identities and expressions.
- D. Continuing education in the field of gender affirming surgery
- E. Track surgical outcomes.

Surgeons offering gender affirming surgery may have a variety of surgical specialty training and backgrounds. The most common surgical specialties include plastic surgery, urology, gynecology, otolaryngology and oro-maxillo-facial surgery (Jazayeri et al., 2021). Consistent with other surgical domains, we recommend that only surgeons who are certified, or eligible to be certified, by their respective national professional boards are to offer GAS. Further it is recommended that surgeons offering care for transgender and gender diverse patients have received documented training in gender affirming procedures and principles of gender-affirming care (Schechter et al., 2017; Schechter & Schechter, 2019). The latter includes, but is not limited to, knowledge around gender diverse identities and expressions and how those affect patient goals, expectations, and outcomes. It is important that surgeons offering GAS are familiar with the available procedures and are able to provide informed consent. If surgeons do not offer a requested procedure, they may offer a referral for a second opinion. It is expected that surgeons offering GAS participate in continuing education activities in the field of GAS (i.e. meetings, conferences, seminars, etc..) so as to maintain current knowledge. We further recommend that surgical outcomes are tracked and communicated to the patients as part of the informed consent (Schechter et al., 2017).

In addition, hospitals, institutions, and physician offices who offer GAS need to be knowledgeable regarding cultural competencies (i.e. language, terminology, etc ...). This may require ongoing and regular staff education.

Statement 2:

We recommend that surgeons, prior to breast augmentation or mastectomy, should assess trans and gender diverse people for risk factors associated with breast cancer.

Prior to breast augmentation or mastectomy, individuals need to be informed about and assessed for breast cancer risk factors, including genetic mutations (such as BRCA1, BRCA2), family history, age, radiation, duration of exposure to estrogen, and the amount of remaining breast tissue anticipated to remain after surgery (Brown & Jones, 2015; Colebunders et al., 2014; Gooren et al., 2013; Salibian et al., 2021; Weyers et al., 2010). Breast cancer screening balances the identification of cancer with the selection of appropriate imaging, tests, and procedures. Currently, evidence-based screening guidelines specific for transgender and gender diverse individuals do not exist (Salibian et al., 2021). As the risk of cancer in individuals seeking gender-affirming breast augmentation or mastectomy is similar to the general population (even in the setting of hormone use), existing cancer screening guidelines need to be followed (Brown & Jones, 2015; Gooren et al., 2013; Salibian et al., 2021; Weyers et al., 2010). Professionals need to be familiar with updates to these guidelines as they are subject to change. Consideration needs to be given to the individual's previous surgical history (ie mastectomy and the amount of retained breast tissue, if any) and medical history (i.e. duration of estrogen use).

Statement 3:

We recommend that surgeons, during the preoperative process, should inform trans and gender diverse people undergoing gender-affirming surgical procedures as to aftercare

requirements, travel and accommodations, and the importance of post-operative follow up.

Details about the timing, technique, and duration of the aftercare requirements are shared with patients in the pre-operative period such that appropriate planning may be undertaken. This includes a discussion regarding anticipated staging of surgical procedures (and associated travel requirements). Given the small number of surgeons who specialize in gender affirming surgery, it is common for patients to travel for their procedures. Prior to surgery, surgeons provide patients with a clear post-operative follow-up schedule. The surgeon discusses the duration of the patient's travel dates, the anticipated inpatient versus outpatient stay, and the potential need for flexibility in travel arrangements (especially if complications occur). Given the complexity and cost of travel and lodging, changes in the care-plan are shared with the patient as early as possible. Surgeons need to ensure that patients have a local provider with whom to follow-up upon return home.

After care and post-surgical follow-up is important. Gender affirming surgical procedures often have specific aftercare requirements, such as: **post-surgery resources** (stable, safe housing; financial resources for travel for follow-up care); **instructions in health-positive habits** (e.g. personal hygiene, healthy-living, prevention of urinary tract infections -UTIs- and sexually-transmitted infections -STIs-) (Wierckx et al., 2011); **post-surgery precautions or limitations on activities of daily life** (e.g. bathing, physical activity, exercise, nutritional guidance, resumption of sexual activity)(Capitan et al., 2020); **post-surgery resumption of medications**, including anticoagulants; and detailed **post-surgery self-care activities** (e.g. post-vaginoplasty dilation and douching regimens, activation of a penile prosthesis, strategies to optimize post-phalloplasty urination, recommendations for hair transplant care)(Capitan et al., 2017; Garcia, 2018; Hoebeke et al., 2005). Some aspects of post-surgery self-care activities may be introduced prior to surgery, and are reinforced after surgery (Falcone et al., 2018). As issues such as wound disruptions, difficulty with dilation, or urinary tract infections may occur (Dy et al., 2019), the follow-up period provides an opportunity to intervene, mitigate, and/or prevent complications (Buncamper et al., 2016; Garcia, 2021).

Statement 4:

We recommend that surgeons should consider gender affirming surgical interventions in trans and gender diverse people (adults and adolescents) seeking these interventions when there is evidence:

- A. Of well-documented (according to local contexts) persistent gender incongruence.**
- B. That the individual fulfills diagnostic criteria prior to gender affirming surgical interventions in regions where a diagnosis is necessary to access health care.**
- C. That other possible causes of apparent gender incongruence prior to gender affirming surgical interventions have excluded.**
- D. That any mental health conditions which could negatively impact the outcome of gender affirming medical interventions have been assessed, with risks and benefits discussed, before a decision is made regarding the intervention.**
- E. That any physical health conditions which could negatively impact the outcome of gender affirming surgical interventions have been assessed, with risks and benefits discussed, before a decision is made regarding the intervention.**
- F. That the capacity to consent for the specific gender affirming surgical interventions has been assessed.**

G. That the capacity to understand the effect of gender affirming surgical interventions on reproduction has been assessed and reproductive options have been explored with the individual prior to the gender affirming surgical interventions.

As noted, gender affirming surgery reduces and/or alleviates gender incongruence, improves quality of life, improves body-image and sexual function (Capitan et al., 2020; Coleman et al., 2012; Hadj-Moussa et al., 2019; Hadj-Moussa et al., 2018), and reduces negative health outcomes such as depression and anxiety (Almazan & Keuroghlian, 2021). The surgeon collaborates with colleagues from other disciplines (e.g. mental health professional and primary care professionals) as needed, to help assess, counsel, and prepare the patient for surgery.

The surgeon, working in conjunction with other healthcare professionals involved in the care of TGD people, is available to provide support and/or counselling throughout the pre- and postoperative period.

For specific recommendations regarding pre-surgical assessment, refer to Chapter 6 (Assessment, Support and Therapeutic Approaches for Adolescents with Gender Variance/Dysphoria) and Chapter 7 (Assessment for Adults with Gender Variance/Dysphoria)

Statement 5:

We recommend that surgeons should, prior to gonadectomy in trans and gender diverse people, confirm that reproductive options have been discussed.

Infertility is often a consequence of both gender-affirming hormone therapy (temporary) and gender-affirming surgery (permanent), and fertility preservation is discussed prior to medical and/or surgical interventions (Defreyne et al., 2020; Jahromi et al., 2021; Jones et al., 2021).

Surgical interventions which alter reproductive anatomy or function may limit future reproductive options to varying degrees (Nahata et al., 2019) It is thus critical to discuss infertility risk and fertility preservation (FP) options with transgender individuals and their families prior to initiating any of these interventions, and on an ongoing basis thereafter (Hembree et al., 2017).

For specific recommendations regarding reproductive options, refer to Chapter 13 (Reproductive Health for Adolescents and Adults)

Statement 6:

We suggest that surgeons should consider offering gonadectomy to trans and gender diverse people when there is evidence that they have tolerated a minimum of 6 months of hormone therapy, unless HRT or gonadal suppression is clinically not indicated and inconsistent with the patient's desires, goals or expressions of individual gender identity. (For supporting text, see statement #7)

Statement 7:

We suggest that surgeons should consider genital gender-affirming procedures in trans and gender diverse adults and adolescents seeking these interventions when there is evidence that the individual has been stable on their current treatment regime (which may include at least 6 months of hormone treatment, or a longer period if required to

achieve the desired surgical result, unless hormone therapy is either not desired or is medically contraindicated).

Exogenous hormones lead to anatomical, physiological and psychological changes. The onset of the anatomic effects (e.g. clitoral growth, vaginal mucosal atrophy) may begin early after initiation of therapy; the peak effect is expected at 1-2 years (T'Sjoen et al., 2019). Depending upon the desired surgical result, a period of hormone treatment may be required (e.g. sufficient clitoral virilization prior to metoidioplasty/phalloplasty) or preferred for psychological and/or anatomical reasons (breast growth and skin expansion prior to breast augmentation, softening of skin and changes in facial fat distribution prior to facial gender-affirmation surgery) (de Blok et al., 2021).

It is important that for individuals who are not taking hormones prior to surgical interventions, surgeons review the potential benefits and/or limitations of hormones on the proposed surgery.

For individuals undergoing gonadectomy who are not taking hormones, a plan for hormone replacement can be developed with their prescribing professional prior to surgery.

Statement 8:

We recommend that surgeons should consider gender affirming surgical interventions in trans and gender diverse adolescents when there is evidence that a multi-disciplinary approach, including mental health and medical professionals, have been involved in the decision-making process.

Substantial evidence (i.e., observational studies (Monstrey et al., 2001; Stojanovic et al., 2017), literature reviews (Esteva de Antonio et al., 2013; Frey et al., 2017; Hadj-Moussa et al., 2019), expert opinions, established guidelines (Byne et al., 2018; Chen et al., 2016; Hembree et al., 2017; Karasic & Fraser, 2018; Klein et al., 2018; Pan & Honig, 2018; Weissler et al., 2018), and a thematic content analysis (Gerritse et al., 2018), support the importance of a multi-disciplinary (i.e. medical, mental health, and surgery) approach to transgender healthcare.

A multi-disciplinary approach is especially important in managing mental health issues if there are present in a TGD person undergoing gender-affirming surgery (de Freitas et al., 2020; Dhejne et al., 2016; Van Der Miesen et al., 2016). In addition, primary care providers and medical specialists can help to support decisions regarding timing of surgery, surgical outcomes and expectations, perioperative hormone management, and optimization of medical conditions (Elamin et al., 2010; Hembree et al., 2017).

For specific recommendations regarding pre-surgical assessment in adolescents, refer to Chapter 6 (Assessment, Support and Therapeutic Approaches for Adolescents with Gender Variance/Dysphoria)

Statement 9:

We suggest that surgeons should consult a comprehensive, interdisciplinary team of professionals in the field of trans gender health when trans and gender diverse people request individually customized (previously termed “non-standard”) surgeries as part of gender affirming surgical intervention.

Gender identities may present along a spectrum, and the expression of a person's identity may vary quite widely amongst individuals (Beek et al., 2015; Koehler et al., 2018). While the overall goal of a particular procedure usually includes reduction of gender dysphoria (van de Grift et al., 2017), gender diverse presentations may lead to individually customized surgical requests that some may consider "non-standard" (Beek et al., 2015; Bizic et al., 2018). Individually customized surgical requests can be defined as: 1) a procedure which alters an individual's gender expression without necessarily aiming to express an alternative, binary gender, and/or 2) the "non-standard" combination of well-established procedures. This is designed to help counsel and inform the patient as well as to ensure that their goals can be achieved.

The patient and their surgeon need to work together to ensure that the patient's expectations are realistic and achievable and that the proposed interventions are safe and technically feasible. The patient and their surgical team need to engage in a shared decision-making process (Cavanaugh et al., 2016). This informed consent process needs to address the irreversibility of some procedures, the newer nature of some procedures, and the limited information available about the long-term outcomes of some procedures.

Statement 10:

We suggest that surgeons caring for transgender men and gender diverse people who have undergone metoidioplasty/phalloplasty encourage lifelong urological follow-up.

Post-operative complications following metoidioplasty/phalloplasty relate to the urinary tract and sexual function (Kang et al., 2019; Monstrey et al., 2009; Santucci, 2018; Schardein et al., 2019). Reported urethral complications (related to urethral lengthening) include: urethral strictures 35-41% , urethral fistulas 15-70% (Monstrey et al., 2009; Santucci, 2018; Schardein et al., 2019), diverticula, vaginal-remnant mucocele, hair growth within the neourethra. (Berli et al., 2021; Veerman et al., 2020). Complications related to sexual function include: limited to absent tactile and/or erogenous sensation, difficulties with orgasm function, and complications with penile prosthetics (Kang et al., 2019; Santucci, 2018). Penile prosthesis-related complications are estimated at: infection (incidence 8-12%), malfunction, urethral erosion, skin extrusion and dislocation of its bone fixation (Falcone et al., 2018; Kang et al., 2019; Morrison et al., 2016). Though a majority of urethral and/or prosthetic complications occur in the immediate and intermediate post-operative period, complications can occur at any time. Early detection may reduce morbidity (e.g. urethral strictures that result in fistulae; pending erosion of a penile prosthetic that would lead to infection and require total explant) (Blecher et al., 2019).

Routine follow-up to assess for early evidence of urethral stricture (or other urinary issues) includes bladder ultrasound measurement of post-void residual volume (to screen for and stage neourethral stricture), fluoroscopic urethrography (to identify and stage neourethral strictures, fistulae and diverticulae), and cystourethroscopy to examine the urethra and bladder. Transgender and gender diverse men may also have routine urologic issues and needs not related to gender transition (urinary calculi, hematuria, and genitourinary malignancies; fertility preservation) (Sterling & Garcia, 2020a, 2020b).

Statement 11:

We recommend that surgeons caring for transgender women and gender diverse people who have undergone vaginoplasty encourage follow-up with their primary surgeon, with a primary care physician, or with a gynaecologist

Vaginoplasty is a safe procedure (Hontscharuk et al., 2021). While complications may occur, most are self-limited and/or treated with minor interventions (Hontscharuk et al., 2021). Minor complications include issues such as granulation tissue, intravaginal hair growth, delayed wound healing and/or wound disruption, aesthetic concerns, and/or introital stenosis (Ferrando, 2020; Kloer et al., 2021). While these complications are usually self-limited, they may impact patient wellbeing after surgery. Additionally, these issues may go un- or mis- diagnosed if patients are not able to access care provided by transgender health knowledgeable professionals. We recommend that patients be followed by their primary surgeon in person at regular intervals such as two weeks, three months, six months and one year after surgery, though more follow up may be indicated for some individuals.

Additional gynecologic care is conducted throughout the lifetime, and can be managed in many settings. A speculum exam to check for granulation tissue, hair, and lesions can be performed by primary care, gynecologist, or the gender affirming surgeon, and may be necessary outside of the immediate post-operative period (Grimstad et al., 2021; Suchak et al., 2015; van der Sluis et al., 2020). Urinary tract infections, sexually transmitted infections, and other fluctuations in the vaginal microbiome may be treated following relevant guidelines formulated for cisgender populations after confirmation by laboratory testing (Hooton, 2012; Sherrard et al., 2018). Manual prostate checks are performed per relevant guidelines formulated for cisgender populations via the vaginal canal, as the prostate is located on the anterior wall of the vagina (Carter et al., 2013).

Other complications include issues such as stenosis of the neovaginal canal, rectovaginal fistula, and/or inflammation (intestinal vaginoplasty) (Bustos et al., 2021). These require a combination of nonsurgical and surgical treatment with consultation and possible referral back to the primary surgeon and/or other surgical consultants (ie colorectal surgeon). In addition, pelvic floor dysfunction may affect 30-40% of patients both prior to and following vaginoplasty. As such, availability of pelvic floor physical therapists is an important adjunct in the post-operative period (Jiang et al., 2019).

Statement 12:

We recommend that patients who regret their gender related surgical intervention are managed by an expert multi-disciplinary team

The percentage of individuals who regret their gender-affirming surgery is very low (between 0.3% and 3.8%)(De Cuypere & Vercruyssen, 2009; Defreyne et al., 2017; Hadj-Moussa et al., 2019; Hadj-Moussa et al., 2018; Landen et al., 1998; Narayan et al., 2021; van de Griff et al., 2018; Wiepjes et al., 2018). The highest incidence of regret was reported in a time where surgical techniques were less refined, the role of multi-disciplinary care was less established, and *The Standards of Care* did not exist or well not widely known (Landen et al., 1998). Regret can be temporarily or permanent and may be classified as the following (Narayan et al., 2021): social regret (caused by difficulties in familial, religious, social or professional life), medical regret (due to long-term medical complications, disappointment in surgical results or inadequate preoperative decision-making), and true gender-related regret (mostly based on patient experienced misdiagnosis and/or insufficient exploration of gender identity). This classification is in accordance with previously discussed negative/positive predictive factors (De Cuypere & Vercruyssen, 2009; Gils & Brewaeys, 2007; Pfäfflin & Junge, 1998).

A multi-disciplinary team could identify the etiology of regret as well as the temporal stability of the surgical request (Narayan et al., 2021). Following this evaluation and in consideration of the

individual's circumstances, medical and/or surgical interventions with the intent of continued transition or surgical procedures to return anatomy to that of the sex assigned at birth may be indicated. (See the assessment chapter for further information).

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