Breast Augmentation

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION

Implants inserted beneath existing breast tissue to enlarge one's breasts.

SURGICAL TECHNIQUES AND OPTIONS

- Implants placed under the pectoralis chest muscles (submuscular) or just under existing breast tissue (subglandular)
- Size, shape, texture and filling (silicone vs. saline) of the implant will be discussed/decided upon with the surgeon
- Different incision sites are possible: periareolar (around areola), inframammary (under breasts), transaxillary (in armpit area)
- Occasionally, a surgery for tissue expansion may be needed before implant surgery can be completed (ie. if there is limited breast tissue/growth after hormones)
- The nipple and areola may be reconstructed
- Rarely, some surgeons are able to use autologous implants (transplant fat from another part of the body to the breast area)

INTENDED RESULTS

- ✓ **Reduces gender dysphoria by aligning anatomy with gender identity**
- ✓ **Larger breasts, however implants cannot perfectly imitate adult breasts**
- ✓ **Decreased need for padded bra/breast prosthesis**

SIDE EFFECTS

- ○ **Irreversible: any of the breast/skin changes that occur as a result of implant surgery will be permanent and cannot be undone. If implants are removed, the skin may be permanently wrinkled or stretched**
- ○ **Implants have a finite lifespan – the need for repeat surgery in future is likely (to replace implant, or to change size, shape, location of implant, or to remove scarring)**
- ○ **Implants make mammography for breast cancer screening more difficult and less sensitive; mammography will require more views than routine screening mammography. Other modalities may be required**
- ○ **Scarring, usually located to be as inconspicuous as possible, but can sometimes be visible under the breasts with inframammary incision**

ALTERNATIVE TREATMENT OPTIONS

- External padding, padded or push up bra, breast prosthesis
- Hormone therapy to stimulate breast growth

SURGICAL RISKS AND COMPLICATIONS OF BREAST AUGMENTATION

- **Dissatisfaction with appearance: a**symmetry of breasts/nipples, skin wrinkling/rippling
- **Capsular contracture** (scar tissue formation around implant becomes tight/firm/painful). The breast shape may change and require surgical removal of the capsular scar tissue and implant removal or replacement. It is less likely with submuscular implants
- **Breast implants are not lifetime devices.** The average lifespan of breast implants is thought to be to approximately 10-15 years. Some will fail earlier (within 5 years) and some will fail later (20-30 years). It is hard to predict when an individual's implants will fail and need removal or replacement. It is important for patients to understand that breast implants are not lifetime devices and over the long-term, the need for removal or replacement is likely
- **Implant failure** (e.g. breakage, leaks, deflation; less likely with 5th generation silicone gel implants)
- **Implant migration/dislocation, skin necrosis** (skin dies)**, extrusion** (skin breaks down and implant appears through the skin)
- **Calcifications** in the breast can develop which can be misinterpreted as suspicious lesions for breast cancer on mammography
- **Numbness/loss of sensation** around the operation site, often temporary
- **Anaplastic Large Cell Lymphoma ALCL** (a rare non-Hodgkin lymphoma, not a breast cancer). A very low but increased risk for this type of cancer in the tissue next to the implant (reported by the FDA at 60 per 5-10 million and by Health Canada at 3 per 100 million). It is currently not possible to confirm increased risk with statistical certainty, research is ongoing by the FDA
- **Mondor disease** (0.63%) – superficial thrombophlebitis (inflammation of vessels) in epigastric veins below inframammary scars; often temporary

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
- DVT, PE (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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Consider referral to the Sherbourne Health Centre ARC (Acute Respite Care) if socially isolated, under-housed or homeless
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing and decrease risk of complications
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- History of keloid scars
- In order to qualify for funding, MOHLTC requires 12 months of estrogen therapy (unless contraindicated) with no breast enlargement (defined as Tanner stage 1, which should be documented on the Prior Approval Form)
- Contraindications: untreated breast cancer, premalignant breast disease
- Breast augmentation can be done concurrently with vaginoplasty (requires general anesthetic)

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect.

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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

IMMEDIATE PRE-OPERATIVE CARE

- Some surgeons may make surgical skin markings with patients standing, sitting or lying down
- IV antibiotics may be given pre-operatively to reduce the risk of infection

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

- Pain management (combination of light activity encouraged, such as walking)
- Bruising, swelling, numbness and/or shooting/burning pain can occur
- Icepacks may reduce swelling
- Follow surgeon's post-op instructions for drains, dressings, sutures and steri-strips
- Follow surgeon's instructions regarding type of bra/supportive clothing

INTERMEDIATE POST-OPERATIVE CARE

- Follow surgeon's recommendations on restrictions to activities
- Follow surgeon's instructions for breast massage initiation, frequency, and technique
- Some general guidelines include:
  - Avoid large sweeping movements with your arms for several weeks
  - Avoid driving for 2 weeks or longer, until safely able to move arms to drive
- Time off work – 3 weeks or longer (depending on type of work)
- Avoid straining, lifting heavy objects (max 10 lbs), and exercise for 4 weeks
- No strenuous activity for 6 weeks; light activity encouraged
- Do not lie or sleep on stomach/breasts for 3 months

LONG-TERM MEDICAL CARE

- Inform providers/mammogram techs about breast implants, in order to obtain the appropriate mammographic views and to decrease risk of rupture
- With silicone implants: follow surgeon's instructions regarding need for periodic imaging to monitor for silent rupture
- 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

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SHERBOURNE Health Centre

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Chest Reconstruction

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION*

- Bilateral mastectomy and chest contouring
- Removes breast tissue and sculpts remaining tissue into a shape typically considered more masculine

In this document:

- "**Nipple**" is the central raised portion of pigmented tissue
- "**Areola**" is the circular shaped pigmented tissue immediately surrounding the nipple
- "**Nipple-areola complex**" (NAC) is the entire tissue complex including both nipple and areola

INTENDED RESULTS

- ✓ **Reduces gender dysphoria by aligning anatomy with gender identity**
- ✓ **Flatter chest profile**
- ✓ **Often eliminates need for binding**

SIDE EFFECTS

- ○ **Irreversible**
- ○ **Decreases ability to lactate/chest feed**
- ○ **Numbness of nipples/areola/chest - higher risk with double incision/bilateral mastectomy**
- ○ **Scarring: Small scars around areola in keyhole and periareolar; large linear scars in double incision/bilateral mastectomy**
- ○ **May decrease ability to screen for breast cancer, since breast cancer screening tests may be less effective**

ALTERNATIVE TREATMENT OPTIONS

- Binding chest
- Wearing clothes that hide chest tissue
- Weight loss to decrease chest tissue

** Adapted from Transgender Health Information Program [Internet]. Transgender Health Information Program. [cited 2016Nov21]. Available from: http://transhealth.phsa.ca/*

SURGICAL TECHNIQUES AND OPTIONS*

There are multiple possible techniques. The type recommended by the surgeon depends on cup size, skin elasticity, and NAC size/position. Three common techniques:

1. KEYHOLE (Recommended for people with an A cup-size and lots of chest skin elasticity)

- A small incision is made along the bottom of the areola
- The NAC is left attached to the body via a pedicle (a stalk of tissue) in order to maintain sensation
- Breast tissue is removed by a liposuction needle through the incision
- The incision is closed. The NAC is usually not resized or repositioned

2. PERIAREOLAR INCISION (Recommended for people with a B or C cup size and moderate chest skin elasticity)

- An incision is made all around the outside of the areola
- The NAC is usually left attached to the body via a pedicle (stalk of tissue) to maintain sensation
- Breast tissue is removed by scalpel and/or liposuction
- The areola may be trimmed to reduce its size
- Excess skin around the areola may also be trimmed away
- The skin is pulled taut around the areola like pulling a drawstring closed
- The NAC is reattached to the skin
- The NAC may be repositioned slightly, depending on chest size and available skin
- Drains (long thin tubing) may be placed in the chest to allow blood/fluid to escape

3. DOUBLE INCISION/BILATERAL MASTECTOMY (Recommended for people with a C-cup size and reduced skin elasticity or a D-cup size)

- Large incisions are made horizontally across the chest, usually beneath the areola
- The skin is peeled back. Mammary glands and fatty tissue are removed with a scalpel
- Some fatty tissue may be liposuctioned
- Excess chest skin is trimmed
- Incisions are closed, leaving two scars below the pectoral muscle lines
- With the "free nipple graft" technique, the NAC is removed completely
- The areola is trimmed to a smaller size and NAC grafted to the chest in a higher position
- With the pedicle technique, the NAC is left partly attached (in an attempt to maintain sensation), repositioned, trimmed to a smaller size, and reattached
- Two drains (long thin tubing) are placed along each incision to allow blood/fluid to escape

SURGICAL RISKS AND COMPLICATIONS OF CHEST RECONSTRUCTION

- **Change in sensation** (loss of sensation or hypersensitivity) **in NAC and chest** (more common with free nipple graft)
- **Partial or full nipple graft failure**, ie. nipple necrosis (tissue dies and falls off) NAC may need to be replaced, reconstructed or tattooed (a rare complication)
- **Changes in colour of NAC**
- **NAC asymmetry**
- **Large scars**
  - Prominent scars with double incision
  - Can cover with chest hair, building pectoral muscles, tattoos
- **Skin contour irregularities** (skin excess, bulges, puckering)
- **Hematoma/Seroma/Abscess**

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

- Bleeding
- DVT, PE (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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Consider referral to the Sherbourne Health Centre ARC (Acute Respite Care) if socially isolated, under-housed or homeless
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing and decrease risk of nipple necrosis
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- History of keloid scars

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect.
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
- 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

IMMEDIATE PRE-OPERATIVE CARE

- Patients should follow the hair removal instructions recommended by their surgeon
- Some surgeons may make surgical skin markings with patients standing, sitting or lying down
- IV antibiotics may be given pre-operatively to reduce the risk of infection

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

- Surgical drains (Jackson Pratt drain) may or may not be necessary for up to one week
- Follow surgeon's post-op instructions for drains, dressings, sutures and steri-strips
- Follow surgeon's recommendations about wearing a compression band (sometimes recommended for 1 month post-op)

INTERMEDIATE POST-OPERATIVE CARE

- Follow surgeon's recommendations on restrictions to activities
- Some general guidelines include:
  - Have a support person during the post-op period to assist with ADLs, IADLs (cleaning, laundry, groceries)
  - Limit arm movements to small, below the shoulder movements for several weeks (ie. avoid large movements to avoid tension on sutures and stretching of scars)
  - Avoid driving for 2 weeks or longer, until safely able to move arms to drive
  - Avoid straining, lifting heavy objects (max 10lbs), and exercise for 3-4 weeks
  - Reduce activities and take time off work for 3 weeks or longer (depending on type of work)
  - Gradual return to daily activities over 4-6 weeks

LONG-TERM MEDICAL CARE

- Swelling is normal for 4-6 months and will resolve over time
- Avoid exposing scars to sunlight for at least 1 yr post-op - this will minimize colour changes in the scar
- In all 3 techniques, some original breast tissue will remain, so ongoing monitoring for breast cancer is recommended; the best method is not known
- 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

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Clitoral Release

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION

A penis is created with the enlarged clitoral tissue. Ligaments around the clitoris are cut, giving the clitoris a longer shaft, which creates a penis. There is no change to the natal urethra (ie there is no urethral lengthening).

Some surgeons use the term "**metoidioplasty without urethral lengthening**" as equivalent to "**clitoral release**".

INTENDED RESULTS

- ✓ **Reduces gender dysphoria by aligning anatomy with gender identity**
- ✓ **Creation of a penis, +/- scrotum and testicular implants**
- ✓ **Fewer complications/less scars than phalloplasty (e.g. no forearm scar)**
- ✓ **Greater chance at maintaining erogenous sensation in the new penis, compared to phalloplasty**
- ✓ **Not able to void standing**

SIDE EFFECTS

- ○ **If vaginectomy and scrotoplasty are desired, hysterectomy + BSO are required, resulting in infertility**
- ○ **Penis is usually not large enough for insertive penetrative sex**
- ○ **Inability to have receptive vaginal sex if vaginectomy is performed**

SURGICAL TECHNIQUES AND OPTIONS

- An enlarged clitoris results from testosterone therapy
- Ligaments around the clitoris are cut, releasing it from the pubis, giving the shaft more length, thus creating a penis
- Some surgeons may offer vaginectomy/scrotoplasty/testicular implants in labia major depending on patient preference and hysterectomy + BSO status (depending on the surgeon this make take place concurrently or in stages)
  Vaginectomy: removal of the vagina (colpectomy) or closure of vagina (colpocleisis)
  Scrotoplasty: creation of a scrotum and insertion of testicular implants
- There is no urethral lengthening - the native urethra is left unchanged
- Surgical techniques vary by surgeon

SURGICAL RISKS AND COMPLICATIONS OF CLITORAL RELEASE

- **Changes in sensation of penis:** decreased sensation, tenderness or hypersensitivity
- **With scrotoplasty and testicular implants:** infection, extrusion, poor/uncomfortable positioning
- **Dissatisfaction with appearance and/or function of genitals** (size, shape, function of penis, scrotum)

ALTERNATIVE TREATMENT OPTIONS

- Metoidioplasty, which lengthens the clitoris with urethral extension (able to void standing)
- Phalloplasty

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

- Bleeding
- DVT, PE (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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Consider referral to the Sherbourne Health Centre ARC (Acute Respite Care) if socially isolated, under-housed or homeless
- Testosterone administration is needed to enlarge clitoris (most surgeons will require at least 1-2 yrs)
- If considering scrotoplasty, requires an earlier total hysterectomy + BSO to allow for vaginectomy
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- Off work for several weeks (depending on the type of work)
- Limit physical activity for 6 weeks
- Full recovery may take up to 3 months

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect

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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

POST-SURGICAL CARE

INTERMEDIATE POST-OPERATIVE CARE

Follow surgeon's recommendations on restrictions to activities. Some general guidelines include:

- Off work for several weeks (depending on the type of work)
- Icing periodically for 10 min can be helpful for swelling/pain control
- Light activity (walking) is encouraged
- Avoid lifting heavy lifting/strenuous activity for 6 weeks
- Full recovery may take up to 3 months
- Continue to avoid smoking and alcohol according to the surgeon's instructions to optimize healing

LONG-TERM MEDICAL CARE

- 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

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Hysterectomy and Bilateral Salpingo-Oophorectomy

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION

Hysterectomy: removal of the uterus

- **Total Hysterectomy** = removal of the entire uterus including the cervix
- **Subtotal Hysterectomy** = removal of most of the uterus, but not the cervix

Bilateral Salpingo-Oophorectomy (BSO):

- **Bilateral Salpingectomy** = removal of both fallopian tubes
- **Bilateral Oophorectomy** = removal of both ovaries

SURGICAL TECHNIQUES AND OPTIONS

1. **Vaginal hysterectomy**: incision is through the vagina, uterus/tubes/ovaries removed through vagina
2. **Laparoscopic hysterectomy**: 3-4 small abdominal incisions, each around 1 cm, uterus/tubes/ovaries are removed through incisions
3. **Laparoscopically assisted vaginal hysterectomy (LAVH):** incision through vagina, removal of uterus/fallopian tubes/ovaries through vagina, with laparoscopic help
4. **Abdominal Hysterectomy**: uterus removed through one large incision through the abdomen

INTENDED RESULTS

- ✓ **Reduces gender dysphoria by aligning anatomy with gender identity**
- ✓ **Stops menses, breakthrough bleeding, menstrual pain**
- ✓ **With total hysterectomy (and no history of gynecologic cancer), individuals no longer require pap smears**
- ✓ **Removes ovaries which is the main source of estrogen**
- ✓ **After surgery, sometimes an individual's testosterone dose may be lowered**
- ✓ **Allows for vaginectomy and scrotoplasty**

SIDE EFFECTS

- ○ **Irreversible**
- ○ **Permanent Infertility (no longer producing eggs)**
- ○ **Permanent removal of uterus (inability to use uterus for carrying embryo)**
- ○ **Almost no estrogen production (puts patient at risk for osteoporosis if an exogenous form of sex hormone is not used)**

ALTERNATIVE TREATMENT OPTIONS

- Hysterectomy only (without BSO)
- Hormone therapy (testosterone) to stop menses
- GnRH analogues to stop ovulation and stop menses
- Hormonal IUD to induce amenorrhea/oligomenorrhea (stop menses or lighten menses)

SURGICAL RISKS AND COMPLICATIONS OF HYSTERECTOMY AND BSO

- **Accidental damage to surrounding tissues such as bowel perforation, injury to bladder, rectum, or other internal organs**
- **Accidental damage to blood vessels which may be needed for future phalloplasty** (inferior epigastric, circumflex iliac)
- **Urinary tract injury and/or infection**
- **Vaginal prolapse** (vaginal vault falls out of its original position)
- **Fistulas** (abnormal connection, which allows fluids/solids to pass between two structures that should not be connected)
  - **Uro-vaginal** (abnormal connection between bladder and vagina)
  - **Recto-vaginal** (abnormal connection between rectum and vagina)
  - **Ano-vaginal** (abnormal connection between anus and vagina)
- **Changes in sexual sensation or decreased intensity of orgasm**
- **Decreased libido**
- **Ovarian remnant syndrome** (pain and bleeding if some ovarian tissue is left behind)
- **Vaginal cuff bleeding** (bleeding from the top section of vagina which was closed)
- **Hot flashes/night sweats and other symptoms of oophorectomy if no exogenous sex hormone is used**

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

- Bleeding, if excessive may require blood transfusion
- Blood clots (DVT, PE)
- 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
- Post-operative regret

General Anesthetic Risks:

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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Consider referral to the Sherbourne Health Centre ARC (Acute Respite Care) if socially isolated, under-housed or homeless
- Fertility counselling +/- egg preservation, since hysterectomy + BSO will lead to permanent loss of fertility
- Post-oophorectomy, continuous exogenous sex hormone is recommended to address increased risk of osteoporosis, as long as deemed medically safe and beneficial
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- If planning future metoidioplasty (more than just simple clitoral release) or phalloplasty, most surgeons require the hysterectomy+BSO be completed at least 6 months prior
- If considering future lower abdominal flap phalloplasty, avoid transverse hysterectomy scars "pfannestiel incisions" in abdominal hysterectomies as the transverse incision disrupts flap vasculature. Vertical abdominal incisions are preferred

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect.

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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

Discuss aftercare plan and social supports. Typical recovery is 2 weeks rest, complete recovery from LAVH is 4-6 weeks, and complete recovery from abdominal hysterectomy is 6-8 weeks

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

- Monitor for excessive vaginal bleeding
- Monitor for signs of infection
- Incision care
- Pain management

Follow surgeon's recommendations on restrictions to activities. Some general guidelines include:

- No lifting for 2 weeks (laundry), avoid stretching or bending for 2 weeks
- No heaving lifting (max 10 lbs)/strenuous activity for 6 weeks
  - No vigorous exercise for 3 months

LONG-TERM MEDICAL CARE

Testosterone dose post-oophorectomy:
Depending on the testosterone dose prior to oophorectomy, dose reduction may be considered as long as it is adequate to maintain bone density. Patients should be informed of possible reduced muscle mass, energy and libido at lower doses. Adequacy of dosing in those on low testosterone replacement post oophorectomy may be assessed by following LH and FSH levels and titration of dosing to maintain these in the premenopausal range

Minimize risk for osteoporosis:

- Ensuring long-term exogenous sex hormone replacement (testosterone)
- Monitor LH and FSH levels to assess if hormone (testosterone) dosage is adequate for bone health
- Calcium and Vitamin D
- Reduce smoking
- Weight bearing activity
- Consider BMD for anyone post-oophorectomy, who has not been on hormones for 5 years, regardless of age

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Metoidioplasty

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION

A penis is created with the enlarged clitoral tissue. Ligaments around the clitoris are cut, giving the clitoris a longer shaft, which creates a penis.
The urethra is extended to the tip of the penis.

INTENDED RESULTS/BENEFITS

- **Reduces gender dysphoria by aligning anatomy with gender identity**
- **Creation of a penis, +/- scrotum and testicular implants**
- **To allow standing urination**
- **Greater chance of maintaining erogenous sensation in the penis compared to phalloplasty**
- **Less scarring than phalloplasty (e.g. no forearm scar)**

SIDE EFFECTS

- **If vaginectomy and scrotoplasty are desired, hysterectomy + BSO are required-resulting in infertility**
- **Penis is not usually large enough for insertive penetrative sex**
- **Inability to have receptive vaginal sex if vaginectomy is performed**

ALTERNATIVE TREATMENT OPTIONS

- Clitoral release, which lengthens the clitoris but without urethral extension
- Devices that aid voiding while standing
- Phalloplasty

SURGICAL TECHNIQUES AND OPTIONS

- An enlarged clitoris results from testosterone therapy
- Ligaments around the clitoris are cut, releasing it from the pubis, giving the shaft more length, thus creating a penis
- Sometimes labial tissue is used to add girth to the penis
- The urethra is lengthened (urethroplasty using mucous-producing tissue from the vagina or the inner cheek) to allow voiding through tip of penis
- Some surgeons may offer vaginectomy/scrotoplasty/testicular implants in labia majora depending on patient preference and hysterectomy + BSO status
  Vaginectomy: removal of the vagina (colpectomy) or closure of vagina (colpocleisis)
  Scrotoplasty: creation of a scrotum and insertion of testicular implants
- Surgical techniques vary by surgeon

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

- Bleeding
- DVT, PE (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 METOIDIOPLASTY

- Even with urethroplasty, some clients will not be able to void standing, due to a change in urine stream (spray, dribble) or lack of penis length.
- **Urinary complications:** fistula, stricture, stenosis, urinary tract infections
- **Urethral fistulas:** uro-cutaneous (abnormal leak between urethra and skin)
- **Urethral stenosis:** narrowing of the urethra causing difficulty urinating
- **Urethral strictures:** completely blocked urethra, inability to urinate, may require a catheter to be inserted (until surgically corrected)
- **Hair growth in urethra:** may cause UTI, stenosis, stricture, intra-urethral stones
- Urethral complications may require surgical revision
- Changes in sensation of penis: decreased sensation, tenderness or hypersensitivity
- **Testicular implant complications**: infection, extrusion, poor/uncomfortable positioning
- **Dissatisfaction with appearance and or function of genitals** (size, shape, function of penis, scrotum)

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Consider referral to the Sherbourne Health Centre ARC (Acute Respite Care) if socially isolated, under-housed or homeless
- Testosterone administration is needed to enlarge clitoris (most surgeons require at least 1-2 yrs)
- If considering scrotoplasty, requires an earlier total hysterectomy + BSO, to allow for vaginectomy
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- Off work for 4 or more weeks (depending on the type of work)
- Limit physical activity for 6 weeks
- Full recovery may take up to 3 months
- Consider the need for a support person in post-op period to assist with ADLs, IADLs (cleaning, laundry, groceries)

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect

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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

- Urinary catheter is likely kept in place post-operatively for several weeks
- Suprapubic catheter may be required

INTERMEDIATE POST-OPERATIVE CARE

Follow surgeon's recommendations on restriction of activities. Some general guidelines include:

- Off work for 4 weeks (or longer depending on the type of work)
- Icing periodically for 10 min can be helpful for swelling/ pain control
- Avoid driving for 2 weeks (or until able to drive safely)
- Light activity (walking) is encouraged
- Avoid vigorous physical activity/heavy lifting for 6 weeks
- Full recovery may take up to 3 months
- Continue to avoid smoking and alcohol according to the surgeon's instructions to optimize healing

LONG-TERM MEDICAL CARE

- Urinary revisions may be required to repair strictures or fistulas
- Balloon dilation may be effective for urethral stricture
- 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

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Orchiectomy

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION

Orchiectomy is the removal of the testes (testicles) and spermatic cord.

SURGICAL TECHNIQUES AND OPTIONS

- Scrotal incision (most common) or inguinal (groin) incision
- Can be done with or without scrotectomy (removal of scrotal sac)
- General, spinal, or local anesthetic
- Day surgery
- Prostate is retained

INTENDED RESULTS

- **Reduces gender dysphoria by aligning anatomy with gender identity**
- **Eliminates main source of endogenous testosterone production and its effects**
- **Patients can often stop or at least significantly reduce androgen-blockers**
- **Some patients may be able to decrease their estrogen dose**

SIDE EFFECTS

- **Irreversible**
- **Permanent infertility (no longer producing sperm)**
- **Almost no testosterone production - puts patient at risk for osteoporosis if a sex hormone is not used**
- **Side effects of low testosterone may include erectile dysfunction, decreased libido, and decreased energy**

ALTERNATIVE TREATMENT OPTIONS

- "Tucking" genitals
- Medications: androgen blockers, GnRH analogues
- Vaginoplasty (surgical construction of vagina & vulva which includes simultaneous orchiectomy)

SURGICAL RISKS AND COMPLICATIONS OF ORCHIECTOMY

- If scrotectomy (removal of scrotal tissue) is performed, this will remove tissue that often is used to create the vaginal lining during vaginoplasty. Depending on the vaginoplasty technique, additional skin grafts (e.g. from the upper thighs) may be required
- Scrotal or retroperitoneal hematoma
- Numbness/loss of sensation in certain areas around the surgical site, often temporary
- Stumps of spermatic cords may be palpable

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

- Bleeding
- DVT, PE (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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Fertility counselling+/- sperm banking
- Post-orchiectomy continuous exogenous sex hormone is recommended to address the increased risk of osteoporosis, as long as it is deemed medically safe and beneficial
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- Consider pros/cons of scrotectomy, as it may affect tissues later used for vaginoplasty
- Orchiectomy can be done at the same time as vaginoplasty rather than as a separate procedure
- Patients should ask their surgeon if there are any additional fees that are not OHIP covered

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect

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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

IMMEDIATE PRE-OPERATIVE CARE

- Consult your surgeon regarding when to stop medications (hormones, blood thinners, aspirin, herbal remedies)

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

- Care of incision site
- Bruising, swelling, numbness and/or shooting/ burning pain can occur
- Activity levels – light activity encouraged (such as walking)

INTERMEDIATE POST-OPERATIVE CARE

- No heavy lifting/strenuous activity for 2-3 weeks

LONG-TERM MEDICAL CARE

- Androgen blocker can be stopped or tapered over 4-6 weeks post-operatively

Estrogen dose post-orchiectomy:

- Depending on pre-op estrogen dose, dose reduction may be considered as long as it is adequate to maintain bone density. Adequacy of dosing in those on low estrogen replacement post-orchiectomy may be assessed by following LH and FSH levels

Minimize risk for osteoporosis:

- Ensuring long-term exogenous sex hormone replacement (estrogen)
- Monitor LH and FSH levels to assess if hormone (estrogen) dosage is adequate for bone health
- Ensure adequate calcium and vitamin D intake
- Reduce smoking
- Weight-bearing activity
- Consider bone densitometry for anyone post-orchiectomy, who has not taken exogenous hormones for 5 years or more, regardless of age

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Phalloplasty

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary care providers and patients. It is not exhaustive and does not replace the informed consent process between surgeon and patient.

DESCRIPTION*

A masculinizing gender affirming surgery to create a penis, scrotal sac and testes. It involves:

- **Creation of a penis** (neophallus) using grafting of tissue, including arteries, veins and nerves
- **Urethroplasty**: creation of a urethra that travels through the neophallus (tissue from skin, vagina, oral mucosa can be used to create the urethra)
- **Vaginectomy**: removal of the vagina (colpectomy) or closure of vagina (colpocleisis)
- **Glansplasty**: creation of the glans penis – by sculpting head of neophallus
- **Scrotoplasty**: creation of a scrotum and insertion of testicular implants
- **Erectile device**: Insertion of an erectile device, if desired

INTENDED RESULTS

- ✓ **Reduces gender dysphoria by aligning anatomy with gender identity**
- ✓ **To allow penetrative sex**
- ✓ **To allow standing urination**

SIDE EFFECTS

- ○ **Irreversible**
- ○ **If vaginectomy and scrotoplasty are desired, hysterectomy + BSO are required, resulting in infertility**
- ○ **Scars (large scar on forearm results from forearm flap phalloplasty). Location of scars vary by surgical technique**

** Adapted from Transgender Health Information Program [Internet]. Transgender Health Information Program. [cited 2016Nov21]. Available from: http://transhealth.phsa.ca/*

SURGICAL TECHNIQUES AND OPTIONS*

Surgical techniques vary by surgeon. Montreal GRS clinic offers **free forearm flap phalloplasty** (also called radial forearm flap), this usually involves several components, which occur over 4-5 surgeries:

1. Skin, nerves, veins and arteries are removed from the forearm (large rectangular area including radial artery)
2. A small part of the forearm skin is used for urethroplasty
3. A large part of forearm tissue is folded "tube within a tube" to create the neophallus shaft and glans
4. The neophallus is attached to the genital area above the clitoris. Microsurgery is performed to attach the blood vessels and nerves from the neophallus to the genital blood vessels and nerves
5. The urethra is re-routed initially below the penis, and later through the penis
6. Skin from the thigh is grafted to the forearm, to help it heal
7. The labia are repositioned and sculpted to make a new scrotum (scrotoplasty)
8. The lining of the vagina is removed and vagina is closed (vaginectomy)
9. Testicular implants are inserted and an erectile device is inserted if desired
10. GRS requires hysterectomy + BSO be completed at least 6 months prior to phalloplasty

Other phalloplasty techniques use other donor sites to create the neophallus:

- Anterolateral thigh (ALT)-free flap or pedicled flap
- Musculocutaneous latissimus dorsi (MCL) from the back – free flap
- Abdominal/groin flap

ALTERNATIVE TREATMENT OPTIONS

- Clitoral release
- Metoidioplasty
- Use of testosterone to develop clitoromegaly (enlargement of the clitoris)
- "Packing" (use of padding or phallic object in pants/underwear)
- Devices that aid voiding while standing

SURGICAL RISKS AND COMPLICATIONS OF PHALLOPLASTY

Urinary/Urethral complications:

- **Urinary complications are very common:** fistula, stricture, stenosis, urinary tract infections
- **Urethral fistulas :** uro-cutaneous - abnormal leak between urethra and skin
- **Urethral stenosis:** narrowing of the urethra causing difficulty urinating
- **Urethral strictures:** completely blocked urethra, inability to urinate, may require a catheter to be inserted (until surgically corrected)
- **Hair growth in urethra:** may cause UTI, stenosis, stricture, intra-urethral stones
- **Urethral complications may require surgical revision**

Other complications:

- **Forearm donor site:** large permanent scar, numbness/stiffness/swelling/pain of wrist/elbow/arm
- **Graft failure:** the neophallus tissue dies (<1% full, 6% partial graft failure)
- **Nerve damage and loss of sensation of neophallus**
- **Decreased sexual satisfaction, inability to orgasm**
- **Dissatisfaction with appearance and/or function of genitals** (size, shape, function of penis, scrotum)
- **Injury to bladder or rectum** (recto-perineal fistulas: rectum to skin)
- **Wound breakdown** (common at base of phallus, perineal-scrotal junction)
- **Testicular implant complications:** infection, extrusion, poor/uncomfortable positioning
- **Erectile device complications:** infection, skin erosion, technical failure, poor positioning

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

- Bleeding
- DVT, PE (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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Hysterectomy and BSO is required at least 6 months prior to phalloplasty
- Consider referral to the Sherbourne Health Centre ARC (Acute Respite Care) if socially isolated, under-housed or homeless
- GRS requires meticulous permanent hair removal from forearm donor site (electrolysis/laser) to be completed at least 6 months prior to phalloplasty
- Perineal electrolysis may also be requested between stages, if perineal tissue is used in the urethral extension
- Smoking cessation is particularly important in phalloplasty (due to blood vessel grafts and risk of graft failure secondary to vasoconstriction caused by nicotine). Some surgeons recommend smoking cessation 6 months pre-op and 6 months post op
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances

Phalloplasty takes multiple surgeries over a period of 1-2 years or longer, depending on the recovery time between surgeries*

Expect 4-5 trips to Montreal and consider travel costs: GRS requires an in-person consultation prior to booking phalloplasty to ensure adequacy of donor site (healthy blood vessels in the forearm).

1. Pre-operative consultation (outpatient)
2. Phalloplasty and vaginectomy, urethra re-routed to perineum: 10 days in Montreal
3. Urethra re-routed through penis: 3 days in Montreal
4. Scrotoplasty: 3 days in Montreal
5. Erectile device: 3 days in Montreal (steps 4 & 5 may be combined in the near future)

IMMEDIATE PRE-OPERATIVE CARE

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect

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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

**Adapted from Transgender Health Information Program [Internet]. Transgender Health Information Program. [cited 2016Nov21]. Available from: http://transhealth.phsa.ca/*

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

- Follow surgeon's instructions for positioning of the neophallus post-operatively
- Follow surgeon's Instructions for suture removal/ dressings
- Follow surgeon's instructions for urinary catheter or suprapubic catheter care and removal
- Smoking cessation and limiting caffeine are important to promote blood flow and support healing

INTERMEDIATE POST-OPERATIVE CARE

- Consider the need for a support person in post-op period to assist with ADLs, IADLs (cleaning, laundry, groceries)
- Follow surgeon's instructions for showering, dressings and underwear.
- Follow surgeon's instructions for range of motion exercises for arm and leg, generally started 1 week post-operatively
- Follow surgeons' recommendations on restrictions to activities

Some general guidelines include:

- Avoid driving for 2 weeks or longer, until safely able to move arms to drive
- Avoid straining and heavy lifting for 6 weeks
- Reduce activities and time off work for 8-12 weeks (or longer depending on type of work)
- Avoid strenuous activity for 12 weeks
- Timelines for recovery vary by surgical stage and procedure. Creation of the neophallus, urethroplasty, and healing of donor site tend to require the longest recovery period. Testicular implants and erectile device insertion will have shorter recovery times

LONG-TERM MEDICAL CARE

- Once forearm wound is completely healed, a compression sleeve can be worn to reduce scarring
- Swelling is normal for at least 4-6 months, and will slowly resolve over time
- Avoid exposing scars to sunlight for 1 yr post-op, this will minimize colour changes in the scar
- 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

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ACKNOWLEDGEMENT

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Vaginoplasty

A summary for primary care providers

This summary provides information to facilitate discussion of transition-related surgery between primary 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 vagina and vulva (including mons, labia, clitoris and urethral opening) and remove the penis, scrotal sac and testes.

INTENDED RESULTS

- ✓ **Reduces gender dysphoria by aligning anatomy with gender identity**
- ✓ **Eliminates main source of endogenous testosterone production and its effects**
- ✓ **Patients can often stop or at least significantly reduce androgen-blockers***
- ✓ **Some patients may be able to decrease their estrogen dose***
- ✓ **Sensate tissues which, in many cases, maintain the ability to have an orgasm**
- ✓ **Ability to have receptive sex (if cavity formation is chosen)**
- ✓ **Ability to void sitting down**
- ✓ **No longer have to 'tuck' genitals**

SIDE EFFECTS

- ○ **Irreversible**
- ○ **Permanent infertility (no longer producing sperm)****
- ○ **Almost no testosterone production—puts patient at risk for osteoporosis if an exogenous sex hormone is not used****
- ○ **Side effects of low testosterone may include decreased libido, decreased energy****

ALTERNATIVE TREATMENT OPTIONS

- "Tucking" genitals
- Orchiectomy +/- scrotectomy
- Vaginoplasty without cavity formation

** Adapted from Transgender Health Information Program [Internet]. Transgender Health Information Program. [cited 2016Nov21]. Available from: http://transhealth.phsa.ca/*

*** Due to orchiectomy*

SURGICAL TECHNIQUES AND OPTIONS*

Vaginoplasty includes:

- Removal of testes (orchiectomy)
- Removal of penis (penectomy)
- Creation of a vaginal cavity/neovagina (vaginoplasty)
- Creation of a clitoris (clitoroplasty)
- Creation of labia (labiaplasty)

Creation of neovagina:

- Different tissues can be used to create the neovaginal lining
- The most common is skin from the shaft of the penis and scrotum
- Sometimes lower abdominal, or other skin grafts can be used as sources of additional skin
- Less commonly, the rectosigmoid colon is used (not available in Canada)

Penile inversion vaginoplasty:
Penile inversion is the most common vaginoplasty technique, and is the technique offered at GRS Montreal. The skin from the shaft of the penis is inverted and used to line the newly created vagina. If the skin from the penis is not sufficient to create the desired vaginal depth, additional skin is typically harvested from scrotal skin. Space for the neovagina is dissected between the bladder and the rectum, posterior to the prostate (which remains in place). The testes are removed.
The clitoris is made from a small portion of the glans containing nerves. The glans remains rooted to the penile dorsal nerves and vessels, and is shaped to construct the clitoris. The clitoral hood is made with penile tissue.
The labia minora are made with mucous membrane from the urethra and penile skin, and the labia majora are constructed from scrotal skin.

Colovaginoplasty:
Vaginoplasty in which a piece of the large intestine is used to create the vaginal vault. The segment of colon maintains its blood supply and tends to be self-lubricating. The procedure is more invasive, is associated with increased risk for bowel complications, and is not performed in Canada at this time.

Vaginoplasty without cavity formation:
A less invasive alternative when a vaginal vault is not desired by the patient. A shallow vaginal dimple is created along with the external genital structures: clitoris, labia minora and labia majora. This option allows urination in the seated position. It does not allow for receptive vaginal sex and precludes future penile inversion vaginoplasty.

SURGICAL RISKS AND COMPLICATIONS OF VAGINOPLASTY

Vaginal complications:

- **Neovagina stricture or stenosis** (lifelong dilation or equivalent is required to prevent this)
- **Prolapse of the neovagina** (vaginal vault falls out of its original position)
- **Partial or complete flap necrosis** (loss of clitoris) *increased risk with smoking
- **Hair growth inside the neovagina** (causing irritation, inflammation, infection)
- **Granuloma inside vagina** (overgrowth of healing tissue, causing a raised bump)
- **Neuroma inside vagina** (raw nerve endings that are hypersensitive)

Urological complications:

- **Urethral stenosis:** narrowing of the urethra causing difficulty urinating
- **Urethral strictures:** completely blocked urethra, inability to urinate, may require a catheter to be inserted (until surgically corrected)
- **Urinary incontinence**
- **Urethro-vaginal fistula**
- **Urinary infections**

Wound dehiscence/delayed healing:

- **The vaginal fourchette, an area of increased tension where the labia minora meet the perineum, and some areas of labia may take longer to heal**

Rectal complications:

- **Rectal injury**
- **Recto-vaginal fistula** (unwanted connection between rectum and vagina, allowing gas/discharge or feces to exit through the vagina, requires surgical revision)

Other risks

- **Loss of sensation, loss of sexual function, inability to orgasm**
- **Dissatisfaction with size/shape of vagina, clitoris or labia**
- **Hypertrophic scarring**
- **Compartment syndrome and nerve injury of the legs:** associated with positioning during surgery

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

- Bleeding
- DVT, PE (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)
- Scarring (can be prominent especially if history of keloid)
- Chronic pain
- Need for revision(s)
- Post-operative regret
- Wound dehiscence (wound opening), delayed healing
- Nerve damage, loss of sensation, hypersensitivity, neuropathic (nerve) pain
- Dissatisfaction with appearance/ function

General Anesthetic Risks:

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

PRE- AND POST-OPERATIVE CARE

PRE-SURGICAL CARE

PRE-SURGICAL CONSIDERATIONS

- Consider referral to the Sherbourne Health Centre ARC (Acute Respite 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, as long as deemed medically safe and beneficial
- Smoking cessation is strongly recommended both pre-op and post-op to optimize wound healing
- Follow surgeon's advice on time periods to avoid smoking, alcohol and other substances
- GRS clinic prefers that prior electrolysis not be performed on scrotal skin
- Due to the frequency of dilation, many patients require up to 3 months off of work. Some may require more time, depending on patient factors in healing and the type of work
- 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-op period
- Need to strictly adhere to post-operative schedule of vaginal dilations, sitz baths and douching, which is a significant time commitment for the first 3 months
- Need for regular follow up with care providers during post-operative period
- The vulva will approach its final appearance at approximately 6-12 months

Each surgical centre has a routine pre-operative process, patients should ask their surgeon what to expect. 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
- Anesthesia will discuss:
  - which medications to stop and when
  - anesthetic approach and risks
  - pain control measures

IMMEDIATE PRE-OPERATIVE CARE

Follow surgeon/anesthetist instructions regarding when to stop medications (hormones, blood thinners, aspirin, herbal remedies)

POST-SURGICAL CARE

IMMEDIATE POST-OPERATIVE CARE

Immediate post-op care (vaginoplasty care):

- Will have a vaginal stent (to keep the vaginal cavity open) and urinary catheter for the first several days
- Subsequently, the stent is removed and dilations, douching and sitz baths begin
- Follow surgeon's instructions on frequency and duration of dilations, douching, sitz baths, and dressing care
  - as an example, GRS Mtl recommends dilating 4 times daily (25 min each time), sitz baths twice daily, and douching twice daily for the first month
  - full dilation schedule can be found on the GRS Montreal website
- **Activity**: short walks of 10 minutes or less to avoid pressure on the stent and stiches
- **Medications**: a course of oral antibiotics is often prescribed to minimize chance of infection

Immediate post-op side-effects:

- Bleeding, itching, swelling, bruising: typically during the first 48 hours
- Pain: controlled with medications, rest and ice
- Bruising can occur from the abdomen to lower thigh and can take approximately 3-4 weeks to resolve
- Labial swelling, can take up to 6 weeks to resolve
- Spraying with urination, usually improves over time (typically within 3-6 months)
- Brown/yellow vaginal discharge for the first 6-8 weeks
- Scarring: typically fades within the first year

LONG-TERM MEDICAL CARE

- Patients and their surgeon can determine whether a surgical revision is necessary. The types of revisions that may be sought are described on the GRS website
- In Ontario, funding for revisions can be applied for through the Ministry of Health and Long-Term Care via completion of the Prior Approval for Funding of Sex Reassignment Surgery form
- Dilations will need to continue daily for at least a year and then weekly on an ongoing basis unless having regular receptive sex
- **Numbness**: sensation tends to gradually return, usually within the first year as the nerve endings heal
- **Sex**: follow surgeon's instructions regarding when sexual activity can be initiated, and whether or not to douche following receptive vaginal sex. The neovagina does not self-lubricate and will require lube for penetrative sex
- Prostate exams, when indicated, can be conducted vaginally
- Discharge from the neovagina is expected. An increase in discharge or malodor can usually be managed by resuming douching for a period of time. Laboratory-confirmed cases of yeast infection or bacterial vaginosis can be treated routinely.
- Using an anoscope rather than a speculum may facilitate visual examination of the neovaginal vault1
- **Neovaginal STIs**: see UCSF Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender-Nonconforming People for more information
- 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

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