Vaginoplasty procedures, complications and aftercare

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Introduction

The most common vaginoplasty technique is some variation of the penile inversion procedure. In this technique, a vaginal vault is created between the rectum and the urethra, in the same location as a non-transgender female between the pelvic floor (Kegel) muscles, and the vaginal lining is created from penile skin. An orchiectomy is performed, the labia majora are created using scrotal skin, and the clitoris is created from a portion of the glans penis. The prostate is left in place to avoid complications such as incontinence and urethral strictures. Furthermore, the prostate has erogenous sensation and is the anatomic equivalent to the "g-spot." Great care is taken to limit the external scars from a vaginoplasty by locating the incisions appropriately and with meticulous closure. Typical depth is 15 cm (6 inches), with a range of 12-16cm (5-6.5 inches); in comparison, typical vaginal depth in non-transgender females is between 9-12cm (3.5 to 5 inches). In the case of prior circumcision a skin graft, typically scrotal in origin, may be required. If there is insufficient skin between the penis and the scrotum to achieve 12cm (5 inches) of depth, a skin graft from the hip, lower abdomen or inner thigh may be used. Resultant scarring at the donor site may be minimized or hidden using standard techniques. Because the penile inversion approach does not create a vaginal mucosa, the vagina does not self-lubricate and requires the use of an external lubricant for dilation or penetrative sex.

Scrotal skin has abundant hair follicles and it is possible to transfer skin with sparse hair growth into the vagina unless hair is removed in advance. Some surgeons rely on treating all the visible hair with aggressive thinning of the skin and cauterization of visible hair follicles at the time of surgery. However,

since hair grows in stages this approach might not adequately address dormant follicles. The most reliable method of preventing hair growth in the vagina is to perform scrotal electrolysis, at least three full clearings 8-12 weeks apart, depending on electrologist preference and hair type and distribution. Surgeons should provide a diagram of the specific area for clearance.

A common outcome of penile inversion vaginoplasty performed in a single stage (a "one-stage" vaginoplasty), with penile skin positioned between scrotal skin, is labia majora that are spaced too far apart. There may also be minimal if any clitoral hooding (except in heavier patients) and the labia minora may be insufficient after one operation. Although there are different variations of the one-step procedure, it has been the author's experience that these previously mentioned deficiencies are common. This constraint is due to factors inherent to the penile inversion approach and the limitations of the blood supply. From the standing position and with the legs together, most results appear acceptable; however, upon direct examination or intimate view, the deficiencies discussed above will be apparent. In order to adequately address these deficiencies, the author believes that a second operation is required. A secondary labiaplasty provides an opportunity to bring the labia majora closer to the midline in a more anatomically correct location, provide adequate clitoral hooding, and define the labia minora. In addition, there are many variables that can affect healing and the final result. Specifically, this secondary procedure also allows the surgeon to deal with differences in healing, such as revision of the urethra, correction of any vaginal webbing or persistent asymmetries, or revise scars that are unsatisfactory. These revisions will improve functionality and the final outcome for the patient and might not otherwise be addressed.

Immediate postoperative considerations

Gauze packing or a stenting device is placed in the vagina intraoperatively and remains in place for 5-7 days. Once removed, the patient is instructed in vaginal dilation, with dilators generally provided by the surgeon; dilation schedules vary between surgeons. Table 1 shows sample postoperative instructions, and Table 2 shows dilation instructions and a sample dilation schedule.

Table 1. Vaginoplasty Postoperative Instructions

Focus area	Instructions
Activity	Avoid strenuous activity for 6 weeks. Avoid swimming or bike riding for 3 months.

Source: Brownstein & Crane Surgical Services

Focus area	Instructions
Sitting	For the first month post-op, sitting may be uncomfortable, but not unsafe. Recommendation to use donut ring to relieve pressure at surgical site.
Bathing	Resume showering following first postoperative visit, patting incisional areas dry. Do not take baths or submerge in water for 8 weeks post-op.
Swelling	Labial swelling is normal and will gradually resolve 6-8 weeks postoperatively. Swelling may be aggravated with long-term sitting or standing. For the first week post-op, applying ice on the perineum for 20 minutes every hour can assist in relieving some swelling.
Sexual intercourse	You may resume sexual intercourse 3 months after surgery, unless you have been instructed otherwise.
Hygiene	Wash hands before and after any contact with the genital area. Shower or wash daily. When washing, wipe from front to back to avoid contamination by bacteria from the anal region. Avoid tight clothing; friction may facilitate bacteria transfer.
Vaginal discharge	Vaginal discharge that is brownish yellow should be expected in the first 4-6 weeks postoperatively. Bleeding and spotting should be expected in the first 8 weeks postoperatively. Soap and water douche should help reduce this. Chamomile or lavender liquid soap can help cleanse the neo vagina as well.
Tobacco/smoking	Avoid tobacco use or smoking 1 month postoperatively, as this can interfere with the healing process.
Diet/nausea/constipation	Begin with a liquid diet and increase to your usual diet as tolerated. Anti-nausea medication may be prescribed. Narcotic pain medication may cause constipation; a stool softener such as Colace can help prevent constipation.

Source: Brownstein & Crane Surgical Services

Focus area	Instructions
Pain medication	Postoperative pain is normal, and pain medication may be prescribed. Pain medication is to be taken as prescribed, and can be switched for Extra Strength Tylenol at any time.
Dilation	Dilation is an important part of recovery. Dilators may be provided to patient with instructions regarding dilation in the post-op period.

Source: Brownstein & Crane Surgical Services

Dilation Instructions

Source: Brownstein & Crane Surgical Services

Please be aware that each person's dilation schedule may vary.

- Prior to insertion into the vagina, ensure the dilator is clean.
- Clean the dilator with warm water and antibacterial soap. Rinse well and dry with a clean paper towel or cloth.
- Apply Surgilube or KY Jelly to the dilator prior to insertion. Only use water based lubrication.
- Avoid silicone-based lubricants.
- Gently insert dilator into the vagina at an angle of 45 degrees until under the pubic bone, and then continue inserting straight inward.
- Expect to feel a small amount of resistance and tenderness. Stop immediately if there is too much resistance or severe pain.
- Insert the dilator into the full depth of the vagina (until you feel moderate pressure or resistance) and leave in place for 10 minutes. You should be inserting until only one or two white dots remain outside of the vagina.
- Start dilating three times daily for three months on the day the vaginal packing is removed.

- You may start using the next size dilator after three months of dilating. You should use the next size for three months.

- Dilation frequency: 0-3 months after surgery 3 times/day for 10 minutes each time, 3-6 months after surgery 1/day for 10 minutes each time, more than 6 months after surgery 2-3/week for 10 minutes each time, more than 9 months 1-2x/week.

- If the vagina begins to feel tight, increase the frequency of the dilation schedule.

- You should use soap and water to cleanse the vaginal canal after each dilation.

Table 2. Vaginoplasty Postoperative Instructions

Months Since Surgery	Color of Dilator	Diameter of Dilator	Frequency
0-3	VIOLET	1-1/8"	3X per day
3-6	BLUE	1-1/4"	Once daily
6-9	GREEN	1-3/8"	Every other day
9-12	ORANGE	1-1/2"	1-2x per week

Source: Brownstein & Crane Surgical Services

Immediate risks include bleeding, infection, skin or clitoral necrosis, suture line dehiscence, urinary retention or vaginal prolapse. Fistulas from the rectum, urethra or bladder usually present early on.

Acute bleeding usually originates from the urethra and most often can be controlled with local pressure. If local pressure is unable to achieve hemostasis, then placing a larger catheter (20F) in the urethra alone may stop the bleeding. If necessary, placing a suture around the bleeding site (with the catheter in place) will stop the bleeding in almost all cases. It is not unusual for localized hematomas to spontaneously drain through the vagina or suture line. This usually occurs a week or greater after surgery as the hematomas liquefy. The blood characteristically appears dark and old, and is not accompanied by clots. Although frightening to the patient, no treatment is indicated.

The genitalia and perineum have an excellent blood supply, so infections should be rare and seldom require more than a broad-spectrum antibiotic. Skin slough or loss is also rare, and should be treated conservatively. Separation of the suture line can occur, most often at the posterior perineum due to the pressure and stretching that occurs with dilation. Separations should be treated conservatively with antibiotic ointment, most will heal without consequence. Dilation should not be discontinued, and is critical at this stage. Failure to adequately dilate in the immediate postoperative period will likely result in severe vaginal stenosis. No attempt at immediate secondary closure of the dehiscence is indicated since it is a contaminated wound and would likely fail. In some cases, dehiscence may result in the development of a posterior web, which can be easily revised at a later stage.

Partial or complete clitoral necrosis may occur and should be treated conservatively with antibacterial ointments. In the majority of cases, the neurovascular bundle and a portion of the clitoris is still present and will usually maintain good sensitivity.

Urinary retention due to swelling and/or temporary peripheral nerve injury (neuropraxia) should be treated with replacement of a catheter for 5-7 days. Flomax is helpful, and this is almost always temporary. Early strictures are very rare.

A patient may lose a portion of the added skin graft and pass it out through the vagina. This usually occurs at least 2 weeks from surgery, and typically due to excessive skin grafting into the vagina. It is not accompanied with bleeding and the sloughed skin appears nonviable. Recovery is uneventful and patients should continue to dilate. A more severe scenario is expulsion of the entire vaginal skin lining, which occurs earlier (usually within the first postoperative week) and is frequently accompanied with at least some bleeding. While uncommon, in most cases it is a disastrous complication and the patient will require surgical intervention, typically one year later to re-line the vagina.

Delayed / long-term postoperative maintenance and considerations

Adherence to the dilation regimen is critical to healing and maintaining vaginal depth and girth. After the initial healing period, dilation must continue regularly for at least one year postoperatively. The depth and the width of the vagina should be checked regularly as one tapers down the dilation schedule. If it is noticed that vaginal depth or width are diminishing either by patient report or in-office examination, the dilation schedule should be increased. If the patient experiences difficulty with dilation due to discomfort, instillation of lubricant ahead of the dilator with either a 3cc syringe, or the applicator device supplied with vaginal antifungals may be helpful. Patients may develop a sensitivity to the preservative in the water based lubricant; simply changing the brand of lubricant is often an effective solution.

Loss of vaginal girth due to inadequate dilation can often be remedied by increasing dilation frequency; loss of vaginal depth is more difficult to address by dilation alone. Persistent pain or otherwise problematic dilation should be discussed with the surgeon. Other possible causes of painful or inadequate dilation

include a small pelvic inlet or muscle spasm and vaginismus. Approaches may include but are not limited to botulinum toxin injections, removal of webbing at the entry of the vagina, and/or a referral to a physical therapist that specializes in pelvic pain and pelvic floor issues.

The vagina is skin-lined and under normal conditions is colonized with a combination of skin flora as well as some vaginal species; a study of vaginal flora in a mix of transgender women with and without symptoms of odor and discharge found Staphylococcus, Streptococcus, Enterococcus, Corynebacterium, Mobiluncus, and Bacteroides species to be most common. Lactobacilli were found in only 1 of 30 women, and candida was not found. There was no correlation between the presence of vaginal symptoms and any one particular species.[1] These findings suggest that vaginal discharge and odor in transgender women is unlikely to due to common causes in non-transgender women such as bacterial dysbiosis or candida; indeed the lack of a mucosa or low pH are consistent with this study's findings of rare lactobacilli and no candida. In most cases discharge is most likely due to sebum, dead skin or keratin debris, or retained semen or lubricant.

Since the vagina does not contain a mucosa, routine cleaning or douching with soapy water should be adequate to maintain hygiene. Initially the patient should douche daily during frequent dilation. Douching can be reduced to 2-3 times a week when dilation is less frequent. If odor or discharge persists, an examination for lesions or granulation tissue should be performed. Use of a solution of vinegar or 25% povidine iodine in water for 2-3 days may help in cases of flora overgrowth or imbalance, after which the patient can return to regular soap and water cleaning. If the drainage and odor persist, an empiric 5-day course of vaginal metronidazole is reasonable.

It is reasonable to consider a yearly visual pelvic exam to screen for lesions, granulation tissue, or undesired loss of depth and girth, though no evidence exists to support this recommendation. Since the vagina is skin lined, there is a risk of developing the same skin cancers that occur on the penile and scrotal skin (squamous cell, basal cell, melanoma). Other skin disorders such as psoriasis can also affect the vagina and should be treated similarly. If indicated, a prostate exam may be performed endovaginally since the rectal approach may be obscured by the new presence of the vaginal walls in between the rectum and the prostate.

A far less common approach to vaginoplasty is the use of either colon or small bowel to line the vaginal vault. This technique has the advantages of diminished need for dilation, greater depth and is naturally self-lubricating. However, this approach requires abdominal surgery with a risk of serious or even life-threatening complications. The primary indication for an intestinal approach is the revision of prior penile-inversion vaginoplasties. Since the secretion is digestive there is a risk of malodor and frequent secretions, and secretions are constant rather than only with arousal. Wearing panty liners or pads may be necessary for the long term. Bacterial overgrowth (diversion colitis) is common and may present with a greenish discharge, treatment includes. The bowel lining is also not as durable as skin. Use of intestinal tissue also

places the vagina at risk of diseases of the bowel including inflammatory bowel disease, arterio-venous malformations (AVM) or neoplasms; screening or diagnostic evaluations for these conditions should be performed as indicated.

Fistulas

The most common fistula is a rectovaginal fistula. These usually occur at the midline within 5 cm of the vaginal opening, and are almost universally the result of a surgical injury to the rectum. Small fistulas may only pass flatus, while larger fistulas can allow stool to drain through the vagina. A temporary diverting colostomy may be required for hygiene. Dilation should continue to avoid closure of the vagina, with the plan to repair the fistula in a minimum of 6 months.

Urethrovaginal fistulas present with urine leakage from the vagina. The majority of cases do not need or require immediate intervention, and in most cases the patient will still be continent. The patient should be counseled that they will be more susceptible to urinary tract infections--particularly after intercourse. Voiding promptly after intercourse and/or acidifying the urine with juices or cranberry pills is usually adequate preventive care. Fistulas between the bladder and vagina are the least common, but are the most difficult to manage. A foley catheter in the bladder will divert a majority, but not all of the urine; in general surgical intervention will be required.

Granulation tissue

Granulation tissue in the vagina is the result of delayed healing and is common. The need for frequent dilation in the early post-operative period exacerbates the problem by causing repeated trauma to the area of granulation. The typical complaint is of mildly blood-streaked yellowish discharge. In most cases this will heal as the need for frequent dilations diminishes over time. If persistent, regular silver nitrate treatments and topical treatment of steroid cream (triamcinolone) or medical grade honey (Medihoney) will speed the healing. Silver nitrate can be applied to granulation areas until cautery is observed with resultant grey scabbing and coagulation. Steroid creams or honey can be applied on the tip of the dilator. Long term, the penile skin lined vagina should be very durable.

Urinary tract infections (UTIs)

Urinary tract infections are not uncommon, since the urethra is shortened during a vaginoplasty. Proper hygiene and hydration are generally adequate preventive measures. A patient who has recurrent urinary tract infections should be evaluated for a urethral stricture. A simple diagnostic test is to attempt to pass a 16F catheter into the bladder to rule out strictures, including post-bulbar or meatal stenosis. Patients with a mucosal flap causing a large meatus will require meticulous hygiene and possibly prophylaxis. Most

patients will see a reduction in their ability to hold larger volumes of urine over longer times as a consequence of the involution of the prostate. Rarely some may even experience urgency incontinence. Bladder relaxants like tolterodine or darifenacin are helpful in these cases.

Sensation and orgasm

No major sensory nerves should have been divided during surgery, so sensitivity should not be adversely affected after vaginoplasty. In an outcome study published in 2002, 86% of the author's patients were orgasmic.[2] Pre-operative functionality is an important indicator, though it is possible that a previously anorgasmic patient will be orgasmic following vaginoplasty. The combination of prolonged estrogen/anti-androgen therapy and orchiectomy during surgery may result in a reported decline in libido for some patients, which is discussed elsewhere in these guidelines. (/guidelines/feminizing-hormone-therapy#S12X)

References

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2. Lawrence AA. Factors associated with satisfaction or regret following male-to-female sex reassignment surgery. Arch Sex Behav. 2003 Aug;32(4):299-315.

Medical Referral Disclaimer

The CoE is unable to respond to individual patient requests for medical guidance. If you need medical advice, please contact your local primary care provider. If you need clarification, seek a second opinion locally or have your provider contact us for more information.

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