



# Successful Buccal Mucosa Graft for Salvage of Neovaginoplasty in a Transgender Patient: Case Report and Six Years Follow-Up

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## Abstract

**Introduction:** The most used technique for neovaginoplasty in transsexual women is the "penile inversion technique". This technique is mostly successful, but there can be complications resulting in loss of the neovagina. New techniques with buccal mucosa graft have been used to correct complications such as rectovaginal fistulas. Buccal mucosa combined with posterior scrotal flap transfer has also been proved to be an option to create a functional neovagina.

**Aim:** Describe a case of a transgender patient who underwent a successful redo neovaginoplasty with buccal mucosa graft after the early loss of the penile skin neovagina.

**Methods:** Information was collected through a review of the patient's chart from the year 2001 until 2018.

**Results:** Feminizing genitoplasty with "penile inversion" technique was first performed in a transgender patient at age of 34. Due to surgical complications, the patient underwent a new procedure to correct a rectalvaginal fistula and was left with a 2 cm deep neovagina. After a year of dilation, without success, the creation of a new neovagina with buccal mucosa graft was performed. Two mucosal grafts of 3 cm × 6.5 cm were used creating a 7 cm × 1.5 cm neovagina. After two years of dilation the patient was able to use an acrylic mold of 10 cm × 3 cm. After 6 years of follow-ups the neovagina is 11 cm long and allows the introduction of a medium vaginal speculum and a 10 cm × 3 cm rigid mold. Patient has not yet started sexual activity.

**Conclusion:** The use of buccal mucosa for neovaginoplasty is technically easy, has good aesthetic results and low risks of complications. This technique allows the creation of a cosmetically and functionally adequate neovagina with a mucosa similar of that normal vaginal tissue. It may be a good alternative for patients with a short neovagina or with loss of the primary neovagina.

## Introduction

Surgical construction of a neovagina for transgender women is the final step in an individual's transition to their preferred gender. The importance and potential benefits of genital gender affirming surgery were first espoused by Harry Benjamin with the release of his book "The Transsexual Phenomenon" in 1966 [1]. Studies have reported significant improvement in psychological well-being after gender affirming surgery [2].

Different surgical techniques for male to female gender affirming surgery are described in the literature. The studies report the use of genital skin flap, penile skin graft, non-genital skin flap or graft and intestinal pedicle transplanted vaginoplasty. Many procedures have been reported yet none is perfect. Regardless of the method of reconstruction, the objective is to create functionally and aesthetically acceptable vagina and vulva, enabling satisfactory sexual function and preserving normal voiding function [3].

Currently, the two most widely used techniques for neovaginoplasty in transsexual patients are the "penile inversion technique", with or without combination of scrotal pedicles and the use of intestinal pedicled transplant [4]. In a recent meta-analysis that evaluated 3716 cases, thirty-seven (80.8%) studies used the penile inversion technique with or without scrotal skin and nine (26.5%) used intestinal flaps, of which three used the sigmoid colon, three used the ileum, and one used the transverse colon [5]. There is a report of nine patients who underwent a combined technique using

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**Figure 1:** Transrectal prolapse of the neovagina.

autologous buccal micro-mucosa free graft combined with posterior scrotal flap transfer [6]. Up to now, there is no report of the use of buccal mucosa to create a complete neovagina in transsexual patients.

Buccal mucosa was first reported as a tissue for repairing hypospadias in 1941 [7]. This technique has also been used for patients with vaginal agenesis [8] and vaginal introitus narrowing in patients with congenital malformation of the genitalia [9,10].

In transgender patients, this technique was first used to correct rectovaginal fistula [11]. Buccal mucosa graft has been used more frequently in the last two decades, because it is easily harvested, has mucosal-like epithelial characteristics and leads to minimal donor site morbidity, both cosmetically and functionally [12].

The neovaginal lining with buccal mucosa is very similar in its macroscopic characteristics (smoothness, elasticity and colour) as well as in its microscopic structure (stratified non keratinized squamous mucosa) to the normal vagina, but also has an inherent secretory function that enables good sexual function [7].

Herein we report the case of a transgender patient who underwent a successful redo neovaginoplasty with buccal mucosa graft after the early loss of the penile skin neovagina due to surgical complication.

## Methods

Information was collected through a review of the patient's chart from the year 2001 until 2018. The data was collect and placed in chronological order by the same researcher. It was done a review of patient's appointments, inpatients notes, surgical forms, prescriptions and exams. All the information was collected preserving patient's identity and following the medical code of ethics.

## Results

The patient had the first medical appointment at our institution at age of 24. At that time no treatment was started yet and the patient had male secondary characteristics. The patient reported female gender identification since the age of seven, had no comorbidities and was on good general health. Genital evaluation disclosed an 11 cm long penis, topic testicles with pubertal consistency, 4.5 cm × 2.5 cm right, 4.5 cm × 3 cm left. The karyotype was found to be 46, XY. The patient underwent psychiatric evaluation and initiated transgender treatment with a multidisciplinary group.

Feminizing genitoplasty with "penile inversion" technique was performed at age of 34. On the first postoperative day, she presented a large perineal hematoma and fever. Vancomycin and piperacillin/



**Figure 2:** Neovagina of buccal mucosa graft after 6 years' follow-up.

tazobactam were initiated. Stabilization of the hematoma was observed and the patient was maintained with compressive perineal bandages and bed rest for 10 days. After this period, the bandage and vaginal mold were removed showing a favorable cosmetic result and almost complete reabsorption of the hematoma. Two days later, with the patient already at home, the neovagina prolapsed almost completely through the anus through a 7 cm long rectal wall defect (Figure 1). An emergency protective loop ileostomy was performed. The prolapsed neovagina was resected and the rectal wall defect closed. The patient was discharged after six days in good general condition with functional ileostomy and multidisciplinary outpatient follow-up. Both the rectal wall and the neovaginal stump healed well, but the remaining neovagina was only 2 cm deep.

After 6 months, in agreement with the patient, the initial strategy was starting vaginal dilation. After 3 months of daily dilation, the vagina was still narrow and short, but the patient preferred not to undergo any surgical procedures at that moment. Dilation was maintained for a year, without success. Creation of a new neovagina with buccal mucosa graft was proposed and accepted by the patient.

In this new procedure, a cavity of 7 cm depth from the apex of the remnant neovagina and 1.5 cm in diameter was carefully prepared with blunt dissection between rectum and urethra. A full-thickness 3 cm × 6.5 cm mucosal graft was harvested from the inner side of lower lip and a second graft of similar size was taken from the cheek mucosa, both after submucosal injection of 1:100,000 epinephrine. Hemostasis was achieved with pinpoint cautery and wound packing with 1:100,000 epinephrine soaked gauze. The cheek mucosa was closed with catgut suture and the lower lip area was left open. Preparation of the buccal mucosa graft was performed following the technique described by Grimsby et al. [13]. The buccal mucosa was defatted with scissors; using a No.11 blade scalpel 25-30 sharp fenestrations 1 mm to 2 mm apart were made in each fragment throughout the tissue, therefore increasing their surfaces. The two graft segments were then sewn together in one piece with 5-0 PDS to cover a 6.9 cm × 1.5 cm silicon vaginal mold. The mold was then inserted into the previously prepared perineal cavity. An occlusive perineal dressing with Gentamicin ointment was done.

The patient was discharged on the 7<sup>th</sup> postoperative day in good general condition. The buccal mucosa donor areas were already in advanced healing process. The patient was scheduled to have the vaginal mold removed at the outpatient clinic, but did not show at the appointment and returned to the clinic 29 days after surgery. She reported losing the mold seven days after discharge but did not

seek medical care. At physical exam, the lower lip and jugal mucosa had discrete edema and the granulation tissue had no significant retractions. The vaginal introitus' mucosa had a circumferential retraction, not patent to vaginal mold. As the patient did not tolerate dilation in the clinic, an ointment containing hyaluronidase and betamethasone valerate was prescribed for daily use three times a day until next appointment.

The following week, introduction of a number 6 Hegar dilator was possible. Two points of vaginal narrowing were detected, one at the introitus and one in the transition between the grafts. The vagina was 7 cm deep. Further ointment treatment and weekly returns were maintained for sequential dilations. After two months, the patient initiated self-dilatation of the neovagina at home using a 10 cm × 1.5 cm acrylic rigid mold, which progressed, after 2 years, to a 10 cm × 3 cm acrylic mold.

On her most recent visit, 6 years after the final surgery using buccal mucosa, the neovagina showed excellent cosmetic and functional results (Figure 2). There were no granulomas or significant scar tissue. The neovagina was 11 cm long and allowed the introduction of a medium vaginal speculum and a 10 cm × 3 cm rigid mold. Patient had not yet started sexual activity due to fear of traumatizing the neovagina and because did not had a partner.

## Discussion

In the present case, the first genital procedure for transgenitalization was the penile skin inversion. A rare [5] and serious complication occurred after few days, a transectal prolapse of the neovagina. The repair in these cases is challenging due to the presence of the peno-scrotal skin flap, depth of the rectal lesion (mid-rectum), and uncertainty regarding anatomical approach [14]. In the present case the prolapsed neovagina was almost completely resected and the patient stayed with a 2 cm long neovagina.

In patients with vaginal agenesis or short vagina, the non-operative approach includes progressive invagination of the vaginal dimple to create a vagina of adequate diameter and length. The patient's cooperation is vital at this point. It has been noted that a functional vagina can be created, but care must be taken not to inadvertently dilate the urethra, which can lead to urinary infection and incontinence [15].

As in our patient dilatation was unsuccessful after one year, an alternative surgical procedure had to be attempted. Aside from being used in the repair of urethral stenosis for two decades now [12], buccal mucosa has recently been considered as an option for the creation of complete neovagina and for neovaginal augmentation in patients with Disorder Of Sexual Development (DSD) [16,9,7].

The benefits of a neovagina originated from a buccal mucosa graft include the quick recovery of the donor site, without visible scarring, and the similarity of looks and function to the native vaginal mucosa [17]. Furthermore, most of the small salivary glands are located in the lamina propria and submucosal layer of the buccal mucosa, and it has been proven that autologous buccal mucosa free grafting (as thick as submucosa) is an effective therapy for dry eye syndrome [18]. As our technique of buccal mucosa grafting includes both full thickness of mucosa and submucosa, we believe that it may have less vaginal contracture and more secretory function than the regular techniques.

The neovagina using buccal mucosa has several advantages: (1) it is simple, feasible, and cheap to perform with low risks of

complications; (2) it creates a sufficiently deep and wide vagina with a similarly close mucosal lining that is thin and has a normal amount of secretion, free of unpleasant odor; (3) there is no residual scar or functional damage to the donor site; (4) it is an option for transsexual patients who have insufficient donor tissues; (5) it is also a good alternative for those who have lost the neovagina for any reason, as in this case, or had an unfavorable previous vaginoplasty [6].

The potential complications of this procedure include injury to the Stenson's duct, limited availability of buccal mucosa and graft contraction and stenosis [17]. Neovaginal stenosis and inadequate depth were some of the most commonly reported complications reported in surgeries for patients with differentiation sexual disorders. Additionally, it was the major contributors to reoperation rates. There are several reasons explaining these complications, but local infection and tissue retraction due to diminished blood supply are the most accepted [19,20]. The association of regular dilation helps to stabilize the diameter of the perineal orifices, even in cases with regular surgical result [10].

## Conclusion

The use of buccal mucosa for neovaginoplasty is technically easy and has good aesthetic results on the donor site with low risks of complications. This technique allows the creation of a cosmetically and functionally adequate neovagina with a similar mucosa of that normal tissue. It may be a good alternative for patients with a short neovagina or with loss of the primary neovagina. Regular dilations may be required to provide adequate depth and width for sexual intercourse.

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