

Chlamydia trachomatis Infection of the Neovagina in Transgender Women

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We report 2 cases of neovaginal *Chlamydia trachomatis* infection in transgender women who underwent penile-inversion vaginoplasty procedures with integrated peritoneum and urethral grafts. These tissue types may have facilitated *C. trachomatis* infection. Medical providers should implement neovaginal screening for bacterial sexually transmitted infections in transgender patients at risk for infection.

Keywords. *Chlamydia trachomatis*; transgender; SRS; gender surgery; neovagina

CASE 1

A 21-year-old HIV-negative transgender woman presented in January 2019 with 3 weeks vaginal irritation, discharge, and malodor. She had undergone vaginoplasty surgery 4 months before. The procedure utilized penile skin and included a urethral mucosa graft (1 × 4 cm) to create the vagina. The postoperative course was uneventful. She was maintained on her gender-affirming hormone regimen of estradiol valerate 20 mg intramuscularly every 2 weeks. She had several sexual partners after surgery, all cisgender men. She used condoms for anal receptive sex but not for vaginal or oral sex. A vaginal swab was negative for *Candida* species, *Gardnerella vaginalis*, and *Trichomonas vaginalis* using the BD Affirm VPIII DNA Probe Test. Anal and pharyngeal specimens were collected using Gen-Probe APTIMA swabs and tested for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections using the Hologic APTIMA COMBO 2 Assay. A urine sample was collected using the Hologic APTIMA Urine Collection Kit. The pharyngeal and anal tests were negative for *C. trachomatis* and *Neisseria gonorrhoeae*. The urine was positive for *C. trachomatis*.

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She responded to treatment with azithromycin 1 g orally, with resolution of symptoms within 4 days. Subsequent urine and vaginal specimens were negative for *C. trachomatis*.

CASE 2

A 32-year-old HIV-negative transgender woman presented for routine asymptomatic sexually transmitted infection (STI) screening in March 2018. She had undergone vaginoplasty 5 months before. The procedure used penile skin as well as a graft of abdominal peritoneal lining (12 × 10 cm) to create the neovagina. Postoperatively, she was treated for neovaginal granulation tissue and stress incontinence. The granulation tissue resolved and was not seen at a 5-week follow-up appointment. She reported condomless vaginal receptive sex with cisgender men but denied oral or anal sex. Her medication regimen consisted of estradiol valerate 20 mg intramuscularly every 2 weeks. A vaginal specimen was collected using the Gen-Probe APTIMA swab and tested for *C. trachomatis* and *Neisseria gonorrhoeae* infections using the Hologic APTIMA COMBO 2 Assay. Urine was collected using the Hologic APTIMA Urine Collection Kit. Both the urine and vaginal swab tested positive for *C. trachomatis*. She was treated with azithromycin 1 g orally. Follow-up testing was done 3 months later, and both urine specimen and vaginal swab were negative for *C. trachomatis*.

DISCUSSION

Transgender people have a gender identity that differs from the sex they were assigned at birth [1]. Transgender women, that is, women assigned male gender at birth, may seek out hormonal or surgical interventions to align their physical characteristics with their gender identity, including genital surgery (vaginoplasty) to create a vagina [1, 2]. These surgeries usually fall into 2 categories, penile-inversion vaginoplasty, which uses penile skin with or without scrotal skin grafts, and intestinal vaginoplasty, which uses bowel for the neovaginal lining [2, 3]. Penile-inversion vaginoplasty results in a neovagina that consists of keratinized stratified squamous epithelium, lacks intrinsic secretions, and has the potential for intravaginal hair growth [2, 3]. Recent techniques have incorporated urethral mucosa or peritoneum grafts, the latter harvested either laparoscopically or through the tunica vaginalis [3]. Using peritoneum or urethral mucosa allows for lack of hair growth and is thought to result in naturally occurring secretions; however, comparative studies with conventional vaginoplasty have not been undertaken [2, 3].

Transgender women are known to be disproportionately affected by HIV; however, less is known about STI risk,

especially for those who have had vaginoplasty. Several studies have documented elevated risk for bacterial STIs among transgender women, predominately extragenital gonorrhoea and chlamydia [4–6]. A recent study examining STI diagnoses among transgender people attending publicly funded STD clinics have documented rates of extragenital gonorrhoea and chlamydia that were similar to and sometimes exceeded rates seen among cisgender (ie, not transgender) men who have sex with men. As data were not available about surgical history or anatomy, there were no results reported for women who had undergone vaginoplasty [6]. Neovaginal STIs have infrequently been reported and are usually relegated to case reports, including diagnoses of herpes simplex, genital warts, *Neisseria gonorrhoeae*, and bacterial vaginosis [7–11].

C. trachomatis is a gram-negative obligate intracellular organism with a predilection for the columnar and transitional epithelium of the cervix and urogenital tract. The peritoneal mesothelium has also been found to be highly susceptible to infection with *C. trachomatis* [12]. Whereas the intact neovagina constructed using penile and scrotal skin should theoretically offer relative protection against infection, newer techniques that include buccal or urethral mucosa or peritoneum flaps may increase susceptibility to this organism, as suggested by these 2 case reports.

To our knowledge, these are the first reported cases of neovaginal *C. trachomatis* in transgender women. We recommend that medical providers include a detailed surgical history as part of the sexual health exam for all transgender patients, in addition to information about sexual orientation identity, genders of sexual partners, and sexual behaviors. Creating a gender-affirming environment is essential to facilitating disclosure, including collecting information about a patient's gender as well as sex assigned at birth and using chosen names and pronouns, regardless of whether these have been legally changed [1].

Transgender women who are symptomatic should undergo testing for *C. trachomatis* and *Neisseria gonorrhoeae*, preferably by nucleic acid amplification tests. Medical providers should consider the possibility of asymptomatic bacterial STIs and

conduct neovaginal screening in transgender women at risk for infection, especially if mucosal or mesothelial grafts were used. Given the limited data from these cases of *C. trachomatis* and previous case reports of neovaginal *Neisseria gonorrhoeae*, we do not know whether neovaginal swabs and urine specimens are equivalent in terms of sensitivity and specificity, and this is an area in need of further research.

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