The Pedicled Anterolateral Thigh Phalloplasty

Kyle Y. Xu, MD[a], Andrew J. Watt, MD[a,b,c,*]

KEYWORDS

• Phalloplasty • Anterolateral thigh flap • Transgender • Genital surgery • Gender confirmation • Gender affirmation

KEY POINTS

- The anterolateral thigh (ALT) flap is a viable and reliable option for phalloplasty.
- The primary advantages of the ALT flap remain an inconspicuous donor site and flexibility in phallus length.
- The disadvantages of the ALT flap are a higher incidence of both flap and urethral complications when compared with a radial forearm phalloplasty.
- Although the ALT phalloplasty can achieve the primary goals of standing micturition, penetrative intercourse, and an aesthetic phallus, multiple stages and revisions are often necessary.
- Careful patient selection is paramount in attaining acceptable results with the ALT phalloplasty technique.

INTRODUCTION

The anterolateral thigh (ALT) flap has become 1 of the 2 primary flaps used by gender affirmation surgeons for the creation of a phallus. The ALT flap was first described for phalloplasty in a transgender female-to-male patient in 2006 as a free flap.[1] Since that time, it has become a viable option for patients who do not wish to have a visible scar on their forearm. The radial forearm free flap remains the most common and most reliable choice at most centers performing gender affirmation surgery; however, the near circumferential forearm scar is recognizable and difficult for patients to conceal in clothing.[2] The advantages of the ALT flap are an inconspicuous donor site and flexibility in the length of the phallus. The ALT flap is generally reliable, can be made innervated, and may be performed in centers without microsurgical capabilities.

The limitations of the ALT flap are related to flap thickness and variation in vascular anatomy. In all but the thinnest of patients, an ALT phalloplasty requires multiple stages for urethral lengthening, debulking via serial excision and/or liposuction, and glansplasty to obtain a natural-appearing phallus and a diameter that is reasonable for penetrative intercourse. Appropriate patients for ALT phalloplasty are those who have thin thigh donor sites, understand and appreciate the need for multiple stages, and do not want a visible scar on their forearm or in whom the radial forearm flap is not an option (previous failed radial forearm phalloplasty, incomplete palmar arch, or previous forearm surgery). In an appropriately chosen patient, the pedicled ALT phalloplasty achieves an aesthetic and functional reconstruction.

The authors have nothing to disclose.

[a] The Buncke Clinic, 45 Castro Street, Suite 121, San Francisco, CA 94114, USA; [b] Adjunct Clinical Faculty, Division of Plastic and Reconstructive Surgery, Stanford University, Stanford, CA, USA; [c] American Society of Gender Surgeons

* Corresponding author. The Buncke Clinic, The San Francisco Transgender Institute, 45 Castro Street, Suite 121, San Francisco, CA 94114.

E-mail address: ajwatt50@gmail.com

Clin Plastic Surg ■ (2018) ■–■

https://doi.org/10.1016/j.cps.2018.03.011

TREATMENT GOALS AND PLANNED OUTCOMES

The goals of the pedicled ALT flap phalloplasty are to attain[3]

1. An aesthetic phallus
2. Standing micturition
3. A sensate phallus capable of penetrative intercourse with both tactile and erogenous sensation
4. Minimal flap and urethral complications

PREOPERATIVE PLANNING AND PREPARATION

Prior to consideration for phalloplasty, all patients must meet the World Professional Association for Transgender Health Standards of Care criteria for genital gender affirmation surgery (**Box 1**).[4] Although not universally agreed on, these standards have been adjudicated and modified by gender health professionals over decades as knowledge of transgender medicine grows, and they generally offer a safe guideline for surgeons embarking on genital gender affirmation surgery. Genital gender affirmation surgery is complex not only from a technical standpoint but also more critically from a psychosocial perspective. Phalloplasty surgeons cannot extract themselves from the necessary assessment of a patient's overall medical and psychological health and must consider postoperative care and social support available to patients throughout their recovery.

Box 1
World Professional Association for Transgender Health criteria for genital surgery

1. Persistent, well-documented gender dysphoria
2. Capacity to make fully informed decisions and to consent to treatment
3. Age of majority in a given country
4. If significant medical or mental health concerns are present, they must be well controlled
5. Twelve continuous months of hormone therapy as appropriate to the patient's gender goals (unless the patient has a medical contraindication or is otherwise unwilling or unable to take hormones)
6. Twelve continuous months of living in a gender role that is congruent with their gender identity

Pertinent history includes prior gender confirmation surgeries, hormone therapy (including duration of therapy), history of bleeding or clotting disorders (including a history of multiple miscarriages), psychosocial stability, social support, substance abuse, and tobacco use. It is also critical to attain a sense of a patient's expectations and to engage in a frank discussion as to whether or not these expectations are reasonable and achievable. Examination of the thigh is performed to look for previous scars and thickness of the subcutaneous tissue. Thigh pinch thickness is assessed in the distal, mid, and proximal thigh. A pinch thickness greater than 1.5 cm is a relative contraindication to a single-stage urethral lengthening. Laser hair removal or electrolysis is completed prior to surgery to prevent hair growth in the neourethra that may contribute to the formation of urethral stones. Routinely, preoperative imaging for perforator mapping is not necessary; however, this technique has been described by other groups.[5] Testosterone therapy is continued throughout the perioperative period. If a patient has a history of clotting disorders or previous flap loss, a hypercoagulable work-up is indicated (**Box 2**).

ALT phalloplasty can be performed either as a single tube (lacking a lengthened urethra) or as a double tube, the inner tube forming the neourethra and the investing external tube forming the shaft of the phallus. The authors only perform a single-stage ALT phalloplasty with urethroplasty as a "tube in a tube" if the thickness of the thigh donor site is less than 1.5 cm. If the thickness is greater than 1.5 cm, the authors recommend a 2-stage approach in which the phallus is constructed during the first stage and urethral lengthening is performed at a separate stage, typically 6 months to 8 months after the initial procedure.

Box 2
Hypercoagulability evaluation

1. Anticardiolipin antibody (IgG, IgM, IgA)
2. Antithrombin III activity
3. Activated partial thromboplastin time–lupus anticoagulant (lupus-sensitive reagent)
4. Factor V Leiden gene mutation
5. Factor VIII activity
6. Homocysteine
7. Protein C activity
8. Protein S activity
9. Prothrombin gene mutation