

Shaft-only Phalloplasty: Technical Modifications to Optimize Aesthetics

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Summary: Shaft-only phalloplasty (SOP) has been described as an alternative option for phalloplasty. Although traditional phalloplasty represents the most complete form of genital gender-affirming surgery, this variation also carries the greatest surgical risk. Patients may opt for a lower risk SOP for reasons including gender identity, gender expression, sexual function, desire for future childbearing, or minimal gender dysphoria associated with sedentary urination. Further, some patients may, due to associated co-morbidities, not be a candidate for neourethral reconstruction. Forgoing urethral reconstruction also means forgoing the presence of a distal urethral meatus and thereby compromising on one of the basic tenets of phalloplasty surgery—the aesthetic appearance. In an SOP, the flap is usually a simple tube with a purse-string suture placed at the distal end. Another concern can be the insufficient bulk of the phallus due to the absence of the volume added by the inner tube. The purpose of this article is to review our technical modifications that allow for creation of a phallic meatus as well as increasing phallic girth when needed. The most frequently described technique to create a neourethra is the tube-within-tube concept. We expanded on this and apply it as a short segment for distal meatal creation in an SOP. Improved aesthetics are achieved by creating the appearance of a phallic meatus and when desired, utilizing a lateral de-epithelialized strip to increase phallic bulk and girth. We hope these technical refinements can assist the surgeon in better meeting the goal of creating an aesthetically pleasing phallus. (*Plast Reconstr Surg Glob Open* 2021;9:e3645; doi: [10.1097/GOX.0000000000003645](https://doi.org/10.1097/GOX.0000000000003645); Published online 22 June 2021.)

INTRODUCTION

Shaft-only phalloplasty has been described as an alternative option to a traditional phalloplasty offered to transmasculine individuals.¹ In a traditional phalloplasty, creation of the phallic and perineal urethra represents the most complex aspect of the surgery. Although traditional phalloplasty represents the most complete form of genital gender-affirming surgery, this variation also carries the greatest surgical risk.^{2,3} Patients may opt for a lower risk shaft-only phalloplasty for reasons including gender identity, gender expression, sexual function, desire for future childbearing, or minimal gender dysphoria associated with sedentary urination.^{4,5} Further, some patients may, due to associated co-morbidities, not

be a candidate for neourethral reconstruction. For these reasons, the traditional binary model of gGAS may not meet each individual patient's needs.⁶ Forgoing urethral reconstruction also means forgoing the presence of a distal urethral meatus and, thereby, compromising on one of the basic tenets of phalloplasty surgery—the aesthetic appearance.⁷ There is a paucity of literature on aesthetic refinements in phalloplasty and even more so for shaft-only phalloplasty. In shaft-only cases, the flap is usually a simple tube with a purse-string suture placed at the distal end. In our experience, we have found the appearance of the healed “meatus” to be inadequate and detracting from the overall aesthetics (Fig. 1A). Another concern can be the insufficient bulk of the phallus due to the absence of the volume added by the inner tube. This is a particular issue in the thinner radial forearm free flap phalloplasty when compared with the bulkier antero-lateral thigh flap phalloplasty.

The purpose of this article is to review our technical modifications that allow for creation of a phallic meatus as well as increasing overall phallic girth when needed. The most frequently described technique to create a neourethra is the tube-within-tube (TWT) concept. We expanded on this and apply a short segment TWT for distal meatal creation in shaft-only phalloplasty (Fig. 1B). Improved

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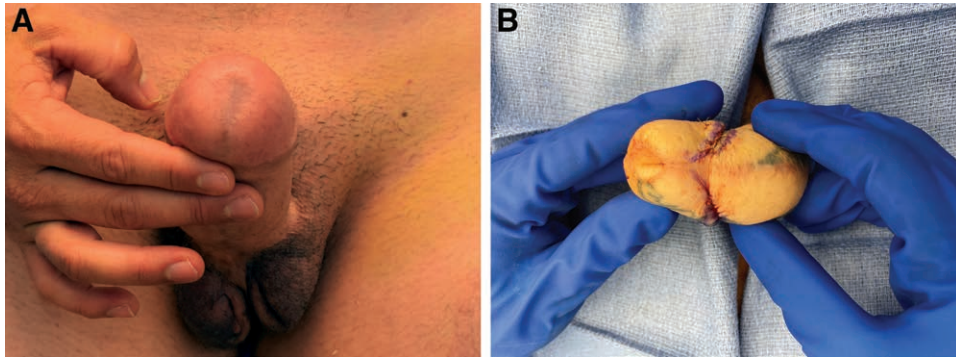


Fig. 1. Typical appearance of phallic meatus following shaft-only phalloplasty with traditional purse-string closure. Note flattening and effacement of the meatal closure, leading to appearance of an atrophic scar not resembling a meatus (A). Appearance of phallic meatus using the distal TWT segment at 8 weeks postoperative from shaft-only phalloplasty using the anterolateral thigh flap (B).

aesthetics are achieved by creating the appearance of a phallic meatus and when desired, utilizing a lateral de-epithelialized strip to increase phallic bulk and girth. We hope these technical refinements can assist the surgeon in better meeting the goal of creating an aesthetically pleasing phallus.

TECHNICAL CONSIDERATIONS

The technical refinements described for SOP can be used for both the radial forearm as well as the ALT—the 2 most common donor sites in phalloplasty. Flap dimensions will vary slightly depending on patient anatomy

and patient preference regarding phallic length and girth. The radial forearm is typically at the lower end of this size range and the ALT at the higher end. A phallic meatus is then designed by creating a small extension at the distal end of the flap using a short segment TWT design. This short segment TWT is constructed only for the aesthetics of a urethral meatus; it is not functional.

This distal TWT extension can be designed on either the medial or lateral border of the flap, depending on surgeon preference and patient anatomy. In our experience a width of approximately 3 cm is sufficient to provide the aesthetic result while decreasing the risk of local

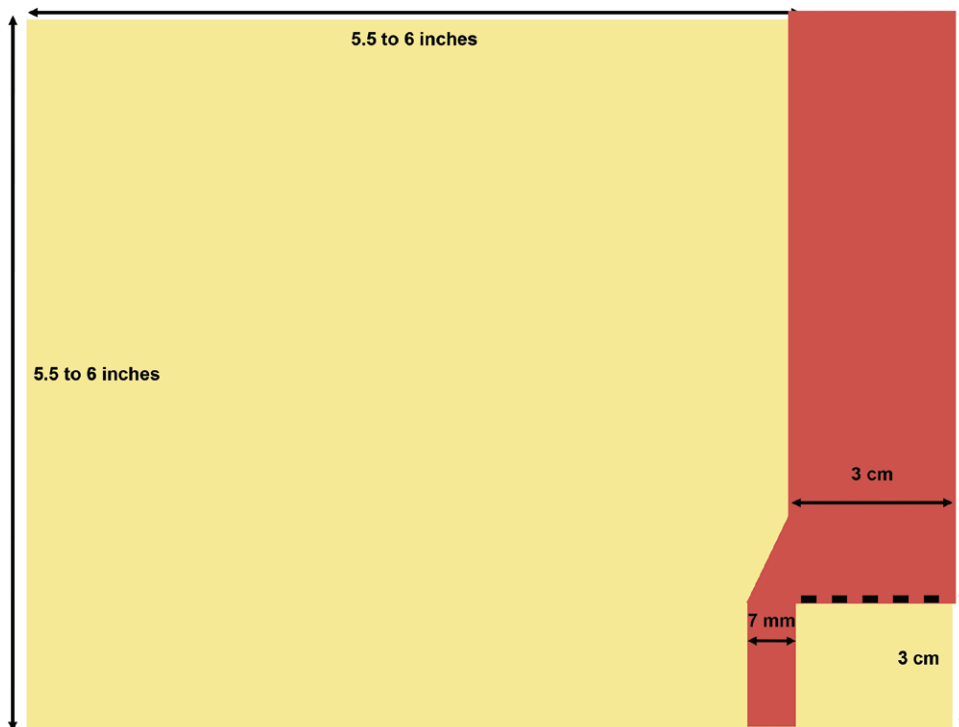


Fig. 2. Flap design for shaft-only phalloplasty using the radial free forearm flap. Note the distal TWT segment used to create the phallic meatus in addition to a de-epithelialized strip to roll into the phallus for added bulk.

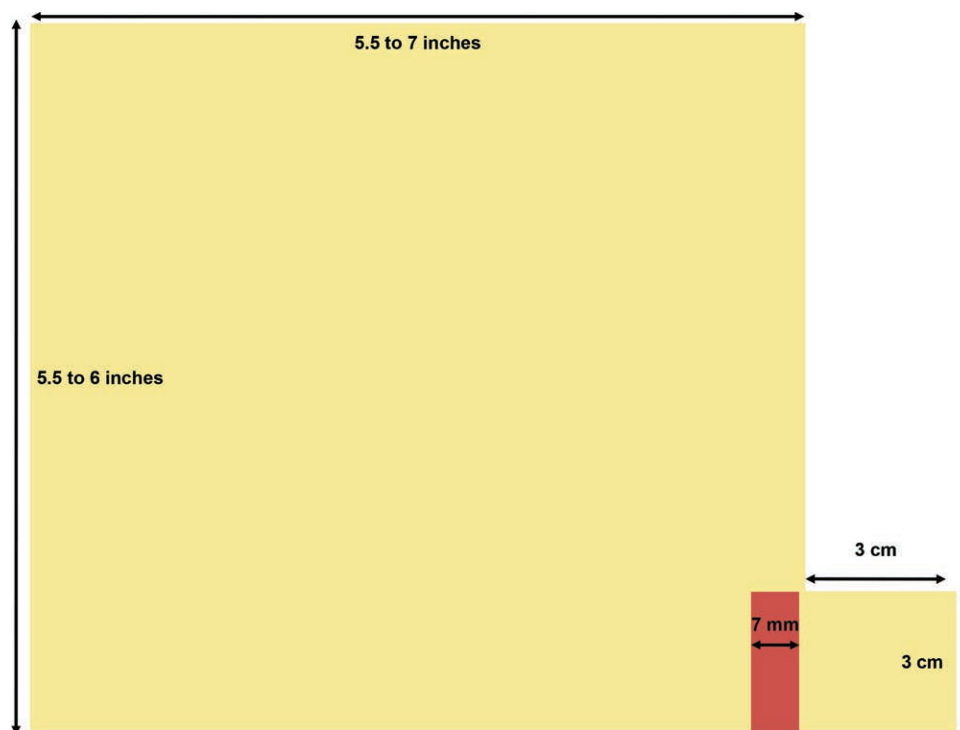


Fig. 3. Flap design for shaft-only phalloplasty using the anterolateral thigh flap. Note the distal TWT segment used to create the phallic meatus. A de-epithelialized strip is not utilized in these cases.

ischemia. The design is created as a square, as only a few centimeters of depth are required to create the meatus and to maintain hygiene (Fig. 1B). A 7-mm strip will be de-epithelialized at the junction of the border of the shaft portion of the flap and the extension. Similar to a TWT phalloplasty, it is critical to preserve the dermis during this step, as this portion of the flap is reliant on random pattern circulation through the subdermal plexus. The distal neo-urethral extension is tubularized using 4'0 polyglactin suture. The proximal end is closed using 4'0 polyglactin horizontal mattress sutures.

Additional maneuvers to optimize aesthetics differ between the donor sites. The radial forearm dermis has a tendency to be thinner and lack subcutaneous bulk. This lack of bulk is further accentuated in a shaft-only phalloplasty and thus we utilize the tissue that would otherwise be used for the neo-urethra, to augment the girth of the phallus. This is done by combining our distal TWT extension with a full-length de-epithelialized strip of forearm tissue that is also rolled into the phallus (Fig. 2). The distal TWT extension is cut inferiorly and disconnected from the de-epithelialized strip. In cases of shaft-only ALT phalloplasty (Fig. 3), excess phallic girth and bulk is prevented by de-fating the subcutaneous tissue of the distal TWT flap extension before tubularization.

As this tube is in effect blind-ended (analogous to an umbilicus), it can collect debris and skin cells and patients are instructed to clean it daily with a moist q-tip starting at 1 week after surgery. No stenting of the meatus is performed and in this small series we have not seen any evidence of meatal stenosis at 3 months follow-up. Once it is

fully healed, they perform basic hygiene care analogous to caring for a neo-umbilicus.

An obvious concern is ischemia of the distal TWT segment and/or the buried de-epithelialized portion of the flap. Intraoperative laser angiography may be a helpful adjunct to assess those aspects of the flap. We have not had any partial flap loss of the distal meatal segment in our current series ($n = 3$), but should it occur, a simple debridement in an ambulatory setting would be possible.

CONCLUSIONS

We describe our approach for achieving an aesthetic phallic meatus and optimizing aesthetics in shaft-only phalloplasty for transmasculine individuals. Using this technique, we are able to create the same aesthetic appearance of a urethral meatus that is achieved in classic “tube-within-tube” phalloplasty with urethral lengthening using the radial free forearm or anterolateral thigh flaps.

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