

Secondary phallic prosthesis placement in transgender patients postmetoidioplasty: a case report on technique and outcome

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Abstract

Introduction: Gender affirming surgery is common among transgender and gender-nonconforming individuals. Genital gender-affirming surgery is a form of surgery that involves transformation and reconstruction of the genitalia while maintaining urologic and sexual function. Masculinizing genital gender-affirming surgery can involve the removal of the female genital and reproductive organs and the creation of a more masculine appearance by using phalloplasty or metoidioplasty techniques. While metoidioplasty has advantages such as limited scarring and preserved genital sensation and clitoral erection, it may not always guarantee the ability to void while standing or even penetrate a sexual partner.

Aim: To describe our method of secondary phallic enhancement after metoidioplasty with a phallic prosthesis.

Methods: Our case is based on a 39-year-old transgender male who underwent metoidioplasty with vaginectomy, scrotoplasty, and urethral lengthening. However, the original surgery was complicated by extensive hematoma formation in the suprapubic area and neoscrotum, leading to a buried position of the neophallus. Subsequent surgery was performed to reduce the prepubic fat pad and penoscrotal interposition, but it too was complicated by hematoma formation and wound dehiscence. To maximize phallic elongation, the tethering urethra was removed, and perineal urethrostomy was performed but could not sufficiently alleviate the buried phallus. As a further step to improve the outcome, we proposed the implantation of a specific phallic prosthesis designed for metoidioplasty with testicular prosthesis placement. Surgery was performed as a single procedure through a penoscrotal incision and greatly enhanced genital appearance.

Results: Three months after surgery, the patient had good sensation of the phallus and was able to have satisfactory sexual activity with his partner. However, he remained dissatisfied with the amount of prepubic tissue and opted to undergo further liposuction.

Conclusion: Phallic prosthesis implantation can be a procedure to improve the condition of multioperated cases of metoidioplasty with resistant phallic burying. Reconstruction with a phallic prosthesis was performed successfully in this case. However, long-term complications and functional outcomes, such as the ability to void while standing or penetrate a sexual partner, remain uncertain. Further experience is needed to determine the efficacy and safety of using a phallic prosthesis as a secondary procedure in patients undergoing metoidioplasty.

Keywords: Transgender care; Erection prosthesis; Erectile dysfunction; Metoidioplasty; Reconstructive urology.

Introduction

Approximately 25% of transgender and gender-nonconforming individuals undergo at least 1 form of gender-affirming surgery, of which half undergo genital gender-affirming surgery.¹ This involves transformation and reconstruction of the genitalia while maintaining urologic and sexual function. Masculinizing genital gender-affirming surgery can consist of removing the female genital and reproductive organs, such as hysterectomy and vaginectomy. A more masculine appearance may be created by phalloplasty and metoidioplasty as the 2 main techniques.² In phalloplasty, an anatomically sized phallus is created through a variety of skin flaps from non-genital areas. Metoidioplasty comprises phallic reconstruction with the hormonally enlarged microphallus. In this, the dorsal suspensory ligaments of the microphallus may be released. If the patient wishes to have the urethra lengthened to the tip of the phallus, extra tissue is necessary to compensate for

the difference in length between the cavernosal bodies of the microphallus and the mucosa of the vaginal vestibulum.^{3–6} Secondly, scrotal reconstruction can be performed by various transposition flaps from the labia majora and/or the prepubic skin.^{7–9} When voiding in a standing position is not important to the patient, metoidioplasty without urethral lengthening can be performed. In this case, the urethral meatus is transposed behind the scrotum as a perineal urethrostomy. Phallic lengthening becomes less technically demanding, as ventral urethral tethering is no longer an issue.^{9–12} The main advantages of metoidioplasty over phalloplasty are that the scarring is limited to the genital area and that near full genital sensation and erectile function of the microphallus can be preserved.^{13,14} The ability to void while standing and to penetrate a sexual partner, however, depends largely on the patients' anatomy and cannot always be ensured.

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Multiple refinements to the surgical techniques have been described to maximize the final penile length after metoidioplasty. Some authors describe the local application of testosterone to the microphallus or the use of self-constructed vacuum devices to enhance the preoperative size of the microphallus or to improve and maintain length in the postoperative setting.¹⁵⁻¹⁸ Others describe evermore extensive forms of releasing the suspensory ligaments of the microphallus.^{4,9}

In 2016, Zephyr Surgical Implants developed a phallic prosthesis (ZSI 100 D4) meant to be applied in metoidioplasty. In a recent publication, Neuville et al demonstrated the use of this prosthesis in a group of 15 patients undergoing primary metoidioplasty.¹⁹ Herein, they reported no complications regarding the placement of the phallic prosthesis. Of patients responding to questionnaires (n = 13), 76.3% indicated being able to void while standing. The capability of penetrative sexual intercourse was not reported. The current report represents the insertion of a phallic prosthesis in a case of multioperated metoidioplasty with resistant phallic burying.

Case presentation

Our patient is a 39-year-old transgender male who previously underwent multiple surgical procedures to enhance the appearance of his external genitalia after a complicated metoidioplasty. Two years ago, a metoidioplasty with vaginectomy, urethral lengthening, and scrotoplasty was performed. In this, the vagina was removed by submucosal dissection up to the hysterectomy scar and fulguration of the most cranial part of the vagina. The urethra was constructed by primary tubularization of the urethral plate mucosa of the labia minora between the urethral meatus and the tip of the microphallus. However, the primary surgery was complicated with extensive hematoma formation in the perioperative period, which was treated conservatively. Two months after surgery, the patient expressed his concerns about the ill-defined penoscrotal definition caused by some tethering of the neourethra and by residual penile interposition between the cranial labial folds. A bilateral V-Y scrotoplasty was therefore opted to enhance this definition, but surgery was complicated by hematoma formation and eventual bilateral wound dehiscence. In an attempt to maximize phallic elongation, the urethra was removed, and perineal urethrostomy was performed in combination with reduction of the prepubic fat pad 6 months later. Unfortunately, this procedure could not alleviate the buried phallus, and the patient remained dissatisfied.

As a further step to improve outcome, we counseled the patient for phallic prosthesis implantation with testicular prosthesis placement. He was informed that this procedure was intended as a salvage procedure to improve the current condition. He was aware that this type of prosthesis is not standardized for patients postmetoidioplasty and that the final outcome was unknown.

Reconstruction in this case was performed by an experienced urologist who specialized in pediatric and reconstructive surgery. Our reconstructive technique was as follows. The patient was put under general anesthesia and positioned in a lithotomy position. A Foley catheter was placed in the perineal urethrostomy (Figure 1). The initial incision was a horizontal semilunar incision through the penoscrotal angle along the cranial scrotum. Progressive blunt and sharp dissection was continued up to the point of the cavernosal bodies of the



Figure 1. Preoperative view of the patient. The phallus is completely buried in the prepubic fat and fibrotic tissue.

phallus (Figure 2). All remaining scar tissue from previous attempts to elongate the phallus was removed, and the caudal side of the proximal cavernosal bodies was exposed by dissecting the ischiocavernosus muscle laterally (Figure 3). Identical to a cisgender penile prosthesis placement, 2 stay sutures were placed in each cavernosal body. Between these sutures, a longitudinal 1-cm incision was made through the tunical tissue. The space within the cavernosal bodies was probed with blunt Metzenbaum scissors up to the proximal and distal points. Next, progressive dilation with Hegar dilators was performed up to a 5-mm diameter (Figure 4). Proximal and distal internal lengths of the cavernosal bodies were measured on either side by a buttoned wound probe. Bilateral length was equal and measured at 8 cm. The prosthesis was unpacked and soaked in a suspension of rifampicin and gentamicin, and the proximal parts of the prosthesis were cut to accommodate the length of the cavernosal bodies. The distal rod part and then the proximal part of the prosthesis were inserted into the cavernosal bodies. This resulted in the phallus being pushed out of the scrotum, reducing the degree of burying significantly. After the tunical tissue was closed, a bilateral scrotal pocket was developed, and bilateral 12-mL testicular prostheses were placed. These pockets were closed over the prostheses, and the skin was closed in layers (Figures 5 and 6).

The Foley catheter was removed at the end of the procedure, and the patient remained under observation for 24 hours, during which antibiotics were continued intravenously. The patient was discharged in good health 2 days postoperatively. He was instructed to perform daily dry aseptic wound care and refrain from manipulating the prostheses until 6 weeks following the operation.

Postoperative follow-up was performed at our tertiary referral center by the treating specialist surgeon. Upon first postoperative visit 2 months after the procedure, the scar was completely healed without any dehiscence. The patient was happy with the enhanced penile aesthetics. He did not have any urinary complaints and remained satisfied to sit while voiding. When sexually aroused, the tip of the phallus still engorged, and he did not have any complaints of cold or floppy glans. He had already had satisfactory sexually activity with his female partner since the operation and was able



Figure 2. Penoscrotal incision and progressive dissection toward the ventral side of the clitoral cavernosal bodies.

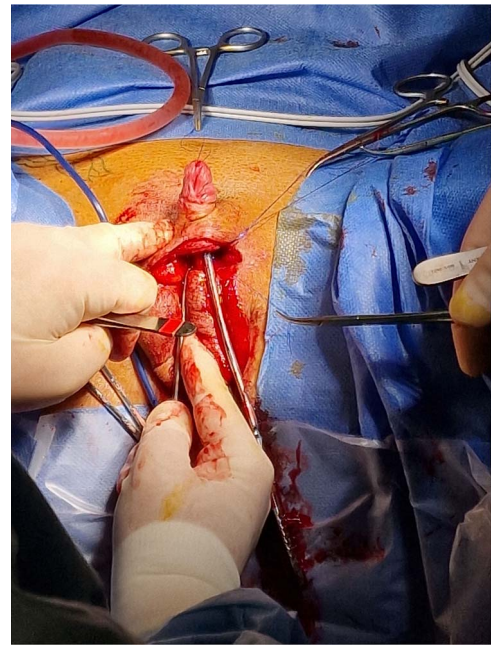


Figure 4. Progressive dilation of the cavernosal bodies with Hegar dilators (3- and 4-mm diameters).

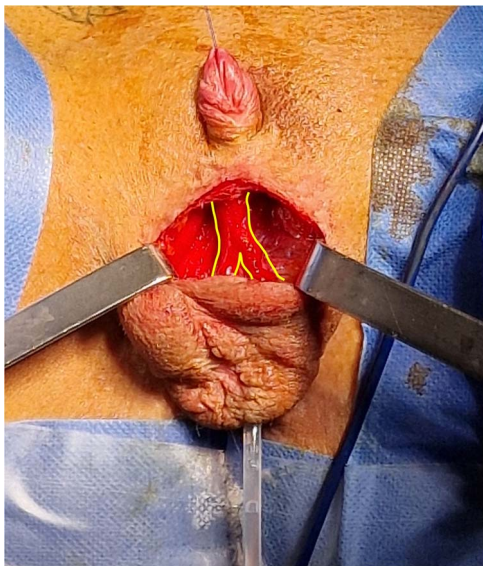


Figure 3. Complete ventral and lateral freeing of the clitoral cavernosal bodies after removal of residual fibrotic tissue. The cavernosal bodies of the microphallus are marked.

to reach orgasm, although he remained incapable of sexual penetration.

One of the 2 testicular prostheses did, however, migrate to the inguinal region, causing discomfort for the patient. Furthermore, he expressed a desire for further reduction of the mons pubis to enhance the definition of the genital area.

Discussion

To the best of our knowledge, this is the first report on secondary placement of a phallic prosthesis after metoidioplasty. As this was a multioperation case with various prior attempts to enhance outcome, the risk of failure after subsequent



Figure 5. Frontal view of postoperative genital complex with phallic and testicular prosthesis in place.

surgery was raised significantly. When looking at the types of earlier-performed surgery, we evaluated that the previous scarring of the surrounding tissues might impair further reconstruction. The cavernosal bodies, however, always remained untouched. Therefore, we chose to use these virgin tissues as the basis of our reconstruction. Of course, various surgical options are possible, and selection among them depends on patient preference and surgeon expertise in complex genital reconstruction.

Secondary optimization possibilities after metoidioplasty were reported by Odeluga et al.²⁰ Proposed techniques include



Figure 6. Lateral view of postoperative genital complex.

improvement of the phallic aesthetic by removing or transposing the upper scrotal tissue parallel to the phallus, the release of ventral chordee caused by the ventral scar of the urethral tubularization, and the performance of monsplasty to enhance the penoscrotal differentiation. All of these were attempted in this patient without satisfactory results. The implementation of this prosthesis was therefore a logical next step in salvaging the aesthetic outcome of this patient. It is important to note that the prosthesis used in this case (ZSI 100 D4) is currently available only in Europe and select centers in Canada. Therefore, this option is not available to all reconstructive surgeons working with transgender individuals worldwide.

Neuville et al were the first to report on the use of this prosthesis.¹⁹ In the setting of primary metoidioplasty with upfront phallic prosthesis insertion, they cited 84.6% patient satisfaction. However, there are no previously published series from the authors' center that include cases without prosthesis insertion that may show how the addition of a phallic prosthesis may have enhanced functional outcomes such as the ability to void while standing or to have penetrative sexual intercourse. Yet, the insertion of this prosthesis does not particularly seem to raise these functional outcomes when compared with other centers.^{10,12,21} The main reason for implanting a device such as this would therefore rather be an aesthetic consideration, as it would aid in alleviating phallic retraction between the scrotum and prepubic fat pad.

To date, the patient in this case report has not sustained any complications specific to the implantation of this phallic prosthesis. Nevertheless, phallic prostheses in general are prone to various short- and long-term complications. Inflatable and malleable prostheses are being used in cisgender and transgender individuals after phalloplasty with varying outcomes. In one study on malleable prosthesis insertion in transgender patients after phalloplasty, infection and protrusion were reported in 12% and 16%.²² This same study reported explantation because of pain or limitation of social activity due to constant rigid phallus in 4% and 12%. All this led to a 44% explantation rate at a mean follow-up of 6.3 months. Another study noted the need for surgical revision within 1 year after prosthesis placement for detachment from the pubic fixation in 13%, malpositioning in 7%, and pain in 3%.²³ At a mean 34.5 months, a 40% explantation rate was indicated. However, the anatomy among transgender individuals after phalloplasty or metoidioplasty differs significantly. Therefore, it is nearly impossible to extrapolate these numbers to the current situation. As opposed to phalloplasty with flap

transfer, the phallus created after metoidioplasty does contain cavernosal bodies surrounded by a tunica albuginea. This provides, on one hand, a natural anchor to the pubic bone and, on the other, a rigid tissue layer preventing device protrusion. In the series of Neuville et al, no specific prosthesis-related complications were noted, providing initial reassuring results.

Conclusion

Here we presented a case of a secondary phallic prosthesis placement for metoidioplasty in a transgender individual who underwent multiple operations. He had successful reduction of phallic burying but did remain dissatisfied with the mons pubis after the first procedure, for which a liposuction was performed. No single technique will be suitable to all. Therefore, it is of utmost importance that reconstructions such as this take place in highly specialized centers with multidisciplinary care.

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Conflicts of interest

None declared.

Data availability

The data that support the findings of this study are available from the corresponding author, WC, upon reasonable request.

References

1. Nolan IT, Kuhner CJ, Dy GW. Demographic and temporal trends in transgender identities and gender confirming surgery. *Transl Androl Urol.* 2019;8(3):184–190.
2. Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgend Health.* 2022;23(suppl 1):S1–S259.
3. Takamatsu A, Harashina T. Labial ring flap: a new flap for metoidioplasty in female-to-male transsexuals. *J Plast Reconstr Aesthet Surg.* 2009;62(3):318–325.
4. Cohanzad S. Extensive metoidioplasty as a technique capable of creating a compatible analogue to a natural penis in female transsexuals. *Aesthet Plast Surg.* 2016;40(1):130–138.
5. Stojanovic B, Bizic M, Bencic M, et al. One-stage gender confirmation surgery as a viable surgical procedure for female-to-male transsexuals. *J Sex Med.* 2017;14(5):741–746.
6. Stojanovic B, Djordjevic ML. Anatomy of the clitoris and its impact on neophalloplasty (metoidioplasty) in female transsexuals. *Clin Anat.* 2015;28(3):368–375.
7. Selvaggi G, Hoebeke P, Ceulemans P, et al. Scrotal reconstruction in female-to-male transsexuals: a novel scrotoplasty. *Plast Reconstr Surg.* 2009;123(6):1710–1718.
8. Pigot GL, Al-Tamimi M, van der Sluis WB, Ronkes B, Mullender MG, Bouman MB. Scrotal reconstruction in transgender men undergoing genital gender affirming surgery without urethral lengthening: a stepwise approach. *Urology.* 2020;146:303.
9. Morrison SD, Morris MP, Mokken SE, Buncamper ME, Ozer M. Technical refinements to extended metoidioplasty without urethral

- lengthening: surgical technique. *Plast Reconstr Surg Glob Open*. 2022;10(2):e4101.
10. Pigot GLS, Al-Tamimi M, Nieuwenhuijzen JA, *et al*. Genital gender-affirming surgery without urethral lengthening in transgender men—a clinical follow-up study on the surgical and urological outcomes and patient satisfaction. *J Sex Med*. 2020;17(12):2478–2487.
 11. de Rooij FPW, van de Grift TC, Veerman H, *et al*. Patient-reported outcomes after genital gender-affirming surgery with versus without urethral lengthening in transgender men. *J Sex Med*. 2021;18(5):974–981.
 12. Waterschoot M, Hoebeke P, Verla W, *et al*. Urethral complications after metoidioplasty for genital gender affirming surgery. *J Sex Med*. 2021;18(7):1271–1279.
 13. Van de Grift TC, Pigot GLS, Boudhan S, *et al*. A longitudinal study of motivations before and psychosexual outcomes after genital gender-confirming surgery in transmen. *J Sex Med*. 2017;14(12):1621–1628.
 14. Butcher RL, Kinney LM, Blasdel GP, *et al*. Decision making in metoidioplasty and phalloplasty gender-affirming surgery: a mixed methods study. *J Sex Med*. 2023;20(7):1032–1043.
 15. Djinovic RP. Metoidioplasty. *Clin Plast Surg*. 2018;45(3):381–386.
 16. Kocjancic E, Acar O, Talamini S, Schechter L. Masculinizing genital gender-affirming surgery: metoidioplasty and urethral lengthening. *Int J Impot Res*. 2022;34(2):120–127.
 17. Cohanzad S. Penile improvement protocol in postoperative management of patients undergoing metoidioplasty. *Aesthet Plast Surg*. 2016;40(6):947–953.
 18. Stojanovic B, Djordjevic ML. Updates on metoidioplasty. *Neurourol Urodyn*. 2022;42(5):956–962.
 19. Neuville P, Carnicelli D, Paparel P, Ruffion A, Morel-Journel N. Metoidioplasty with implantation of a specific semirigid prosthesis. *J Sex Med*. 2021;18(4):830–836.
 20. Odeluga N, Reddy SA, Safir MH, Crane CN, Santucci RA. Optimization of second-stage metoidioplasty. *Urology*. 2021;156:303–307.
 21. Bordas N, Stojanovic B, Bizic M, Szanto A, Djordjevic ML. Metoidioplasty: surgical options and outcomes in 813 cases. *Front Endocrinol (Lausanne)*. 2021;12:760284.
 22. Pigot GLS, Sigurjónsson H, Ronkes B, Al-Tamimi M, van der Sluis WB. Surgical experience and outcomes of implantation of the ZSI 100 FtM malleable penile implant in transgender men after Phalloplasty. *J Sex Med*. 2020;17(1):152–158.
 23. Sun HH, Isali I, Mishra K, *et al*. Surgical outcomes at a single institution of infrapubic insertion of malleable penile prosthesis in transmen. *Urology*. 2023;173:209–214.