

## NOTE ON SURGICAL TECHNIQUE

# Alternative surgical management of penile siliconoma using partial degloving and resurfacing

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## Summary

**Introduction:** Siliconoma represents an inflammatory tissue response to extravasated silicone. Penile enhancing silicone injections have been described for over 50 years. Most of the publications report complications including negative effects on penile appearance and function which require corrective procedures. Penile circumferential skin and siliconoma excision with skin grafting has been described in multiple case reports and series as an effective and feasible option to remove the silicone and achieve good esthetic results. **Methods:** We describe a simple and feasible single stage procedure removing the siliconoma with adjacent non-viable skin while preserving 50% of healthy penile skin and resurfacing the defect with a split-thickness skin graft to treat a long-term complication of penile silicone injection associated with recurrent infections and a chronic skin ulceration.

**Conclusion:** Partial excision of the affected penile skin and siliconoma with defect resurfacing with a split-thickness skin graft is a feasible with good functional and cosmetic outcomes.

**KEY WORDS:** Penis; Siliconoma; Penile silicone injection; Penile reconstruction; Penile enlargement.

Submitted 12 January 2023; Accepted 30 January 2023

## INTRODUCTION

The penis has long been considered an essential part of masculinity, and its size and girth have been related to virility, sexual performance and even power. Various cultures around the world have historically described rituals and processes involving penile manipulations to increase size and girth (1). Exposure to pornographic content may lead men to have distorted perceptions of the normal size and appearance of genitalia and consequently seek out esthetic procedures (2, 3). The average penile length and girth are 9 cm and 9-10 cm respectively in a flaccid state, and 14-16 cm and 12-13 cm respectively in an erect state (3). Most men seeking out length and/or girth augmentation have normal penile parameters and may suffer from penile dysmorphophobia (3, 4). Filler injections to increase penile girth date back to the early 1900s, when liquid paraffin and other mineral oils were used. These substances frequently caused severe adverse effects, including infection and risk of penile loss. Eventually, liquid injectable silicone began to be used (3, 5). Although there have been reports of satisfactory results

without any short-term complications (mean follow-up 20 months), the *Sexual Medicine Society of North America* (SMSNA) recommends that silicone injections and any penile augmentation procedure should be considered experimental surgery (3, 6). This is due to the lack of sufficient data to support the safety and efficacy of these procedures and the fact that several complications requiring surgical correction have been published in multiple case series and reports (3, 7). The severity and complexity of complications may range from silicone migration to the development of erectile dysfunction, penile deformity, infection, and late granulomatous reactions requiring surgical silicone excision (3, 8). Partial excision without skin grafting has been described in the past with suboptimal esthetic results (9). Since 1993, penile degloving, foreign body removal, circumferential excision of penile skin and resurfacing with a *split-thickness skin graft* (STSG) has been the most reproduced and successful option due to its technical ease and superiority compared to flaps (10). In this paper, we describe a yet unpublished surgical approach of partial skin excision and resurfacing with a STSG with good functional and cosmetic outcomes for treatment of post-silicone penile injection late complication for girth augmentation (Figures 1, 2).

## METHODS

### *Surgical technique:* **partial degloving and resurfacing with STSG**

The patient is placed under general anesthesia in supine position. Wide spectrum antibiotic prophylaxis is given (piperacillin-tazobactam). The patient needs to be prepped and draped in a sterile manner, including the antero-lateral (left or right) thigh for STSG harvest. A silk traction suture is placed at the penis glans (this traction will be kept after the procedure). Penile physical examination is performed under general anesthesia to delineate the affected area that will have to be resected (Figure 3). A partial circumcising incision at the base of the corona is performed from 3 to 9 o'clock, or more if the foreign material extends forward, and the incision is extended down the dorsal aspect of the penile shaft, surrounding all the affected area where foreign material can be palpated (Figure 4). Then, the siliconoma is carefully dissected off the *Buck's* fascia



**Figure 1.**  
Ulceration extending through all layers of the skin and subcutaneous tissue, exposing Buck's fascia.



**Figure 2.**  
Complete ulcer healing after two months of dressing.

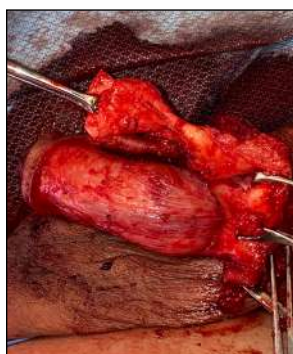


**Figure 3.**  
Palpable silicone on the dorsal aspect of the penile shaft extending to the suprapubic area.



**Figure 4.**  
Partial circumcising incision at the base of the corona from 3 to 9 o'clock extended down the dorsal aspect of the penile shaft.

**Figures 5, 6.**  
Siliconoma dissection off the Buck's fascia and the dorsal neurovascular bundle.



and the dorsal neurovascular bundle (Figures 5, 6). At this point, we must be careful of damaging the branches of the



**Figure 7.**  
Complete excision of the siliconoma and overlying abnormal skin up to the suprapubic area.



**Figure 8.**  
Split-thickness skin graft application on the dorsal penile defect and sutured by 4-0 chromic.



**Figure 9.**  
Single layer Adaptic™ dressing and vacuum assisted closure sponge were placed over the graft.

dorsal nerves that could be coursed through the siliconoma and hard to be spared. The siliconoma and overlying abnormal skin must be completely excised up to the suprapubic area, or wherever its limit is located, and the affected segment must be removed (Figure 7). The ventral penile skin is preserved as our technique is for cases where the dorsal aspect of the penis is affected while the ventral is intact, healthy, and vascularized. If dissection extends proximally to the proximal corporal bodies, it's better to fix them to the suprapubic tissue with 3-0 PDS or similar, to exteriorize the penile shaft and avoid loss of length, also, doing this fixation prevents a potential dead space, and subsequent seroma formation. After the removal of the foreign material and the corporal bodies fixation, the removed skin is templated and measured for skin graft. A distal 0.014 inch STSG is harvested from the previously prepped donor area (we suggest the thigh) using a dermatome, then, the graft is slightly fenestrated to prevent hematoma formation. The STSG is inset with plain gut sutures (preferably 4-0 chromic), and then adjusted accordingly to the penile defect, so the excess graft is tailored to fit the defect (Figure 8). Once the graft is fixed, a 16-Fr urinary catheter is installed. There are plenty dressing options that can be used for these kinds of procedures; a good option is an Adaptic™ dressing. A single layer of Adaptic™ dressing can be applied, and then, a tailored black vacuum assisted closure (VAC) sponge is placed over the STSG; the remainder of the VAC dressing is applied in the usual fashion (Figure 9). Then, the penile traction has to be kept to prevent disadherence of the VAC dressing. To do so, we sug-



**Figure 10.**  
Home discharge on day five with daily dressing changes and a silver nitrate dressing on the donor site.



**Figure 11.**  
Postoperative day 12, excellent take of the graft.



**Figure 12.**  
Excellent esthetic outcomes and healing at one month.



**Figure 13.**  
Excellent esthetic outcomes and healing at one month..



**Figure 14.**  
Two months after the procedure.

gest a protective outer sheath, which can be tailored with an empty 1000 cc saline plastic bottle or similar, and then create a small opening where the suture can be fixed in a manner the penis is kept straight (important to avoid excessive traction). Finally, the graft harvest site is draped with Xeroform™ and a dry dressing.

After the surgery, the VAC and urinary catheter were removed on post-operative day five, when usually the graft has taken; if necessary, they can be kept longer. Once the patient is discharged, daily dressing changes and a silver nitrate dressing on the donor site are mandatory to secure an optimal healing (Figure 10).

Subsequently, on post-operative day 12, the STSG has an excellent take (Figure 11), and the donor site shows signs

of a good healing. The postoperative pain is mild and usually triggered by erections. Glans numbness might be reported in cases of aggressive neurovascular bundle dissection or when the foreign material was markedly adherent. After one month, the penis usually shows an excellent healing with an excellent esthetic outcomes, achieving patient's satisfaction (Figures 12, 13). After two months, the improving continues; typically, the painful erections and glans numbness subside (Figure 14).

## DISCUSSION

Penile enhancement procedures continue to be offered despite multiple case reports and series published in current medical literature depicting potentially devastating complications ranging for erectile dysfunction to penile deformity and even penile loss (3, 7, 8). Despite small case series describing «successful» short-term follow-up with penile fillers (3), there are no current formal society guidelines supporting the use of these procedures. Furthermore, these experimental procedures lack standardization, and no prospective trials or studies on large cohorts currently demonstrate their safety and feasibility. The defects and complications resulting from enhancement procedures can be difficult to manage, and to do so, reconstructive penile surgery is needed, which of the existing techniques will be used vary depending on the extent of the imperfection, and the involvement of different structures. Currently, two of the most used are the scrotal flap (dartos fascio-myo-cutaneous flap) and the circumferential penile skin excision with STSG resurfacing. The goal of any of these reconstructive surgery techniques is to retrieve penis functionality and aspect.

The scrotal flaps provide high aesthetic results and post-operative satisfaction with high flap viability, and they can be used for the treatment of various urogenital defects, regardless of its severity (11). Surgical methods of this technique range from single-sided scrotal axial flap for defect closure to a combination of multistage stacked flap methods; scrotal axial flaps always requires an intact donor site and they are often used for patients with defects due to penile enhancement injections (11).

STSG is an easy and effective technique capable of covering large surfaces of skin loss, and at the same time provide excellent functional and aesthetic outcomes (12). To perform this technique, usually the penile skin is excised, extending to the scrotum if necessary, preserving dartos as much as possible, since it facilitates the graft mobility. After dissection is done, and the graft harvested, it is placed over the defect and tacked in with sutures (usually chromic), securing it at the base and the neo-ventral raphe that is created (for this a total penile degloving is needed) (12).

In this paper, we describe a partial penile skin degloving and STSG resurfacing, which to our knowledge is the first manuscript in current medical English literature to do so, as circumferential penile skin excision with STSG resurfacing has only been described to date. Despite good esthetic and erectile function results obtained with circumferential penile skin excision, it was hypothesized by the authors that a partial penile degloving limited to the affected area would decrease the morbidity of the procedure, the risk of

vascular or nerve damage while preserving normal and well vascularized native penile tissue. A smaller defect also decreases the morbidity of the STSG harvest site.

Currently, one of the most described alternative options for penile and scrotal reconstruction either post silicone excision or trauma (iatrogenic, burns, animal bites, gunshots, self-mutilation, circumcision, etc.) is the scrotal flap technique (13, 14). This technique is mostly used in cases with extensive penile scarring, concurrent scrotal migration and when the use of STSG is not possible (13). Finally, proper patient counseling prior to silicone excision and penile reconstruction is primordial to address all possible future functional or esthetic outcomes. Patient should be informed about the risk of penile skin and glans hypoesthesia, erectile dysfunction, penile curvature, residual silicone materials and any graft related complications.

### CONCLUSIONS

Injection of foreign materials such as silicone for penile enhancement may lead to devastating complications and this practice is not currently supported by formal society guidelines. Partial excision of the affected penile skin and siliconoma with resurfacing of the defect with a STSG is a feasible reconstructive technique in select cases with areas of intact penile anatomy while limiting the potential morbidity of circumferential penile degloving and a large STSG donor site defect.

### REFERENCES

1. Francoeur R, Perper T, Scherzeer NA. *Descriptive dictionary, and atlas of sexology*. Greenwood Press, New York; 1991.
2. Alter GJ, Salgado CJ, Chim H. *Aesthetic surgery of the male genitalia*. *Semin Plast Surg*. 2011; 25:189-195.

3. Bizic MR, Djordjevic ML. *Penile enhancement surgery: an overview*. *EMJ Urology*. 2016; 4:94-100.

4. Vardi Y, Har-Shai Y, Gil T, Gruenwald I. *A critical analysis of penile enhancement procedures for patients with normal penile size: surgical techniques, success, and complications [published correction appears in Eur Urol. 2009; 55:1002. Harshai, Yaron [corrected to Har-Shai, Yaron]]. Eur Urol*. 2008; 54:1042-1050.

5. Oates J, Sharp G. *Nonsurgical Medical Penile Girth Augmentation: Experience-Based Recommendations*. *Aesthet Surg J*. 2017; 37:1032-1038.

6. Yacobi Y, Tsivian A, Grinberg R, Kessler O. *Short-term results of incremental penile girth enhancement using liquid injectable silicone: words of praise for a change*. *Asian J Androl*. 2007; 9:408-413.

7. Silberstein J, Downs T, Goldstein I. *Penile injection with silicone: case report and review of the literature*. *J Sex Med*. 2008; 5:2231-2237.

8. Lee T, Choi HR, Lee YT, Lee YH. *Paraffinoma of the penis*. *Yonsei Med J*. 1994; 35:344-348.

9. Lighterman I. *Silicone granuloma of the penis. Case reports*. *Plast Reconstr Surg*. 1976; 57:517-519.

10. Cavalcanti AG, Hazan A, Favorito LA. *Surgical reconstruction after liquid silicone injection for penile augmentation*. *Plast Reconstr Surg*. 2006; 117:1660-1661.

11. Adamyan RT, Kamalov AA, Ehoyan MM, et al. *Scrotal Tissues: The Perfect Material for Urogenital Reconstruction*. *Plast Reconstr Surg Glob Open*. 2020; 8:e2948.

12. Alwaal A, McAninch JW, Harris CR, Breyer BN. *Utilities of Split-Thickness Skin Grafting for Male Genital Reconstruction*. *Urology*. 2015; 86:835-839.

13. Asanad K, Banapour P, Asanad S, et al. *Scrotal flap reconstruction for treatment of erectile dysfunction following penile enhancement with liquid silicone*. *Urol Case Rep*. 2018;20:75-77.

14. Moussa M, Abou Chakra M. *Scrotal Dartos-Fascio-Myo-Cutaneous flaps for penis reconstruction after iatrogenic skin shaft sub-amputation*. *J Surg Case Rep*. 2019; 2019:rjz206.

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**Conflict of interest:** The authors declare no potential conflict of interest.