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Nonsurgical Medical Penile Girth Augmentation: Experience-Based Recommendations

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Abstract

Penile augmentation is increasingly sought by men who are dissatisfied with the size and/or appearance of their penis. However, augmentation procedures are still considered to be highly controversial with no standardized recommendations reported in the medical literature and limited outcome data. Nevertheless, these procedures continue to be performed in increasing numbers in private settings. Therefore, there is a need for safe, effective, and minimally invasive procedures to be developed, evaluated, and reported in the research literature. In this article, we focus particularly on girth enhancement procedures rather than lengthening procedures as penile girth appears to be particularly important for sexual satisfaction. We discuss the advantages and disadvantages of the common techniques to date, with a focus on the minimally invasive injectable girth augmentation techniques. Based on considerable operative experience, we offer our own suggestions for patient screening, technique selection, and perioperative care.

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Penis size is an important issue for many men and is considered to symbolize masculinity and sexual prowess.[1,2] Men commonly believe that "bigger is better" and that a large penis is needed to impress their sexual partners.[3] Thus, when men perceive that their penis size is inadequate, it can have a major negative impact on their self-esteem and sexual functioning.[4] It should come as no surprise that there appears to be an increasing number of men seeking procedures to enhance the size of their penis.[5,6] The exact numbers of men undergoing these procedures are rarely reported in the literature so claims of increases are often anecdotal, but it was estimated that 10,000 men underwent penile surgery for cosmetic reasons in the United States between 1991 and 1998.[7] However, penile augmentation procedures are still considered to be highly controversial.[5] The Sexual Medicine Society of North America's position statement on this topic states:

> "The Society for the Study of Impotence has found no peer reviewed, objective or independently-monitored studies, or other data, which prove the safety or efficacy of penile lengthening and girth enhancement surgery. The Society believes that, in men who do not have congenital anatomical anomalies of the penis, the safety and efficacy of penile lengthening and girth enhancement surgery have not been established. Therefore, penile lengthening and girth enhancement surgery can only be regarded as experimental surgery. The Society is aware of complications and adverse outcomes which should be clearly disclosed to patients considering such surgery. The

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> Society believes that those government agencies charged with the regulation of medical practice and the enforcement of laws prohibiting false or unsubstantiated advertising claims should give careful attention to claims made with regard to these surgical procedures."[8]

Notwithstanding this statement, penile enhancement procedures continue to be developed and performed, primarily in private settings.[5]

Penile enhancement refers to procedures which aim to increase the circumference/girth of the penis, increase the length of the penis, and procedures to alter the skin around the penis.[9] In this paper, we focus particularly on penile girth enhancement procedures owing to the first author's (J.O.) experience with these procedures (performed over 100). Furthermore, according to the literature, girth appears to be more important for sexual satisfaction, particularly from the perspective of female sexual partners.[10] This may be because a penis of larger girth will stretch the vaginal opening such that the deep structures (ie, the clitoral crura and vestibular bulbs) are more stimulated, as well as greater stimulation of the clitoral glans by the movement of the penis.[11] In addition, the vagina is densely packed with receptors that are finely tuned to detect stretch sensations and thus readily detect variability in circumference, as opposed to vibrations and temperature.[11]

Despite the rather limited literature in the field, there are several published reviews on penile enhancement techniques (for both length and girth)[4,5,9,12] and thus an extensive discussion of these techniques is not the focus of this paper. Instead, owing to the first author's experience performing penile girth enhancement procedures and the second author's (G.S.) experience investigating patient's psychological motivations for cosmetic genital surgery, we offer experience-based recommendations. Specifically, we address men's motivations for girth augmentation procedures, techniques and complications, and perioperative recommendations to assist aesthetic surgeons navigate the growing demand for this highly underreported cosmetic treatment.

MOTIVATIONS

Men who seek penile enhancement procedures almost always have penises within normal size ranges.[13] According to Vardi et al[5] in their critical review of penile enhancement procedures, "the reported normal length and girth of an adult flaccid penis ranges between 7.6 cm and 13.0 cm in length and 8.5 cm and 10.5 cm in circumference, and the reported normal length and girth of an erect penis ranges between 12.7 cm and 17.7 cm in length and 11.3 cm and 13.0 cm in circumference." However, these results have varied across studies and depended on the methods used and the study population.[5] Despite most patients falling within these normal penile size ranges prior to augmentation, they report a degree of body image dissatisfaction.[14] This dissatisfaction can have various negative impacts on psychological and social functioning such as anxieties/inhibitions in sexual relationships and lowered self-esteem. Dissatisfaction with a normal sized penis is termed "small penis syndrome" (SPS) or "small penis anxiety" (SPA).[2] More specifically, SPS is defined as an "anxiety about the genitals being observed, directly or indirectly (when clothed) because of concern that the flaccid penis length and/or girth is less than normal for an adult male, despite evidence from a clinical examination to counter this concern."[2] Although further scientific research is needed to identify the specific factors which contribute to the development of SPS, there are reports that dissatisfaction with penis size may be related to exposure to pornography, in particular, men viewing the large penises of male porn actors.[13] However, patients also report that comments about penis size from peers (friends and sexual partners) as well as family members have played a role in their size dissatisfaction.[1] In addition, there appears to be broader societal narrative that penis size is indicative of masculinity and so a small penis is viewed as less "manly."[13] These sociocultural influences appear to lead some men to believe that their own normally sized penis is inadequate and seek penile enhancement procedures to address their concerns.

Aesthetic surgeons should also be aware that a proportion of men with SPS may also meet diagnostic criteria for body dysmorphic disorder (BDD).[1] According to the *Diagnostic and Statistical Manual for Mental Disorders - 5 (DSM-5)*,[15] the diagnostic criteria for BDD are: "Preoccupation with one or more perceived defects or flaws in physical appearance that are not observable or appear slight to others. At some point during the course of the disorder, the individual has performed repetitive behaviors (eg, mirror checking, excessive grooming, skin picking, reassurance seeking) or mental acts (eg, comparing his or her appearance with that of others) in response to the appearance concerns. The preoccupation causes clinically significant distress or impairment in social, occupational, or other important areas of functioning." The differences between men who meet criteria for penile focused BDD vs SPS only were recently investigated in a general community sample.[1] Those who met criteria for BDD displayed more avoidance behaviours (eg, avoiding going to public changing rooms, being intimate with a partner) and safety-seeking behaviours (eg, changing posture to avoid their penis being seen, searching for solutions to increase penis size), and also experienced higher anxiety when exposing their naked penis to others (eg, sexual partner, medical professional) or when wearing tight trousers/swimming costumes.

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In clinical settings, the percentage of men reporting penile size concerns who meet diagnostic criteria for BDD is not known.[1] Some studies have reported that patients had "penile dysmorphic disorder" or "penile dysmorphophobia,"[16] but these reports were not based on any established diagnostic tools for BDD and so we cannot be certain that these individuals had BDD.[1] Individuals with BDD often seek cosmetic treatment to address their appearance anxieties and distress, however, this usually leads to no improvement or even a worsening of their symptoms.[17] There is also the concern that these individuals will harm themselves and/or their surgeon. Thus, a diagnosis of BDD is considered to be a contraindication to cosmetic treatment.[17] However, there are currently no reports of the specific outcomes for men with penile focused BDD who have undergone penile augmentation. We recommend that if the surgeon has any concerns, screening for BDD symptoms should be conducted early in the consultation process using standardised BDD screening measures (such as the Cosmetic Procedure Screening Scale for BDD related to penile appearance [COPS-P]),[18] potentially in collaboration with a mental health professional. In addition, surgeons should explore patient expectations for treatment outcomes to ensure these are realistic to help prevent dissatisfaction.[4]

TECHNIQUES

As a growing number of men with penile dissatisfaction seek cosmetic treatment to enhance their penile girth, there is a need to develop simple, safe, effective, and minimally invasive procedures. To date, injectable materials appear to show the greatest promise for fulfilling these criteria rather than more invasive grafts.[5] Thus, the focus of the discussion will be on the findings from the more commonly used injectable materials. It must be noted, however, that there are no recommended indications for these procedures in the medical literature to date, nor have any guidelines been proposed.[5] Furthermore, no injectable filler has been approved by the US Food and Drug Administration (FDA) for use in the penis.[19]

Some of the earliest penile girth enhancement procedures around the early 1900s involved the injection of liquid/melted paraffin or other mineral oils.[12] However, these injections often led to disastrous side effects such as foreign body reaction, granulomas, infection, ulceration, and the risk of penis loss.[12] Subsequently, liquid injectable silicone (LIS) was used to enhance the girth of the penis with varying levels of success.[5,12,20] One study of 324 patients reported a mean increase of 27% in circumference and 0.84 cm in diameter post-LIS injection with reportedly high patient and partner satisfaction. In addition, there were no complications in the 1 to 36 month follow-up period.[21] However, Silberstein et al[20] suggest that complications from LIS injections may not be observed for several years and thus may not have been captured in the short follow-up timeframe of this study. Such complications include silicone migration, swelling, penile distortion, and late granulomatous reactions and so the use of LIS for penile augmentation is not recommended.[20]

Autologous fat injections were initially thought to overcome some of the previously noted complications, and positive outcomes have been reported for this technique.[5,12] Panfilov[22] reported an increase in mean girth of 2.65 cm in 88 patients one year after fat injections with 85 (97%) reporting satisfaction with outcomes. Kang et al[23] reported an increase of 2.71 cm in 52 patients after 6 months with moderate rates of patient satisfaction (n = 37, 71%). However, the major caveat of these injections is the rupturing or reabsorption of the injected adipocytes with possibly less than 10% of the cells surviving the injection process.[5] While some medical professionals have injected larger volumes of fat to compensate for this significant percentage of cell death,[4] this larger volume is associated with greater risk of complications such as curvature/asymmetry of the penis and the formation of calcified fat nodules which appear to be permanent.

Injectable hyaluronic acid (HA)-based gels appear to effectively enhance penile girth without significant complications.[12] In Kwak et al's[24] study of 41 patients, compared with a basal mean girth of 7.48 cm (± 0.35 cm), there was a significant increase to 11.41 cm (± 0.34 cm) at 1 month postgel injection and this was maintained to 18 months postinjection (11.26 cm ± 0.33 cm). The patients themselves and their sexual partners reported high levels of satisfaction at 18 months postinjection and there were no serious adverse reactions in this time period. However, according to Kwak et al[24] "most patients" reported a minor decrease in the tactile sense of the penile body. Similarly positive results have been reported for glans augmentation with injectable HA-based gels.[25] It must be noted, however, that a 15% loss in glandular circumference after 5 years postinjection was reported compared to the measure taken at 6 months postinjection.[25] Nevertheless, the patients themselves did not notice the loss in circumference and high levels of satisfaction were still present.[25] According to Kwak et al,[24] the major limitation of using HA-based gels is not the efficacy but the need for the surgeon to hone their skills around the injection of the filler. In addition, from the perspective of the patient, there are likely to be additional costs involved as HA-based gels do not provide a permanent solution owing to slow reabsorption. Thus, patients may require further treatments.

More recently, there have been reports of the successful use of a nonabsorbable soft-tissue filler, polymethylmethacrylate (PMMA) microspheres, to enhance penile girth with lasting effects. Yang et al[26] reported an increase of approximately 2 to 4 cm in penile girth at 6 months postinjection in

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Figure 1. Prominent nodules on a 54-year-old man at 3 years postpolymethylmethacrylate (PMMA) microsphere injection to enhance penile girth.

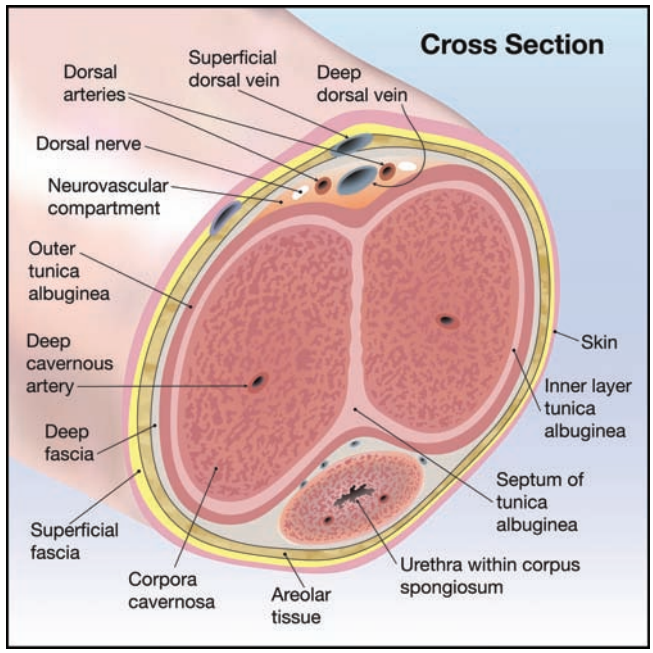

Figure 2. Illustration of the layers of the penis.

20 patients, but with some associated complications—one mild asymmetry of penile shape and one small nodule in the injected site. An 18 month follow-up study indicated that the effects of PMMA were long lasting but whether the patients were satisfied with their outcomes was not investigated.[27] The possibility of PMMA microsphere migration was examined in this follow-up study and of the 4 patients assessed via magnetic resonance imaging, there was no evidence of migration to the scrotum or abdominal wall. In a more recent study involving a larger number of patients (N = 203) with longer follow-up periods, Casavantes et al[3] reported a mean increase of 3.5 cm in penile girth up to 7 years post-PMMA microsphere injection. This was accompanied with high satisfaction rates (N = 168, 83%), but also a high rate of complications. Over half of the patients reported irregularities of the implant such as nodules, hard ridges, and indentations, and 3 patients (0.4%) required surgical removal of nodules. As reported previously,[27] there was no evidence of PMMA migration. However, as Alter[28] stated in his commentary of this study,[3] the long-term implications of PMMA microsphere injection into the penis are not yet known and this must be investigated. Of potential concern is that PMMA microsphere removal is likely to involve "aggressive degloving" of the penis[3] and so the procedure is not easily reversed (Figure 1).

PERIOPERATIVE CONSIDERATIONS

As discussed above, HA-based gels appear to be the most promising injectable material as aesthetic surgeons endeavour to deliver safe, simple, effective penile girth enhancement. As such, the first author has been optimizing the use of these gels over a number of years. Juvéderm Voluma, is the current preference for its combination of elasticity, cohesivity, and long duration of persistence.[29,30] The first author provides his perioperative considerations based on his experience of over 100 penile augmentations on men aged 22 through to 68 years.

Prior to the procedure, informed consent is obtained from patients regarding the experimental nature of the procedure and that there is no filler approved for penile augmentation. Patients are often concerned about the potential for pain in the delivery of preprocedure anaesthesia. Injections of local anaesthesia can cause bruising of the penis and so the application of topical EMLA (eutetic mixture of local anaesthetics) cream liberally over the penis to ensure complete coverage is recommended. The penis is wrapped in plastic film for approximately 60 minutes to allow for appropriate numbing after which time the EMLA cream is removed.

The induction of a semierection is recommended before injection of the filler. This is achieved via lateral injection of Prostaglandin E1 into the corpus cavernosum (Figure 2). The injection of fillers into a semierect penis prevents indentations forming when the penis returns to a flaccid state. In the few minutes required for the penis to reach semierection, the surrounding genital area is sterilized with chlorhexidine wash and draping placed on the genital region surrounding the penis.

Access points are made through the skin and superficial fascia (Dartos) using a 21G needle (Figure 2). These access points may be at the proximal, distal, or midshaft

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laterally at the "3 o'clock" and "9 o'clock" positions. If necessary to allow optimal 360-degree smooth coverage of the penis with filler, other access points may be made more dorsally or ventrally trying to avoid the superficial veins. Patients do not appear to form scars at these access points. In contrast to the sharp needle used to generate the access points, the use of a blunt 22G × 70 mm (0.72 mm diameter) cannula is recommended to deliver the filler. The importance of using a blunt cannula over a sharp needle is to enhance the safety of the procedure. Specifically, the injector is unlikely to penetrate the deep (Buck's) fascia causing intravascular occlusion of the dorsal artery or deep dorsal vein, traumatize the corpora, or occlude the urethra. The blunt cannula also causes less bruising from the superficial veins.

HA-based gels are optimally injected via the blunt cannula into the plane between the superficial/Dartos and deep/Buck's fascia (Figure 2). Some patients will naturally have more fibrous septa in this layer which can create some resistance when the blunt cannula slides up and down this layer, however, this is generally very well tolerated by patients. Multiple passes are made with the blunt cannula delivering approximately 0.05 mL aliquots/microthreads of HA with the total volume ranging between 10 and 20 mL, depending on the length of the patient's penis. The penis is then manually massaged to smooth any irregularities. The procedure is completed by applying antibiotic ointment to the access points and placing a tubular bandage over the penis, which should be worn for at least 24 hours. An important consideration of the use of HA-based gels is that the procedure is reversible using enzymatic degradation via hyaluronidase. Thus, any irregularities can be readily rectified or the entire procedure can be reversed.

Aftercare involves chlorhexidine washes twice per day, massages as required to smooth any irregularities, and abstaining from sexual intercourse/masturbation for 3 days (and minimal sexual activity for 2 weeks). Patients returning to these activities within the first week have not experienced noticeable shifts in the filler. Some patients are concerned that their girth has actually decreased after a few days when the swelling subsides so these patients need to be reassured. After 2 weeks, the HA has usually integrated into the penile tissue. For optimal results, a follow-up session is recommended after approximately 4 weeks to inject a further 5 mL of HA and ensure even coverage. With a total of 15 to 25 mL injected over the course of 2 sessions, this usually results in an increase of penile girth of approximately 2.5 cm when flaccid and 1.3 cm when erect (Figure 3). Although this volume of filler may seem costly for patients on first inspection, a similar volume of HA gel (18 to 22 mL) was previously used by Kwak

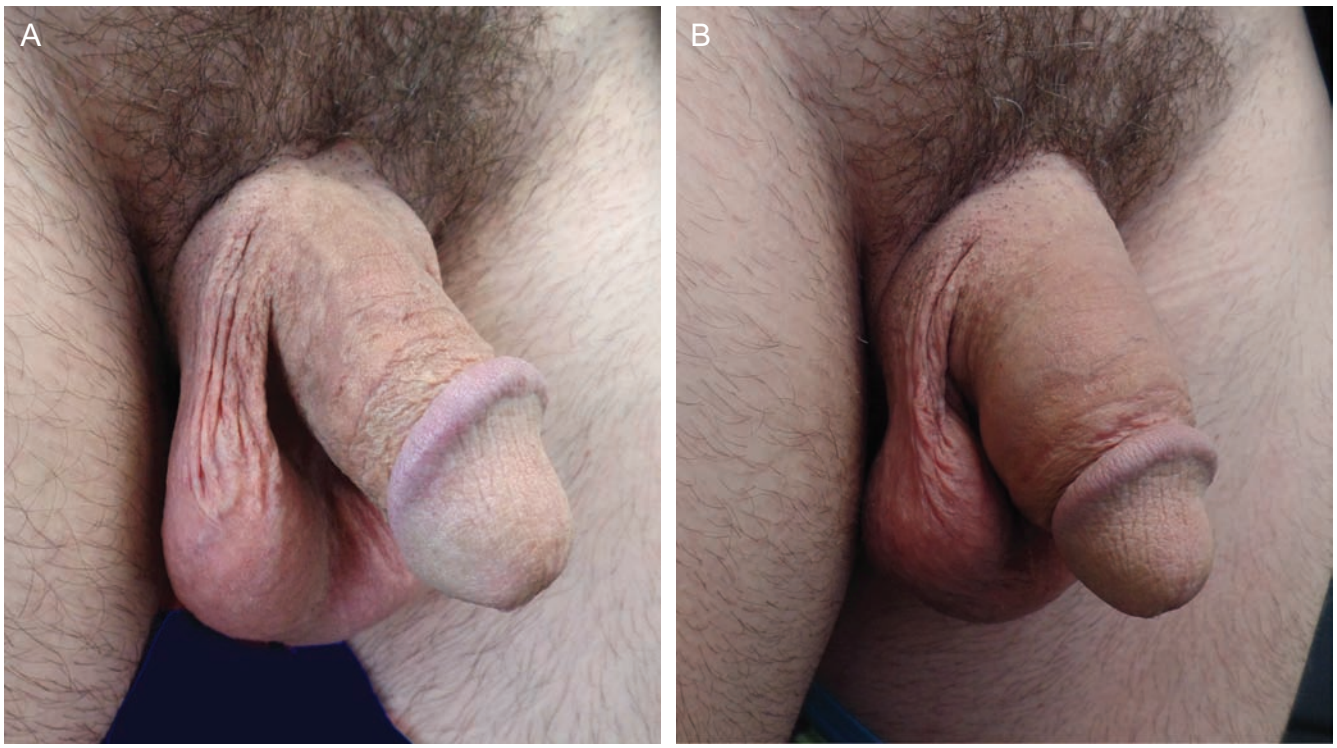

Figure 3. (A) Preinjection photograph of a 47-year-old man who was concerned about his "thin" penis, which measured 9.5 cm in girth. (B) Postinjection photograph obtained 1 month after 15 mL injection of a hyaluronic acid (HA)-based gel to enhance penile girth, now measuring 13.0 cm.

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et al[24] with enlargement effects maintained to 18 months postinjection. Thus, the longevity appears to outweigh the cost. The results of the described protocol generally last in excess of 24 months and patients are encouraged to return for "top up" injections after this length of time to maintain the desired results.

Complications have been rare with this injection protocol. Those that have arisen include; excessive edema and distal pooling of the filler which was corrected with oral steroid administration and hyaluronidase to address the distal pooling; small collections of filler near circumcision scars which were resolved with hyaluronidase; and a lack of filler midshaft which led to the change in protocol for the induction of a less firm erection and the addition of a follow-up injection after 4 weeks. An extensive evaluation of the outcomes of the described procedure, including patient satisfaction and complications, is in progress. In addition, owing to the lack of data surrounding the psychological outcomes of penile augmentation procedures reported in the literature to date (eg, effects on self-esteem), our in-progress work aims to address this important gap in the literature.

CONCLUSIONS

Penile augmentation procedures are increasingly being requested by men with normal sized penises who are concerned about their penile size and/or appearance. As such, there is a great demand to develop safe, effective, and minimally invasive procedures to assist these men. Girth augmentation using injectable fillers appears promising in this endeavour. A range of fillers have been used over the years and none is without limitation. To date, HA-based gels appear to be safe and effective and, although not permanent, have the added advantage of reversibility using hyaluronidase. However, there is still a lack of rigorous scientific research investigating the outcomes and complications of these procedures. We strongly encourage professionals in the field to undertake this outcome research to shed some much needed light on these procedures. Future research should also focus on examining the effects of these procedures on men's sexual and psychological well-being as these appear to be key motivating factors.

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