

Preliminary Report

Nonsurgical Medical Penile Girth Augmentation: A Retrospective Study of Psychological and Psychosexual Outcomes

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Abstract

Background: Although interest in penile augmentation procedures is increasing, there is a significant lack of research into the psychological and psychosexual outcomes of these procedures.

Objectives: To investigate the psychological and psychosexual outcomes of nonsurgical medical penile girth augmentation.

Methods: This retrospective study involved a mixed method approach. Twenty-five men who had undergone a nonsurgical medical penile girth augmentation between 1 and 12 months prior (mean, 6.6 months) completed an online questionnaire containing measures of procedure motivation, procedure satisfaction, genital self-image, penile-focused body dysmorphic disorder symptoms, self-esteem, and sexual relationship satisfaction. Six of these men elected to complete in-depth one-to-one semi-structured phone interviews to further explore the psychological impacts of the procedure.

Results: In the online questionnaire, most men were satisfied with their penile size, appearance, and function after penile girth augmentation. The men also reported statistically significant improvements in their genital self-image ($P < 0.001$) and self-esteem ($P = 0.008$), and a reduction in penile-focused body dysmorphic disorder symptoms ($P = 0.002$) at the time of completing the questionnaire compared to recalled pre-procedural levels. The in-depth interviews yielded 3 themes surrounding penile augmentation outcomes: (1) high satisfaction with increased penis girth; (2) increased self-confidence, particularly in situations in which the penis would be seen, such as a locker room; and (3) increased sexual confidence, but some mixed impacts on sexual relationships.

Conclusions: Most men appear to be satisfied with their nonsurgical medical penile girth augmentation results, and they also seem to experience improvements in their overall self-esteem.

Level of Evidence: 4

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In society, men with larger penises tend to be viewed as more “powerful” and “masculine,” and this message is propagated in our mainstream media.^{1,2} As a result, men who perceive their penises to be smaller than average may become concerned that they are less “manly” than their peers. Several studies indicate that a sizeable percentage of men are dissatisfied with their penis size.²⁻⁴ For example, a large-scale study found that 45% of men desired a larger penis, in particular, those men who perceive their penis to be either smaller than average (91%) or average (46%).² However, most studies suggest that men who have size

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concerns are actually in the normal population size range.⁵ Nevertheless, men are increasingly seeking medical solutions for their supposedly inadequate genitals.²

There is a wide range of medical penile augmentation methods, both surgical and nonsurgical, all of which are still considered to be controversial.⁶⁻⁸ The literature to date suggests that current surgical techniques are often associated with relatively low satisfaction and high complication rates.^{6,7} Penile augmentation using injectable materials, particularly aimed at enhancing penile girth, may represent a safe noninvasive alternative for men seeking to enhance their penile size, although further rigorous research is needed.⁹ Nevertheless, a variety of injectable materials has been reported in the literature, including liquid injectable silicone,^{10,11} autologous fat,^{12,13} polymethylmethacrylate,^{14,15} and hyaluronic acid (HA),^{16,17} but no filler has yet been approved by the US Food and Drug Administration for use in the penis.¹⁸ The research to date suggests that HA fillers are associated with the few side effects and yield high satisfaction rates.^{7,19} However, they do not offer a permanent size enhancement owing to slow reabsorption over time.⁹ A study of 41 men who underwent penile girth enhancement using HA filler found that patient satisfaction scores were 3.71 ± 0.46 (range: 0-4) at 1 month post-procedure and 3.34 ± 0.53 at 18 months, with no adverse reactions.¹⁷ Similar satisfaction results after 5 years have also been reported for glans penis augmentation using HA.¹⁶

Beyond these relatively simplistic measures of satisfaction with procedural outcomes, however, there are very limited data on broader outcomes. A procedure that aims to improve function and appearance can influence multiple domains of life functioning, including physical, sexual, and psychological,²⁰ but these domains have received very little attention from researchers. With respect to psychological functioning, an important factor to consider in the field of cosmetic interventions is body dysmorphic disorder (BDD), the most common psychological disorder in individuals who seek cosmetic procedures.²¹ This disorder involves a preoccupation with a slight or perceived flaw in physical appearance, which has a significant negative impact on social, occupational, and general life functioning.²² This preoccupation prompts some individuals to undergo cosmetic procedures in an attempt to correct their perceived physical defect. In fact, between 5% and 15% of cosmetic surgery patients meet criteria for BDD,²² and this diagnosis appears to be even more common in male patients than female patients.²³ However, rather than an alleviation of their psychological distress after cosmetic intervention, individuals with BDD usually experience no change or a worsening of their symptoms after undergoing cosmetic treatment.²⁴ Thus, BDD is generally considered to be a contraindication to cosmetic treatment.²¹

The prevalence of BDD in men seeking penile augmentation is not yet known.²⁵ So called "penile dysmorphobia"

has been reported in a limited number of studies involving surgical methods of penile augmentation.²⁶⁻²⁸ Unexpectedly, some studies reported high surgical satisfaction rates for patients with penile dysmorphobia, while Li et al²⁶ reported a low overall surgical satisfaction rate at 35%, which was even lower in patients with penile dysmorphobia at 27%. However, the diagnosis of penile dysmorphobia in all studies did not appear to be based on any validated screening measure or structured diagnostic interview for BDD, and so we cannot be certain whether these men actually had a diagnosis of BDD prior to surgery or the effects the procedure had on their BDD symptoms.

Research also suggests that men experience improvements in their self-esteem and confidence, particularly in sexual situations, after surgical penile augmentation.^{28,29} However, these results were similarly based on non-validated measures, often single items, which cannot capture the complexity of psychological constructs such as self-esteem. Furthermore, quantitative questionnaires in general are somewhat limited in their capacity to provide in-depth and complex understandings of men's life experiences after undergoing penile augmentation. In-depth interviews with patients are an essential source of information, as it is possible to explore why patients are satisfied/dissatisfied with the procedure, and also the patients themselves can identify the specific areas of their lives impacted by the procedure and what these impacts are. Without this information, medical practitioners may unintentionally overlook outcomes that their patients consider to be highly important. To our knowledge, no interview studies have been published with men who have undergone penile augmentation procedures.

Thus, in the current study, we sought to examine the psychological and psychosexual outcomes in men who had already undergone a penile girth augmentation, using a unique mixed method approach. First, for the quantitative component of the study, we aimed to investigate the effects of girth augmentation on penile-focused BDD symptoms, genital self-image, overall self-esteem, and sexual relationship satisfaction, using *validated* measures in a questionnaire. Second, for the qualitative component, we aimed to explore in-depth, via interview, the impacts on girth augmentation on men's lives, particularly surrounding the issues of psychological and sexual well-being.

METHODS

Quantitative Phase

Participants and Procedure

A sample of adult men in Australia who had undergone a penile girth augmentation procedure from May 2016 to August 2017 were recruited from April 2017 to August 2017 through private clinics in Sydney and Perth, Australia. None of the men who underwent the procedure had a micropenis,

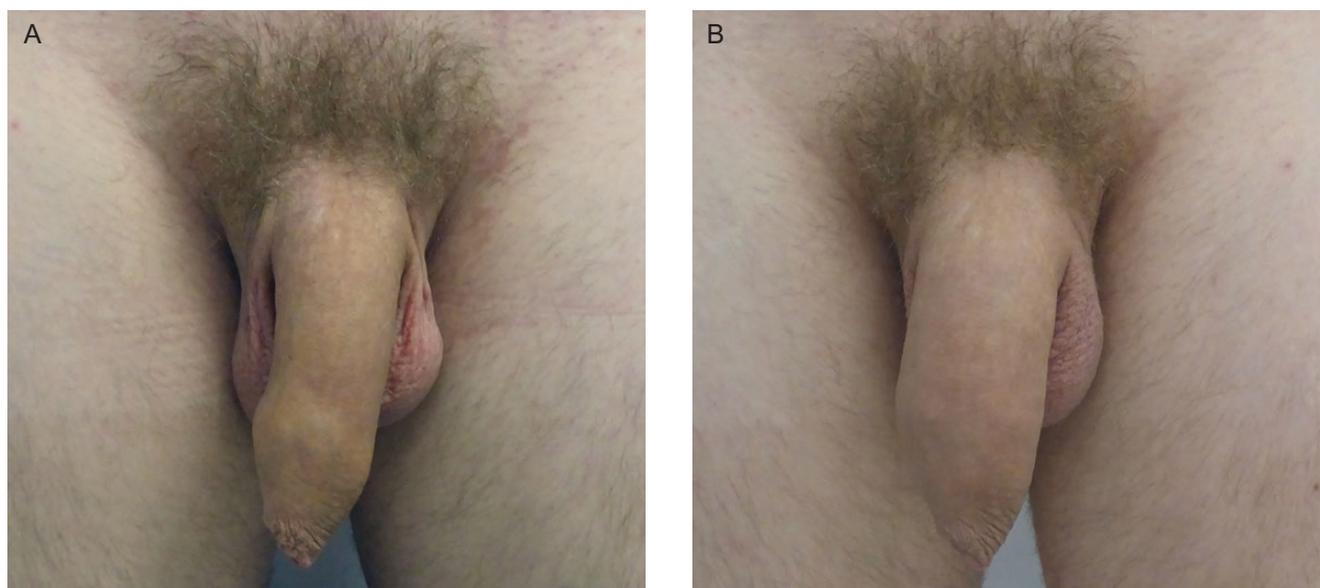


Figure 1. (A) Pre-injection photograph of a 34-year-old man who was concerned about “shrinkage” of his penis, which measured 11.0 cm in girth. (B) Post-injection photograph obtained 1 week after 10 mL injection of a hyaluronic acid (HA)-based gel to increase penile girth, which now measured 13.5 cm.

defined as a stretched penis measuring less than 7 cm.^{30,31} The penile girth augmentation method employed in this study, using a HA-based gel, has been previously described⁹ and example procedure results are shown in Figure 1. Men were contacted by clinic staff, who were not involved in the patient’s treatment, via email or phone text message and were provided with a weblink to study information. Interested patients then clicked on the weblink at the end of the study information to access an online questionnaire. Participation in the questionnaire was completely anonymous and confidential, and completion of the questionnaire was considered to be informed consent, according to the Australian National Health and Medical Research Council.³² Only the first author (G.S.), a researcher who was completely independent of the patient’s treatment, had access to the online portal containing the completed survey data. This was important, as the second author (J.O.), a facial plastic and cosmetic surgeon, performed the penile augmentation procedure on some of the study participants. Ethical approval to conduct the questionnaire was obtained from the Flinders University Social and Behavioural Research Ethics Committee.

Inclusion criteria for the study were: (1) undergone a HA injectable penile girth augmentation at least one month prior; (2) aged 18 or over; (3) proficient in English; and (4) agreeable to contact with the clinics. Of the 80 men eligible to participate in the study, 25 completed the online questionnaire, resulting in a response rate of 31.3%. This rate was slightly higher than previous penile augmentation research¹⁴ and corresponded to other cosmetic intervention studies.³³ As the participants completed the survey anonymously, analysis of any potential differences in characteristics between men who chose to participate

and those who did not could not be conducted. A blank copy of the survey is available online as Supplementary Material at www.aestheticsurgeryjournal.com.

Survey participants were between 1 and 12 months post-girth augmentation procedure (mean, 6.6 months; median, 8 months). Participant age ranged from 23 to 69 years (mean, 39.6; *SD*, 13.7 years). Most participants (76.0%, *n* = 19) self-identified as Caucasian/White (1 “Arab,” 5 no response). The majority (56.0%, *n* = 14) self-identified as exclusively heterosexual (2 predominantly heterosexual, 1 equally heterosexual and homosexual, and 3 exclusively homosexual, 5 no response), and most were involved in a relationship at the time of completing the questionnaire (76.0%, *n* = 19). The most common highest level of education achieved by participants was trade/certificate/diploma (36.0%, *n* = 9), followed by an undergraduate university degree (24.0%, *n* = 6), high school (12.0%, *n* = 3), and postgraduate university degree (8.0%, *n* = 2). Some participants (20.0%, *n* = 5) had previously undergone a cosmetic procedure of some kind that included rhinoplasty (*n* = 2), chin implant (*n* = 1), male breast reduction (*n* = 1), “body lift” (*n* = 1), and Botulinum toxin injections (*n* = 1). Furthermore, 28% (*n* = 7) had previously tried another method of penile augmentation that included penis pumps (*n* = 2), extenders/stretchers (*n* = 2), autologous fat transfer (*n* = 1), girth enhancement using a non-HA material (*n* = 1), “penile implant” not otherwise specified (*n* = 1), and platelet rich plasma injection (*n* = 1).

Measurements

The questionnaire included measures of demographic information, followed by details of the penile augmentation

procedure and motivations for and satisfaction with the procedure. Participants were then asked to rate their current levels of genital self-image, penile-focused BDD symptoms, and self-esteem and sexual relationship satisfaction. Next, they were asked to recall their levels of genital self-image, penile-focused BDD symptoms, and self-esteem and relationship satisfaction before undergoing girth augmentation so that any perceived changes in these outcomes from prior to augmentation to the time they completed the questionnaire could be measured.

Motivations for Penile Augmentation and Procedure Details

Participants were first asked to recall their reasons for undergoing a girth augmentation in an open-ended response. These were rated by two independent raters, and four categories were agreed upon, namely, “self-perception,” “psychological distress,” “sexual function/pleasure,” and “appearance.” Participants were then asked to provide the month and year of their girth augmentation. They were also asked whether they had tried any other method of penile enhancement and any other cosmetic procedures in their lifetime and to provide details of these procedures if applicable.

Satisfaction With Penile Augmentation

Satisfaction with the girth augmentation procedure was measured using 3 items. The items addressed current satisfaction with penile size, appearance, and function on a 7-point Likert-type scale ranging from 1 (extremely dissatisfied) to 7 (extremely satisfied). In addition, they were asked whether they had had any complications and to provide details where relevant.

Male Genital Self-Image

Men’s perceptions of their genitals or genital self-image were measured using the 7-item Male Genital Self-Image Scale (MGIS).³⁴ Participants rated their level of agreement with each item (eg, “I am satisfied with the appearance of my genitals,” “I am not embarrassed about my genitals”) on a 4-point Likert-type scale (1 = Strongly disagree to 4 = Strongly agree). The 7 items were summed to generate an overall score ranging from 7 to 28 with higher scores indicating more positive genital self-image. The reported internal consistency for this scale was high (Cronbach’s $\alpha = 0.93$)³⁴ and was similar in the present study (Cronbach’s α recalled = 0.92, current = 0.93).

Penile-Focused Body Dysmorphic Disorder

Penile-focused BDD symptoms were measured using the 9-item Cosmetic Procedure Screening Scale for Penile Dysmorphic Disorder (COPS-P), which follows the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) criteria for BDD, with a focus on penile concerns.³⁵ Participants rated their level of symptomatology for each item

(eg, “To what extent does the size or appearance of your penis currently cause you distress?,” “To what extent do your concerns about the size or appearance of your penis currently interfere with your social life?”) on a 9-point Likert-type scale (0 = Not at all to 8 = Extremely/Very Severely). The 9 items were summed to generate an overall score ranging from 0 to 72 with higher scores indicating greater preoccupation and distress surrounding the penis and thus a greater likelihood of a diagnosis of BDD. In accordance with Veale et al,³⁵ an overall score of 40 was used to discriminate men with penile-focused BDD from those with less severe small penis anxiety.³¹ This scale has demonstrated high internal consistency (Cronbach’s $\alpha = 0.94$),³⁵ and this was slightly lower in the present study (Cronbach’s α recalled = 0.89, current = 0.86).

Self-Esteem and Relationships

Self-esteem and relationship satisfaction were measured using the 14-item Self-Esteem and Relationship (SEAR) questionnaire.³⁶ This questionnaire consisted of two domains: Sexual Relationship (8 items) and Confidence (6 items), and within the Confidence domain, there were 2 subscales: Self-Esteem (4 items) and Overall Relationship (2 items). Participants rated the frequency with which they agreed with each item (eg, Sexual Relationship Domain: “I felt confident about performing sexually,” Confidence Domain - Self Esteem Subscale: “I felt like a whole man,” Confidence Domain - Overall Relationship Subscale: “I was satisfied with our relationship in general”) on a 5-point Likert-type scale (1 = Almost never/never to 5 = Almost always/always). The items were summed within domains/subscales as well as an overall score and transformed to a 0 to 100 scale (as described in Cappelleri et al³⁶) with higher scores indicating a more favorable response. The total and domains/subscales have demonstrated good internal consistency previously (Cronbach’s $\alpha = 0.76$ to 0.93)³⁶ and were higher in the present study (Cronbach’s α recalled = 0.81 to 0.95, current = 0.84 to 0.92).

Data Analysis

The data were analyzed using IBM SPSS (version 24.0; IBM SPSS, Inc, Chicago, IL). Paired samples *t*-tests (two-tailed) were used to examine changes in participants’ current ratings for genital self-image, penile-focused BDD symptoms, and self-esteem and relationships satisfaction compared to their recalled ratings before their procedure. Missing values in the data set were handled with pair-wise deletion. A value of $P < 0.05$ was considered to be statistically significant.

Qualitative Phase

Participants and Sampling

Participants were a sub-sample of the men who completed the quantitative questionnaire and indicated interest in

further research by providing contact details in a separate section at the end of the questionnaire. Participants were sent an email or text message by the first author (G.S.) with information about a phone interview study. Interested participants completed a written consent form and consent was reconfirmed verbally at the start of each interview. Ethical approval to conduct the interview study was obtained from the Flinders University Social and Behavioural Research Ethics Committee. Of the 12 men who were invited to participate in the interview study, 6 responded and consented to participate (50.0%), similar to interview response rates for a study involving women undergoing cosmetic genital surgery.³⁷ Interview participants were between 1 and 14 months post-augmentation procedure (mean, 7.3 months; median, 7 months), and ranged in age from 30 to 58 years (mean, 42.7; *SD*, 10.2 years). All participants self-identified as Caucasian/White. Most identified as exclusively heterosexual (66.7%, $n = 4$), and the remainder identified as exclusively homosexual. Similarly, 66.7% ($n = 4$) were involved in a relationship at the time of the interview. Half had achieved an undergraduate university degree (50.0%, $n = 3$), with the remainder nominating trade/certificate/diploma qualification (33.3%, $n = 2$) and postgraduate degree (16.7%, $n = 1$). Two participants (33.3%) had previously undergone a cosmetic procedure in their lifetime, which included a chin implant ($n = 1$) and Botulinum toxin injections ($n = 1$).

Data Collection and Analysis

The first author (G.S.), a female clinical and research psychologist, conducted all six one-to-one interviews with participants in July and August 2017. The first author was not involved in the treatment of any of the participants. A qualitative phenomenological approach was used to gain an in-depth understanding of the effects of penile girth augmentation on men's psychological and sexual well-being. An interview guide was developed containing questions similar to a study conducted by the first author investigating the psychological outcomes of cosmetic genital modification procedures in women.³⁷ The first author adopted a semi-structured interview approach to provide flexibility to briefly diverge from key interview questions to explore issues of importance to individual participants. The interviews began with confirmation of participant demographic information. The next section of questions involved the exploration of participant motivations to undergo the procedure. This was followed by exploration of societal influences that may have potentially impacted participant attitudes towards their penis size and decision to have an augmentation. The final section of the interview involved exploring participant satisfaction with the outcomes and any effects

girth augmentation had on their lives, including on their sexual relationships and psychological well-being. This same framework was used in all interviews. As it was not possible to do justice to all themes in this paper, the three themes related to satisfaction and outcomes were included owing to the focus on psychological and psychosexual outcomes in this paper.

The phone interviews were between 20 and 54 minutes in duration (mean, 31.8 minutes; median, 28 minutes). These interviews were audio recorded and transcribed verbatim. As previously described by Braun and Clarke,³⁸ the transcriptions were analyzed using inductive thematic analysis. The extracts were read multiple times so the first author (G.S.) was familiar with the interview data and then coded for important features. The codes were confirmed with the second author (J.O.). The first author examined similar codes to generate themes and represented these visually as a thematic mind map on paper. The thematic map was discussed with the second author and revised until a consensus was reached.

RESULTS

Quantitative Phase

Motivations and Satisfaction

The men provided a range of reasons for seeking penile girth augmentation. As seen in Table 1, the most common motivation was to improve their self-perception. The next most common reasons were to address psychological distress related to penis size, and to improve sexual function/enjoyment for themselves and/or a partner, and, finally, to improve the appearance of their penis.

After penile girth augmentation, the majority of participants reported that they were either "slightly," "moderately," or "extremely" satisfied with the size ($n = 20$, 80.0%), appearance ($n = 19$, 76.0%), and function ($n = 19$, 76.0%) of their penis after augmentation (Table 2). Three participants (12.0%) utilized a final comments section at the end of the questionnaire to provide reasons for dissatisfaction (ie, scores less than 4 on the 7-point Likert-type scale), and these included an unnatural look to their penis ($n = 2$), girth size increase not being as large as expected ($n = 1$), and prominent look of the foreskin due to lack of circumcision ($n = 1$). Only a minority of participants ($n = 2$, 8.0%) reported post-procedure complications that included infection, swelling, and pooling of filler.

Psychological Outcomes

As seen in Table 3, the participants reported significant changes in their genital self-image, penile-focused BDD symptoms, and the self-esteem subscale of the SEAR measure. More specifically, the participants reported increased

Table 1. Participant Motivations for Penile Girth Augmentation by Theme ($n = 25$)

Theme	Example	n (%) [*]	n (%) as sole reason
Self-perception	"Just wanted more size to feel better about myself." "To feel more confidence in myself."	8 (32.0)	4 (16.0)
Psychological distress	"Primarily have always been conscious of my size" "I knew that I lacked girth for many years. From girls telling me, and seeing for myself. I just wanted to feel normal and not ashamed or anxious of it. It was occupying about 80% of my thoughts that I was inadequate, and useless."	7 (28.0)	6 (24.0)
Sexual function/ pleasure	"I wanted to make my partner feel very full and very stretched." "So it...feels tighter when having sex."	7 (28.0)	2 (8.0)
Appearance	"So it looks bigger." "It's always nice to feel you fill out a pair of underwear or swimmers better."	6 (24.0)	1 (4.0)
Combination	"Partner has had multiple children so trying to increase her pleasure along with mine. Not quite satisfied with natural size. Increase confidence, self-image and pleasure." "Self-esteem. Feeling comfortable in public change rooms."	7 (28.0)	

*Percentages do not sum to 100%, as participants provided motivations that were coded into multiple themes.

Table 2. Participant Satisfaction With Penile Girth Augmentation Outcomes ($n = 25$)

Variable	Extremely satisfied n (%)	Moderately satisfied n (%)	Slightly satisfied n (%)	Neither satisfied or dissatisfied n (%)	Slightly dissatisfied n (%)	Moderately dissatisfied n (%)	Extremely dissatisfied n (%)
Size satisfaction	9 (36.0)	6 (24.0)	5 (20.0)	0 (0.0)	1 (4.0)	3 (12.0)	1 (4.0)
Appearance satisfaction	7 (28.0)	8 (32.0)	4 (16.0)	0 (0.0)	2 (8.0)	4 (16.0)	0 (0.0)
Function satisfaction	10 (40.0)	4 (16.0)	5 (20.0)	3 (12.0)	2 (8.0)	1 (4.0)	0 (0.0)

Table 3. Comparisons of Participant Recalled Ratings Before Penile Girth Augmentation and Current Ratings on Psychological and Psychosexual Outcome Measures ($n = 25$)

Measure	Range	Before mean (SD)	Current mean (SD)	P value	Cohen's d
Genital self-image	7-28	17.7 (4.7)	21.9 (4.0)	<0.001	0.96
Penile-focused body dysmorphic disorder	0-72	21.9 (14.7)	11.9 (11.1)	0.002	0.77
Self-esteem and relationship*	0-100	69.8 (21.7)	78.0 (18.0)	0.091	0.41
D1: Sexual relationship*	0-100	71.1 (22.2)	76.8 (18.2)	0.240	0.28
D2: Confidence*	0-100	68.1 (24.1)	79.5 (19.5)	0.065	0.52
S1: Self-esteem	0-100	67.5 (25.9)	80.6 (17.9)	0.008	0.59
S2: Overall relationship*	0-100	71.9 (22.7)	72.9 (28.6)	0.809	0.04

D, domain; S, subscale. * $n = 12$ for these analyses, as participants needed to be involved in a relationship both before augmentation and at the time of questionnaire completion to allow for comparison.

genital self-image and self-esteem, as well as less severe BDD symptoms at the time of completing the questionnaire compared to their recalled levels prior to penile augmentation. It must be noted that the recalled ratings from 2 participants (8.0%) would have potentially met diagnostic criteria for BDD before undergoing penile augmentation,

and this reduced to zero participants for their current ratings (after augmentation). Furthermore, these 2 participants both rated their satisfaction with the size, appearance, and function of their penis after augmentation in the satisfied range (ie, scored 5 and above on the 7-point Likert-type scales).

Qualitative Phase

High Overall Post-Procedure Satisfaction

Participants were generally very satisfied with the improvements in the aesthetics of their penis after girth augmentation, which sometimes even exceeded their expectations.

I think that the result that I've ended up with is fantastic. I absolutely love it.... But also the length of the penis. It's much longer now when it's flaccid obviously. It doesn't really retract much at all. (Participant 2, aged 40, 7 months post-augmentation)

Some noted that although their penis was not "perfect," they were still satisfied with the perceived improvement in appearance.

P: It's slightly skewiff, so it's slightly sort of not as perfect as it used to be.

I: So it's got a bit of a kink in it now?

P: Got a bit of a kink, yes....but I feel great with it. It's fantastic. (Participant 6, aged 47, 1-month post-augmentation)

Increased Self-Confidence From Less Worry

All participants reported an increase in their self-confidence as a result of their increased penile girth. Some added that they were not necessarily lacking in self-confidence prior to the procedure. However, after the procedure, they no longer had to worry about their penis size.

I just stopped thinking about it [my penis]. It was no longer an issue obviously because I'd solved that issue so therefore I suppose, you find yourself not thinking about it. I guess I have to say there is definitely a confidence factor. (Participant 2, aged 40, 7 months post-augmentation)

I didn't feel like I had no confidence at all, but I feel like I have a bit more confidence now. (Participant 5, aged 30, 7 months post-augmentation)

Participants consistently provided examples of feeling more confident and comfortable in non-sexual situations where their naked penis (eg, locker/change room) or the outline of their penis (eg, wearing a swimsuit) would be visible to others. Prior to the procedure, these situations would have provoked some anxiety in the participants.

[Feeling] a little bit more comfortable, especially in the change room. I was very conscious before and...I was always covered [up] so I don't really worry that much anymore when naked. I'm not worried about people seeing my penis. (Participant 3, aged 47, 14 months post-augmentation)

I don't think twice about if I had to change in a [locker] room, that's really not an issue or coming out of a pool or any sort of thing like that I don't have

to worry about. I always know that I look good naked I guess...I think, for anybody, that would increase confidence too on a day to day basis. (Participant 5, age 30, 7 months post-augmentation)

Individual Differences in Impacts on Sexual Relationships

Most participants reported that they were more confident to initiate sex and felt that their partner's pleasure was increased. If not involved in a relationship at the time of the interview, participants predicted that future partners would experience greater sexual enjoyment as a result of their penile enhancement.

P: Probably just more confident in bed, that's probably the best change....I venture there [the bedroom] a bit more often.

I: So you feel like you can initiate sex a bit more often?

P: Yes. (Participant 1, aged 58, 14 months post-augmentation)

P: I definitely think it would be a lot better for my future partner.

I: Sure. So you're likely to increase her sexual pleasure you think?

P: I'd say so, yes. (Participant 4, aged 34, 1 month post-augmentation)

However, one participant noted that as he had been in a very long-term relationship with his female partner, he did not think the impact on his sex life was so obvious.

Well, suppose I've been with the same one [relationship] for twenty-five years so probably not to an extent. (Participant 3, aged 47, 14 months post-augmentation)

Another participant stated that he actually felt more pressure in sexual situations than he did before his augmentation procedure. This perceived pressure was from prospective male sexual partners as his penis was now so large and thus more appealing to other men.

So now sometimes I can have performance issues and confidence issues because it's like there's a much more obvious focus on my penis from other guys... They see how big it is when it's flaccid and then say "Oh great. That's incredible. Let's get going [have sex]." And then I think "...I hope I can perform" and then those [doubting] thoughts start to process...So a bigger penis has actually probably caused me to have more performance issues now than I had before. (Participant 2, aged 40, 7 months post-augmentation)

DISCUSSION

As the first study to conduct an in-depth exploration of the psychological and psychosexual outcomes of penile

girth augmentation, using both quantitative and qualitative approaches, we have provided several new insights. We have shown that men are generally satisfied with the outcomes of their nonsurgical medical penile girth augmentation. We also found, for the first time, that they report statistically significant improvements in their genital self-image, overall self-esteem, and a reduction in penile-focused BDD symptoms after having a girth augmentation procedure. Through our qualitative analysis, we discovered that men appear to relate improvements in their overall self-confidence to a decrease in anxiety about their penis being viewed by other people such as peers and partners. We also report, for the first time, that although girth augmentation can have positive effects on some men's sexual relationships, it can also have less desirable effects too.

In terms of motivations to undergo girth augmentation, the men reported in the quantitative phase that they were motivated by a range of reasons to undergo penile girth augmentation, with the most common being to improve their overall perception of themselves. This finding supported previous research that self-worth in men can be influenced by the perceived "adequacy" of their genitals,³⁹ and when a man feels his penis is "inadequate," he may seek a medical solution in an attempt to improve his self-worth. Our results suggested that 8% of men potentially fulfilled the diagnostic criteria for BDD (focused on their penis) prior to penile augmentation, which may have motivated these individuals to seek augmentation. Notably, our study was the first to employ a validated BDD screening measure in a penile augmentation setting. Our BDD prevalence is similar to that found in patient cohorts seeking other forms of cosmetic treatments.²¹ However, our study was reliant upon men's recall of their psychological state prior to their procedure and so may potentially be an underestimate of BDD prevalence, considering that 20% of the men had undergone another form of cosmetic procedure in their lifetime, indicating dissatisfaction with multiple body parts. This investigation of BDD should be replicated in patients *prior* to penile augmentation and also involve a structured diagnostic interview as confirmation of BDD diagnosis.

The vast majority of participants were satisfied with the size, appearance, and function of their penis after girth augmentation in the quantitative study phase, including the 2 men whose recalled scores for pre-augmentation potentially met diagnostic criteria for BDD. The satisfaction rates were generally higher than for surgical augmentation methods,^{6,7} but slightly lower than reported in other injectable penile girth augmentation studies.^{14,17} However, unlike these other studies, our assessment of satisfaction was conducted anonymously and independently of the treatment team. Importantly, we also collected reasons for dissatisfaction with outcomes, which are often overlooked

in this area of research.⁸ Dissatisfactions reported in our study focused on aesthetic concerns and unmet expectations for girth increase. The complication rate was low in our study (8%), but the fact that the patients themselves nominated the complications they experienced, rather than the medical practitioner, may have contributed to the slightly higher complication rate compared to other HA-based girth augmentation methods.¹⁷ The men involved in the qualitative study phase all expressed high satisfaction, with some commenting that their expectations for size increases were exceeded.

The men also experienced significantly improved genital self-image and a reduction in BDD symptoms in the quantitative study phase, compared to their recalled levels prior to augmentation, thus indicating an overall improvement in their attitudes and distress surrounding their penis. The men who indicated that they would have potentially met diagnostic criteria for BDD prior to augmentation, according to their recalled scores, no longer met criteria after their procedure. This was unexpected, as BDD symptoms usually do not improve or worsen after cosmetic treatment, and so BDD is usually considered to be a contraindication.^{21,24} However, a small prospective study involving women who underwent labial reduction surgery also found that almost all patients no longer had BDD 3 months post-surgery.⁴⁰ This may be a point of differentiation for cosmetic genital procedures in which there may be more definite functional reasons motivating the individual to undergo the procedure than for other more aesthetically focused procedures, such as rhinoplasty. It is also possible that even for individuals who do feel satisfied with the body part that was the focus of the cosmetic procedure, their preoccupation may shift to another body part and the diagnosis of BDD remain. Clearly, further research investigating BDD in penile augmentation patients is required and medical practitioners should continue to screen their patients for this disorder and refer to mental health practitioners when needed.

The improvements in attitudes towards their penis also appeared to translate to significant improvements in overall self-esteem in the quantitative phase. A desire to increase self-esteem is a common motivation for cosmetic intervention in general,⁴¹ including in our study, but research suggests that improved self-esteem does not always occur after treatment or the increase is only modest.^{33,41,42} However, our findings were in accordance with 2 other penile augmentation studies,^{28,29} although these studies were reliant upon single-item non-validated measures and focused particularly on sexual self-esteem. It may be the case that improvements to the penis, in particular, may impact a man's overall sense of self more strongly than improvements to other body parts (eg, nose, chin). The men's reports from the qualitative interviews supported and expanded on the quantitative findings. All men

mentioned an increase in self-confidence that they linked to no longer having to be anxious about their penis being seen by others. It may have been the case that these men had concerns that dated back to childhood or adolescence, potentially with negative comments being made by family members and peers.⁵ Certainly, some men reported receiving negative comments about their penis and the resulting psychological distress as a motivating factor for penile augmentation in the quantitative phase of the study. Thus, an increase in penis size would have likely been a relief and allowed these men to feel more comfortable in situations in which their penis was visible, such as a change room.

Unlike the improvements in self-esteem after augmentation, there were no significant improvements in men's perceptions of their sexual relationship or relationships as a whole in the quantitative phase. Notably, not all men in the sample were involved in a relationship either before or after their augmentation procedure, and so the sample size was reduced for this analysis. Nevertheless, sexual relationship satisfaction is influenced by multiple factors, both emotional and relational aspects of sexual interactions,⁴³ and so it may be unrealistic to expect enhancements in this area of life after an increase in penile girth size alone. Thus, sexual relationship quality may be an important issue for clinicians to discuss with prospective penile augmentation patients to check that their expectations are realistic. A man who expects a greatly improved relationship with his partner after augmentation may be disappointed with his procedural outcomes.⁴² Nevertheless, the qualitative data suggested that men may experience improvements in particular *aspects* of their sexual relationships, including increased confidence to initiate sex with a partner and increased sexual enjoyment for their partner. Although some previous quantitative studies have included simple satisfaction ratings for the patient's partner, which were usually similar to the patient's own satisfaction levels,^{16,17} future research could involve in-depth interviews with partners to further explore the effects of penile augmentation on sexual relationships.

Another novel finding from the qualitative study phase was that transitioning to a larger penis size could actually lead to some men feeling more anxious about their sexual performance. This issue may be particularly important in men who have sex with men, as was the case in our study, as men who have larger penises tend to be sought after as the "top" or anal penetrative partner.¹ Thus, establishing and maintaining an erection may be more important in the "top" role than the anal receiving partner ("bottom" role).¹ A penile augmentation procedure may mean that a man who used to have a smaller penis and was traditionally a receiving partner is now expected to be the penetrative partner, which may generate some anxiety around having to perform the more dominant sexual role. Although the majority of men in our study identified as exclusively

heterosexual, this may be an important issue for clinicians to consider when consulting with bisexual or homosexual penile augmentation patients.

The present study should be interpreted with some limitations in mind. First, owing to the retrospective design of the study, we relied upon participant recall of their psychological state prior to augmentation. It may have been difficult for men to accurately remember their attitudes towards their penis before their augmentation procedure, which was longer than 12 months prior for some participants. Clearly, our preliminary findings addressing psychological outcomes of penile augmentation presented here should be further investigated using a prospective controlled study design, which is our in-progress work.

Second, we did not collect any data on the physical outcomes of the girth augmentation, such as girth measurements before and after the procedure, as we did not expect the men themselves to accurately recall these measurements. Further, owing to the anonymous data collection, which was performed independently of the treating clinics via the first author (G.S.), we could not match men's responses with their clinical records. Nevertheless, the fact that the treating medical practitioners were not involved in data collection in any capacity, thus potentially reducing response bias,⁴⁴ is a significant strength of our study. Our previous research suggests that an injection total of 15 to 25 mL of HA will usually result in a girth increase of approximately 2.5 cm when flaccid and 1.3 cm when erect.⁹ An important consideration is that a larger increase in penile girth size may not necessarily translate to greater psychological benefits for the patient, and so a broad range of outcomes, physical, psychological, and sexual, should be examined in future outcome studies.

A third limitation of our study was that the sample size was relatively small for the quantitative phase, particularly the sexual relationship analysis, as not all men were involved in relationships before or after augmentation. As a result, we did not have sufficient statistical power to detect small effects. Smaller sample sizes in psychosocial research in cosmetic surgery settings are a noted common issue,³³ particularly with more sensitive procedures such as penile augmentation.⁴⁵ The qualitative phase involved a smaller group of men; again, however, qualitative research is not intended to yield a "representative" sample like a quantitative study.⁴⁶ Instead, coherence of themes among participants is important, and that was evident in our qualitative phase. It is possible that there was a bias in our sample toward men who were more satisfied with their girth augmentation outcomes. However, 12% of men felt sufficiently comfortable, potentially owing to the anonymous and independent nature of the data collection, to specifically outline the reasons for their dissatisfaction with procedural outcomes. Previous research suggests that individuals who participate in questionnaire studies

on intense topics are actually less likely to have had an extremely positive or extremely negative experience.^{46,47}

CONCLUSION

Notwithstanding these limitations, our study results have provided novel insights into the psychological and psychosexual outcomes of penile girth augmentation, using a unique mixed method approach, and thus provided an important platform for future research. We showed that men perceive that nonsurgical medical penile girth augmentation has a positive effect on their attitudes toward and distress surrounding their penis, as well as on their overall self-esteem. Some men added in the interviews that they no longer felt anxious in situations in which their penis could potentially be viewed by others. There were no overall positive effects on men's sexual relationships; however, the men who were interviewed generally indicated that they were more confident to initiate sex with a partner. Our study results will potentially assist clinicians in their discussions with men who are concerned about their penis size and are seeking penile augmentation.

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Supplementary Material

This article contains supplementary material located online at www.aestheticsurgeryjournal.com.

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