



Girth Maxx and Other Methods of Penile Augmentation: Clinical Outcomes and Complications: A Retrospective Descriptive Study with Published Implant Comparators

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Abstract: Background: Penile augmentation methods differ in durability, reversibility and treatment burden. We described circumference change, satisfaction and complications after three injection protocols and placed these findings alongside published implant outcomes. Methods: Retrospective cohorts comprised hyaluronic acid (HA; 214 patients), an HA-poly-L-lactic acid combination (Girth Maxx; 183) and Powerfill (32). Published Peniflex (232) and Penogrande (23) cohorts provided surgical context. Crossovers accounted for 19 repeated group memberships. Injection outcomes included clinician-measured flaccid midshaft circumference and a patient-reported satisfaction composite. Results were analysed descriptively using visit-specific denominators and Wilson 95% confidence intervals (CIs). Results: After an initial 20-mL HA injection, mean circumference gains at 2, 6 and 12 months were 2.10, 1.76 and 0.21 cm. At 12 months, 67/102 HA respondents were satisfied (65.7%; 95% CI 56.1-74.2). Girth Maxx satisfaction was 159/165 at the designated two-month visit and 141/144 at 10-12 months (97.9%; 95% CI 94.1-99.3). Mean retained gains were 1.30 cm at approximately 12 months and 0.80 cm at 24 months in subsets assessed before full-volume retreatment. Powerfill gains were 2.54 cm at two months and 1.84 cm at one year; 22/27 respondents were satisfied at one year (81.5%; 95% CI 63.3-91.8). Recorded complications included HA irregularity and migration, 14 Girth Maxx contour complications and five marked inflammatory episodes after Powerfill. Implant results involved different measurement states and concomitant lengthening procedures. Conclusions: HA offered a straightforward, modifiable approach but limited persistence. Girth Maxx showed a favourable observed balance of satisfaction and contour outcomes. Powerfill complications warrant caution despite persistence. Implants offer a long-term surgical option. These observational findings require prospective confirmation.

Keywords: Hyaluronic Acid, Polylactic Acid, Patient Satisfaction, Treatment Outcome, Postoperative Complications, Penile Augmentation.

INTRODUCTION

Patients seeking penile augmentation differ in their expectations of size, tissue consistency, duration and recovery. A satisfactory result therefore depends on more than circumference gain. Repeat injections, contour correction and surgical complications may influence satisfaction even when enlargement is achieved.

European Association of Urology guidance and the Sexual Medicine Society of North America position statement emphasise counselling, psychological assessment and the

limited evidence for cosmetic penile enhancement. Subcutaneous implants remain an area of particular uncertainty. [1,2] Randomised studies have investigated hyaluronic acid (HA) and polylactic acid fillers, but their findings are specific to the formulations and protocols tested. [3,4] A prospective study of 301 men also showed that greater augmentation did not necessarily produce greater satisfaction. [5]

We describe outcomes after HA, a combined HA-poly-L-lactic acid (PLLA) procedure termed Girth Maxx, and Powerfill. Previously published Peniflex and Penogrande results provide surgical context. The aim was to assess observed persistence, satisfaction and corrective burden and to identify practical considerations for patient counselling.

METHODS

Study Population

This retrospective descriptive analysis used aggregate injection summaries extracted from clinical records by the treating clinician, together with published implant data. HA treatment was performed during 2016-2026, Girth Maxx during 2022-2026 and the selected Powerfill treatments during 2018-2024. The clinical data cut-off was 14 October 2026. No prospective sample-size calculation was performed; the analysis used available eligible records.

HA and Girth Maxx were performed in Ukraine (Dievo and Medlife, Kyiv; Reshon and Eviva, Kharkiv), Poland (Sonokard and Arsmedis, Wroclaw), Dubai (MedPalm, Quttainah Specialised Hospital and Yugen Care) and Moldova (GoldenMed, Chisinau). Initial Powerfill treatment occurred in Ukraine, with some later corrections in Poland or Dubai. The clinician-reported injection population was aged 19-62 years, with baseline flaccid circumference of 6-11 cm; group-specific distributions were unavailable.

Table 1: Study cohorts

Intervention	N	Period and exposure	Analysis population
HA	214	2016-2026; 195 initial 20-mL and 19 initial 10-mL injections	Efficacy: 20-mL subgroup; safety: full cohort
Girth Maxx	183	2022-2026; nominal 20-mL HA-PLLA combination	Includes 74 prior HA recipients; excludes local correction after Powerfill
Powerfill	32	2018-2024; 29 received 1 g total powder; three reduced quantities	Primary-treatment follow-up; other polylactic acid brands excluded
Peniflex	232	2017-2025; published solid implant series [7]	Historical comparator; concomitant ligamentotomy and stretching
Penogrande	23	2017-2025; published inflatable extracorporeal implant series [7]	Historical comparator; concomitant ligamentotomy and stretching

Clinical assessment excluded unrealistic expectations, significant psychiatric illness, active local disease, phimosis, uncontrolled diabetes and deformity or other illness likely to compromise outcomes. Suitability was assessed by clinical interview. Patients could become eligible after correction of a reversible contraindication. Baseline circumcision was approximately 47% across filler recipients and 60% in Girth Maxx, without exact recoverable counts. All implant recipients were circumcised.

The five cohorts contained 684 treatment-group entries representing 665 reported unique individuals (Table 1). Crossovers were HA to Girth Maxx (seven), HA to Peniflex (ten) and HA to Penogrande (two). No triple memberships were reported. Five Powerfill recipients underwent subsequent local HA-PLLA correction but were not included in the 183-patient Girth Maxx cohort. The three injection groups therefore contained 429 group entries representing 422 unique injection recipients. Screening and exclusion totals were unavailable, and consecutive recruitment could not be confirmed.

HA, hyaluronic acid; PLLA, poly-L-lactic acid. The 684 group entries represent 665 unique individuals: seven HA→Girth Maxx, ten HA→Peniflex and two HA→Penogrande repeated memberships. Five Powerfill recipients underwent local hybrid correction without joining the Girth Maxx cohort. No triple memberships were reported.

Injection Procedures

Of 214 HA recipients, 195 initially received 20 mL and 19 received 10 mL. HYAcrop MLF2 was the predominant product, with other dense HA body fillers also used. Follow-up efficacy summaries concern the initial 20-mL subgroup; the full cohort contributes safety observations.

The nominal Girth Maxx protocol combined 10 mL HA with 210 mg PLLA suspended in 10 mL saline, producing approximately 20 mL after syringe-to-syringe mixing. PLLA was supplied as GANA V (119 patients) or Lanluma V (64). Both presentations contained 210 mg PLLA within 520 mg total powder per vial. Lanluma V packaging identified GANA R&D Co., Ltd., South Korea, as manufacturer and Sinclair Pharmaceuticals Ltd., United Kingdom, as distributor; the GANA V supplier specification confirmed the same nominal PLLA and powder masses. Complete product equivalence was not independently tested. [6] The recorded preparation was approximately two minutes for suspension and one minute for mixing with HA, followed by immediate injection. This describes the actual clinical protocol, separately from manufacturer reconstitution instructions.

Girth Maxx included 74 patients previously treated with HA: 67 elsewhere and seven within the present HA cohort. The interval was 5-12 months, averaging 7.5 months. Residual HA could remain, assessed by inspection and palpation. Thirteen patients underwent preparatory treatment of nodules: twelve previously treated elsewhere and one within the HA cohort. One vial each of PBSerum Drain and PBSerum Smooth (without the Plus designation) were combined in one syringe for focal enzyme treatment, followed by Girth Maxx after 3-7 days. Product-specific enzyme activities and the historical instructions for use were not available for retrospective verification; this is a report of observed practice, not a recommendation for an established rescue protocol.

Powerfill was analysed separately from other polylactic acid brands. Twenty-nine patients received 1 g total product powder, including excipients, and three received 600, 700 or 800 mg of the same powder. The preparation used 20 mL saline and 10 mL 2% lidocaine, with approximately 15 minutes of preparation. These masses do not denote pure polymer; the active polymer fraction and stereochemistry were not independently verified.

Injection used a 22-G access needle and a 22-G, 75-mm cannula, with material distributed along the shaft between dartos and Buck fasciae, predominantly dorsolaterally. Procedures took place under aseptic outpatient conditions. Recorded antibiotic prophylaxis

was levofloxacin 500 mg daily or cefuroxime axetil 500 mg twice daily on the procedure day and the following day. A compression dressing was applied. Girth Maxx aftercare specified compression for 1-3 days and avoidance of sex, strenuous activity and tight clothing for seven days; HA aftercare specified approximately two weeks of sexual abstinence.

Outcomes and Analysis

Circumference was measured by the clinician at the midshaft in the flaccid state before treatment and at available follow-up visits. Proximal and distal assessments evaluated contour. Girth Maxx visible length was measured from pubic skin to glans tip without bone pressure at approximately two months. Incomplete patient-measured erect dimensions were not combined with the principal circumference outcome.

Injection satisfaction required positive patient reports in three domains: expected circumference gain; symmetrical, even contour; and improved sexual pleasure for the patient and partner as perceived by the patient. Partners were not independently surveyed. This binary composite was not a validated questionnaire. Complications and further procedures were extracted retrospectively; event categories could overlap.

HA efficacy denominators excluded additional injections before the visit. Girth Maxx satisfaction included available respondents; dimensional subsets at 12 and 24 months excluded earlier full-volume augmentation but allowed small 5-7-mL contour corrections reported not to alter midshaft circumference. Powerfill means concerned primary treatment before further augmentation or correction.

Results are descriptive. Satisfaction proportions have two-sided Wilson 95% CIs, calculated using Python 3.12.14. No missing outcomes were imputed. Standard deviations were unavailable for injection measurements and were not estimated from sample size. Unequal follow-up, crossovers and baseline differences precluded reliable between-group significance testing. The published implant observations concern procedures performed during 2017-2025, as confirmed by the authors, with different satisfaction measures and concomitant ligamentotomy and stretching. [7] No adjusted models, interaction tests or sensitivity analyses were performed because patient-level data were unavailable.

RESULTS

Circumference and Satisfaction

Table 2 presents injection outcomes using the available denominator at each visit. After an initial 20-mL HA treatment, mean circumference gain declined from 2.10 cm at two months to 0.21 cm at one year. At one year, 67/102 respondents were satisfied. All 35 dissatisfied respondents cited limited persistence and the cost or procedural burden of further injections; some also described residual contour concerns.

Immediate circumference gain after 20 mL HA or Girth Maxx was approximately 2 cm, with a reported individual range of 1.7-2.3 cm. The nominal two-month Girth Maxx assessment initially included 169 respondents, of whom 163 were satisfied. Four assessments actually occurred at 10 days and 2, 3 and 7 weeks, before another 20-mL injection; all four

patients were satisfied. Separating these observations left 159/165 satisfied at the designated two-month visit.

Girth Maxx satisfaction was 141/144 at 10-12 months and 105/106 at 24 months. Mean retained circumference gain before full-volume retreatment was 1.30 cm at approximately one year (n=123) and 0.80 cm at two years (n=97). Mean visible flaccid length gain was 1.7 cm among the 169 patients assessed at early follow-up, including the four earlier assessments described above. Clinical photographs are presented in Figure 1.

Forty-three Girth Maxx recipients received a further 20 mL during the first year, including 25 by six months, primarily to obtain additional enlargement. The earliest repeat injection was at 10 days. The mean immediate increment after this injection was 1.67 cm relative to the pre-repeat measurement. At 10-12 months, 41/144 respondents wanted additional material. At 24 months, 74/106 received 20-40 mL after the assessment as maintenance treatment. Satisfaction and a request for further volume were therefore compatible outcomes.

Powerfill mean gains were 2.54 cm at two months (n=31) and 1.84 cm at one year (n=27). Satisfaction was 26/31 and 22/27, respectively. These visit samples were not complete paired cohorts.

Table 2: Injection outcomes by assessment

Group	Assessment	Satisfied surveyed /	Satisfaction % (95% CI)	Mean girth gain cm
HA	2 months	123/156	78.8% (71.8-84.5)	2.10
HA	6 months	101/124	81.5% (73.7-87.3)	1.76
HA	12 months	67/102	65.7% (56.1-74.2)	0.21
Girth Maxx	Designated 2-month visit	159/165	96.4% (92.3-98.3)	NR
Girth Maxx	10-12 months	141/144	97.9% (94.1-99.3)	1.30 (n=123)
Girth Maxx	24 months	105/106	99.1% (94.8-99.8)	0.80 (n=97)
Powerfill	2 months	26/31	83.9% (67.4-92.9)	2.54
Powerfill	12 months	22/27	81.5% (63.3-91.8)	1.84

Girth is clinician-measured flaccid midshaft circumference. CI, Wilson confidence interval; NR, no exact mean reported. Four earlier Girth Maxx assessments at 10 days and 2, 3 and 7 weeks (all satisfied) are separate from the designated two-month row; the combined early count is 163/169. Girth Maxx 12- and 24-month dimensional subsets exclude full-volume retreatment but permit small contour corrections; satisfaction denominators include available respondents. HA means concern initial 20-mL treatment without intervening injections. Powerfill means follow primary treatment. Standard deviations were unavailable; visit samples differ.

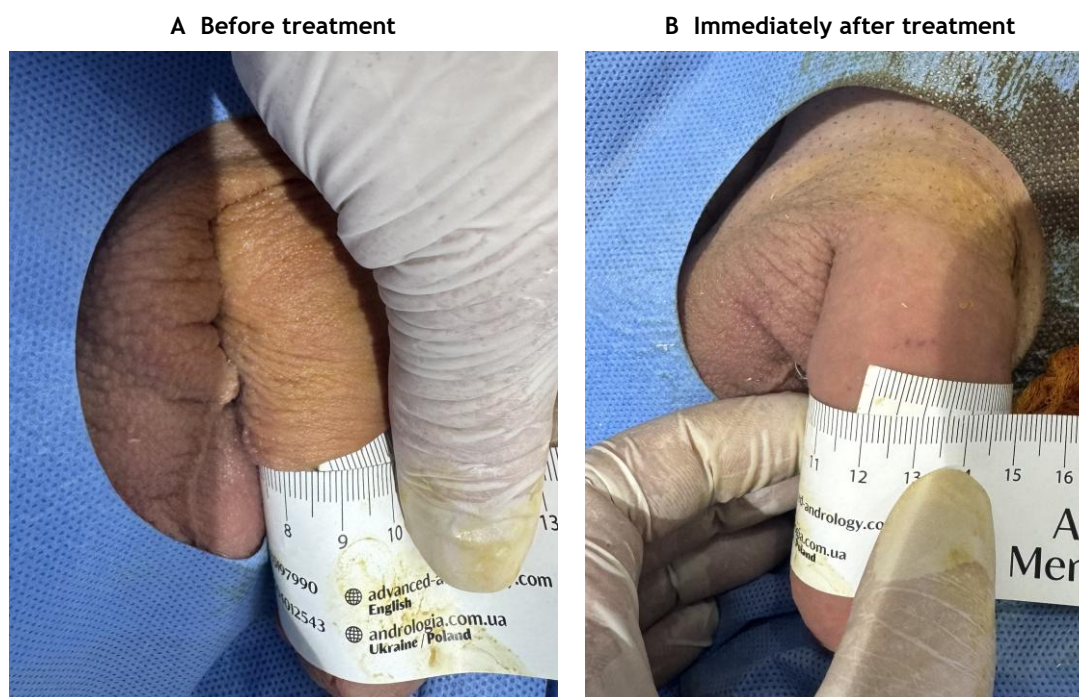


Figure 1: Penile augmentation with Girth Maxx. (A) Before treatment. (B) Immediately after the procedure. Circumferential measuring tapes are shown in both panels. The immediate postprocedural appearance does not establish the long-term retained result.

Complications and Corrective Procedures

Table 3 summarises recorded events. HA observations included irregularity in 24 patients, migration in 13 and enzymatic correction in 13. Two inflammatory episodes at approximately two weeks resolved after hyaluronidase and antibacterial treatment; infection was not established or excluded. Fourteen patients underwent circumcision, twelve for impaired foreskin retraction and two for appearance concerns.

Fourteen Girth Maxx patients had contour-related complications: seven irregularities, three migrations and four firm nodules. Eleven received small 5-7-mL additions and three enzyme-based correction; resolution was reported in all fourteen. The four early retreatment cases were already included in this total. Seven patients subsequently underwent circumcision, six for impaired retraction and one for appearance concerns.

Seven Powerfill recipients developed firm protrusions or deformity; five received local 5-10-mL HA-PLLA correction, including one who also received enzymes. These patients remained in the Powerfill cohort and were not counted in Girth Maxx. Five experienced marked inflammation between two weeks and two years. One patient with material discharge had a negative culture, underwent evacuation and single-suture closure, and healed. Two episodes resolved spontaneously; two recurrent cases required circumcision with substantial excision of material from midshaft and periglans regions. A sterile mechanism was suspected but not proven.

Six Powerfill patients reported erect length reduction without standardised measurement: approximately 1 cm in three after marked inflammation, and approximately

0.5 cm in three without a marked episode. Nine underwent circumcision for retraction difficulty: five after primary treatment, including the two excision cases, and four after additional injections 1-2 years later. This total spans repeated exposure. No necrosis or sensory loss was reported in the injection cohorts.

Table 3: Recorded injection complications and subsequent procedures

Group	Event or procedure	n / cohort (%)	Clinical detail
HA	Irregularity	24/214 (11.2)	May overlap migration and correction
HA	Migration	13/214 (6.1)	Overlap not quantified
HA	Enzymatic correction	13/214 (6.1)	Includes two inflammatory episodes and one later pre-hybrid correction
HA	Inflammation	2/214 (0.9)	Resolved after hyaluronidase and antibacterial treatment
HA	Subsequent circumcision	14/214 (6.5)	12 retraction difficulty; two appearance concerns
Girth Maxx	Unique contour complications	14/183 (7.7)	Seven irregularities, three migrations, four firm nodules
Girth Maxx	Correction of these events	11 additions; three enzyme corrections	Small additions 5-7 mL; resolution reported in all fourteen
Girth Maxx	Subsequent circumcision	7/183 (3.8)	Six retraction difficulty; one appearance concern
Powerfill	Firm protrusions or deformity	7/32 (21.9)	Five received local 5-10 mL HA-PLLA correction; one also enzymes
Powerfill	Marked inflammation	5/32 (15.6)	Two underwent circumcision with substantial material excision
Powerfill	Reported erect shortening	6/32 (18.8)	Patient-reported; three $\approx$ 1 cm, three $\approx$ 0.5 cm
Powerfill	Subsequent circumcision	9/32 (28.1)	Five after primary treatment; four after further injections

Categories overlap and cannot be summed into an overall adverse-event rate. The four early Girth Maxx retreatment cases are already among the fourteen contour complications. Circumcision percentages use full cohorts, not the unknown number initially uncircumcised; the Powerfill total spans repeated treatment. No necrosis or sensory loss was reported; ascertainment was retrospective.

Published Implant Outcomes

Table 4 summarises the published implant findings. [7] Flaccid, erect and inflated dimensions are kept distinct. All recipients also underwent ligamentotomy and postoperative stretching, limiting attribution of length change to the implant alone. The Penogrande cohort included 14 patients with partial erectile dysfunction, eight with documented veno-occlusive dysfunction. The authors confirmed 211 satisfied Peniflex recipients among 232 patients, giving a recalculated satisfaction proportion of 91.0%.

Table 4: Published implant outcomes [7]

Outcome	Peniflex n=232	Penogrande n=23
Stretched length gain cm	1.47 ± 0.52	3.11 ± 0.83
Flaccid girth gain cm	3.8 ± 0.5	4.2 ± 0.7
Erect or inflated girth gain cm	4.9 ± 0.61 (erect)	6.7 ± 0.97 (inflated)
Satisfied at 12 months	211/232 (91.0%)*	21 (91.3%)
Seroma requiring aspiration	87 (37.5%)	1 (4.3%)
Displacement / prolapse / decreased erection	5 / 1 / 1	0 / 0 / 0
Infected haematoma / pump-limiting fibrosis	0 / 0	1 / 1
Pain at full inflation	Not applicable	2 (8.7%)
Reoperation	7 (3.0%)	2 (8.7%)

Values with ± reproduce published mean ± standard deviation. All recipients also underwent ligamentotomy and stretching. *Peniflex satisfaction was recalculated as 211/232=91.0% after author confirmation of the numerator and denominator; the original publication printed 90.1%. Measurement states and satisfaction instruments differ from injection outcomes. Complication categories may overlap. No new between-group tests were performed.

DISCUSSION

The principal clinical finding was the favourable observed balance of satisfaction, consistency and contour outcomes with Girth Maxx. HA provided a straightforward initial augmentation but had limitations in softness, migration and persistence. Powerfill offered a denser and more persistent result, accompanied by delayed inflammation, contour problems and self-reported shortening. These patterns are relevant to counselling, although the design does not establish comparative superiority.

The findings should be interpreted alongside formulation-specific HA and polylactic acid trials. [3,4] Patient descriptions of a firmer, more muscle-like feel after Girth Maxx may help explain its appeal, but consistency was not assessed with a validated scale. Earlier HA exposure and residual material distinguish many Girth Maxx recipients from a treatment-naïve population. Identical nominal polymer doses or a common manufacturer do not establish clinical equivalence of products or validate mixing them with HA.

Further enlargement, maintenance after resorption and correction of an adverse event should be reported separately. A patient can be satisfied yet request more volume, whereas a successful correction still represents an additional intervention. This distinction is particularly relevant to the 43 early Girth Maxx additions and the later maintenance injections. Satisfaction after previous additions should not be presented as the effect of a single initial injection.

Foreskin problems occurred after all three injection approaches. In the author's practice, circumcision was recommended but not mandatory before up to 20 mL HA or Girth Maxx when retraction was easy, and was required before polylactic acid-only treatment or larger single-session volumes. This is a local policy rather than a threshold validated by these data. Exact uncircumcised denominators were unavailable, preventing a comparison

of risk by circumcision status. The Powerfill excision cases also demonstrate that some complications required more than routine circumcision.

Volume and Patient Counselling

A cylindrical approximation helps explain why the same filler volume produces different circumference gains in different shaft lengths. For treated length L , initial circumference C_0 and circumference increase ΔC , the added volume is:

$$V = L[(C_0 + \Delta C)^2 - C_0^2]/(4\pi)$$

Lengths are in centimetres and volume in cm^3 , equivalent to mL; all dimensions must refer to the same anatomical state. The clinician's illustrative ranges for a shaft approximately 7 cm flaccid and 10 cm stretched were 8-10 mL for +1 cm circumference, 20-23 mL for +2 cm, 35-40 mL for +3 cm and 55-60 mL for +4 cm. A quadratic fit to these range midpoints gives $V \approx 7.10\Delta C + 1.81(\Delta C)^2$. These are geometric illustrations outside the restricted initial-dose efficacy cohorts, not validated dosing recommendations or safety limits.

Counselling should first address clinical and psychological suitability, then desired duration, willingness to repeat treatment, modifiability, preferred consistency and tolerance for surgery. The present data do not validate a brand-based allocation algorithm. Erectile symptoms require standard assessment; the small Penogrande subgroup does not establish a routine treatment pathway for mild erectile dysfunction. [1,2]

Limitations

The main limitations are retrospective aggregate extraction, incomplete baseline information, uncertain consecutive recruitment, variable follow-up and crossover. Respondents and dimensional subsets changed over time, and retreatment exclusions may introduce selection bias. Confidence intervals reflect uncertainty among respondents rather than correction for missing follow-up. Patient-level records were not systematised for paired analysis or adjustment. Complications were not prospectively adjudicated, and absent recorded events do not establish zero risk. Suspected sterile inflammation and reported activity-related triggers were not proven mechanisms. Preferential follow-up by satisfied patients could inflate satisfaction estimates; its magnitude cannot be quantified. Findings from selected private-practice populations and specific formulations may not generalise to other settings. The implant cohorts were previously published, used different outcome instruments and involved concomitant surgery. Their reuse is explicitly identified. The unvalidated satisfaction composite, lack of independent partner assessment, formulation differences and authors' intellectual-property interests further support the need for independent prospective investigation.

CONCLUSIONS

HA injection is a relatively straightforward, modifiable approach to girth augmentation, with a generally favourable observed safety profile in this series. Its soft consistency, susceptibility to migration and limited persistence can reduce satisfaction. Patients should

anticipate maintenance, often discussed at intervals of 6-12 months, rather than a permanent result; these intervals were not evaluated as a standard retreatment schedule.

Girth Maxx showed a favourable observed balance of high satisfaction, firmer patient-perceived consistency and limited migration among the injection approaches described. Recorded contour complications were successfully corrected. These findings make it a promising option for further study, while its PLLA component means that correction should not be equated with complete enzymatic reversibility. A lower overall complication risk cannot be established without complete, harmonised patient-level event data.

Powerfill provided persistent augmentation and firmness but was associated with delayed inflammation, deformity, self-reported erect shortening and, in some patients, material excision. These findings do not support its designation as a gold standard for injectable penile augmentation.

Solid silicone and inflatable augmentation implants represent an evolving direction in aesthetic urology for selected patients seeking a long-term solution. Their potential permanence must be weighed against surgery, device-specific complications and possible revision or removal. Treatment selection should reflect patient expectations and clinical suitability, with the present observations informing discussion rather than prescribing a validated allocation algorithm.

DECLARATIONS

Ethics Approval

The retrospective analysis of anonymised clinical data was approved by the Commission on Ethics and Bioethics of the Educational and Scientific Medical Institute, National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine (Protocol No. 22/2026, 16 October 2026). This decision concerns retrospective review and publication of clinical data; it does not constitute prospective approval of treatments performed before that date.

Consent to Participate

Patients signed consent for clinical procedures and clinical data recording. The retrospective analysis used anonymised clinical information; no additional intervention or contact was required for this analysis.

Consent to Publish

Written informed consent for publication of the clinical photographs was obtained from the patient.

Funding

The authors report no external funding or free study products or implants.

Competing Interests

Ivan Aguilar reports a Peniflex-related patent. Oleksandr Knigavko reports a Ukrainian Penogrande-related patent and applications in the United States and China. Both authors participated in clinical use of the interventions described.

Data Availability

De-identified data may be available from the corresponding author on reasonable request, subject to ethics approval, privacy requirements and availability of records.

Author Contributions

Oleksandr Knigavko: Conceptualization, Methodology, Investigation, Data curation, Writing - original draft. Ivan Aguilar: Investigation, Resources, Writing - review and editing. Both authors approved the manuscript for publication.

Prior Publication and Registration

The 255 implant entries and associated results were previously published in reference 7 and are used here as contextual comparators. This retrospective analysis was not a prospectively registered clinical trial.

Artificial Intelligence Disclosure

ChatGPT (OpenAI; GPT-6, accessed 16 October 2026) assisted with manuscript organisation, English editing and calculation scripting. The authors are responsible for verification of the data, references and interpretations and for the submitted content. AI was not used to generate clinical observations or modify clinical image content.

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