REVIEW
Andrology

Doi: 10.4274/jus.galenos.2025.2025-4-2
J Urol Surg

Genital Cosmetic Procedures in Urology

Özer Ural Çakıcı[1], Abdulmecit Yavuz[2], Çağrı Doğan[3], Tahsin Turunç[4]

[1]Private Clinic, Ankara, Turkiye
[2]İstinye University Faculty of Medicine, Department of Urology, İstanbul, Turkiye
[3]Namık Kemal University Faculty of Medicine, Department of Urology, Tekirdağ, Turkiye
[4]UroCentre Urology Clinic, Adana, Turkiye

Abstract

In recent years, genital cosmetic procedures have been increasing in the field of Andrology. The most common of these procedures are penis lengthening and girth enhancement. In this review, we have examined the studies conducted on penile reconstruction surgeries, including the details of surgical techniques as well as complications and methodological shortcomings with an emphasis on possible bias that might enormously affect the published literature. Although we have observed that these procedures have become increasingly popular in recent years due to the lack of sufficient studies on these surgeries, we believe that caution should be exercised and patient selection should be meticulous.

Keywords: Genital cosmetic, penile lengthening, penile girth enhancement, penile augmentation procedures

Introduction

Although aestheticism, has a long history that dates back to ancient times, aesthetic and plastic surgery's dominance as an independent branch is a matter of modern medicine (1). With advancements in medical approaches, aesthetic interventions have become more common and widely accepted and are creating a significant market in the medical field (2). Female genital aesthetics has established its role through well-documented procedures, demonstrating a significant positive impact on an individual's well-being following successful surgery (3,4). However, male genital aesthetics has faced significant opposition from authors and scientific associations due to low patient satisfaction rates and high complication rates. In this review, we aim to put together the available evidence and integrate it with the authors' experience, predict a possible outcome for the rising demand for male genital augmentation procedures, and bring the collective opinion of the Andrology Working Group of the Society of Urological Surgery in Turkiye (5).

Available Evidence, Classification, and Reporting

The evidence on male genital augmentation procedures remains limited in the medical literature, often highlighting complications from unlicensed and illegitimate interventions, with a scientific consensus yet to be established (6). Since its introduction to the literature in the 1980s, this subject has proven challenging for establishing strong evidence. Reflecting the tough nature of the proposed claims, cutting-edge literature consists of a significant number of reviews and society statements on male genital aesthetic surgery (7-9). In this review, we went through the available evidence based on the procedure and grouped it according to its evidence grade for each unique procedure or approach. Although the review has no aim of complete illustration of the surgical points, à là un atlas chirurgical, we also summarized the essential steps and possible devastating complications of the main surgical approaches that are often used in operative procedures of male genital aesthetic interventions.

Unique Situation of Penile Augmentation Surgery in Terms of Clinical Evidence

Despite worldwide recognition of modern digital libraries and numerous studies on a broad variety of conditions, penile augmentation still endures significant discrepancies between interventions performed in the healthcare sector and the reporting of their results. For most fields (i.e., oncology or stone disease), the evidence comes from the highest volume centres or

Correspondence: Özer Ural Çakıcı MD, Private Clinic, Ankara, Turkiye
E-mail: ozerural@hotmail.com **ORCID-ID:** orcid.org/0000-0001-7942-2748
Received: 02.04.2025 **Accepted:** 23.06.2025 **Epub:** 30.06.2025

Cite this article as: Çakıcı ÖU, Yavuz A, Doğan Ç, Turunç T. Genital cosmetic procedures in urology. J Urol Surg. [Epub Ahead of Print]

individuals; however, for male genital aesthetics, there is a vast gap between the providers and the reporters. While preparing this review, we observed that many surgeons worldwide, known for performing high-volume cases in this field, have not reported their outcomes. We also identify another unique aspect of male genital aesthetics: many surgeons tend to abandon these interventions at some point in their careers, a trend that contrasts with other subspecialties such as paediatric urology, endourology, or urooncology.

Penile Lengthening Procedures

Penile Lengthening by Ligament Release and Dorsal Skin Advancement Techniques

The operation is usually performed under general anaesthesia; however, other options may also be available depending on the preferences of the anaesthesiologist and surgical candidate. An inverted V incision is carried out and anatomical layers are divided with control of the bleeders by cautery, until rectus fascia and periosteum of the pubic bone are distinguished. The dissection plane is further deepened under the pubic symphysis with extreme caution against possible harm to dorsal penile structures, especially arteries and nerves. A venous injury is generally more manageable, though it can still be significantly disruptive. After the complete visualization of the penile suspensory ligament complex, the main component is divided. Despite there being no consensus on foreseeing the possible benefit of length after this manoeuvre, magnetic resonance imaging seems a promising modality in predicting how much advancement would be possible with division of the ligament. After careful dissection of the main suspensory ligament of the penis and control of the bleeders, de-novo anatomical space under the pubic symphysis should be filled to avoid leaving a dead space in the surgical area. Either a native tissue, such as fat, spermatic cords, or a subcutaneous flap formed from excess skin, or a bio-compatible material, for instance a testis prosthesis or an acellular matrix sheet, can be used to fill the relevant space. Closure of the anatomical layers without tension is mandatory for a favourable result (Figures 1a to 1h).

The inverted V-Y plasty has long been the main option for penile lengthening and is well-described in plastic surgery literature (10,11). From an anatomical perspective, the procedure has potential benefits, namely increasing the visible proportion of the penis. However, the results appear to be underwhelming. Li et al. (12) reported an average of 1.3 cm of lengthening in the length of the stretched penis, with a risk of 1 cm of shortening in some patients. Deskoulidi and Caminer (13) reported enhanced self-esteem in all their subjects after V-Y plasty with suspensory ligament release, resulting in 2 to 4 cm of lengthening in the flaccid state. The authors suggested that the procedure has favorable results in experienced hands. Both studies hold significant importance, as they report results of men with normal penile length, which constitutes the main reason for penile enlargement procedures for aesthetic purposes (14).

The ligament release technique is also used in combination with penile prosthesis implantation, and the results are usually satisfactory (15). Given the remarkably high patient satisfaction reported in Borges' study (15), it is likely that the implant had a more significant influence on outcomes than the lengthening procedure alone. Some technical modifications of the suspensory ligament release, are also relevant for overcoming complications of the surgery. Cross-closing of the incision, filling the dead spaces with flaps, or insertion of biodegradable or biocompatible materials between the penis dorsum and pubic arch can be considered in this manner (16-19). All these variations aim to prevent tension during the skin closure and elimination of anatomical dead space, thereby preventing scar formation on the skin and/or re-attachment of the penis to the inferior side of the pubic bones, which are culprits of de novo penile shortening. The anatomy of the penile suspensory system has also attracted attention in accordance with the increasing demand for penile augmentation surgery. An unorthodox approach to suspensory ligament release is reported by Mertziotis et al. (20), who described a circumferential coronal incision resembling a circumcision. The incision prevented scarring, a common burden of the inverted V-Y plasty incision, and the results are quite satisfactory.

Contemporary anatomical studies also focused on the subject. Previously, Hoznek et al. (21) imaged the suspensory ligament complex of the penis using volunteers and further supported their findings with cadaveric dissections, and they clarified the role of the individual parts in the erection process. Currently, all contributors to the penile suspensory complex are better understood, and prediction of surgery outcomes is made possible using three-dimensional reconstruction (22-26). We think that the recent advancements in the penile suspensory ligament anatomy are quite fascinating as they reflect the increasing interest in male genital aesthetic surgery.

Complications of the procedure also draw attention and hold an important, albeit small, part of urological practice. Even though the loss of the anatomical leverage point, which results in a low-hanging penis and loss of acute angle during erection, is a well-known complication of suspensory ligament release; Ralph et al. (27) did not report any cases in their series that needed ligament repair after penile elongation surgery. However, suspensory ligament release is also known for high rates of complications that have necessitated admissions to tertiary healthcare centres and complex reconstructions (28,29). Overall, we can conclude that penile elongation with suspensory ligament release can be offered to candidates of surgery following the essential

ethical principles: setting realistic expectations, discussing potential complications, and aiming to benefit the patient and his well-being. We also want to indicate our opinion that the classical surgical approach should undergo improvements that account for special circumstances, such as short penile skin due to excessive circumcision. Moreover, concurrent interventions, such as prepubic liposuction and girth enhancement injections, should be better integrated into the surgical planning.

Penile Lengthening by Ventral Skin Adjustment and Correction of Scrotal Skin Web

The peno-scrotal corner portrays the inferior border of the penis. Thus, sharpening the angle of the corner and sliding the corner to a more caudal position resemble an extended penis. A wide scrotal skin web, which is usually a consequence of excessive removal of the ventral skin by circumcision, may also interfere with sexual mechanics. Correction can be achieved using Z-plasty, inverted V-Y plasty, skin removal, and primary closure (Figure 2a to 2e) (30-32,33). The procedure is also well-described as being performed in conjunction with penile prosthesis implantation (34,35). Satisfaction rates are noticeably high with all types of approaches for penoscrotal angle restoration. Candidates usually have anatomical condition at the time of admission, which is a major difference from those of penile lengthening surgery who have normal penile morphology (36,37). Based on this particularity of the candidates and high satisfaction rates, we hypothesize that the interventions may be less prone to medico-legal problems relative to suspensory ligament release. Considering all available evidence and our personal experience, we can conclude that penoscrotal reconstruction can be offered to patients who have an objective and documentable issue and are pursuing better cosmesis of the genitalia. The surgical approach should be determined by the surgeon based on the expectations of the patient and the feasibility of the patient's anatomy.

Complex Reconstruction Involving Massive Skin Removal, and Procedures Involving Graft or Flap Closure

Increased awareness of self-image, surge in obesity rates, rise in metabolic surgery, and advanced plastic surgery care, led to promising treatments for men including total abdominoplasty, panniculectomy, total grafting of the penile skin, as well as combined surgeries (11,38). It is not always possible to clearly distinguish between aesthetic and reconstructive procedures, as there are significant areas of overlap. On the other hand, we can propose that male genital surgery involving two distinct dissections, such as lower abdominal exposure via an inverted V, total penile degloving via a circumcision, implantation of foreign bodies, or any secondary and beyond procedures, can be considered complex interventions. For candidates who are

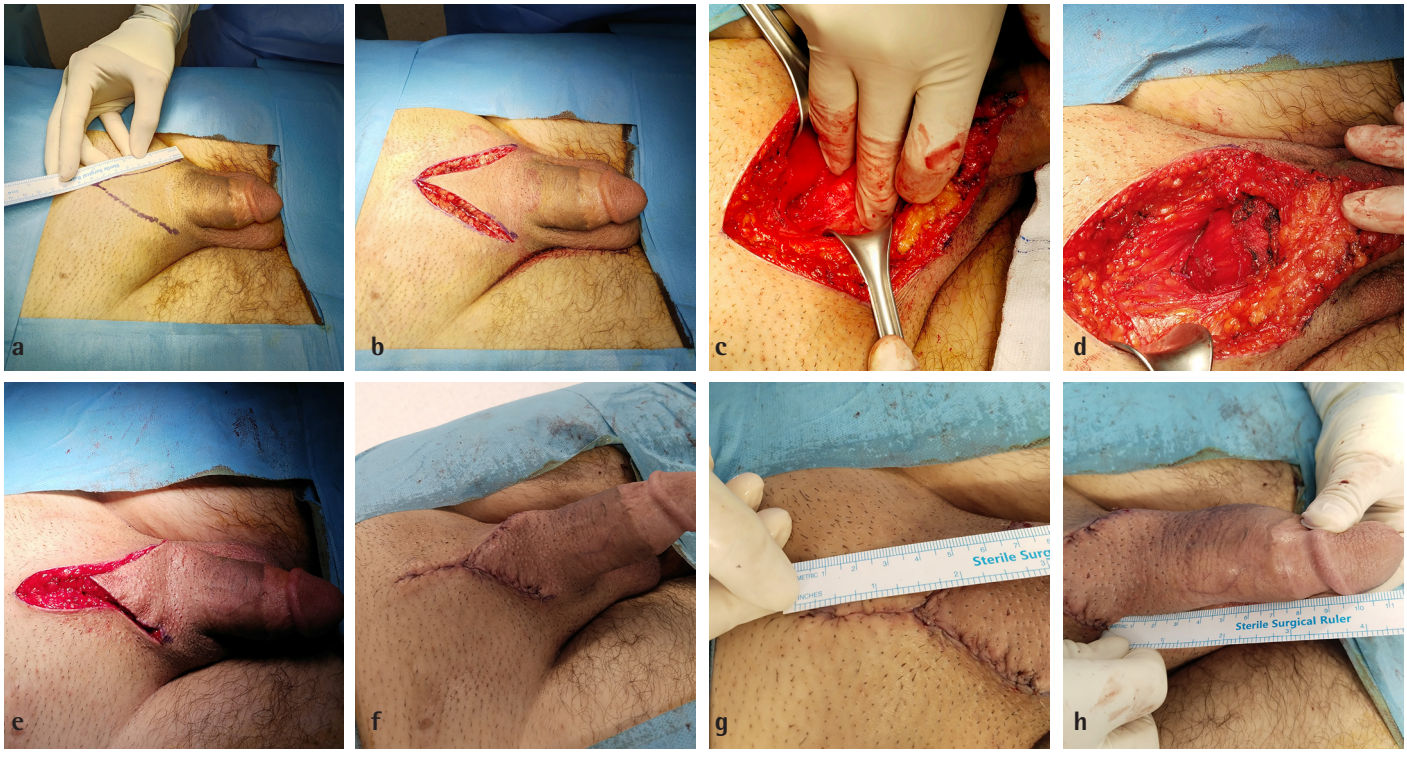

Figure 1a. Marking the skin where the inverted V incision will be made with a ruler and measuring its edges, **b.** Incising the skin and subcutaneous tissue, **c.** Release of the suspensory ligament, **d.** Appearance after cutting the suspensory ligament, **e.** Closing the inverted V incision in an inverted Y shape, **f.** Y-shaped skin suturing, **g.** Measurement of excess skin from the new incision, **h.** Measuring the length obtained from the penis skin

scheduled to undergo combined and extensive surgery, such as abdominoplasty, skin resection, or penile grafting or flap-based reconstruction, we suggest a multi-disciplinary evaluation, including a plastic surgery consultation and a precise pre-operative evaluation by an anaesthesiologist. Considering the condition of these candidates, the surgery can be regarded beyond the spectrum of pure aesthetic purposes; thus, we suggest that a decision process should aim to include the patient and the reconstructive surgery should be performed in experienced centres.

Penile Girth Enhancement Procedures

Penile Girth Enhancement Procedures Involving Dermal Grafts

Dermal and dermal-fat grafts are time-tested options for the reconstruction of tissue defects and have significant advantages since they are autologous grafts. Zhang et al. (39) implanted dermal grafts by first performing a suspensory ligament incision and then fixing the graft to the tunica albuginea after degloving of the penis. Their cohort was quite a young patient group; they reported an average of a 1.2 cm increase in penile girth during erection. Xu et al. (40) further confirmed these results with a similar mean girth benefit in two unique patient cohorts suffering from possible penile dysmorphophobia, and previous hypospadias surgery (41). Dermal grafts are also reported to be beneficial in reconstructive surgery for adults with a history of previous hypospadias surgery.

Considering the wide usage of dermal and dermal-fat grafts in plastic surgery for different kinds of tissue defects, one can clearly conclude that the procedure is safe, at least in the short term. Unfortunately, most studies lack long-term data. However, first-year satisfaction rates seem to be acceptable in the majority of papers. Most urologists are not familiar with the harvesting of dermal grafts. Thus, the procedure can be addressed through a multi-disciplinary approach. We can

Figure 2a. Marking of excess skin tissue in the anterior part of the penoscrotal region, **b.** Skin incision, **c.** Completion of excision of excess skin tissue, **d.** Anatomical closing of subcutaneous layers by sutures, **e.** Completion of the anterior phalloplasty procedure

Figure 3. Postoperative appearance just after a prepubic reduction, foreign material removal, penile skin excision and grafting on a young male who had undergone V-Y plasty penile lengthening and acellular matrix-based girth enhancement

conclude that dermal grafts are considered a time-tested option for penile girth enhancement procedures with an essential place in salvage surgery. Figure 3 shows a penile grafting procedure combined with pubic skin excision after a previous failed V-Y plasty and acellular matrix-involving girth enhancement. Based on the available case series, we can also conclude that dermal graft-based girth enhancement can be carried out in the same session with penile elongation procedures involving the penile suspensory ligament complex. Finally, we emphasize that dermal grafts are globally accepted for reconstructive surgery and endorsed by major sources in plastic surgery; thus, from a medicolegal point of view, as a material, dermal grafts seem to be one of the safest options, apart from the surgical procedure and its results.

Penile Girth Enhancement Procedures Involving Autologous Fat

Fat-injection based penile enhancement is extensively described in plastic surgery textbooks and, notwithstanding the alienation of urologists to the procedure, seems to have a solid place in common practice. The material is collected by liposuction through a sterile suction device. The gathered fat is thinned using a two-way syringe set and saline. The semi-viscose native jelly is injected just under the skin using a blunt tip cannula via a stab incision. The procedure can be a matter of a single, separate session, or can be carried out consequent to a lengthening procedure or cosmetic surgery that diminishes the belly fat (Figure 4a to 4e).

The intervention is quite popular due to its feasibility and recognition in aesthetic surgery practice. As we have stated, medicolegally, it is described in plastic surgery sources, thus, it can be accepted as a customary intervention. Despite its widespread use, the outcomes of penile enhancement procedures using autologous fat injections are not extensively reported in the literature. We suppose that the discordance is a result of the gap between the field practice, and contributions to the literature of the aesthetic surgery practitioners. Its complications, such as asymmetrical distribution of the fat deposits, are well-described and the cosmetic result may not be agreeable to the patients because of the loss of enhancement over time (28,42). Mortality is also reported because of systemic fat embolism (43).

Application of Dermal Fillers for Increasing the Penile Girth

Increased demand for minimally invasive options for cosmetic rejuvenation has led to outpatient injectable preparations comprising biocompatible materials. Hyaluronic acid (HA) has secured a solid place in clinical applications of cosmetology (44). Based on its wide usage, HA has been implemented in penile aesthetics mainly to add extra volume to the penile shaft (45). It is noteworthy that HA is a minimally invasive procedure that can be applied in an outpatient clinic setting compared to other penis thickening methods (Figure 5). HA based procedures provide a temporary enhancement, which can be considered both an advantage and a disadvantage.

It seems the scientific community has also accepted HA procedures quite well, which is evident in the number of published studies on using HA for penile augmentation. Kwak et al. (46) reported their feasibility study, which was performed on 50 patients, who underwent penile augmentation using HA dermal fillers because of subjective complaints of small penis size. Evaluating 41 out of 50 patients, they reported a mean of a 4 cm increase in girth that sustained over 18 months with an excellent safety profile. Further studies confirmed the safety and efficacy of penile girth enhancement by HA injections (47). HA injections are also used and reported to be successful in glans penis augmentation (48,49). Despite the tremendous market of penile girth enhancement, complications seem to be relatively low and manageable; however, dismal results are also possible, albeit rare (50,51).

The durability and mechanical behaviour of HA fillers in penile augmentation are strongly influenced by the type and concentration of the cross-linking agent used, 1,4-butanediol diglycidyl ether (BDDE). BDDE stabilizes the HA chains through covalent bonding, forming a three-dimensional network

Figure 4a. Measuring penis girth before the penile girth enhancement procedure, **b.** Removal of subcutaneous fat tissue from the belly with sterile liposuction device, **c.** Keeping the fat tissues obtained through liposuction in the syringe, **d.** Injecting diluted fatty tissues into the subcutaneous tissue of the penis using a syringe, **e.** Measuring penis girth after the penile girth enhancement procedure

that resists enzymatic breakdown. Fillers with higher BDDE concentrations demonstrate significantly greater durability with residence times extending up to 18-24 months. Therefore, the desired durability should be matched to the specific anatomical site and aesthetic goal. The BDDE cross-linking density of the filler should be selected accordingly. For instance, he penile shaft areas may benefit from moderately cross-linked fillers that balance pliability and longevity. Importantly, patients must be thoroughly informed about the expected duration, potential variability in outcomes, and the biodegradation profile of the selected filler material to ensure informed consent and optimize satisfaction (44,52,53).

Combining available scientific data, our personal experience, and observation of the male genital aesthetics market, we can conclude that dermal filler injections for penile girth enhancement are safe and effective options for candidates of penile aesthetic procedures. As providers, we think that urologists and plastic surgeons should carry out these interventions. Although the procedure is usually safe, proper informed consent, which includes the contemporary state of HA in the clinical guidelines, should be obtained.

Comparison of Different Dermal Fillers for Penile Augmentation Procedures

HA was compared to other fillers in well-conducted studies. Both Yang et al. (54) and Kim et al. (55) reported similar satisfaction rates of HA injections for penile augmentation when contrasted with polylactic acid injections. Kim et al. (55) also reported better augmentation by polymethyl methacrylate (PMA) compared to HA and PLA. Penile girth enhancement using PMA injections was also reported to be safe and successful by

Figure 5. Injection of hyaluronic acid under the skin of the penis with a syringe for penile girth enhancement procedures

Figure 6. Injection of hyaluronic acid into the glans penis with a syringe for glans penis augmentation

Casavantes et al. (56). Both studies agreed that dermal fillers for penile augmentation are safe, with extremely low adverse effects across all intervention arms.

Putting together the available evidence, we think that the choice of filler material should be based on the preference of the surgeon and approval of the local authorities.

Penile Augmentation Procedures Using Acellular Matrix Materials and Modifications

Biologically compatible acellular matrix scaffolds are available for clinical use with a wide variety of application areas. In terms of penile surgery, using acellular matrix grafts in Peyronie's Disease treatment is well-described and has become standard for most urologists. An effort to use acellular matrix scaffolds for penile girth enhancement also arose. Alei et al. (57) brought a proposed technique to the literature without any major complications and favourable psychosexual impacts. Tealab et al. (58) attempted a characteristic material for girth enhancement together with penile suspensory ligament division through dorsal inverted V incision and Y-plasty; unfortunately, their results were disappointing.

The clinical guidelines of the European Association of Urology classified acellular matrix scaffold-based penile augmentation procedures as experimental, which burdens the surgeon with a significant responsibility (59). As the authors, we think that acellular matrix procedures should not be considered as experimental, considering their time-tested usage in Peyronie's disease treatment and widely accepted benefits in wound care. On the other hand, we are unable to draw a conclusion about their role in penile girth enhancement surgery and think that associated procedures should be carefully carried out by a devoted clinical team experienced in penile reconstructive surgery. We also think that, regarding the safety profile and reversible nature of dermal fillers, acellular matrix-based enhancement procedures should not be offered as the first-line option for candidates of enhancement surgery.

Penile Augmentation Using Flaps

Notwithstanding their fundamental role in gender-reassignment phalloplasty, flap-based augmentation procedures did not become popular for cosmetic penile enhancement, likely because of their challenging nature. Virtually any muscle or musculocutaneous flap can be used for penile girth enhancement. A superficial circumflex artery and vein flap is reported to be successfully applied, and slightly more than 50% expansion of penile circumference is reported (60). From a surgical point of view, we propose vascularized flaps should provide substantial girth gain; however, the procedures are demanding and, unfortunately, most urologists lack such training. Therefore, flaps are not commonly considered primary options for cosmetic penile augmentation and are usually withheld for reconstructive tertiary interventions.

Penile Silicone Implants

Penile silicone sleeve implants, such as the Penuma® implant, have emerged as prominent options for penile augmentation. Additionally, other silicone-based devices, including the

Himplant® and similar sleeve-type implants, have expanded the range of available cosmetic solutions (61-64). These implants are intended primarily for aesthetic enhancement rather than functional correction, targeting men with normal erectile function who express dissatisfaction with flaccid penile dimensions. However, their rising popularity necessitates an evidence-based examination of their clinical outcomes and associated risks.

Silicone sleeve implants are typically inserted using either an infrapubic or lateral scrotal approach. Recent studies favoured the lateral scrotal approach due to lower revision and removal rates of the two approaches compared to the former method (65,66). Penile silicone implants are associated with consistent, measurable increases in penile dimensions. Multi-institutional studies indicate an average increase in flaccid penile length of approximately 4.1±1.5 cm (50% increase) and girth gains averaging 3.4±1.5 cm (37% increase). Retrospective studies report high patient satisfaction rates, often exceeding 70%, with significant enhancements in self-esteem and sexual confidence (67). Nevertheless, these outcomes must be interpreted cautiously, as most existing data are derived from retrospective analyses subject to selection and reporting biases, and it should be underlined that reported complications of Penuma® implant include seroma formation (2-12%), infection (1.3-3%), and implant displacement (up to 7%), de novo penile curvature, sexual dysfunction, and even disabling penile deformities (68,69).

Current guidelines from the Sexual Medicine Society of North America recommend deferring invasive cosmetic procedures in patients with unmanaged psychiatric conditions, highlighting the necessity for rigorous psychological screening. Furthermore, the European Association of Urology clinical guidelines caution against routine use of penile silicone implants, emphasizing the current limited evidence base and classifying these procedures as experimental due to inadequate long-term outcome data (59,70,71). Based on these cautions, we endorse the use of penile silicone implants, which should be offered to selected patients and preferably within clinical trial settings.

Glans Penis Augmentation Procedures

Augmentation of Glans Penis

The glans penis is a unique structure without any counterpart in the human body. It plays an essential role in sexual acts by possessing a large number of receptors and supporting erection through engorgement. Its role acting as a stream bed for the distal urethra is another peculiar function that is still not completely understood and revealed (72). Glans penis augmentation has become a matter of clinical practice due to its essential role and fundamental position. Glans augmentation in the treatment of premature ejaculation is also reported with satisfactory results; however, it is beyond the scope of our review (73).

There is considerable evidence on glans penis augmentation, including the techniques, clinical success, and complications. Although dermal fat grafts have also been proposed for glans augmentation, dermal fillers, with HA being quite common, seem to be used globally (74-76). The safety profile, clinical results, and availability of dermal fillers have already been discussed for penile augmentation, and the results are quite similar for glans augmentation. However, physicians should be aware that potential complications of glans augmentation, though rare, can be severe and may result in total loss of the organ (77).

Combining the available evidence, we can conclude that dermal fillers can be regarded as an option for glans penis augmentation for cosmetic purposes. We endorse using a minimal volume of fillers per session and dividing the total targeted amount of fillers into separate interventions to diminish the risk of necrosis as much as possible (Figure 6). We highly recommend early referral of the patient to a tertiary centre in case of glans necrosis.

A summary of outcomes and complications of representative studies from the available literature relevant to penile lengthening and/or girth enhancement surgery is given in Table 1.

Table 1. Summary of evidence among the reviewed literature with emphasis on representative studies for each penile augmentation procedure

Reference	No. of patients	Girth/ length	Technique	Mean gain in penile girth (cm)	Mean gain in penile length (cm)	Complications
Zhang et al. (39), 2016	17	Girth and length	Dermal free graft, ligamentolysis and V-Y advancement	1.5 (F) 1.2 (E)	2.7 (F) 0.8 (E)	Ischemic necrosis (n=1) 6%
Xu et al. (40), 2016	23	Girth and length	Dermal free graft ligamentolysis and V-Y advancement	1.6 (F)	2.2 (F) 3.1 (SP)	Scrotalization (n=5) Hypertrophic scar (n=2) n=7 of 23 (30%), Dermal fat shrinkage at 6 mo was <30%
Tealab et al. (58), 2013	24	Girth and length	Acellular dermal matrix, ligamentolysis and V-Y advancement	2.8 (F)	1.7 (F)	Ischemic ulcers (n=8) Implant loss (n=4) Decreased penile sensation (n=1) n=13 of 18 (72%)
Mertziotis et al. (20), 2013	35	Girth and length	Ligamentolysis and V-Y advancement, dermal fat graft	2.2 (SPL)	2 (SPL)	Penile retraction (n=4) Scar hypertrophy (n=18)
	47		Ligamentolysis via circumcision, dermal fat graft	1.9 (SPL)	2.1 (SPL)	Penile retraction (n=3) No scar hypertrophy
Elist et al. (61), 2018	400	Girth	Silicone implant	4.8 (F)	NS	Seroma 19 (4.8) Hypertrophic scar (n=18) Fibrosis of capsular tissue (n=14) Implant infection (n=9), 4 were removed Implant infection and breakage, (n=4), all were removed Implant breakage (n=1), implant was removed Temporary sensory loss (n=6) Detachment of sutures (n=6), 4 implants were removed Skin ulcer (n=5) Hematoma (n=4), 1 implant was removed n=86 of 400 (21.5%)
Shaeer (60), 2014	40	Girth and length	SCIAV flap	1.5 (F)	NS	Shaft ulcers (n=2) Penile length decrease (n=10) Scar revision (n=11) Debulking pedicle (n=6) Debulking shaft (n=4) Donor-site dehiscence (n=5) Donor-site infection (n=1) n=8 of 40 (20%)
Alei et al. (57), 2012	69	Girth	Porcine dermal acellular graft	3.2 (F)	NS	Fibrosis and retraction (n=9) Suture dehiscence (n=8) Seroma (n=2) n=19 of 69 (27%)
Casavantes et al. (56), 2016	203	Girth	PMMA injection	3.5 (F)	0.8 (F)	n=0 of 203 (0%)
Kwak et al. (46), 2011	41	Girth	Hyaluronic acid injection	3.8 (SP)	NS	n=0 of 41 (0%)

PMMA: Polymethyl methacrylate, SCIAV: Superficial circumflex iliac artery and vein, F: Flaccid penis, SP: Stretched penis, E: Erected penis, NS: Not specified

Conclusion

Medicine is a humanitarian craft. The demands of the people create the practice of medicine, while those demands are shaped by the prerequisites of the population. Male genital aesthetics is in demand and practiced. As a characteristic of this field, we have noted a strong dissociation between the clinical providers and reported literature on penile aesthetic procedures. For instance, Abecassis et al. (78) reported that they had performed about 2000 penile adipose grafting and suspensory ligament division surgeries between 1992 and 2010; unfortunately, we were unable to find any further papers by them. In 2009, Vardi and Gruenwald (79) pointed out that the lack of true methodological evaluation was the typical aspect, and from our point of view, the main shortcoming, of penile enhancement. As common practice, practitioners expect 90% or more of patients to be satisfied with the results, while a 5% or less occurrence of complications from the interventions endorsed to patients is anticipated. We believe that penoscrotal web corrections, moderate penile shaft thickening using dermal fillers, and buried penis corrections meet these criteria, supported by both literature evidence and our personal experience. However, V-Y plasty based lengthening, girth enhancement using acellular matrix-based procedures, or implants seem to have higher complication rates and are prone to result in devastating outcomes with low satisfaction rates (25). We also suppose that we may have to face complications from penile enhancement because of improper performance of penile enhancement procedures. The field also carries risks such as potential legal claims or, in rare cases, violent acts against surgeons, given its highly sensitive nature. On the other hand, practitioners will have to respond to rising demand, at least by directing the candidates to more appropriate interventions or management choices. Unfortunately, in most approaches for penile augmentation, the evidence is not conclusive enough between the clinical guidelines and practical implementations of urologists. It's clear that there has been significantly biased reporting of the results, which is discordant with the clinical experience of the authors as well as leading figures of the genital aesthetics worldwide. Apart from our distinctive endorsement of specific interventions that have been reviewed in this paper, we want to underline that male genital cosmetics, particularly penile enhancement and associated procedures, should initially follow the common sense of medical ethics and aim for the best interest of the patient, ensuring the patient is fully informed. The provider should be competent to overcome complications and manage the course, or refer when needed. The collection of accurate and appropriate data is the indispensable step in establishing scientific evidence, and unfortunately, it seems that it was the missing fundamental of penile enhancement surgery to date.

By this review, we underline that one of the main targets in this field should be recognizing the diversity of the surgical practice, making the outcomes of the practicing physicians available in a reliable fashion, preventing market-driven promotion of male genital enhancement surgery while acknowledging the availability of surgical options for candidates who would benefit from male genital aesthetic procedures. In the end, the metaphorical pendulum is still swinging.

Acknowledgement

Figures 1, 2 and Figures 4 to 6 were obtained from the personal archive of the senior author, Prof. Dr. Tahsin Turunç. Figure 3 is provided by Dr. Özer Ural Çakıcı. All figures were collected with the individuals' informed consent and anonymized in accordance with relevant ethical standards.

Footnotes

Authorship Contributions

Concept: Ö.U.Ç., A.Y., Ç.D., T.T., Design: Ö.U.Ç., A.Y., Ç.D., T.T., Data Collection or Processing: Ö.U.Ç., A.Y., Ç.D., T.T., Analysis or Interpretation: Ö.U.Ç., A.Y., Ç.D., T.T., Literature Search: Ö.U.Ç., A.Y., Ç.D., T.T., Writing: Ö.U.Ç., A.Y., Ç.D., T.T.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Macionis V. History of plastic surgery: art, philosophy, and rhinoplasty. J Plast Reconstr Aesthet Surg. 2018;71:1086-1092. [Crossref]
2. Triana L, Palacios Huatuco RM, Campilgio G, Liscano E. Trends in surgical and nonsurgical aesthetic procedures: a 14-year analysis of the international society of aesthetic plastic surgery-ISAPS. Aesthetic Plast Surg. 2024;48:4217-4227. Erratum in: Aesthetic Plast Surg. 2024;48:4601. [Crossref]
3. Simonis M, O'Connell HE. Female genital cosmetic surgery: a social trend driving surgical practice. BJU Int. 2025;135(Suppl 3):12-13. [Crossref]
4. Alter GJ. Pubic contouring after massive weight loss in men and women: correction of hidden penis, mons ptosis, and labia majora enlargement. Plast Reconstr Surg. 2012;130:936-947. [Crossref]
5. Çeker G, Deliktaş H, Gül Ü, Turunç T, Turkiye TAWGotSoUSi. The Andrology Working Group of the Society of Urological Surgery in Turkiye: bridging academic gaps and advancing male reproductive or sexual health. J Urol Surg. 2025;12:101-107. [Crossref]
6. Christ JE, Askew JB Jr. Silicone granuloma of the penis. Plast Reconstr Surg. 1982;69:337-339. [Crossref]
7. Moore KT, Fu MZ, Lichtbroun BJ, Leitner DV. Penile enhancement surgery-the short and the long of it. Urology. 2025;197:226-231. [Crossref]
8. Roth BJ, Hammad MAM, Sultan MI, Abou Chawareb E, Banton J, Park SSH, Perito PE, Yafi FA, Raheem O. Hyaluronic acid and urology: a systematic review and meta-analysis. Sex Med Rev. 2025;13:52-61. [Crossref]
9. Falagario UG, Piramide F, Pang KH, Durukan E, Tzelves L, Ricapito A, Baekelandt L, Checcucci E, Carrion DM, Bettocchi C, Esperto F. Techniques for penile augmentation surgery: a systematic review of surgical outcomes, complications, and quality of life. Medicina (Kaunas). 2024;60:758. [Crossref]

10. Alter GJ. Penile enlargement surgery. Tech Urol. 1998;4:70-76. [Crossref]
11. Alter GJ. Aesthetic Genital Surgery. IN: Neligan P and Rubin JP editors. Plastic Surgery. 4th Ed, Vol 2, Chapter 30. Elsevier Publishing. 2018 London. pp 742-764. [Crossref]
12. Li CY, Kayes O, Kell PD, Christopher N, Minhas S, Ralph DJ. Penile suspensory ligament division for penile augmentation: indications and results. Eur Urol. 2006;49:729-733. [Crossref]
13. Deskoulidi PI, Caminer D. Lengthening phalloplasty with division of the suspensory ligament and distally based fat flaps in penis enlargement operations. Plast Reconstr Surg. 2023;152:434e-437e. [Crossref]
14. Soubra A, Natale C, Brimley S, Hellstrom WJG. Revelations on men who seek penile augmentation surgery: a review. Sex Med Rev. 2022;10:460-467. [Crossref]
15. Borges F, Hakim L, Kline C. Surgical technique to maintain penile length after insertion of an inflatable penile prosthesis via infrapubic approach. J Sex Med. 2006;3:550-553. [Crossref]
16. Boiko MI, Notsek MS, Boiko OM, Chernokulskyi IS. Penis enlargement by penile suspensory ligament division with cross-plasty of the skin. Turk J Urol. 2022;48:91-97. [Crossref]
17. Danino MA, Benkahdra M, El Khatib A, Yafi N, Trouilloud P, Danino RP, Laurent R. Anatomical study of the penile suspensory system: a surgical application to micropenis. Plast Reconstr Surg Glob Open. 2023;11:e4728. [Crossref]
18. Zhang X, Huang Z, Xiao Y, Kuang L, Zhang M, Zhang G, Li Q, Bai W, Xu T. Suspensory ligament release combined with acellular dermal matrix filler in infrapubic space: a new method for penile length augmentation. Andrologia. 2019;51:e13351. [Crossref]
19. Shaeer O, Shaeer K, el-Sebaie A. Minimizing the losses in penile lengthening: "V-Y half-skin half-fat advancement flap" and "T-closure" combined with severing the suspensory ligament. J Sex Med. 2006;3:155-160. [Crossref]
20. Mertziotis N, Kozyrakis D, Bogris E. Is V-Y plasty necessary for penile lengthening? Girth enhancement and increased length solely through circumcision: description of a novel technique. Asian J Androl. 2013;15:819-823. Erratum in: Asian J Androl. 2013;15:854. [Crossref]
21. Hoznek A, Rahmouni A, Abbou C, Delmas V, Colombel M. The suspensory ligament of the penis: an anatomic and radiologic description. Surg Radiol Anat. 1998;20:413-417. [Crossref]
22. Filipoiu FM, Ion RT, Filipoiu ZF, Tulin AD, Enciu O, Enyedi M. Suspension of the penis - dissection, anatomical description and highlighting of anatomical risks in sectioning the suspensory ligaments. Basic Clin Androl. 2023;33:26. [Crossref]
23. Chen X, Wu Y, Tao L, Yan Y, Pang J, Zhang S, Li S. Visualization of penile suspensory ligamentous system based on visible human data sets. Med Sci Monit. 2017;23:2436-2444. [Crossref]
24. Liu W, Calopedos R, Blecher G, Love C. Penile suspensory ligament: anatomy, function, and clinical perspectives of its repair. J Sex Med. 2025;22:175-183. [Crossref]
25. Mariani UM, Fayman M, Nkomozepi P, Ihunwo AO, Mazengenya P. Topographic and structural anatomy of the suspensory ligament of the penis: implications for phalloplasty. Aesthet Surg J. 2024;44:516-526. [Crossref]
26. Wang R, Yang D, Li S. Three-dimensional virtual model and animation of penile lengthening surgery. J Plast Reconstr Aesthet Surg. 2012;65:e281-e285. [Crossref]
27. Ralph O, Shroff N, Anfosso M, Blecher G, Ralph D. Repair of the penile suspensory ligament for congenital and acquired pathology. BJU Int. 2019;124:687-692. [Crossref]
28. Alter GJ. Reconstruction of deformities resulting from penile enlargement surgery. J Urol. 1997;158:2153-2157. [Crossref]
29. Wessells H, Lue TF, McAninch JW. Complications of penile lengthening and augmentation seen at 1 referral center. J Urol. 1996;155:1617-1620. [Crossref]
30. Alter GJ, Salgado CJ, Chim H. Aesthetic surgery of the male genitalia. Semin Plast Surg. 2011;25:189-195. [Crossref]
31. Caso J, Keating M, Miranda-Sousa A, Carrion R. Ventral phalloplasty. Asian J Androl. 2008;10:155-157. [Crossref]
32. Schifano N, Castiglione F, Cakir OO, Montorsi F, Garaffa G. Reconstructive surgery of the scrotum: a systematic review. Int J Impot Res. 2022;34:359-368. [Crossref]
33. Alter GJ. Correction of penoscrotal web. J Sex Med. 2007;4:844-847. [Crossref]
34. Hakky TS, Rodriguez AR, Parker J, Lockhart JL, Honeymeyer Iii J, Carrion RE. Ventral phalloplasty. Int Braz J Urol. 2012;38:565-566. [Crossref]
35. Miranda-Sousa A, Keating M, Moreira S, Baker M, Carrion R. Concomitant ventral phalloplasty during penile implant surgery: a novel procedure that optimizes patient satisfaction and their perception of phallic length after penile implant surgery. J Sex Med. 2007;4:1494-1499. [Crossref]
36. Alter GJ. Augmentation phalloplasty. Urol Clin North Am. 1995;22:887-902. [Crossref]
37. Thomas C, Navia A. Aesthetic scrotoplasty: systematic review and a proposed treatment algorithm for the management of bothersome scrotum in adults. Aesthetic Plast Surg. 2021;45:769-776. [Crossref]
38. Croghan SM, Kelly C, Daniels AE, Fitzgibbon L, Daly PJ, Cullen IM. Reconstruction of the male external genitalia in diverse disease processes: our reconstructive algorithm, techniques, and experience. Curr Urol. 2022;16:185-190. [Crossref]
39. Zhang GX, Weng M, Wang MD, Bai WJ. Autologous dermal graft combined with a modified degloving procedure for penile augmentation in young adults: a preliminary study. Andrology. 2016;4:927-931. [Crossref]
40. Xu L, Zhao M, Chen W, Li Y, Yang Z, Ma N, Wang W, Feng J, Liu Q, Ma T. Augmentation phalloplasty with autologous dermal fat graft in the treatment of "small penis". Ann Plast Surg. 2016;77(Suppl 1):S60-S65. [Crossref]
41. Xu L, Zhao M, Yang Z, Chen W, Li Y, Ma N, Wang W, Feng J, Liu Q, Ma T. Modified penile augmentation by dermal-fat graft in post-hypospadias adults. Aesthetic Plast Surg. 2016;40:120-129. [Crossref]
42. Furr J, Hebert K, Wisenbaugh E, Gelman J. Complications of genital enlargement surgery. J Sex Med. 2018;15:1811-1817. [Crossref]
43. Zilg B, Råsten-Almqvist P. Fatal fat embolism after penis enlargement by autologous fat transfer: a case report and review of the literature. J Forensic Sci. 2017;62:1383-1385. [Crossref]
44. Bukhari SNA, Roswandi NL, Waqas M, Habib H, Hussain F, Khan S, Sohail M, Ramli NA, Thu HE, Hussain Z. Hyaluronic acid, a promising skin rejuvenating biomedicine: a review of recent updates and pre-clinical and clinical investigations on cosmetic and nutricosmetic effects. Int J Biol Macromol. 2018;120:1682-1695. [Crossref]
45. Schifano N, Capogrosso P, Antonini G, Baldini S, Scroppo F, Salonia A, Zerbinati N, Dehò F. The application of hyaluronic acid injections in functional and aesthetic andrology: a narrative review. Gels. 2023;9:118. [Crossref]
46. Kwak TI, Oh M, Kim JJ, Moon du G. The effects of penile girth enhancement using injectable hyaluronic acid gel, a filler. J Sex Med. 2011;8:3407-3413. [Crossref]
47. Zhang CL, Quan Y, Li H, Li Q, Bai WJ, Xu T, Zhang XW. Penile augmentation with injectable hyaluronic acid gel: an alternative choice for small penis syndrome. Asian J Androl. 2022;24:601-606. [Crossref]
48. Kim JJ, Kwak TI, Jeon BG, Cheon J, Moon DG. Human glans penis augmentation using injectable hyaluronic acid gel. Int J Impot Res. 2003;15:439-443. [Crossref]

49. Moon du G, Kwak TI, Kim JJ. Glans penis augmentation using hyaluronic acid gel as an injectable filler. World J Mens Health. 2015;33:50-61. [Crossref]
50. Quan Y, Gao ZR, Dai X, Kuang L, Zhang M, Li Q, Xu T, Zhang XW. Complications and management of penile augmentation with hyaluronic acid injection. Asian J Androl. 2021;23:392-395. [Crossref]
51. Wang HC, Long X. Filler-induced non-thrombotic pulmonary embolism after genital aesthetic injection. J Cosmet Laser Ther. 2022;24:66-72. [Crossref]
52. Kablik J, Monheit GD, Yu L, Chang G, Gershkovich J. Comparative physical properties of hyaluronic acid dermal fillers. Dermatol Surg. 2009;35(Suppl 1):302-312. [Crossref]
53. Flynn TC, Sarazin D, Bezzola A, Terrani C, Micheels P. Comparative histology of intradermal implantation of mono and biphasic hyaluronic acid fillers. Dermatol Surg. 2011;37:637-643. [Crossref]
54. Yang DY, Ko K, Lee SH, Lee WK. A comparison of the efficacy and safety between hyaluronic acid and polylactic acid filler injection in penile augmentation: a multicenter, patient/evaluator-blinded, randomized trial. J Sex Med. 2019;16:577-585. [Crossref]
55. Kim DW, Jeong HC, Ko K, Yang DY, Kim JK, Lee SH, Kim TH, Lee WK. Which dermal filler is better for penile augmentation for aesthetic purposes? A prospective, single-surgeon study based on real-world experience. World J Mens Health. 2025;43:428-436. [Crossref]
56. Casavantes L, Lemperle G, Morales P. Penile girth enhancement with polymethylmethacrylate-based soft tissue fillers. J Sex Med. 2016;13:1414-1422. [Crossref]
57. Alei G, Letizia P, Ricottilli F, Simone P, Alei L, Massoni F, Ricci S. Original technique for penile girth augmentation through porcine dermal acellular grafts: results in a 69-patient series. J Sex Med. 2012;9:1945-1953. [Crossref]
58. Tealab AA, Maarouf AM, Habous M, Ralph DJ, Abohashem S. The use of an acellular collagen matrix in penile augmentation: a pilot study in Saudi Arabia. Arab J Urol. 2013;11:169-173. [Crossref]
59. Minhas S, Boeri L, Capogrosso P, Cocci A, Corona G, Dinkelman-Smit M, Falcone M, Jensen CF, Gül M, Kalkanli A, Kadioğlu A, Martinez-Salamanca JI, Morgado LA, Russo GI, Serefoğlu EC, Verze P, Salonia A. European Association of Urology Guidelines on male sexual and reproductive health: 2025 update on male infertility. Eur Urol. 2025;87:601-616. [Crossref]
60. Shaeer O. Girth augmentation of the penis using flaps "Shaeer's augmentation phalloplasty": the superficial circumflex iliac flap. J Sex Med. 2014;11:1856-1862. [Crossref]
61. Elist JJ, Valenzuela R, Hillelsohn J, Feng T, Hosseini A. A single-surgeon retrospective and preliminary evaluation of the safety and effectiveness of the penuma silicone sleeve implant for elective cosmetic correction of the flaccid penis. J Sex Med. 2018;15:1216-1223. [Crossref]
62. Siegal AR, Celtik KE, Razdan S, Sljivich M, Kansas B, Shah B, Levine LA, Valenzuela RJ. A multi-institutional update on surgical outcomes after penile silicone sleeve implantation. Ther Adv Urol. 2024;16:17562872241241858. [Crossref]
63. Wilson SK, Picazo AL. Update on the Penuma® an FDA-cleared penile implant for aesthetic enhancement of the flaccid penis. Int J Impot Res. 2022;34:369-374. [Crossref]
64. Elist JJ, Baniqued M, Hosseini A, Wilson SK. Correction of retractile penis with subcutaneous soft silicone penile implant. Int J Impot Res. 2020;32:317-322. [Crossref]
65. Salkowski M, Levine LA. Outcomes and patient satisfaction after penuma silicone implant surgery via two surgical approaches. Ther Adv Urol. 2024;16:17562872241280021. [Crossref]
66. Siegal AR, Zisman A, Sljivich M, Razdan S, Valenzuela RJ. Outcomes of a single center's initial experience with the penuma® penile implant. Urology. 2023;171:236-243. [Crossref]
67. Salkowski M, Alter K, Levine L. Outcomes and satisfaction after penile silicone implant surgery. J Sex Med. 2022;19:S106. [Crossref]
68. Juwono T, Buscaino K, Fernandez-Crespo R, Carrion R. Infection of the penuma penile implant and associated post-operative complications: a case report. Urol Case Rep. 2021;39:101846. [Crossref]
69. Sökmen D, Albayrak AT, Başağa Y, Sertkaya Z. The first reported case of suprapubic migration of the Penuma penile implant as a post-operative complication: a case report. Urol Case Rep. 2025;59:102951. [Crossref]
70. Trost L, Watter DN, Carrier S, Khera M, Yafi FA, Bernie HL, Ziegelmann M, Köhler T. Cosmetic penile enhancement procedures: an SMSNA position statement. J Sex Med. 2024;21:573-578. [Crossref]
71. Penile size abnormalities and dysmorphophobia [Internet]. The European Association of Urology: Sexual and Reproductive Health Guidelines; 2025 [updated 2025]. [Crossref]
72. Özbey H, Arlı OT. "Fossa navicularis" and "septum glandis": a "flow-control chamber" for the male urethra? Med Hypotheses. 2020;140:109642. [Crossref]
73. Kim JJ, Kwak TI, Jeon BG, Cheon J, Moon DG. Effects of glans penis augmentation using hyaluronic acid gel for premature ejaculation. Int J Impot Res. 2004;16:547-551. [Crossref]
74. Shaeer O. Shaeer's glans augmentation technique: a pilot study. J Sex Med. 2012;9:3264-3269. [Crossref]
75. Moon DG, Kwak TI, Cho HY, Bae JH, Park HS, Kim JJ. Augmentation of glans penis using injectable hyaluronic acid gel. Int J Impot Res. 2003;15:456-460. [Crossref]
76. Yang DY, Ko K, Lee SH, Moon DG, Kim JW, Lee WK. Efficacy and safety of newly developed cross-linked dextran gel injection for glans penis augmentation with a novel technique. Asian J Androl. 2018;20:80-84. [Crossref]
77. Yamasaki Y, Asai A, Maruta S, Sakaguchi M, Tsurusaki T. [A case of glans penile necrosis due to hyaluronic acid into the penis for male genital augmentation]. Hinyokika Kiyo. 2021;67:399-401. Japanese. [Crossref]
78. Abecassis M, Berreby S, Boccara D. Chirurgie d'augmentation pénienne : lipopénosculpture d'épaississement et d'allongement [Penile enhancement surgery: widening and lengthening lipopenisculpture]. Ann Chir Plast Esthet. 2010;55:135-142. French. [Crossref]
79. Vardi Y, Gruenwald I. The lack of true methodological evaluation in penile enhancement. J Sex Med. 2009;6:623-624. [Crossref]