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INVITED MINI REVIEW

Female Cosmetic Genital Surgery: Delivering What Women Want

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Abstract Female cosmetic genital surgery (FCGS) is the latest and fastest growing sub-specialty in the broad specialty of gynecology. It encompasses procedures designed to change aesthetic and/or functional aspects of women's genitalia. In case of FCGS, there is difficulty in separating purely aesthetic concerns from medical concerns, because there is much overlap. The initial controversies over FCGS have almost settled down in the light of the mounting scientific evidence suggesting that a number of procedures that currently exist are safe, effective, and capable of treating to a considerable extent the suite of conditions associated with course-of-life vulvo-vaginal changes. Also, the rapidly expanding demands that have arisen for FCGS procedures from women across the globe have made it imperative for the reconstructive pelvic surgeons to master

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the cosmetic genital procedures so as to deliver the women what they want, in the most scientific manner. The issue of asking for and provisioning of FCGS is essentially a matter of individual patient and physician decision-making.

Keywords Cosmetic gynecology · Cosmetic vaginal surgery · Vaginal rejuvenation · G-spot · Labiaplasty · Vulvo-vaginal rejuvenation

Introduction

Female cosmetic genital surgery (FCGS) in our opinion is the correct inclusive term, which encompasses the complete armamentarium of procedures designed to change aesthetic and/or functional aspects of women's genitalia. It is imperative to the autonomy of women and upholds the right of adult women to choose to undergo lawful medical and surgical treatments. The terms female genital cosmetic surgery (FGCS), cosmetic vaginal surgery (CVS), aesthetic vaginal surgery, vulvo-vaginal rejuvenation have been used in the medical literature and lay press at times to mean the same.

Although initially explored procedurally in 1984 [1], the realm of vulvo-vaginal surgery for cosmetic purposes is only recently undergoing heavy exploration. Controversy surrounded FCGS in its initial years with ACOG [2] in 2007 cautioning about the lack of scientific evidence backing the proliferation of burgeoning cosmetic surgical procedures.

Indeed, most of the criticism and controversies on FCGS that followed stemmed from the ACOG 2007 Committee opinion. However, Ostrzenski in a methodological scientific review [3] very recently analyzed the scientific integrity of ACOG 2007 Committee opinion and found overt prejudice and residual bias in the recommendations. Scientifically imprecise interpretations and omissions of relevant references were noted, and Ostrzenski concluded that ACOG 2007 recommendations relating to FCGS did not meet the scientific integrity norms for scientific quality, objectivity, credibility, and appropriate transparency.

Additionally, critics of FCGS tried to draw analogs to female genital mutilation (FGM) procedures [4]. FGM has been defined by WHO as procedures involving the partial or complete removal of, or other injury to, external female genitalia for non-medical reasons [5, 6]. It is necessary to distinguish between elective procedures meant to provide an aesthetic and/or medical benefit and those stemming from oppressive societal forces that may be detrimental to women's health. The decision to undergo elective surgery should rest with a well-informed patient under the guidance of medical professionals properly trained, but the importance of curtailing FGM must not be overlooked.

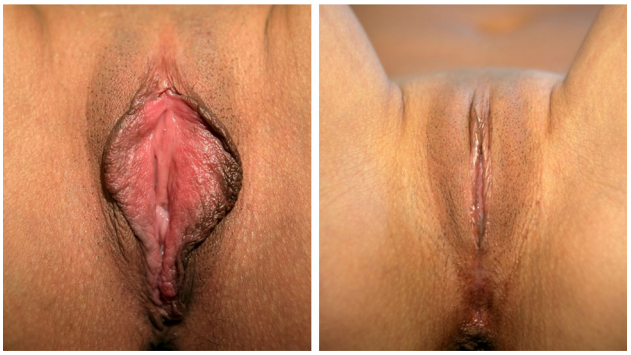

Fig. 1 Before and after pictures of labiaplasty

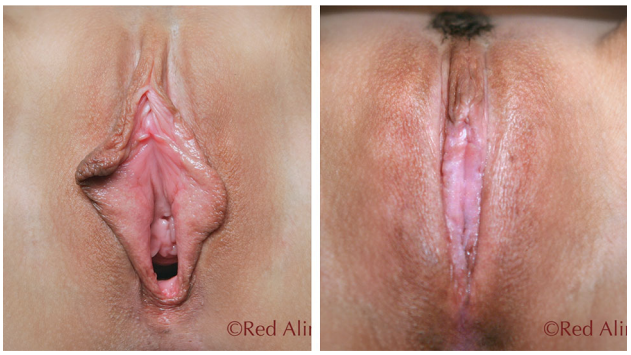

Fig. 2 Before and after pictures of labiaplasty and vaginal rejuvenation

In the case of FCGS, there is difficulty in separating purely aesthetic concerns from medical concerns, because there is much overlap. Some treatments among the expanding armamentarium may provide a beneficial effect on stress urinary incontinence, atrophic vaginitis and associated irritation, dyspareunia and other sexual dysfunction, and more. It may be impossible to find a case where an individual wishes to undergo FCGS without some expectation of ancillary health benefit. The potential for FCGS to powerfully impact quality of life cannot be understated; pregnancy, menopause, sexual dysfunction, and related conditions can have a profound effect on female quality of life and self-perception [7, 8], so it is understandable that any procedure that may successfully address such conditions would be highly sought.

Purpose of this mini-review is to provide an overview of the array of procedures available that fall under the heading of FCGS, rather than to delineate the vast spectrum of perceptions and idealizations within the many cultures of the world. It is up to medical professionals to use the information contained herein as a springboard to further study, leading to the ethical application of these procedures to improve women's health and quality of life.

Cosmetic Genital Surgery Techniques

Although numerous procedures fall in the basket of FCGS, we shall give an overview of only the most commonly sought after and performed procedures, i.e., labiaplasty, clitoral hood reduction, and vaginal rejuvenation which encompasses perineoplasty and vaginoplasty. Labia majora reduction or augmentation, hymenoplasty, G-spot augmentation, labia majora divergence repair, perineal skin reduction, mons pubis reduction are few of the other procedures which fall in purview of FCGS, however, shall not be covered in the present review.

Labiaplasty

Labiaplasty, also known as labioplasty, involves surgical modification of either the labia majora or minora, but most commonly, a reduction of the size of labia minora (Fig. 1) and is one of the most frequently performed FCGS procedures. Goal often is to preserve the contour of the lips and maintain the labial edge color. Different surgical techniques include curvilinear resection, V-wedge resection, inferior wedge resection and superior pedicle flap reconstruction, Z-plasty, and other less utilized techniques.

In the curved linear resection [9, 10], one of the first described techniques, cold cutting, may be done or an energy-based device like electrosurgical needle, laser, or a RF generator can be used for cutting. Labial tissue, as much as is required to be resected is linearly resected and sculpted as desired, and then, the cut edges are repaired with resorbable fine suture. The goal of this technique is to maintain a minimum labial length of 1 cm and permit protrusion past the introitus [11]. Preservation of the natural contour of the corrugated free edge is not possible with this technique. However, it depends upon the desires of the patient undergoing the procedure, and in one study of 550 women, 97 % actually requested removal of the dark edges [12]. Advantages include small, comparatively straight labia flush with or tucked below the labia majora with a pinker edge. Risks include over-correction or complete amputation warranting surgical revision [13].

V-wedge resection, initially described by Alter [14] includes excision of a V-shaped wedge of the labial tissue, with the superior edge of the V beginning slightly inferior to the prepucial folds flowing downward from the clitoral hood and the inferior edge of V beginning above the posterior commissure. Advantages include prevention of over-resection and excessive tightening. Risks include wound edge separation, fistula formation, clitoral hood excess, and postoperative pain. V-wedge resection has been modified in various ways. Z-plasty [15] is one modification, wherein a central wedge of labia is removed via a "Z"-shaped incision. In inferior wedge resection and superior pedicle flap reconstruction, the inferior portion of the labia minora is excised and the superior portion is brought down as a pedicle flap and anchored to the denuded inferior edge.

The linear resection and modified wedge techniques are the most commonly employed surgical techniques. Whereas the curved linear resection results in smaller and uniform labia which are most commonly desired by the women asking for labiaplasty, it also leads to lightening (or pinking) of the frequently darkened-edge labia. In very few patients, there was dissatisfaction with occasional scarring by this technique, particularly in cases where over-vigorous resection was performed. This in all probability led to the development of the various wedge procedures along with their modifications, where the end results are a more natural-looking labial edge, The wedge procedures also have less scarring and labial hypersensitivity, but then, it comes at a greater risk of postoperative separation vis-à-vis the curvilinear labiaplasty. Some experts consider the wedge resection the technique of choice; however, there is no consensus.

Multiple studies of labiaplasties reveal high rates of overall satisfaction, including improved self-esteem [16–19]. In the absence of any head-to-head comparative trials presently, recommendations cannot be made that which technique provides the best cosmetic results.

Clitoral Hood Reduction

Clitoral hood, anatomically called preputium clitoridis, is a fold molded from labia minora and wraps over the external part of the glans of clitoris. Clitoral hood reduction, sometimes called as clitoral hoodectomy, is an elective procedure to separate the prepuce from the clitoral tissue [20] encompassing resection of excess skin in the fold surrounding the clitoris.

Clitoral hood reduction is absolutely different medically from clitoridectomy, the surgical excision of the clitoris. Clitoridectomies are a form of "female genital mutilation," and the authors of this review unambiguously condemn it and never ever do perform it.

Women ask for clitoral hoodectomy to improve sexual function by exposing a larger area of the clitoris to enhance sexual gratification and at times, for cosmetic appearance, hygienic concerns and interference with intercourse due to a trapped clitoris and chafing [17, 20]. Surgical goal is to decrease the length and protuberance of the prepuce of clitoris. The surgical technique typically involves a wedge resection labiaplasty followed by bilateral fusiform excision of excess lateral clitoral hood skin [21], reducing the overall size of labia minora as well as of the clitoral hood. The importance of not overexposing the clitoris needs a

special mention, which otherwise may risk clitoral hypersensitivity.

Another surgical technique involves bilateral elliptical, fusiform, semicircular excision of the redundant folds of preputium clitoridis, in which incisions are made parallel to the long axis of the clitoris, on the crease between the labia minora and labia majora. It leaves the clitoris more exposed and at the same time maintains the midline position. Some surgeons also remove an inverted U-shaped slice of skin superior to the clitoris, but then, suture lines are more visible than lateral procedures, and a midline scar leads to pain.

The surgery has not much complication rates in trained hands, and in a study, out of 407 patients who underwent central wedge labiaplasty along with clitoral hood reduction, only 4 % had complications and only 2.9 % needed revision surgery [22]. Patients should be counseled about possible complications including scarring, pain, and denervation injuries.

Vaginal Rejuvenation

"Vaginal rejuvenation" encompasses components of perineoplasty and vaginoplasty, and is performed to treat a "wide" vagina. These procedures are nothing but modifications of the existing well-established vaginal and pelvic floor reconstructive surgical techniques of colpoperineorrhaphy to modify the vaginal caliber by decreasing the diameter of the vaginal canal along with reconstructing the perineal body [23].

The surgical techniques used may involve dissection with traditional scalpels or using various energy sources like laser, radiofrequency, or ultrasound. Different techniques utilizing different energy sources have claimed better surgical outcomes with reduced morbidity, scarring, and favorable outcomes in vaginal caliber and sensation. However, no studies confirm their superiority compared to traditional scalpel and monopolar needle electrode.

Vaginoplasty is designed to surgically tighten the vaginal canal and encompasses removal of excess vaginal mucosa from the vaginal fornices. It may involve anterior colporrhaphy, posterior colporrhaphy, excision of lateral vaginal mucosa, or a variable combination of these surgical techniques (Fig. 2). Some surgeons perform a midline levatorplasty also, which in our considered opinion should be best avoided as this may cause significant dyspareunia.

Perineoplasty, also known as perineorrhaphy, encompasses surgical reconstruction of the vaginal introitus by tightening the perineal muscles and the vagina in order to decrease the size of vaginal opening. Often performed along with posterior colporrhaphy, it is called colpoperineorrhaphy. Reverse perineoplasty involves reconstruction of scar tissue caused by lichen sclerosus or prior surgery is meant to treat dyspareunia and involves incision of palpable bands and scar while creating an advancement flap to increase the introital caliber.

The surgical goal of perineoplasty is to reinforce the pelvic floor at and inside the introitus to produce an elevated perineum, reconstruction of the perineal body, introital tightening, and correcting the posterior compartment defects. The surgical procedure, if performed correctly, reconstructs the downward angle of the vagina which in turn leads to penile pressure against the clitoral complex, pushing it against the pubic bone with coital thrust, presumably helping with clitoral orgasms.

Non-surgical Energy-Based Procedures

Energy-based colporrhaphy involves the use of lasers or radiofrequency (RF) energy to improve the quality of vaginal wall tissue by inducing the growth of new collagen and elastin, similar to skin rejuvenation as performed by aesthetic practitioners. The purpose of these procedures is to "tighten" the vaginal canal while making the tissue more elastic and tear resistant. RF procedures are completely noninvasive, so there is no disruption in barrier function, and recovery is minimal [24, 25].

Overall Summary

Mounting scientific evidence suggests that a number of FCGS procedures currently exist that are safe, effective, and capable of treating the suite of conditions associated with course-of-life vulvo-vaginal changes. The recent proliferation of noninvasive techniques holds much promise. The advent of energy-based techniques using lasers and RF offers effective procedures that are safe, consistent, and reproducible, suggesting a new era of elective surgery for women is on the horizon, which may revolutionize the way gynecology is practiced. This class of procedures is likely the most prone to exploitation, overexposure, and the creation of unrealistic expectations.

Clearly, the division between cosmetic and medical procedures has become somewhat indistinct in many areas, and FCGS is no exception. There is a powerful and perhaps not fully understood deep connection between the appearance and function of a woman's genitals and her self-perception, self-esteem, and sense of well-being [26]. Much of this is tied to sexual health and wellness. While considerable impetus for evolution in the field of FCGS has originated within the gynecological community in general and the ones focused on urogynecology and pelvic reconstruction in particular, savvy aesthetic physicians and others have applied their considerable resources and expertise to solving these problems with novel applications

of established tools in the armamentarium, all with the aim of improving quality of life. Understandably, the urogynecological and pelvic reconstructive surgeons must stand at the forefront, as these issues rest firmly within their specialty.

The tide, however, is starting to turn. A large number of gynecologists presently want to explore newer vistas in specialty and are adapting to cosmetic procedures. Education is the preferred weapon when it comes to training the health care providers to provide standard of care to women who choose to undergo cosmetic genital surgery. In India, "Urogynecology and Pelvic Health Association of India," in association with The Society of Cosmetic Gynecology in India, has taken the lead in planning to organize a global congress on cosmetic gynecology in India so as to fill the felt void in training and education of our colleagues. The synergy of such educational initiative shall be very productive for the participants, but this remains only a stepping-stone. The larger audience beyond those who would attend such congresses remains the gynecologists who are being trained in the postgraduate residency programs, and the focus has to reach them so as to equip more hands to deliver women what they desire from their heath care providers. The decision of this journal to invite a review on FCGS lays the much needed academic foundation for this new branch of both gynecology and cosmetic surgery in this part of the world.

Compliance with Ethical Standards

Conflict of interest None.

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