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Review Article

Obstetrics and Gynaecology Section

# Recent Advances of Aesthetic Gynaecology: A Narrative Review

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## ABSTRACT

In the vast field of gynaecology, Female Cosmetic Genital Surgery (FCGS) is the newest and fastest growing sub specialty due to sexual distress and vaginal laxity. It includes operations intended to alter the genitalia of women in terms of function and/or aesthetics. Using electronic databases including MEDLINE/PubMed, Embase, and Scopus, a literature review search with current advancements was carried out without regard to dates or research designs. The search was based on 40 different cosmetic gynaecological terms, including "surgical vaginoplasty," "labiaplasty," "vaginal rejuvenation," "vaginismus," and "energy based devices," amongst others. All english full-text prospective, retrospective, and interventional studies describing cosmetic gynaecological procedures that included atleast five participants were considered. Efficacy and satisfaction metrics were highly variable ranging from validated questionnaires to no outcome subjectively or objectively quantified. This review provides an overview of the developing field of cosmetic gynaecology as well as the opinions of the authors and current developments in the study of this therapeutic area. Vaginal laxity is common and may impact sexual function and quality of life. Expanding aesthetic gynaecology may benefit the patients in their Female Sexual Function Inventory (FSFI) scores, intimate wellness, and psychosocial function.


**Keywords:** Energy based devices, Laxity, Vaginal rejuvenation, Vaginoplasty

## INTRODUCTION

More than 20 million women are now plagued with uterine prolapse, childbirth injuries, and incontinence due to rising life expectancy. Vaginal delivery, normal aging, and atrophy are the causes of disorders like vulvovaginal laxity and vaginal relaxation syndrome [1]. These disorders have an impact on women's sexuality and sense of well-being in addition to their practical effects. Until recently, talking about these subjects, even with a woman's healthcare practitioner, was frowned upon. This reality is described by a 2012 International Urogynaecological Association study that revealed 84% of doctors thought vaginal laxity were under-reported and 95% said laxity had an impact on sexual function [2].

Aesthetic gynaecology is a slowly growing field in India. It's been more than a decade since we are practicing the upcoming newer advances. With the newer generation and the increasing demands and patient interest it has now finally picked up its pace and more and more doctors are becoming aware of its benefits [3]. Cosmetic gynaecology includes surgical as well as non surgical procedures. Surgical procedures include labiaplasty, vaginoplasty, clitoral hoodectomy, hymenectomy, labia majora augmentation, and G-spot amplification are just a few of the numerous treatments that fall under the umbrella of female genital cosmetic surgery. Non surgical methods like genital peeling, Platelet Rich Plasma (PRP), Botulinum toxin, fillers, energy based devices etc., [4].

Factors for the increasing demand and increasing patient interest in cosmetic gynaecology in India are [5]:

- Female incontinence, disorders of sexual dysfunction are more talked and accepted today, spreading awareness and more approachable to psychiatrists or doctors for their problems.
- Women and men have become more aware of genitals and their appearances. The proliferation of sexually explicit material in digital print format and increasing genital hair laser removals has contributed to this too.
- Uplifting of the taboo around sexual dysfunction, vaginismus, and the mere thought of opening up about sexual status is tremendously changing in India. Awareness mediums like movies, videos, talk shows, rallies, lectures, and seminars proved to have helped the patients to seek medical help.
- The advent of non surgical methods for aesthetic gynaecology has been proven to have an immense response and patient acceptance in India.
- The concept of a healthy lifestyle includes sexual intimacy as an important aspect physically and psychologically. Many studies like Pauls RN et al., Garcia B et al., Desai SA et al., shows that couples who are happily intimate for longer lives have lesser chances of hypertension, cardiac problems, diabetes, depression, Alzheimer's [2,4,5].

Other terminologies used for Cosmetic gynaecology are FCGS and vulvovaginal rejuvenation.

## FEMALE COSMETIC GENITAL SURGERY (FCGS)

The FCGS is the newest and fastest growing sub specialty in the wide area of gynaecology. It comprises procedures, meant to change a woman's genitalia's appearance or function [6]. It may be difficult to discern between medical issues associated with FCGS and those that are purely aesthetic due to extensive overlap. In light of mounting scientific evidence that demonstrates a number of currently employed therapies are safe, effective, and capable of addressing a range of issues related to course-of-life vulvo-vaginal modifications [7]. Given the continuously increasing demand for FCGS surgeries from women all over the world, reconstructive pelvic surgeons must be familiar with cosmetic genital treatments in order to provide women with what they want in the most effective way possible. The decision to seek and give FCGS is mostly left up to each patient's doctor [8].

## VAGINAL REJUVENATION

Only 14% of women contact a doctor for sex during their lifetime, despite the fact that 40% of women with female sexual dysfunction experience psychological anguish. The communication barriers on issues related to female sexual dysfunction and incontinence have been broken today, thanks to public awareness campaigns, physician education, and media sources [9]. Amongst FCGS, vaginal rejuvenation is considered one of the most controversial genital cosmetic inventions which aims to decrease the average diameter of the vagina, mainly for sexual reasons [10]. Surgical and non surgical procedures can be used with proficiency with lasers and energy based devices for rejuvenation and an increased understanding of the vaginal anatomy, tissue structure, and function [11-13].

### Surgical Methods

- **Surgical vaginoplasty:** Full-length vaginal tightening (not just of the introitus) is required for vaginal tightening and the treatment of vaginal injury or deformity. The vagina can be adjusted to the patient's preferred size.

  There are some interesting studies on surgical tightening:

  - The research found that regardless of whether the procedure was a main or revision vaginoplasty, 17.4%-100% (median 79.7%) of patients were able to orgasm after surgery in 140 investigations using 12 distinct vaginoplasty surgical procedures. The most popular standardised test was the FSFI. In overall, 81% of patients reported being happy with their sexual satisfaction. Dyspareunia was the most frequent cause of sexual activity interference [14].
  - According to a study in Hungary, a type of surgical vaginoplasty called Laparoscopic Vecchietti operation modified by the use of an endovaginal transducer is a safe procedure to create a neovagina, which ensures good quality of sexual life with high FSFI scores for patients [15].
  - A retrospective follow-up research in New York found that the median time to orgasm for 199 individuals who underwent genital surgery was 180 days. A total of 153 (86%) of the 178 patients who had atleast a year's worth of follow-up data were orgasmic, whereas 25 (14%) were not. The majority of patients experienced orgasms during their six-month follow-up visits, but more than a year following surgery, a significant percentage of patients still experienced orgasms for the first time [16].
- **Labiaplasty:** The most frequent technique in the category of female genital cosmetic surgery, labiaplasty (defined as the surgical reduction of the labia minora), has shown an increase in popularity over the past 10-15 years. However, there has been no study into labial size in the juvenile and adolescent populations, hence the definition of labial hypertrophy is arbitrary. The principles of medical ethics recognise the need to prevent injury, hence performing labiaplasty on children and teenagers should be avoided for the reasons that will be discussed [17].

The primary reason for wanting a labiaplasty is unhappiness with genital aesthetics, not functional issues. The majority of medical specialists agree that before surgery, women considering labiaplasty should consult with a psychiatrist or psychologist. However, it is unclear if counselling and education are beneficial for addressing dissatisfaction or poor genital self-esteem. Counselling and education may be helpful in lowering the demand for labiaplasty since the psychological nature of the patient and motivation for this type of surgery are often the problem [18].

To determine the effectiveness of this treatment and the proper indications for it, more study is needed. This review focuses on the need to know more about the reasons behind women's treatment decisions and if conventional approaches, like counselling are effective. Labiaplasty and associated patient reported outcomes must also be systematically evaluated in order to determine its efficacy and safety.

Two types of surgeries may be done:

- Labiaminoraplasty with clitoral hood reduction: Trimming of the labia minora as per the desire of the patients.
- Labiamajoraplasty: Usually done for loose or wrinkled or hanging labia Majora [17,18].

### Non Surgical Methods

Thermal energy based devices for female rejuvenation:

- Lasers-$CO_2$, Erbium-YAG, Diode
- Radiofrequency (RF)
- Ultrasound-high Intensity Focused Ultrasound (HIFU)

### Lasers

Largely lasers can be micro ablative fractional laser therapy like the $CO_2$ lasers or non ablative lasers like the Erb-Yag and Diode. The wavelengths are mid-infrared invisible light spectrum. $CO_2$ (10600 nm), Er:YAG (2940 NM) for vagina and vulva, Diode at 1470 nm [Table/Fig-1] [19-21].

| Study name | Results |
|---|---|
| Salvatore S et al., [19] Climacteric. 2015, 77 patients, menopausal | Significant improvement in FSFI scores (14.8-27.2) 17 patients having normal sex life |
| Filippini M et al., [20] Photomed Laser Surg. 2017, 386 postmenopausal women | Effective in treating vaginismus and dyspareunia due to atrophy |
| Pieralli A et al., [21] Arch Gynaecol Obstet. 2016, 50 patients (41-66 years) | Vaginal health index score: 8.9-21.6 (<15 VVA) Visual analog scale: statistical effect in dyspareunia 52% satisfied at 1 year follow-up |

**[Table/Fig-1]:** Review of carbon dioxide lasers for vaginal rejuvenation [19-21].

### Radiofrequency (RF) Devices

Without the support of a sufficient amount of scientific data, RF-based treatment has been used as an aesthetic alternative treatment for a number of cosmetic medical causes. Additionally, the US Food and drug administration issued a warning on the usage of energy based technologies for cosmetic uses such as vaginal "rejuvenation," cosmetic vaginal therapy, menopausal-related vaginal diseases, and symptoms of urinary incontinence and sexual function [22,23].

Focused electromagnetic waves generating heat upon tissue impedance are widely accepted in facial and off-face sites. Non ablative RF was first explored to achieve tightening of vaginal canal by Dillon B and Dmochowski R in 2009 [22]. Monopolar, bipolar, multipolar, and quadripolar devices are now available [Table/Fig-2] [23-25].

| Study name | Results |
|---|---|
| Pitsouni E et al., [23] Maturitas. 2017 Sep 547 patients, menopausal with genitourinary symptoms | Reduce symptom severity, improve quality of life of postmenopausal women and restore the vaginal mucosa to premenopausal status |
| Romero-Otero J et al., [24] The Journal of Sexual Medicine. 2020;17(3) 15 women | Decision on several queries related to the use of RF-based devices for genitourinary indications was made in the favour for cosmetic gynaecology. |
| Shobeiri SA et al., [25] International Urogynaecology Journal. 2019;30(3) | Well-designed case-control, randomised studies are required to further investigate the potential benefits, side-effects, and efficacy of laser therapy for cosmetic purpose. |

**[Table/Fig-2]:** Review of studies showing Radiofrequency (RF) devices in cosmetic gynaecology [23-25].

Common mechanism of action of energy based devices includes stimulation of (type 1) collagen remodelling and regeneration in the extra-cellular matrix, contracture of elastin fibres, neovascularisation, leading to vaginal lubrication and increase in the small nerve fibre

density in the papillary dermis [24]. This leads to newly formed collagen, and increased elastin fibres in the submucosa in post-treatment biopsies [25].

**Indications of energy based devices:** Vaginal tightening, stress urinary incontinence, overactive bladder, frequent washroom visits, orgasmic dysfunction, anorgasmia, genito-urinary syndrome of menopause, lubrication, Grade I prolapse, recurrent UTI, vaginitis, lichen sclerosis, hyperplastic dystrophy, eczema, vaginal flatulence, anal indications, erectile dysfunction in males, vulvodynia.

## Procedure

- Out Patient Department (OPD) or lunch time procedure
- 15-30 minutes
- Two-three sittings were advocated, each approx. 1 month apart for most devices
- Touch-up sitting after 12-18 months

Advantages

- Painless-no anaesthesia
- No downtime
- No medications
- Practically no side-effects
- Other benefits for the genitourinary tract
- Restores vaginal milieu and flora, decreases recurrent vaginitis, recurrent UTIs, etc.,

Other energy sources like light therapy are also available as home devices, e.g., blue light at wavelength 415 nm.

## Platelet-rich Plasma (PRP)

It is the commonest rejuvenating injectable used in various parts of the body. The patient's venous blood is collected in special tubes and centrifuged to get a supernatant of PRP. It acts by being very rich in and promoting growth factors [26].

**Uses of PRP:**

- Clitoral-urethro-vaginal complex augmentation used for orgasms and stress urinary incontinence
- Lichen sclerosis
- Vulval dryness
- As an adjuvant with fillers for labioplasty

## Fillers

Various fillers with hyaluronic acid are available which are used by the dermatologist. The gynaecological use of fillers is an off label indication of its use. They are used on an OPD basis, but their high costs limit its users.

**Uses:**

- In G-spot augmentation, autologous fat is harvested from the trochanteric area [27].
- For augmentation of the G-spot for vaginal-mediated orgasms, the patient should be able to identify her G-spot.
- Labia majora augmentation.

## Pelvic Floor Strengthening

This is a very important aspect of pelvic floor health or intimate wellness. Study by Samuels JB et al., show that Kegel exercises are not very effective in the long run. Also, sagging of the floor due to pregnancy, vaginal bleeding, menopause and genetics is common [28].

High Intensity Focused Electro Magnetic chairs (HIFEM) is now available. These cause supra-maximal pelvic floor contractions of the entire pelvic floor. Usually, six sittings are advocated, twice a week for three weeks. The patients are very happy with these procedures, as all they have to do is sit on the chair fully clothed, and the chair does all the work [28].

**Uses:**

- Stress urinary incontinence
- Sexual dysfunction
- HIFEM technology is able to safely and effectively treat a wide range of patients.

## Genital Peels

One of the commonest complaint of patients is having a darker vulvar and inner thigh, compared to the rest of their body [29]. Many chemical peels or lasers are available, which can help reduce this problem. Usually, repeat settings are based on the treatment modality used. Home maintenance with local creams and serums can go a long way in preserving the results. Glycolic acid peels are believed to offer good results for the same if the patient is not sensitive to them [29].

## Vaginismus

Vaginismus is one of the commonest causes of a non consummated marriage. The electromyography studies show an increase in the rising tone of these muscles, with a difficulty in relaxation. For refractory vaginismus, botulinum toxin can be used as an off-label indication. Approximately, 150-200 U of toxin A is injected under short general anaesthesia, along with dilatation. A thorough pretreatment questionnaire, the FSFI, and consultation may all be used to assess vaginismus [30]. [Table/Fig-3] shows the previous studies with botulinum toxin in the treatment of vaginismus. Most patients resume sexual activity within a month of the procedure. Usually, a repeat is not required. Thorough counselling is imperative for the success of this procedure [31-35].

| Author name | Study design | No. of cases | Treatment regimen | Outcome measures | Follow-up | Results |
|---|---|---|---|---|---|---|
| Ghazizadeh S and Nikzad M [31] | Retrospective study | 24 | 500 U of Botulinum diluted with 1.5 mL of normal saline solution. Dose: 150–200 U injected first; the dose gradually increased till 400 U | Vaginal muscles resistance | 1 year | 23 patients have per speculum examination showing no vaginismus<br>18 patients had satisfactory intercourse<br>4 patients had mild pain<br>All symptoms of vaginismus improved<br>2 patients were lost to follow-up |
| Shafik A and El-Sibai O [32] | Case-control study | 13 | Case: Single dose of injection: 25 U diluted in 1 mL saline solution<br>Control: saline solution | Satisfaction of intromission | SOS | Improvement of all symptoms of vaginismus No recurrence in follow-up<br>Control subjects did not improve |
| Bertolasi L et al., [33] | Prospective study | 39 | Repeated cycles at 4 weeks of botulinum neurotoxin injected into levator ani. | Possibility of sexual intercourse, levator ani EMG hyperactivity, Lamont scores, Visual activity score, Female sexual function index | 105 weeks | At the first 4 weeks after the first cycle, primary outcome improved. When follow-up ended, 63.2% completely recovered; 15.4% still needed reinjections |
| Pacik PT [34] | Retrospective study | 20 | Dose: 100 to 150 U of BoNT-A; Dilution: 100 U of BoNT-A diluted in 2 mL of saline; | Possibility of having intercourse | SOS | 80% of patients improved in 3 months<br>15% patients continued the injections<br>5% of the patients did not respond to the treatment |

**[Table/Fig-3]:** Studies of botulinum toxin in the treatment of vaginismus [31-34].

# DISCUSSION

**The strategy of using vaginal rejuvenation:** Vaginal laxity can signify various things to different individuals and to doctors as well, but the impact of genital sensation and sexual function rather than the laxity itself remains the most frequent complaint from patients. The degree of laxity has seldom been acknowledged, however, there are various alternatives offered by surgeons and cosmetic practitioners for correcting vaginal laxity. The mucosa and appearance were primarily the focus of Ostrzenski's 4-degree categorisation [36] and the degree of vaginal laxity has yet to be evaluated objectively.

The degree of vaginal laxity severity should be taken into consideration while choosing the vaginal rejuvenation approach. While non surgical therapy is appropriate for light-degree vaginal laxity, surgical treatment is appropriate for severe-and moderate-degree vaginal laxity. For individuals with mild vaginal laxity, $CO_2$ laser therapy or another non invasive method should be employed. Due to the treatment's minimally invasive nature and distinctive success, these patients will also report high satisfaction ratings. It is not unexpected that some patients with moderate vaginal laxity won't see significant improvement after receiving simply $CO_2$ laser therapy, because this technique's positive effects are on epithelial structures rather than muscles, which in these situations wouldn't be enough to restore vaginal function. Additionally, surgical therapy results in good improvements in FSFI and the best satisfaction ratings for individuals with mild vaginal laxity [37].

**Gender assignment: A psychiatric or physical choice?:** Gender Identity Disorder (GID) is defined as an incongruence between one's physiological sex and gender identity, which is one's fundamental sense of self as a man or a woman. The disorders known as male-to-female and female-to-male GID, respectively, are characterised by physiological males having a female gender identity and physiological women having a male gender identity [38]. The diagnostic and therapeutic guidelines for patients with GID Fourth Edition, serve as the foundation for GID diagnosis and therapy [39]. To discuss the issues related to the diagnosis and treatment of GID, a medical care team comprised of experts with knowledge and interest in the diagnosis and treatment of GID in various fields, such as psychiatrists, plastic surgeons, urologists, and gynaecologists (and, if necessary, endocrinologists, paediatricians, psychologists, and social workers as well) should be organised [39].

After a thorough discussion about one's upbringing, lifestyle, and sexual activity, gender identity is determined. Gender dysphoria is defined as a strong and persistent dissatisfaction with one's sex, a need for a cross-gender role, and discomfort with one's sex and is diagnosed according to Diagnostic and Statistical Manual of mental disorders-Fourth edition (DSM-IV) by American Psychiatric Association [40].

**Energy based devices-A boon or a bane?** With the whole Pandora's box completely opened, in July 2018, US Food and Drug Advisory (FDA) issued a warning against energy based devices in which patients are discouraged from utilising energy based devices for vaginal rejuvenation, cosmetic vaginal procedures, or symptoms of menopause, urine incontinence, or sexual function, according to this notification [41]. A general recommendation has been given for the management of a number of conditions due to the lack of standardisation in this developing area of gynaecology. It is necessary to break down the above statement in order to better comprehend the factors. After adequate study demonstrating safety and efficacy, energy based cosmetic vaginal operations may have a place in medical practice. It is recommended that, there is a need to take a step back and create consistent definitions and procedure results to remove any doubt or ambiguity and to promote objective research that is reliable and reproducible. According to Tailor V et al., to properly reveal the mysteries of energy based therapy and ascertain its success, strict protocols involving sham treatment should be the goal for research participants and blinded investigators performing follow-up assessments [42].

**Postgynaecological cosmetic surgery-sexual satisfaction guaranteed?** A woman's belief that the procedure will enhance their body image, sexual satisfaction, and marital relationship, is said to be the primary driver of gynaecologic cosmetic surgery requests [43]. When female genital-cosmetic surgery was performed by a skilled surgeon, Goodman MP et al., discovered that sexual pleasure and intimate body self-perspective image improved following the procedure in two years [44]. Another study found that women interested in gynaecologic cosmetic surgery were less satisfied with their bodies than those who were not [45]. Studies have more explicitly indicated that social and intrapersonal factors play a significant role in the motivation for aesthetic surgery [46]. Social networks may include features like media exposure, interpersonal ties, and conversations with peers about physical appearance matters a lot.

The score for assessing not only sexual gratification but for woman's body image are as follows:

- **FSFI-6-**The index evaluates pain, lubrication, orgasm, satisfaction, and sexual desire. A result of less than 19 shows the need for additional research [47].
- **BIQLI**-This 19-item self-reported scale measures how one's life has been impacted by their body image. It assesses feelings about oneself and life in general, psychological conditions, relationships with people of the same sex as oneself and with people of different sexes, eating and physical activity, tutoring activities, sexual encounters, and family and work/school environments. Higher body satisfaction is indicated by a higher BIQLI overall score [48].
- **LSSQ**-The LSSQ is a 25-item, multidimensional questionnaire that evaluates sexual attitude, sexual adjustment, and sexual life quality. The scale's scores, which range from 0-125, can be understood as follows: 25-50% of people are dissatisfied, 51-75% low satisfied, 76-100% moderately satisfied, and 101-125% are highly satisfied [49].

As studied by Eftekhar T et al., [43] Female Sexual Function Inventory (FSFI-6) [47] and the Larson Sexual Satisfaction Questionnaire (LSSQ-F) were administered to women at two different times: preoperative (one week prior to surgery) and postoperative as three months after surgery and the results showed, female genital cosmetic surgery improved women's body image and sexual function, as well as sexual satisfaction in couples, perhaps leading to a more pleasurable and healthier marital connection. Similarly, the LSSQ [49] was used to assess the sexual satisfaction of the male partners (LSSQ-M) and Body Image Quality of Life Inventory (BIQLI) of which the results further demonstrated that women in the sample expressed more positive than negative consequences of their body image for many domains of life [48].

Hence, this review included varied studies in various aspects of gynaecological cosmetic surgery and also medical treatments showing the usage, advantages, and disadvantages and the manual for approach, satisfaction scores, and psychological aspect pertaining to aesthetic gynaecology. Although, the study includes many review articles, case reports, and evidence-based studies, it definitely has author's selection bias in the selection of the studies. Although many studies are included, for the establishment of the fact that this new upcoming budding area of gynaecology needs proper protocols and studies for its beneficial usage.

## CONCLUSION(S)

Though this new specialty as "Aesthetic gynaecology", there is nothing aesthetic about procedures that enhance intimate wellness, pelvic floor problems, and sexual dysfunction. It is still considered a taboo and a procedure frowned upon by society in India. Majority of the women after normal vaginal delivery face vaginal laxity and associated sexual stress and psychological trauma from the male partner or society. Like all the other organ functions may have dysfunction, then why discriminate between intimate wellness and sexual function? Randomised control trials and social awareness of these qualities of life-changing treatments are needed.

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