

# Laser labiaplasty and vaginal rejuvenation: how to reach zero post-operative infections. An expert opinion and short narrative review on protocols, safety and outcome

Filis Demirgean<sup>1\*</sup>, Simona Albu<sup>2</sup>, Maria-Magdalena Constantin<sup>3</sup>, Adrian Streinu-Cercel<sup>4</sup>

## Abstract

Labiaplasty, the surgical modification of the labia minora, has gained popularity lately due to increasing functional and aesthetic concerns. We examine the preoperative considerations, postoperative outcomes, and potential complications associated with this intervention, while describing our center's protocol for laser labiaplasty. The use of laser technology appears to enhance surgical outcomes, by minimizing tissue trauma and expediting recovery. This paper highlights the importance of individualized patient care, surgeon expertise, and adherence to best practices to optimize safety and results. As labiaplasty techniques continue to evolve, further studies are necessary to evaluate their benefits, risks and long-term outcomes.

**Keywords** laser therapy, labiaplasty, postoperative complications.

## Introduction

Labiaplasty, a surgical modification of the size or shape of the labia minora, has emerged as a solution for managing labial hypertrophy. Although labial hypertrophy is most often an anatomical variation, it can also be the result of many other underlying conditions, such as disorders of sex development, hormonal treatments and infections, or cultural practices. The earliest recorded surgical treatment for labial hypertrophy dates to 1681<sup>1</sup>; however, this

procedure has become popular in the recent decades, especially among women in highly developed countries. This surge in interest correlates with rising exposure to sexual images in mass-media and with the higher preoccupation with ideals of feminine beauty.<sup>2</sup>

While there are multiple surgical and non-surgical approaches for labial hypertrophy, there is no technique yet accepted as a golden standard. Factors influencing the choice of intervention include the patient's anatomical characteristics, aesthetic goals, medical history, risk tolerance for anesthesia, and the preferences of the healthcare provider. Possible complications for this procedure include pain, discomfort, wound dehiscence and infection. Nevertheless, the incidence of reported complications is low, while patient satisfaction is high.<sup>2</sup>

Healthcare professionals remain divided in their stances on labiaplasty. Some are interested in performing it or already do so, while others are hesitant or completely oppose the idea of treating labial hypertrophy. Such arguments include the disregard of labial hypertrophy as a cause of sexual or everyday dysfunction, the lack of established standards of care, and providers' concerns for perpetuating unrealistic body standards for women. The challenges faced by those who offer this procedure to their patients come from the lack of sufficient and qualitative data concerning the actual numbers of

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<sup>1</sup>MD, Carol Davila University of Medicine and Pharmacy, Bucharest, 050474, Romania; <sup>2</sup>MD, PhD, Department of Obstetrics and Gynaecology, Carol Davila University of Medicine and Pharmacy and University Emergency Hospital, Bucharest, 050098, Romania; <sup>3</sup>MD, PhD, Second Department of Dermatology, Carol Davila University of Medicine and Pharmacy and Colentina Clinical Hospital, Bucharest 020125, Romania; <sup>4</sup>MD, PhD, Department of Infectious Diseases I, Carol Davila University of Medicine and Pharmacy and National Institute for Infectious Diseases "Prof. Dr. Matei Balș", Bucharest, 021105, Romania.

\*Corresponding author: Filis Demirgean, [filis.demirgean@drd.umfcd.ro](mailto:filis.demirgean@drd.umfcd.ro)

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labiaplasties performed, the satisfaction rates and their positive and negative outcomes. Until now, clear definitions or a universally accepted classification system haven't been established for labial hypertrophy.<sup>2</sup> We explore the use of laser labiaplasty, among other surgical techniques, for managing labial hypertrophy, with an emphasis on the technique's efficacy and associated risks, particularly the occurrence of postoperative infections.

### Types of labiaplasty techniques, their risks and benefits

Various surgical techniques have been described for the reduction of labia minora. The simplest method involves direct excision, wherein excess tissue is removed in a linear fashion under local or general anesthesia. While straightforward, this method may result in visible scarring or contracture. Modified techniques such as the “running W” (zigzag) or “lazy S” incision aim to reduce tension along the wound edges, avoid scar contracture or suture line disruption.<sup>2</sup>

Wedge resection, another common technique, involves removing a V-shaped segment of the most prominent area of the labia minora. Variations include the 90-degree Z-plasty, “hockey stick”-shaped anterior resection, or “star labiaplasty.” These preserve the labial edge and color but still risk scar contracture.<sup>2</sup>

Deepithelialization limits resection to the epidermis of the central labia using a fuse-shaped design, preserving the labial edge throughout. Lipoplasty alters the labia majora's appearance for reconstructive and aesthetic purposes. Laser and radiofrequency serve both as surgical adjuvants, reducing electrocautery use and inflammation risks, or as non-surgical approaches for this procedure.<sup>2</sup>

Given the variety of techniques, pre- and postoperative protocols must address risks and complications. While a standard guideline is not yet accepted, current literature describes some procedures and their outcomes.

Triana and Robledo<sup>3</sup> analyzed outcomes in 74 patients undergoing labiaplasty under local or general anesthesia. They utilized laser or radiofrequency devices instead of electrocautery,

in order to limit tissue inflammation. Of the 74 patients, two developed wound infections—one resolved after suture expulsion and antibiotic therapy. The authors hypothesized that internal sutures contributed to the infections. Transitioning to external sutures eliminated further incidences. All patients reported improved sexual function and no intercourse discomfort.

Hersant et al.<sup>4</sup> investigated 21 patients who underwent labia minora reduction with concurrent augmentation of the labia majora. All patients received a prophylactic dose of cefotaxime before surgery. Postoperative care included topical antibiotics, protective gauze dressings, and clear hygiene instructions. Reported complications were minimal and included one palpable lump, which was resolved with massage, and one minor labial separation that required no intervention.

Solanki et al.<sup>5</sup> treated 12 patients using the zigzag “running W” technique. Postoperative care involved topical antibiotics (polymyxin B-bacitracin), jelonet dressings, oral antibiotics, and analgesics. No infections or wound dehiscence occurred, though one patient experienced bilateral hematomas shortly after surgery, another had urinary retention, and a third had transient wound oozing.

In a study by Bizjack-Ogrinc and Sencar<sup>6</sup>, 80 women underwent Er:YAG laser labiaplasty under local anesthesia. Initially, sutures were used but later omitted. Postoperatively, patients applied a gentamicin-betamethasone cream for five days. Around 80% of patients experienced minor wound separation, which was anticipated due to the non-sutured approach. Seven developed infections treated with topical and systemic antibiotics, one presented with bleeding and another developed a hematoma. Four patients required minor corrective surgery.

González-Isaza et al.<sup>7</sup> reviewed 112 patients who underwent multi-pulsed CO<sub>2</sub> laser labiaplasty. No infections, wound complications, or adverse events were reported, and patient satisfaction was high.

Lapalorcia et al.<sup>8</sup> presented a unique case of severe labial hypertrophy associated with long-term antiretroviral therapy. The procedure

included sharp dissection and fat resection with postoperative measures like cold compression and antibiotic ointment application twice daily. Recovery was uneventful, with only mild edema observed.

Labiaplasty complications include scar contracture, adhesion formation, wound dehiscence, infection, persistent vulvodynia, and undesired cosmetic results, though risks are minimal. Rouzier et al.<sup>9</sup> reported that fewer than 5% of patients experienced pain or dyspareunia by postoperative day 28, with 7% requiring minor revisions. Despite these complications, over 90% were satisfied with both cosmetic and functional outcomes.

Munhoz et al.<sup>10</sup> analyzed 21 patients undergoing wedge resection with flap reconstruction. Complications included one infection, one hematoma, and two cases of wound dehiscence. All issues resolved without lasting effects, and no sexual dysfunction was reported.

Pardo et al.<sup>11</sup> employed an Nd:YAG laser in 55 cases, using electrocautery selectively. Two patients presented transient pain that was well managed with oral analgesics, and only one wound dehiscence occurred. No infections were documented.

Yang et al.<sup>12</sup> conducted a comparative study assessing complications across different nursing protocols. Patients in the observation group, who received structured postoperative care, experienced significantly fewer complications, particularly infections and delayed healing (one case of infection, one of skin scarring and one of delayed healing), compared to the 11 cases of reported complications in the control group (three infections, one hematoma, two skin scarrings and four delayed healings).

Ahluwalia et al.<sup>13</sup> examined 58 adverse event reports in the Food and Drug Administration's (FDA) Manufacturer and User Facility Device Experience (MAUDE) database related to laser vaginal procedures. Pain was the most common complaint. Several cases involved numbness, scarring, infections, or dyspareunia, and about half reported persistent symptoms. While informative, these results warrant further investigation to determine clinical relevance.

Géczi et al.<sup>14</sup> suggested that laser labiaplasty resulted in fewer immediate complications compared to traditional surgery, especially regarding local swelling and bleeding. However, more robust data are required to draw definitive conclusions. A summary of the techniques described and reported complications is available in Table 1.

### Our protocol

At our clinic, a thorough preoperative evaluation is conducted, that includes a pelvic ultrasound, a cervical smear (PAP test), HPV testing, and analysis of vaginal secretions. The CO<sub>2</sub>RE Intima laser is the device of choice, with procedures performed under local anesthesia.

Patients receive a topical anesthetic (lidocaine-prilocaine mix) 30 minutes prior to injection of local anesthesia. The area is disinfected with povidone-iodine, and precise markings are made before infiltration with lidocaine-adrenaline solution. Hemostasis is achieved using clamps placed at the site of the markings, that are left until sufficient coagulation is achieved.

Postoperatively, topical treatments include fusidic acid-hydrocortisone cream and zinc bacitracin-neomycin sulphate powder. Hemostatic sponges and sterile dressings are applied, and analgesia is managed with intravenous acetaminophen and oral ketoprofen. Patients receive detailed hygiene and wound care instructions, including wound cleaning and fusidic acid-hydrocortisone cream plus zinc bacitracin-neomycin sulphate powder application, twice daily for three days, followed by a repairing balm, twice daily for a week. Sexual activity, intense exercise, and immersion in water (e.g., pools, saunas) are discouraged for six weeks.

Patients are evaluated two times: on the first postoperative day, and again, six weeks after the procedure. Reevaluation includes clinical examination of the area, assessment of postoperative complications, and rating of patient satisfaction, using the standardized Global Aesthetic Improvement Scale (sGAIS).

Table 1. Reported techniques and complications in current literature

Authors	Technique	Wound Infections	Other complications
Triana and Robledo <sup>3</sup>	Laser or radiofrequency-assisted surgical labiaplasty	2 out of 74 patients (2.7%)	0 out of 74 patients (0%)
Hersant et al. <sup>4</sup>	Surgical labiaplasty	0 out of 21 patients (0%)	2 out of 21 patients (9.5%)
Solanki et al. <sup>5</sup>	“Running W” surgical labiaplasty	0 out of 12 patients (0%)	3 out of 12 patients (25.0%)
Bizjack-Ogrinc and Sencar <sup>6</sup>	Er:YAG laser labiaplasty	7 out of 80 patients (8.8%)	66 out of 80 patients (82.5%)
González-Isaza et al. <sup>7</sup>	Multi-pulsed CO <sub>2</sub> laser labiaplasty	0 out of 112 patients (0%)	0 out of 112 patients (0%)
Munhoz et al. <sup>10</sup>	Wedge-resection surgical labiaplasty	1 out of 21 patients (4.8%)	3 out 21 patients (14.3%)
Pardo et al. <sup>11</sup>	Nd:YAG laser labiaplasty	0 out of 55 patients (0%)	3 out of 55 patients (5.5%)
Ahluwalia et al. <sup>13*</sup>	Surgical and laser labiaplasty	2 out of 46 patients (4.3%)	44 out of 46 patients (95.7%)

### Discussion

Women seek labiaplasty for various reasons – some driven by functional concerns, others by aesthetic dissatisfaction or psychological distress. The American College of Obstetricians and Gynecologists has cautioned against promoting labiaplasty and related procedures as standardized medical interventions, due to insufficient data and potential risks like scarring, altered sensation, and psychological harm.<sup>15</sup>

Nonetheless, published literature indicates a high satisfaction rate among patients who undergo the procedure. Many women report significant improvements in sexual function, physical comfort, and self-esteem. Over 90% of those surveyed expressed a willingness to repeat the procedure, even if not entirely satisfied.<sup>9</sup>

Importantly, the absence of accessible and evidence-based treatment options may drive some individuals to attempt dangerous do-it-yourself genital modifications, potentially resulting in life-threatening harm or genital mutilation, as documented in the case reported by Farahani et al.<sup>16</sup>

Labiaplasty also has clinical relevance for specific populations, such as intersex individuals or those with secondary hypertrophy from medical treatments, as seen in the case reported by Lapalorcía et al.<sup>8</sup> These procedures can

alleviate gender dysphoria or restore genital function and self-confidence.

Anatomical diversity in labial structure is normal, but societal and media-driven norms can distort women’s perceptions of their bodies. While most women sought this procedure for functional reasons, many of them also cited aesthetic reasons, with some not presenting signs of labial hypertrophy and wishing, still, to undergo the procedure.<sup>17</sup> Healthcare providers must balance sensitivity to aesthetic desires with clinical responsibility, ensuring patients receive psychological counseling when needed, especially in cases suggestive of body dysmorphia. Still, many women experience genuine discomfort, avoiding certain clothes, physical activities, or sexual intimacy. In these cases, labiaplasty is an option that should be discussed by the medical provider with their patient.

Despite the reported low risk and high satisfaction associated with labiaplasty, available data remains limited in scope. Most studies include small cohorts and use varied methodologies, limiting the reliability of conclusions. Until more comprehensive studies are conducted, clinical guidelines remain provisional. Existing recommendations, such as those by the Society of Obstetricians and Gynecologists of Canada (SOGC), stress informed consent and patient education

regarding natural anatomical variation and potential risks.<sup>14,18</sup>

Future research should aim to standardize definitions of labial hypertrophy, develop grading systems, and establish evidence-based protocols linking anatomical features with symptomatology and patient outcomes.

### Conclusions

Labioplasty, particularly laser-assisted techniques, has proven effective for many women seeking relief from physical discomfort or dissatisfaction with labial appearance. While postoperative complications such as infection remain relatively uncommon, they can occur and should be proactively addressed through thorough preoperative screening, careful surgical technique, and structured aftercare. Despite increasing demand and high patient satisfaction, the field still lacks standardized definitions, classification systems, and large-scale outcome studies. To ensure safe, ethical, and patient-centered care, future research must focus on establishing evidence-based guidelines that balance functional outcomes, aesthetic goals, and psychological well-being.

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