



Case Report

Efficacy of CO₂ Laser for Vaginal labiaplasty

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Introduction

Labia minora hypertrophy is defined as labia minora longer than 4 cm and is often asymmetric [1]. This condition can be attributed to various factors, such as sex development disorders [2], androgenic drugs administration in childhood [3], or chronic irritation [4,5], but it is mainly referred to idiopathic or congenital origins [2].

Women with labia minora hypertrophy often wish to undergo labiaplasty for different aesthetic, functional, and/or psychological reasons [1,4,6]. It is estimated that more than half of the women approaching their physicians for labiaplasty want to improve the appearance of their labia minora [1,7,8] and almost all indicate its aesthetic appearance as one of the reasons [9,10]. Other non-aesthetic, functional reasons for labiaplasty are related to quality of life such as pain and discomfort during intercourse, issues related to hygiene or infection, irritation during certain sport activities such as cycling, riding, or jogging, and discomfort while wearing tight clothing [1,10].

Aside from these reasons, women also experience psychological distress due to loss of self-confidence, embarrassment, and negative impact on their sexual life [7,11].

Various techniques exist to perform labiaplasty including edge resection, wedge resection, de-epithelialization, W-plasty, custom flask, fenestration, composite reduction, and laser labiaplasty [12]. This report on laser labiaplasty for the correction of hypertrophy and/or asymmetry of the labia minora presents the authors' experience with this method.

Patients and Methods

Between September 2020 and April 2023, 48 labiaplasties were performed at San Luca Medical Clinic (Tirana, Albania) on patients who sought correction of their condition for aesthetic or functional reasons. Patients age ranged from 19 to 45 (mean 31.5±7.3), and none of them was at menopause. Aesthetic reasons were attributed to patients requesting correction of the condition simply because

of personal preferences; functional reasons to patients who experienced pain, found tight fitting clothes uncomfortable, or were concerned about their hygiene. During the first consultation, the patients were given a questionnaire to indicate the reasons (aesthetic, functional, or psychological) they considered the most likely to have caused them to seek labiaplasty.

Of the 48 patients who applied for labiaplasty, 41 (85.4%) reported approaching due to aesthetic reasons, whereas the rest 7 (14.6%) did so due to aesthetic as well as functional reasons.

Labiaplasty procedure

The procedure was explained to all patients, who then gave signed consent, and received local anaesthesia (lidocaine + adrenaline) injected in each labium. With the patient in the gynaecologic position, the intended incision line with a curvilinear form was marked with ink on the internal aspect of the right labium minor. This labium was immediately placed against the left labium minus where the ink line is transferred for optimal symmetry. Also, was marked the exterior part of the labia with ink.

With the labia then extended on wet gauze strips (physiologic solution 0.9%) fixed to the inguino-cruel area, is done the permanent marking of the tissue with a focused CO₂ laser (Pixel CO₂, Focus 100mm module, Alma Lasers Ltd, Israel) at a power 2.5-3.0 watts on both sides.

Then, the excessive tissue was excised following the curvilinear mark with the trim technique at a power of 4.0-9.0 Watts (W), in continuous mode. In cases where there was a disproportion between the clitoral prepuce and the newly sized labia minora, parts of the clitoral prepuce were removed on both sides of the clitoris.

Before closing the incision, 2-3 passes of defocused CO₂ (2.5-4 cm away from the tissue) with a power of 2.5-3.0 watts were emitted. Then the incision was closed with 4-0 PGA. Patients were kept in observation and discharged around 3 hours after surgery.

During the observation period, topical antibiotics in cream and ice were placed. Patients were recommended to avoid excessive movements during the next 24 hours.

For the management of postoperative pain and inflammation, patients were prescribed with 400 mg ibuprofen and were instructed to intermittently apply ice pads on the treated area during the first 4 to 5 days.

Vaginal pictures were taken before the procedure, immediately after the procedure, and at the follow-up visit that took place 2-4 weeks post-procedure. After the procedure, patients were asked to rate their satisfaction from the procedure using a 5-point Likert scale, and at the follow-up visit, they were asked to rate their satisfaction from the treatment, using the same scale.

Results

The labiaplasty procedure was carried out in a median of 45 minutes, and there were no intraoperative complications. The complications noted during the postoperative period were:

- Early postoperative period; small haematoma (12 mm) after accidental trauma in the following 2 hours after the procedure, reported by two patients, which was treated by drainage in both cases. Trauma was related to constipation, so from that moment and on, patients were carefully instructed to have a fiber-rich diet during the 2-3 days around the procedure.
- Late postoperative period; poor regeneration in one patient. For this patient, another session was performed after 3 months. There were two follow up meetings: the first one after 7 days and the second after 3 weeks. During the following hour after the procedure, the patient experienced local pain managed with NSAIDs. The pain lasted 30 minutes to 3 hours in 45 out of 48 patients. 3 patients did not experience any pain. During the following 24 hours, 47 of

the 48 patients experienced local oedema. 9 out of the 48 patients returned to their routine the next day after the procedure. 35 out of the 48 patients returned to their routine after 24-30 hours from the procedure. 4 of the patients returned to their routine after 48 hours from the procedure.

During the first week, patients were instructed to avoid medium-high effort activities, sports, pools or saunas. After 3 weeks full regeneration was completed in 45 (93.75%) patients and they felt safe to restart sexual activity.

Patients who decide to undergo labiaplasty take a lot of time to decide about having the procedure done. One of the reasons they take their time is because of the fear of pain during the procedure and the difficulties they might encounter during the recovery time.

For that reason, three questionnaires were used. One for the procedure itself that included comfort, pain and general sensation. The second questionnaire was performed 3 weeks after the procedure, when regeneration was completed. The third questionnaire was performed 6-9 months after the procedure in 30 of the 48 patients.

Using the satisfaction Likert Scale questionnaire (1- very dissatisfied, 2- moderately dissatisfied, 3- neither satisfied nor dissatisfied, 4- moderately satisfied, 5-very satisfied), all 48 patients (100%) were very satisfied (5) with the procedure itself. After 3 weeks, as for the grading of satisfaction from the treatment results, that was conducted at the follow-up visit, 45 patients (93.75%) were very satisfied (5), and the rest 3 (6.25%) were satisfied (4).

After 6-9 months, a third questionnaire was performed in 30 from 48 patients. 27 from 30 patients were very satisfied and 3 of the 30 patients were moderately satisfied. Figures 1&2 show labia minora before and after correction surgery.



Figure 1: 43 years old patient. Labia minora Hypertrophy with aesthetic factors.



Figure 2: 36 years old patient. Labia minora Hypertrophy and asymmetry with aesthetic factors.

Discussion

Labia minora hypertrophy patients suffer emotional and sexual discomforts alongside a decrease in many lifestyle-related aspects due to this condition. A labiaplasty procedure can improve sexuality, self-esteem, and overall quality of life in these patients.

Current evidence suggests that motivation for labiaplasty has both psychological and emotional origins rather than being determined by physical difficulties, and that there is an increasing demand for this intervention. This theory is reinforced by the finding that 75% of specialists in sexual health choose to refer women who request labiaplasty to psychological services before considering any surgical interventions [13]. In the present series, the aesthetic factor was involved in 100% of cases, whether associated or not with other factors, and satisfaction rate was similar. Therefore, it should not be disregarded.

Labiaplasty Classic surgical techniques often have a long recovery time with a high incidence of haematoma, infections and scar regeneration. In the experience of the author, laser labiaplasty is easier to perform than conventional cautery or cold-knife excision, due to the high precision of the laser and low rates of blood loss.

The curvilinear laser labiaplasty approach described in this report helps the physician to have a cleaner operating field during the procedure, cause of less blood loss, which facilitates creating symmetry and avoiding overcorrection. In addition, cutting using a CW laser enables a clean cut and less risk of post procedural scarring, achieving a natural appearance.

On the other hand, the laser labiaplasty approach helps the patient to have a shorter and more comfortable recovery time without blood loss or infections, allowing returning to the routine after 24 hours from the procedure in most of the cases.

The nearly complete absence of blood loss achieved with the laser is a remarkable advantage. Besides allowing to work in good haemostatic conditions, it prevents hematoma and haemorrhage at this highly vascularized site during the early postoperative period. As seen in the results of this report, hematoma was observed among only 2 out of 48 patients (4%) and both were posttraumatic hematoma. To conclude, CO₂ focused laser seems to be a safe and precise surgical tool to perform this type of procedure. Optimal biophysical and bio-stimulating laser-tissue interactions allow delicate vulvar tissues to shorten downtime.

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