ABSTRACT

Introduction: Female genital cosmetic surgery includes traditional surgical procedures resulting in alterations in genital size, appearance, and function as well as cosmetic vulvar and labial procedures. Vaginal labiaplasty, the surgical reduction of the labia minora as a treatment for labia hypertrophy, is becoming more and more common and there are many different techniques with no optimal approach suggested.

Aim: The purpose of this study is to report on a “sutureless” laser labiaplasty and to evaluate the efficacy and safety of this technique.

Methods: A retrospective chart review analysis of all 80 patients who underwent laser labiaplasty between February 2015 and April 2018 was conducted.

Main Outcome Measures: Women were asked about or checked for side effect and answered a questionnaire regarding their satisfaction.

Results: Majority of women did not report of any side effect, 7 reported wound infection, bleeding was reported by 1 patient, and 1 woman reported hematoma formation. All of the patients reported high satisfaction. There were no partly satisfied or dissatisfied patients.

Conclusion: Sutureless laser labiaplasty is a safe and effective way of improving women’s lives and is associated with a high degree of patient satisfaction.

U. Bizjak-Ogrinc, S. Senčar. Sutureless Laser Labiaplasty of Labia Minora. Sex Med 2021;9:100406.

INTRODUCTION

Reconstructive reparative procedures designed for cosmetic and functional improvement of human tissues and organs have been available and performed for thousands of years. But cultural changes in the last 2 decades and the pursuit of perfection in a modern, economically developed societies, made women more comfortable with the idea of altering and therefore improving even more intimate areas of their bodies.

Female genital cosmetic surgery includes traditional surgical procedures resulting in alterations in genital size, appearance, and function (repairs after obstetrical delivery, perineorrhaphy, anterior/posterior colporrhaphy, and of course intersex and transsexual surgical procedures) as well as cosmetic vulvar and labial procedures. The line between cosmetic and medically indicated surgical procedures is blurred, and today many operations are performed for both purposes.

Vaginal labiaplasty, the surgical reduction of the labia minora as a treatment for labia hypertrophy, was first described in the plastic surgery literature by Hodgkinson and Hait in 1984. Labia minora hypertrophy can be a result of sex development disorder, estrogen or androgen treatment during childhood, infection, tissue expansion by repetitive pulling or irritation or it can occur concomitantly with incontinence and consists of multiple components, including the clitoral hood, lateral prepuce, frenulum, and the body of the labia minora. According to the published data more than half of the women looking for labiaplasty wanted to improve the appearance of their labia minora and in some studies almost all listed aesthetics as one of the reasons. Other nonesthetic, functional reasons for labiaplasty are pain and discomfort during intercourse, hygiene problems, irritation during certain sport activities such as cycling, jogging and similar, and discomfort while wearing tight clothing. Aside from all this reasons, women also experience psychological
distress due to loss of self-confidence, embarrassment, and negative impact on their sexual life.\textsuperscript{9,14}

Clinical labia minora hypertrophy remains poorly defined, with no established cut-off values and only few attempt at classification since data on measurements of the labia minora are sparse.\textsuperscript{15}

An indication for surgery can also be asymmetry. All things considered, the criteria of the “ideal vulva” are very subjective so a decision to perform the procedure should be based on the patients perception and surgeons discretion. In order to obtain the best possible results many different techniques have been used by surgeons around the world. All of the techniques can be can be categorized into 3 groups: Edge resection, wedge resection, and central resection. According to published data best-fit techniques are not proposed since all studies report of good outcomes and high satisfaction rates no matter the technique used as long as the operator had enough experience with labiaplasty.\textsuperscript{16}

Ablative lasers like are Er:YAG and CO\textsubscript{2} are also used in labiaplasty procedures.\textsuperscript{17}

Three articles report on using laser instead of scalpel for cutting, Pardo used Nd:YAG,\textsuperscript{12} Smarrito and González-Isaza instead used CO\textsubscript{2}.\textsuperscript{18,19} However Er:YAG laser has also been used for surgical procedures in gynecology for at least 2 decades.\textsuperscript{20} Technique used in this article is based on a technique learned from Dr. Claudia Pidal from Universo Laser Clinic, Buenos Aires, Argentina. She has been using Er:YAG laser to cut of excessive labia minora tissue while curved serrated forceps are used on both labia to prevent bleeding and achieve hemostasis by compression for many years.

Due to its simplicity, good results and low risk this technique is becoming popular among Er:YAG users.\textsuperscript{21} We have been using Er:YAG laser for many different indications for more than 7 years with high success, minimal side effects, and great patient satisfaction. This study on laser labiaplasty for the correction of hypertrophy and/or asymmetry of the labia minora presents the authors’ experience with this method.

METHODS

Patients

This was a retrospective chart review study that was conducted at the Gynaecology Clinic Name, City, and Country. Ethics approval (No. 0120-253/2019/7) was obtained from the National Medical Ethics Committee of the Ministry of Health of the Republic of Country and the study was conducted according to the Declaration of Helsinki.

All 80 patients who underwent laser labiaplasty between February 2015 and April 2018 at Name, City, Country were included in this retrospective study. The patients ranged in age between 20 and 63 years (median 39 years). The patients were given a questionnaire during the first consultation in order to determine the reasons they considered labiaplasty. The reasons were grouped in 4 categories; functional (pain related to sports, clothing, or sexual activity or erythema and pruritus, irritation or scruff) (Figure 1), esthetic (Figure 2) as in undesirable appearance, infectious (urinary or vaginal), and other. Almost half of the women (35 or 44%) had no children. The procedure was explained to all patients, who then gave signed consent.

Laser Procedure

The amount of tissue that is going to be removed was discussed with the patient and marked before the procedure. All patients received local anesthesia with 2% xylocaine and adrena-
line 1:100 000 (Scandonest) as Figure 3 shows. With the patient in the gynecologic position, the surgeon places aortic clamp on the previously marked line on labia minora as shown in Figure 3. Edge resection of excess tissue was then performed in a noncontact mode with 2940 nm Er:YAG laser (SP Dynamis, Fotona, Ljubljana, Slovenia) and 2 mm spot size on R11 handpiece, fluence of 32 J/cm², SP mode and 20 Hz. Figure 3 also shows results immediately after the procedure. The initial patients treated in 2015/2016 were sutured with 4-0 Vicryl suture if needed. Later, as the authors gained experience in determining the right amount of time for the clamps to be left on the labia minora, suturing was no longer required. Hospital discharge occurred 3 hours after surgery. All the patients received topical gentamicin and betamethasone cream (Diprogenta, Schering-Ploughm, Kenilworth, New Jersey, USA) to be used for the next 5 days. The patients were instructed to take NSAIDs (eg, diclofenac) if needed. All women were discouraged from having sexual intercourse and performing strenuous physical activity for 4 weeks. A first postoperative visit took place on the 6th postoperative day, with a second visit around 60th days after surgery. On the 60th postoperative day all patients answered a 4 point Likert scale satisfaction (very dissatisfied, dissatisfied, satisfied, very satisfied) questionnaire. If the patient expressed a wish for correction surgery it was performed no sooner than 6 month after.

RESULTS

All of the 80 patients included in this study had only laser labiaplasty procedure done in that visit. Suturing was used for 16 patients (20%) and only 4 (5%) needed corrective surgery. Corrective surgery was requested because there was either a small area of hypertrophic tissue that was not removed with the first procedure or because they simply wanted additional reduction of labia minora. When asked why they requested labiaplasty 72 women (90%) reported functional problems but for only half of those (36 or 45%) this was the only reason. Aesthetic concerns were the second most common reason, 34 women (43%) reported it, but only 8 women (10%) stated this as the only reason. Less common reasons are shown in Table 1.

The labiaplasty procedure was carried out in around 30-40 minutes, and there were no intraoperative complications. Since this was a “sutureless” procedure around 80% of the patients had slight separation of wound edges that were expected and considered a part of normal healing process of a nonsutured wound. Poor cosmetic results usually associated with wound dehiscence were not observed in our study because of the very limited wound separation. On the follow-up visit the women were asked about or checked for other possible side effect; bleeding, pain, wound infection, hematoma, pain during sex, scarring decreased sensibility or other infections. Majority of women (71 or 89%) did not experience any side effect, 7 (9%) developed wound infection, bleeding was reported by 1 patient, and 1 woman reported hematoma formation. All patients who developed side effects were seen by one of the authors and treated if needed. Patient who experienced symptoms of local infection received either additional topical mupirocin ointment (Betrixion, Pliva, Slovenia) for few days or systemic amoxicillin/clavulanic acid (Amoksiklav, Lek, Slovenia) for 10 days or azithromycin (Sumamed, Pliva, Slovenia) for 3 days. The side effects were statistically significantly (Fischer exact test, P = .002) more common with patients whose wounds were sutured (Table 2). All of
the patients (80) were asked about satisfaction at their follow up around 60th day after procedure. Majority of the women reported high satisfaction; 76 patients (95%) were very satisfied and remaining 4 women were satisfied. There were no very dissatisfied or dissatisfied patients.

**DISCUSSION**

There is not much published data on what a normal vulva looks like but according to what can be found “normal” lengths and widths of labia minora are very variable. In a review

**Table 1. Reasons for surgery**

| Reason for surgery     | N  | %  |
|------------------------|----|----|
| Functional             | 72 | 90 |
| Esthetic               | 34 | 43 |
| Infectious             | 12 | 16 |
| Other                  | 1  | 1  |
| Functional ONLY        | 36 | 45 |
| Aesthetic ONLY         | 8  | 10 |

**Table 2. Side effects according to technique (suturing or no suturing)**

|                          | Sutures |          | No sutures |          |
|--------------------------|---------|----------|------------|----------|
|                          | N       | %        | N          | %        |
| Bleeding                 | 1       | 6.25     | 0          | 0        |
| Wound infection          | 4       | 25       | 3          | 5        |
| Hematoma                 | 1       | 6.25     | 0          | 0        |
| No side effects          | 10      | 62.5     | 61         | 95       |
| SUM                      | 16      | 100      | 64         | 100      |
published in 1949, labia minora measured from less than 2 cm to 5 cm. Lloyd et al measured the dimensions of labia minora in 50 women not presenting with labial issues and described a range in length of 20–100 mm and width of 7–50 mm and Widschwendter\(^\text{24}\) reports of median labia minora length of 35.5 mm and median width of 19 mm. The definition of “normal” vulva and therefore “abnormal” or hypertrophic is subjective and dependent on the culture of that region. Interestingly, women in Zambia attempt to elongate their labia minora with the use of weights or pulling. Elongation of the labia is considered an aspect of becoming a proper Zambian woman (one who is ready to get married).\(^\text{25}\) There have been some attempts at labia minora classification; the Franco classification\(^\text{26}\) divides labia minora width into 4 groups: <2 cm; 2–4 cm; 4–6 cm; and >6 cm and the algorithm developed by Ellsworth\(^\text{27}\) assigns a specific type of reduction technique to each group. The Gonzalez classification, proposed in 2015, resembles the Franco classification.\(^\text{28}\) Conventionally labial hypertrophy is defined as maximal labial width exceeding 5 cm. Rouzier proposed 4 cm\(^\text{11}\) and Munhoz defined it at 3 cm.\(^\text{13}\) Since there is no common ground or a universally established guideline and findings by Widschwendter\(^\text{24}\) that women who perceive their labia as too large actually do have larger labia minora and that women who undergo labiaplasty do benefit from it\(^\text{14}\) authors think that decision for or against labiaplasty if there are no other contraindications should be more or less entirely on the patient. As opposed to many other published studies\(^\text{9–13}\) where main reason for labiaplasty are esthetic concerns, our patient reported esthetic reasons in only 43% (only 10% reported esthetic reasons as the only reason). The percentage of women who reported only functional problems is relatively high (45%). In our opinion the reason is that aesthetics and especially gynecological aesthetics are not yet really popular and present in our region therefore not many patients are familiar with option or think about having it done. In almost all of the reviewed articles suturing is always needed to approximate the edges of the wound, it is reported also in all 3 articles that we found where laser was used.\(^\text{12,18,19}\) First published article on laser labiaplasty reports on a remarkable advantage since nearly complete absence of blood loss is achieved with Nd:YAG laser.\(^\text{12}\) This kind of technique also prevents hematomata and hemorrhage during the early postoperative period. The Er:YAG wavelength used in our study is inherently much less coagulative so hemostasis had to be achieved with clamps. Suturing is not needed with the technique that we are proposing if the clamps are left on the labia minora for the right amount of time, which can be determined through experience. We have shown that suturing is actually associated with a significantly higher percentage of complications in comparison nonsutured group (Table 2). In our experience the need for suturing was not related to a more complex procedure (due to eg, anatomy) but simply because proper hemostasis was not achieved due to premature removal of clamps. This assumption is based on procedure done in the last year (not included in this study) when suturing was used extremely rarely. In the experience of the authors, laser labiaplasty is easier to perform than conventional cautery or cold-knife excision, as there is no need for approximation of the tissue using fine interrupted sutures. A remarkable advantage is also almost complete absence of blood loss which allows working in clear, bloodless operating field, and minimizes hematomata and hemorrhage in postoperative period. Around 11% of women experienced some kind of complication, mostly wound infection; 9% considering whole cohort, 25% in the sutured group, and less than 5% in nonsutured group. This is considerably less than described by Munhoz\(^\text{13}\) who reported overall 23% complication rate or Rouizer\(^\text{11}\) who reported that 64% of women had pain that lasted 7 days on average. We consider wound dehiscence that happens even with sutured\(^\text{11–13}\) wounds, a normal and expected part of healing process when this kind of technique is used and did not result in poor cosmetic outcome. All the women treated with Er:YAG laser labiaplasty have been satisfied; 95% reported high satisfaction rate; that is accordance with more or less all studies previously cited.

The main limitation of our trial is its retrospective chart review design, which is subject to potential bias, especially due to limited statistical analyses that could be performed and the lack of control group. Also, a potential bias due to the recruitment procedure and inclusion and exclusion criteria can be ruled out since all women requesting labiaplasty between February 2015 and April 2018 were included. In our opinion, the strength of the retrospective design of our study is a large sample size of 80 women, and, that along with including the whole cohort of women wanting labiaplasty, makes our sample is far more representative of the unselected population than those of RCTs. We have also managed to get response to the satisfaction questionnaire from all 80 included women, meaning that a bias with loss-to-follow up was minimized.

**CONCLUSION**

In conclusion, the Er:YAG laser labiaplasty is a safe and effective way of improving women’s lives and is associated with a high degree of patient satisfaction. A comparative study of laser and classical labiaplasty would be needed to confirm the benefits of laser versus classical labiaplasty.

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STATEMENT OF AUTHORSHIP

U.B.-O., Conceptualization, Methodology, Investigation and Writing – Original Draft; S.S., Conceptualization, Methodology, Investigation and Writing – Original Draft.

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