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Original Research

Evaluation of satisfaction level of women with labiaplasty

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Background: The aim of our study is to evaluate the satisfaction levels of women who have undergone labiaplasty procedure for various indications in our center. *Methods*: A total of 100 women aged 17–52 years who underwent labiaplasty procedure with various indications between 2019 and 2020 in our center, were included in our study. First of all, detailed medical histories of women who will undergo labiaplasty were obtained. The satisfaction of the women included in the study with the labiaplasty procedure was measured using the FSFI both before and after the intervention. *Results*: When the FSFI of the women participating in the study were evaluated before and after the intervention, the average score of "Sexual Desire" was 4.27 $\pm$ 1.360 before the intervention, this rate increased to 8.08 $\pm$1.710 after the intervention. While the mean "Sexual Arousal" score before the intervention was 14.35 $\pm$ 4.250, this average was found to be 24.92 $\pm$ 5.920 after the intervention. While the mean score of the "Orgasm" subfield was determined as 6.49 $\pm$ 2.050 before the intervention, this score was found to be 12.37 $\pm$ 3.080 after the intervention. Patient satisfaction was determined as 100%. *Conclusion*: The number of labiaplasty procedures performed worldwide is increasing day by day. As the results and complications of these procedures and patient satisfaction increase, the demand for labiaplasty will increase even more. There is an urgent need for publications on this subject in the literature.

Keywords

Labiaplasty; Satisfaction; Aesthetic; FSFI

1. Introduction

The labia minora, which protrudes abnormally and crosses the labia major, is an undesirable condition that causes both aesthetic and functional problems for women. This can also lead to female sexual disorder (FSD). These problems often include insecurity in tight clothing, embarrassment when undressing, hygiene, dryness, irritation, and discomfort during sexual intercourse. The consequences of labia minora hypertrophy are reduced self-esteem, occupational safety (mannequins), sporting events, and close relationships. As a result, with the increase of social awareness about hyperplastic labia minora, an increasing number of women are seeking treatment not only for aesthetic concerns but also for functional and/or psychological reasons. After the identification of this concern, various surgical procedures have been developed to obtain an "appealing vulva" which is defined as volumized labia maiora and labia minor with no overlap over the majora [1–3]. These procedures aims at the reduction of labia minora for labia majora volumization in order to get an overall improvement of the vulva. Labiaplasty, lipofilling with macrofat, nanofat and the use of hyaluronic acid in the augmentation of labia majora are novel procedures performed for this purposes [4, 5].

Among these surgical procedures, labiaplasty has become increasingly popular in recent years [6]. Vaginal labiaplasty refers to the surgical reduction of labia minora to treat labia hypertrophy. Other features of this procedure are that it is minimally invasive, preservation of the introitus, optimum color/tissue match, and maintenance of neurovascular supply [6]. Although there are no generally accepted practice standards for labiaplasty, patient satisfaction rates are high [7].

There are no widely accepted guidelines for labiaplasty, and this procedure is applied for a variety of reasons. Hypertrophy of the labia minora can cause dyspareunia, chronic urinary tract infections, irritation, hygienic difficulties and preventing sports [8, 9]. Historically, some authors have viewed distances ranging from the midline to the lateral free margin of the labia minora as abnormal. Others advocated surgery only in the presence of chronic symptoms [6].

Labiaplasty procedure was first described in the literature in 1984 by Hodgkinson and Hait [10]. 132,664 labioplasty procedures were performed worldwide in 2018 [11]. In 2018, 18,476 labiaplasty procedures were applied in Brazil, 13,668 in the USA and 4800 in Italy [11]. It has been reported that the increasing interest in such procedures is related to the increasing demand [12]. Although these surgical procedures are ethically controversial, 95% of the patients are satisfied with their quality of life and self-perception results [13, 14]. In 1681, François Mauriceau described women seeking treatment for discomfort caused by labia hypertrophy [15], later Meissner [16] and Treub [17] made similar statements. Today, this issue is increasingly addressed by media platforms and medical organizations in modern society [18].

With a better understanding of the relatively new labiaplasty procedure, it is clear that it will be increasingly demanded by women. Therefore, measurement of patient satisfaction becomes important in such procedures. Various questionnaires and scales are used in this regard. We used the Female Sexual Function Index (FSFI) in this study. The aim of

our study is to evaluate the satisfaction levels of women who have undergone labiaplasty procedure for various indications in our center.

2. Material and methods

A total of 100 women aged 17–52 years who underwent labiaplasty procedure with various indications between 2019 and 2020 in our center, were included in our study. First of all, detailed medical histories of women who will undergo labiaplasty were obtained. Accordingly, the age, employment status, marital status, child status, number of children, normal delivery history, normal delivery count, cesarean delivery history, cesarean delivery count, symptoms and reasons for requesting labiaplasty were recorded. In addition, the development of complications in the postoperative 1st and postoperative 6th months, general patient satisfaction, and the need for revision were also recorded.

Those with incomplete data and women who did not want to participate in the survey were excluded from the study. Written and verbal consents were obtained from all women participating in the study, explaining the objectives of the study in detail. Ethical approval for the study was obtained from the local ethics committee of the hospital (Date: 03/05/2020 Decision No: 003). The study was conducted in line with the ethical principles of the Declaration of Helsinki.

2.1 Procedures performed in the study

Seven different techniques have been reported for labiaplasty [19]. In our study, two techniques commonly used among these different techniques were used. Two main procedures were used in the study.

2.1.1 Carved linear resection technique

In this technique, a part of the labium is carved linearly and excised using a cutting tool such as focused or key laser, plastic surgery scissors (baby Metzenbaum, Keye), electrosurgical needle electrode with cutting current or radiofrequency (RF) shielded wire cutting tool. The desired amounts of excess tissue portions are removed. Conservatively, care is taken not to enter the lateral levels too laterally and avoid the mucosal Hart line by creating medial tension and pull the mucosal surface outward.

After excision, bleeding is controlled and suture ligatures are preferred for arterial bleeding and cautery is preferred for slight bleeding points. Absorbable mono or polyfilament (non-chromic) subcutaneous suture line is used to reduce dead space and provide additional support. Being less reactive, monofilament is preferred thereof, but it is more difficult to work with this suture. Most surgeons prefer a thin, rapidly absorbable suture for the skin closure layer.

Advantages: It includes a shorter surgical learning curve together with small, relatively flat and "smooth" labia that can be made relatively in alignment with the labia majora and often exhibiting a lighter (more pink) edge.

Disadvantages: If the edge is closed with continuous or too tight sutures, a more scalloped appearance is obtained. If not paid attention, sometimes scarring and disfigurement occurs, with hypersensitivity at the edge and pain induced by genital swelling/stimulation. If there is a color mismatch between the mucosal and lateral surfaces of the labium, there will be a "colored line" along the resection line. This line usually heals and fades within a year [3, 6–9].

2.1.2 Modified V-wedge technique

In this technique, the large V-shaped "wedge" of the labium is excised. The upper edge begins inferior to the fold from the clitoral hood, while the lower edge begins well above the posterior commissure. Either a Z-plasty (rarely used) or a "hockey stick" curvature is used laterally to remove slack and prevent "page corner folds". Thin (3-0 to 5-0) synthetic delayed and absorbable fastening stitches are used subcutaneously in initial re-approximating, to relieve tension of the skin suture lines and reduce dead space. Skin closure is usually performed with interrupted, small-caliber (4-0 to 6-0) absorbable sutures.

Advantages: More natural-looking anterior edge, potentially less disruption of edge innervation, a better aesthetic capacity when working with women with a large, loose and multi-ply clitoral hood.

Disadvantages: A longer learning curve, a greater risk of wound dehiscence, the need for more careful initial postoperative care on the patient's side, and the greater likelihood of removing less tissue than intended.

2.2 Female sexual function index–FSFI

The satisfaction of the women included in the study with the labiaplasty procedure was measured using the FSFI both before and after the intervention. The FSFI scale was developed by Rosen in 2000 to evaluate female sexual function [20]. FSFI originally consisted of 19 questions. Items with the best performance in six areas on the FSFI-19 scale were selected for the FSFI-6 short form. In our study, FSFI-6 scale was chosen to measure the patient satisfaction. The scale includes sexual desire, sexual arousal, lubrication, orgasm, satisfaction and pain parameters.

FSFI is widely used in clinical practice as a screening tool and also as an outcome measure in clinical trials. However, as far as we know, it has not been used in the literature to measure the satisfaction of women with labiaplasty. The FSFI questionnaire was administered in paper-pencil form using standard instruction and scoring procedures. In the FSFI, women are asked questions about their experiences during the last 4 weeks. Accordingly, it consists of a total of 19 questions: sexual desire 2, sexual arousal 4, lubrication 4, orgasm 3, satisfaction 3 and pain 3 questions. The Turkish adaptation, validity and reliability study of the scale was performed by Aygin and Aslan [21].

2.3 Statistical analysis

The data obtained in the study were analyzed using IBM SPSS Statistics v 23.0 (SPSS inc., Chicago, IL, USA) packaged software. While evaluating the study data; categorical variables were expressed as frequency (number, percentage), and

Table 1. Reasons for women to request labiaplasty.

	n	%
Sensation of friction, itching and pain while wearing tight pants and underwear	16	16.0
Aesthetic concerns	30	30.0
Embarrassment and loss of self-confidence thinking that it will have a bad effect on her partner	1	1.0
Causing pain and discomfort in sexual intercourse due to the sagging inner lips	34	34.0
Feeling pain and discomfort while doing sports, especially riding a bike or horse, or during daily activities	19	19.0
Total	100	100.0

numerical variables as descriptive statistics (mean ± standard deviation). The coefficients of skewness and kurtosis for the assumptions of normality of numerical variables were examined and it was found that the coefficients were in the range of ±1.5. For this reason, parametric statistical methods were used in the study. The differences between two dependent numerical variables were examined with the Dependent Sample *t*-test. $p < 0.05$ values were considered statistically significant in the analyzes.

The Cronbach Alpha value of the Sexual Function Scale was determined to be 0.845 before the intervention and 0.964 after the intervention.

3. Results

A total of 100 women aged 17–52 years who underwent labiaplasty procedure in our center for various reasons were included in our study. The average age of women is 36.17 ± 7.510 years. Forty (40%) of the women are between the ages of 17–34 and 60 (60%) of them are between the ages of 35–52. While 56 (56%) of the participants are working, 88 (88%) of them are married.

Eighty two of the women (82%) have children. Regarding the number of children; of 82 women who have children, 17 (20.7%) have one, 43 (52.4%) two, 22 (26.8%) three or more children.

Sixty five of the participants have a normal delivery history. Of these 65 women, 20 (30.8%) had one, 29 (44.6%) had two and 16 (24.6%) had three or more normal deliveries.

In 29 (29%) of the participants there is a history of cesarean delivery. Of these 29 women, 14 (48.3%) had a history of one cesarean delivery and 15 (51.7%) had two cesarean sections.

The whys and wherefores of women to request a labiaplasty procedure are given in Table 1.

Complications occurred in 2 patients (2%) during the first month follow-up. The complication is in the form of loosening of the stitches and re-suturing. Complications were also observed in 2 patients (2%) in the 6-month follow-up. A reoperation was either planned or performed in these two people. Patient satisfaction was determined as 100%. None of the patients required revision. The demographic and clinical characteristics of the patients are given in Table 2.

Table 2. Demographic and clinical characteristics of the patients.

(n = 100)	Number	Percent
Age (Mean = 36.17 SD = 7.510)		
17–34 years	40	40.0
35–52 years	60	60.0
Working status		
Working	56	56.0
Not working (house wife, student)	44	44.0
Marital status		
Married	88	88.0
Single	12	12.0
Children		
Yes	82	82.0
No	18	18.0
Child count (n = 82)		
1	17	20.7
2	43	52.4
3 or more	22	26.8
History of normal delivery		
Yes	65	65.0
No	35	35.0
Normal delivery count (n = 65)		
1	20	30.8
2	29	44.6
3 or more	16	24.6
History of cesarean delivery		
Yes	29	29.0
No	71	71.0
Cesarean delivery count (n = 29)		
1	14	48.3
2	15	51.7
Complication 1st month		
Yes	2	2.0
No	98	98.0
Complication 6th month		
Yes	2	2.0
No	98	98.0
Patient satisfaction		
Yes	100	100.0
Need for revision		
No	100	100.0

When the Female Sexual Function Indexes of the women participating in the study were evaluated before and after the intervention, the average score of "Sexual Desire" was 4.27 ± 1.360 before the intervention, this rate increased to 8.08 ± 1.710 after the intervention. While the mean "Sexual Arousal" score before the intervention was 14.35 ± 4.250, this average was found to be 24.92 ± 5.920 after the inter-

Table 3. Examination of the Pre-Intervention and Post-Intervention Differences in Female Sexual Function Scale and Sub-Domain Scores.

	Pre-intervention		Post-intervention		*t*	*p*
	Mean	± SD	Mean	± SD		
Sexual desire	4.27	1.360	8.08	1.710	−4.200	**<0.001***
Sexual arousal	14.35	4.250	24.92	5.920	−29.253	**<0.001***
Lubrication	5.72	1.920	5.60	1.590	0.948	0.345
Orgasm	6.49	2.050	12.37	3.080	−29.454	**<0.001***
Satisfaction	6.92	2.320	12.45	3.090	−26.630	**<0.001***
Pain	5.92	2.050	11.71	3.180	−21.141	**<0.001***
Sexual function scale	43.67	10.530	75.13	17.160	−36.009	**<0.001***

*, $p < 0.05$ (Statistically significant); *t*, Dependent Sample *t*-test.

vention. While the mean value of the "Lubrication" subfield was 5.72 ± 1.920 before the intervention, this score was calculated as 5.60 ± 1.590 after the intervention. While the mean score of the "Orgasm" subfield was determined as 6.49 ± 2.050 before the intervention, this score was found to be 12.37 ± 3.080 after the intervention. While the average score of "Satisfaction" before the intervention was 6.92 ± 2.320, this score was found to be 12.45 ± 3.090 after the intervention. While the average "Pain" score was 5.92 ± 2.050 before the intervention, this score increased to 11.71 ± 3.180 after the intervention. While the mean "Sexual Function Index", which is the sum of the scores of these sub-domains, was 43.67 ± 10.350 before the intervention, this index was calculated as 75.13 ± 317.160 after the intervention (Table 3).

4. Discussion

Labiaplasty, which is a relatively novel female genital aesthetic/plastic surgical intervention performed to eliminate labia minora hypertrophy, has gained popularity rapidly in recent years with the influence of the media and the internet. Studies have shown that the media is the driving force of the increasing demand for labiaplasty [22–24]. In a recent study, the importance of internet images in the decision of women who underwent labiaplasty was emphasized [25]. Women who experience symptoms often search digital media to find information promoting them to seek genital procedures [26].

There is not yet a widely accepted standard of labia minora reduction, and currently 7 different labiaplasty techniques are carried out. Although the discussions about labiaplasty practices go on in the literature, the number of publications is insufficient and they are mostly in the form of case reports and case series. The American College of Obstetricians and Gynecologists published a Committee Opinion on labial surgery, warning about informing patients about the risks and possible adverse effects of these operations [27, 28]. However, there is no universally accepted standards or guidelines. The labiaplasty procedure, which was previously performed to eliminate sexual dysfunction, dyspareunia and body morphological disorder, is now increasingly done for the purpose of increasing sexual function and aesthetics [29, 30]. As the results, complications and patient satisfaction of labiaplasty procedures are better understood, the number of women who want to have this procedure will increase.

When the motivation of women demanding labiaplasty is examined; women can request this procedure for (1) aesthetics (e.g., self-awareness, to avoid ugliness and abnormality in social situations) (2) functional (e.g., to reduce discomfort, irritation and pain during non-sexual activities), and (3) for sexual reasons (e.g., to reduce dyspareunia and the fear of negative consideration by the sexual partner) [9, 31, 32].

Various types of labiaplasty have been developed over the years. Regardless of the technique, most women are satisfied with the results [18]. The most popular labiaplasty techniques are V-wedge resection and linear excision labiaplasty. In the V-wedge resection procedure, a wedge of tissue is simply excised from the labia to reduce the size of the labia and the remaining edges are stitched back together [33]. In linear labiaplasty, also known as the Trim procedure, the outer part of the labia is removed with a curved excision. We performed these two popular labiaplasty techniques in our study. Labiaplasty technique is continuously refined with adding of new techniues. For example, the use of needles in the surgical reduction of labia minora has resulted in reduction of operational time [34]. There are several studies reporting before and after videos of their labioplasty practice [35, 36].

There are various questionnaires used to measure the satisfaction of patients who have undergone cosmetic/plastic genital surgery. Body Image Quality of Life Index (BIQLI), Genital Appearance Satisfaction (GAS), Cosmetic Procedures Scale—Labia (COPS-L), Pelvic Organ Prolapse (PISQ) and Female Sexual Function Index (FSFI) are among these scales. And among these, there are studies in which BIQLI, GAS, COPS-L and PISQ questionnaires are employed in women who have undergone labiaplasty [37]. In this study, the questionnaire scores were compared between women who underwent labiaplasty and the control group, as well as before the intervention and after 3 months of follow-up. However, the FSFI was used for the first time in the literature in this study to measure women's satisfaction with labiaplasty.

In our study, psychosexual and physiological results of labiaplasty and patient satisfaction were measured with FSFI. Accordingly, when looking at the average scores from the

scale; significant increases were recorded after labiaplasty procedure in sexual desire, sexual arousal, orgasm and satisfaction scores compared to before. It is noteworthy that the average of the lubrication sub-score has decreased. However, we think that the decrease in vaginal lubrication is not a direct result of labiaplasty, but may be due to other factors. Moreover, the difference is not statistically significant.

In the literature, FSFI has been used to evaluate a wide variety of aspects of sexual function among women. FSFI has been studied in series of women with sexual dysfunction such as female sexual arousal disorder (FSAD), hypoactive sexual desire disorder (HSDD), female sexual orgasm disorder (FSOD), dyspareunia/vaginismus (pain), and multiple sexual dysfunctions [38]. In addition, the FSFI scale was used by Ahmed *et al.* [39] in premenopausal women, in Egyptian women by Anis *et al.* [40], and in Turkish women admitted to the urogynecology clinic by Aydin *et al.* [41], Bartula *et al.* [42] in breast cancer patients, by Burri *et al.* [43] in sexually active Swiss women, in Peri- and Postmenopausal women reporting hot flashes by Carpenter [44], in women diagnosed with HSDD by Clayton *et al.* [45], and Fakhri *et al.* [46] used it in Iranian gynecology patients.

As stated earlier, the FSFI scale was not used in women who underwent labiaplasty, so the scores obtained before and after the intervention on the scale could not be compared with other studies.

Limitations of the study

Our study was conducted in a single center. However, the number of our patients is relatively high for such a new and a hot topic. Maybe a control group consisting of healthy individuals and/or individuals without labiaplasty could be included. Or, labiaplasty techniques could be divided into two different groups and analyzed comparatively. Unfortunately, the number of patients we applied the V-wedge technique was much lower than the linear resection patients. These may be subject to further studies. Finally, since our study was based on patients' perspective, our results should not serve as evidence that these procedures are exactly clinically effective.

5. Conclusions

Labiaplasty, a relatively novel female cosmetic/aesthetic genital surgery technique, has become very popular today. The number of labiaplasty procedures performed worldwide is increasing day by day. As the results and complications of these procedures and patient satisfaction increase, the demand for labiaplasty will increase even more. There is an urgent need for publications on this subject in the literature. As the evidence increases, standards and widely accepted guidelines will be developed gradually. On the other hand, efforts to develop a modified and optimal labiaplasty technique should be continued in order to eliminate the disadvantages of existing techniques. Finally, since today's information source is the internet and social sharing platforms such as YouTube in particular, it will be useful to upload content based on real knowledge and experiences by professionals to guide patients correctly.

Author contributions

GE designed the study, performed the research, analyzed the data and wrote the manuscript.

Ethics approval and consent to participate

Written and verbal consents were obtained from all women participating in the study, explaining the objectives of the study in detail. This study was approved by the local ethics committee of the hospital with the 03/05/2020 dated and 003 numbered decision.

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Conflict of interest

The author declares no conflict of interest.

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