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ORIGINAL PAPER

The effect of vaginoplasty on coping with stress, self-esteem, and sexual satisfaction in Turkish women: a cross-sectional controlled study

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Abstract

Background Vaginoplasty is among female genital cosmetic surgery methods, which has increasingly gained popularity among women seeking a solution to enhance their sexual functioning. The objective of this study was to evaluate the postoperative self-esteem, sexual satisfaction, coping with stress, and defense mechanisms in married Turkish women who underwent vaginoplasty surgery.

Methods A total of 106 women who underwent vaginoplasty and 106 healthy control subjects were evaluated. Study data were collected through face-to-face interviews using "Personal Information Form," "Coopersmith Self-Esteem Inventory," "Sexual Satisfaction Scale," "Coping Responses Inventory," and "Defense Style Questionnaire" and compared between the two groups.

Results The mean Coopersmith Self-Esteem Inventory score was significantly higher in the vaginoplasty group compared to the controls ($p < 0.001$). The mean ego-focused sub-dimension score of the Sexual Satisfaction Scale was significantly higher in the control group ($p = 0.005$), while the mean logistic analysis sub-dimension score of the Coping Responses Inventory was significantly higher in the vaginoplasty group ($p = 0.002$). There was a statistically significant positive correlation between self-esteem and mature defenses in both the vaginoplasty and control groups ($p = 0.028$, $p = 0.020$, respectively). The correlation between the self-esteem and immature defenses was significantly negative in both groups (for both $p < 0.001$).

Conclusions The main results of this study indicate a higher self-esteem and sexual satisfaction in women undergoing vaginoplasty. In addition, the use of mature defense mechanisms was also higher among these women compared to healthy control subjects. These results show the importance of both preoperative and postoperative psychiatric evaluations in women undergoing cosmetic genital surgeries.

Level of evidence Level II, Risk/Prognostic.

Keywords Vaginoplasty · Self-esteem · Sexual satisfaction · Coping · Defense mechanisms

Introduction

Female genital esthetic surgery is defined as a surgical anatomic alteration recommended only due to esthetic reasons or for treatment of changes occurring throughout life and includes various surgical interventions with the aim of achieving a better vaginal appearance and increased quality of sexual function [1–3]. Vaginoplasty, one of these surgical interventions, includes a series of operations performed by gynecologists or plastic surgeons especially in order to reduce the vaginal diameter due to sexual reasons [3–5]. Surgical vagina reduction procedures are not new, but historically they have been performed for postnatal repair rather than esthetical or sexual satisfaction concerns [6]. In recent

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years, these operations are performed to increase sexual satisfaction and eliminate the complaints of dyspareunia caused by wrong episiotomy applications [7].

Studies have shown that women who ask for vaginoplasty have a low quality of life and show depression and anxiety symptoms, and the relationship with their partner is not romantic [5, 6, 8]. Studies conducted after vaginal tightening procedures have found that vaginoplasty provided high satisfaction in women and increased their quality of life and that sexual life of the couples has become better since the operation provided high satisfaction also in the partners [6, 9].

In recent years, female genital esthetic surgery, particularly vaginoplasty, has become popular among women in Western countries. According to the American Association of Plastic Surgeons (AAPS), there is a 30% increase in vaginoplasty procedures [4, 10–13].

In societies like Turkey, which have patriarchal origins but are trying to adapt to Western civilizations, the evaluation of sexuality in women has become a current issue in recent years. In this setting, women avoid telling their spouses (partners) what they find stimulating in sexuality and taking attitudes that would make them more active for enjoyment. In this context, the sexual functions of the couples are negatively affected. Internalization of negative attitudes towards sexuality in our country, where the ties of patriarchal life are still strong, can restrict a healthy sexual life by making it difficult for women to make free decisions about their sexual experience. High sexual satisfaction ensures positive physical and psychological health and a better quality of life [8, 14].

The objective of this study was to evaluate the self-esteem, sexual satisfaction, coping with stress, and defense mechanisms of married Turkish women who underwent vaginoplasty surgery.

Materials and methods

Study design and population

Population of this descriptive study consisted of women who underwent vaginoplasty in a private female health center. Before the beginning of the study, a power analysis was performed to determine the sample size. In the analysis, in which two groups of independent samples were compared, when alpha margin of error was taken as 0.5, effect size as 0.5, and study power as 0.80, it was determined that a minimal sample size of 102 persons should be reached. A total of 123 consecutive women presented to our clinic between 01/08/2020 and 01/11/2020. Eleven women rejected participation and six women had missing data that prevented analysis of the data forms. Finally, the study was completed with 106 women, and this figure was enough for the calculated sample size. Study data were collected through face-to-face interviews using the survey form prepared by the researchers in line with the relevant literature. The participants filled the survey forms during the first control visit 1–3 weeks after the operation.

The healthy control group consisted of the patients' relatives who presented to the health center due to various reasons but did not undergo vaginoplasty. The inclusion criteria for this group were being aged over 18 years, having no disease related to obstetrics and gynecology, and willing to participate in the study. The presence or absence of an obstetric or gynecological disease was determined with a detailed conversation by a gynecologist. Patients were excluded in cases that might cause suspicious conditions for the disease or require further examination. The healthy control group consisted of 106 women.

Data collection tools

Study data were collected through the "Personal Information Form," "Coopersmith Self-Esteem Inventory," "Sexual Satisfaction Scale," "Coping Responses Inventory," and "Defense Style Questionnaire".

Personal Information Form The form was developed by the researchers based on the relevant literature. It included 10 questions about sociodemographic features of the women who presented for vaginoplasty and about the operation.

Coopersmith Self-Esteem Inventory The scale was developed by Coopersmith in 1967 in order to measure the attitudes of individuals towards themselves on various subjects [15]. The Turkish adaptation of the scale was performed by Turan and Tufan (1987) [15, 16]. Test–retest reliabilities of the scale carried out with 1-year internal were found as 0.65 and 0.76. The scale has two separate forms applied to children and adults. The adult form involves a short form of 25 items and a long form of 58 items. In this study, short form (25 items) of the scale was used. The expected answers are scored as 1 and the other answers as 0 points. The maximum self-esteem score that can be obtained from the scale is 25 for the short form.

Sexual Satisfaction Scale Reliability and validity of the scale were studied by Stullhofer et al. [17]. The Turkish adaptation was carried out by Tugut (2016) [18]. The scale was developed to measure sexual satisfaction in the clinical and field studies and has a 5-Likert structure. Scoring of the scale is calculated by summing the items points. The minimum and maximum scores that can be received from the scale are 20 and 100 points, respectively. High scores from the scale indicate high sexual satisfaction.

Coping Responses Inventory The scale was developed by Moos (1993) in order to evaluate coping with stress methods and prepared for adults [19]. The Turkish adaptation was made by Kocaballi and Kilic in 2016 [20]. The original scale consists of two sections as avoidance and approach with total eight sub-dimensions. The scale involves 24 statements that are graded with 5-Likert type and the answer options include 1, Never; 2, Rarely; 3, Sometimes; 4, Mostly; and 5, Always [20].

Defense Style Questionnaire The scale was developed by Andrews et al. in 1993 and adapted to Turkish by Yilmaz et al. in 2007 [21, 22]. The questionnaire was revised as SBT-40, which includes 40 items and 20 defenses. It empirically evaluates the reflections of the defense mechanisms used unconsciously at the level of consciousness. The participants marked each item on a 9-point scale. Twenty defense mechanisms were evaluated under 3 sub-dimensions, including immature, neurotic, and mature defenses. In this scale, each sub-defense and 3 defense types can be calculated using total score or arithmetic mean.

Statistical analysis

Data obtained in this study were evaluated utilizing SPSS version 22.0 (Statistical Package for the Social Sciences for Windows) package software. Descriptive features of the individuals are expressed as number, percentage, mean, and standard deviation values. The skewness-kurtosis values and skewness-kurtosis indices of the numerical variables were examined to determine normality of the variables. Since the skewness-kurtosis values of the numerical variables were less than ± 1, it was assumed that the data showed a normal distribution. The independent samples *t* test was used for the comparison of the numerical variables between the groups. The correlation between the numerical variables was evaluated with Pearson's correlation analysis. $p < 0.05$ values were considered statistically significant.

Results

Sociodemographic features of the study sample are given in Table 1. The mean age was 36.11 ± 8.22 years, 78.8% ($n = 167$) of the women were married, and 55.2% ($n = 117$) were university graduates. No statistically significant difference was found between the vaginoplasty and control groups in terms of age ($p = 0.318$), marital status ($p = 0.317$), and education level ($p = 0.215$). The number of children ($p = 0.057$) and parity ($p = 0.058$) were close to statistical significance between the two groups. There was a statistically significant difference between the groups in terms of the occupation ($p = 0.002$).

Table 1 Sociodemographic features of the study sample

Variables		Control ($n = 106$)		Vaginoplasty ($n = 106$)	
		Mean	SD	Mean	SD
Age (years)		35.54	8.49	36.67	7.95
		n	%	*n*	%
Marital status	Single	26	24.5	19	17.9
	Married	80	75.5	87	82.1
Education status	Primary school	5	4.7	1	0.9
	Middle school	5	4.7	3	2.8
	High school	26	24.5	38	35.8
	College	62	58.5	55	51.9
	Academy	8	7.5	9	8.5
Occupation	Not working	15	14.2	40	37.7
	Health staff	20	18.9	10	9.4
	Public	22	20.8	18	17.0
	Private sector	46	43.4	36	34.0
	Student	3	2.8	2	1.9
Number of children	No	38	35.8	19	17.9
	1	14	13.2	17	16.0
	2	34	32.1	43	40.6
	3	17	16.0	21	19.8
	≤4	3	2.8	6	5.7
Parity	No	38	35.8	19	17.9
	1	15	14.2	21	19.8
	2	30	28.3	38	35.8
	3	18	17.0	20	18.9
	≤4	5	4.7	8	7.5

The comparison of self-esteem, sexual satisfaction, and strategies of coping with stress between the two groups is shown in Table 2. The mean Coopersmith Self-Esteem Inventory score was significantly higher in the vaginoplasty group (16.18 ± 3.08) compared to the controls (12.04 ± 2.93) ($p < 0.001$). The mean ego-focused sub-dimension score of the Sexual Satisfaction Scale was significantly higher in the control group ($p = 0.005$), while the mean logistic analysis sub-dimension score of the Coping Responses Inventory was significantly higher in the vaginoplasty group ($p = 0.002$). The differences between both groups in the positive reappraisal ($p = 0.064$) and problem solving ($p = 0.076$) sub-dimension scores of the Coping Responses Inventory were close to statistical significance.

The comparison of Defense Style Questionnaire sub-dimensions between the groups is shown in Table 3. There was no significant difference between the groups in terms of the mature defenses, while there were significant differences in neurotic and immature defenses. Among the immature defense mechanisms, the mean projection ($p = 0.006$), passive aggression ($p < 0.001$), acting out ($p = 0.005$), isolation ($p < 0.001$), devaluation ($p < 0.001$), autistic fantasy

Table 2 Comparison of self-esteem, sexual satisfaction, and coping responses between the groups

Scales		Control ($n=106$)		Vaginoplasty ($n=106$)		Statistical analysis	
		Mean	SD	Mean	SD	t	p
Coopersmith Self-Esteem Inventory		12.04	2.93	16.18	3.08	− 10.011	< 0.001
Sexual Satisfaction Scale	Ego-focused	32.84	7.79	29.15	11.00	2.823	0.005
	Partner- and activity-focused	33.92	7.47	32.72	10.75	0.942	0.347
Coping Responses Inventory	Positive reappraisal	22.00	3.45	22.91	3.62	− 1.862	0.064
	Problem solving	22.58	2.77	23.34	3.41	− 1.786	0.076
	Logical analysis	25.86	3.69	27.41	3.40	− 3.170	0.002
	Seeking environment support	7.41	1.51	7.14	1.71	1.230	0.220
	Seeking professional support	6.81	1.48	6.59	1.65	1.004	0.317

($p<0.001$), denial ($p<0.001$), displacement ($p<0.001$), dissociation ($p<0.001$), and splitting ($p=0.005$) scores were significantly lower in the vaginoplasty group.

The correlations between the Self-Esteem Inventory, Coping Responses Inventory, and Defense Style Questionnaire are shown in Table 4. There was a statistically significant positive correlation between self-esteem and mature defenses in both the vaginoplasty and control groups ($p=0.028$, $p=0.020$, respectively). The correlation between the self-esteem and immature defenses was significantly negative in both groups (for both $p<0.001$). There was a statistically significant positive correlation between Coopersmith Self-Esteem Inventory scores and positive reappraisal ($p<0.001$) and problem solving ($p<0.001$) sub-dimension scores of the Coping Responses Inventory in the vaginoplasty group. A similar correlation was found between the Coopersmith Self-Esteem Inventory scores and ego-focused sexual satisfaction sub-dimension scores ($p=0.010$).

Table 3 Comparison of Defense Style Questionnaire sub-dimensions between the groups

	Control ($n=106$)		Vaginoplasty ($n=106$)		Statistical analysis	
	Mean	SD	Mean	SD	t	p
Mature defenses	46.74	6.84	44.81	9.99	1.643	0.102
Anticipation	12.44	2.38	12.28	3.58	0.384	0.702
Humor	11.51	2.69	11.11	3.76	0.902	0.368
Sublimation	11.34	2.65	10.67	3.36	1.611	0.109
Suppression	11.43	2.34	10.71	3.75	1.668	0.097
Neurotic defenses	46.87	7.76	42.70	8.73	3.674	< 0.001
Undoing	12.25	2.79	10.49	3.81	3.842	< 0.001
Pseudo-altruism	11.72	2.39	13.00	2.96	− 3.443	0.001
Idealization	11.81	3.15	10.02	3.59	3.840	< 0.001
Reaction formation	11.08	2.87	9.18	4.04	3.935	< 0.001
Immature defenses	125.62	28.83	101.06	22.08	6.960	< 0.001
Projection	10.81	3.31	9.37	4.15	2.780	0.006
Passive aggression	11.61	3.56	7.09	3.29	9.573	< 0.001
Acting out	10.02	3.84	8.57	3.59	2.840	0.005
Isolation	12.00	2.75	9.51	3.38	5.876	< 0.001
Devaluation	10.14	3.65	7.50	3.12	5.636	< 0.001
Autistic fantasy	9.27	3.94	6.93	3.69	4.456	< 0.001
Denial	9.47	3.71	7.67	3.92	3.417	< 0.001
Displacement	11.09	3.60	7.88	3.57	6.503	< 0.001
Dissociation	9.68	3.89	6.99	3.53	5.282	< 0.001
Splitting	11.02	2.68	9.76	3.76	2.814	0.005
Rationalization	8.99	4.32	8.57	3.34	0.781	0.435
Somatization	11.47	2.86	11.16	3.97	0.654	0.514

Table 4 Correlations between Self-Esteem Inventory, Sexual Satisfaction, Coping Responses Inventory, and Defense Style Questionnaire

		Coopersmith Self-Esteem Inventory			
		Control ($n=106$)		Va ($n=106$)	
		r	*p*	*r*	*p*
Sexual Satisfaction Scale	Ego-focused	−0.052	0.596	0.248	0.010
	Partner- and activity-focused	0.005	0.963	0.163	0.096
Coping Responses Inventory	Positive reappraisal	−0.134	0.169	0.401	<0.001
	Problem solving	−0.049	0.618	0.411	<0.001
	Logical analysis	0.042	0.670	0.254	0.009
	Seeking environment support	−0.184	0.059	0.040	0.685
	Seeking professional support	−0.092	0.350	−0.015	0.881
Defense Style Questionnaire	Mature defenses	0.214	0.028	0.225	0.020
	Neurotic defenses	−0.378	<0.001	−0.047	0.635
	Immature defenses	−0.368	<0.001	−0.339	<0.001

*$p<0.05$; **$p<0.01$

Discussion

It is often proposed that sociocultural processes are one of the important causes of physical dissatisfaction. This ongoing and widespread physical dissatisfaction among women can become increasingly special [23]. If the specialized body perception is in the sexual field, negative representations in the mind of the individual may constitute a basis for seeking genital plastic surgery [24].

It is known that women who are worried about the appearance of their genitalia or who seek female genital plastic surgery search the Internet for these issues [2]. The quality of the information provided by websites about female genital and cosmetic procedures has been investigated in several studies [25, 26]. These studies found that these websites use confusing tags to describe female genital cosmetic surgery (FGCS) procedures, and there is little or no information regarding the insufficient evidence for the clinical efficacy of these procedures. However, the risks of cosmetic surgeries have been shown as minimal and physical and psychological benefits of these procedures have been exaggerated [25, 26].

In the present study, patients who presented to a private healthcare center for vaginal esthetic procedures were compared with a healthy control group in terms of self-esteem, sexual satisfaction, and defense mechanisms. It was found that self-esteem was higher in the women who underwent vaginoplasty, while ego-focused sexual satisfaction was higher in the control group. On the other hand, the use of immature and neurotic defense mechanisms was found to be higher in the control group.

Self-esteem is the evaluation of the difference between self-image of an individual and ideal self-perception. Accordingly, self-esteem is influenced by several variables, including respect from others, competence, and evaluation of these two concepts for herself (self) [27]. Studies have shown that low self-esteem is one of the main causes underlying genital esthetic surgery. In addition, symptoms of depression and anxiety disorder and low quality of life are the other observed main psychological problems. In our study, self-esteem was found to be higher in the women undergoing vaginoplasty. This result of our study can be interpreted as that self-esteem increased following the operation we have performed. A prospective study conducted on genital esthetic operations supports this result of our study [8]. In that multicenter study, a total of 258 women were followed up for 6–42 months, and it was found that 91.6% of the women were satisfied with the results of these procedures. Regression in psychiatric disorders, especially depression and anxiety, and increase in quality of life can be expected.

One of the main variables related to satisfaction of women with their genitalia is sexual satisfaction. Studies investigating the results of vaginoplasty, labiaplasty, and other genital esthetic operations have mostly focused on postoperative physical and medical aspects, while psychological factors and sexual satisfaction have been less taken into account [28]. In a study, it was shown that the decision of women for seeking esthetic surgery may be influenced by their sexual partners. In that study, it was reported that one-third of women undergoing female genital esthetic surgery decided to have this operation in order to increase sexual satisfaction of their partners [29]. In this context, sexual satisfaction has an important place in women submitting for genital esthetics. In our study, ego-focused sexual satisfaction was found to be higher in the control group than in the vaginoplasty group. Ego-focused sexual satisfaction refers to personal features and habits, including ability to focus on sexual stimuli and emotions and the other relevant physiological and psychological

reactions [30]. In a study by Erdogan, the results of the vaginoplasty procedure were published. In that study, there was an increase in sexual satisfaction of women in the postoperative period [9]. In another study, labiaplasty was shown to have a slight effect on sexual satisfaction of women, but there was no improvement in general psychological welfare or the quality of intimate relationships [31]. These results indicate lack of evidence-based results between sexual satisfaction and genital esthetic operations. However, it is obvious that sexual satisfaction may be an indication for genital esthetic operation for both a woman and her partner.

Defense mechanisms are psychological reactions given by an individual to internal and external threats at an unconscious level. Defense mechanisms are assessed under three titles as immature, neurotic, and mature. Mature defense mechanism is often seen in individuals who notice and recognize problems, while immature defenses are more common in the situations where the problems are not recognized. Neurotic defenses are between these two defense mechanisms [22]. In our study, neurotic and immature defense mechanisms were found to be more commonly used in the control group compared to the vaginoplasty group, whereas no significant difference was observed between the two groups in terms of mature defense mechanisms. We think that these results obtained in our study are closely associated with self-esteem. There is a positive correlation between mature defenses and many positive personality traits such as a high self-esteem, ability of empathy, self-confidence, insight, and confidential attachment, while there is a negative correlation between these traits and immature and neurotic defense mechanisms [32, 33]. A study by Zeigler-Hill et al. supports these findings. The authors found that immature defense mechanisms used at a higher level are closely associated with fluctuations in self-esteem [34]. However, in some cases, sexual function and satisfaction are not improved by vaginoplasty, and this should be specifically discussed with the patient during preoperative counseling [35].

Study limitations

This study has some limitations. First of all, the fact that this study is a cross-sectional study, which creates difficulties in establishing a cause-effect relationship between variables, found to be related. Second, when the health control group is recruited, no obstetrical examination was performed and only verbal questioning was made. This might cause the healthy control group to include women with the disease, albeit rarely. Although our sample size was determined in line with the power analysis, it is not possible to generalize the results across the country. In addition, some other demographic features such as comorbidities or psychological aspects could not be analyzed. Occupational differences between groups, the small number of patients enrolled, and the absence of obstetrical/gynecological examination in the healthy groups should be kept in consideration during the evaluation of data and study's results. Further studies are needed to confirm findings from this cross-sectional study and the recruitment of a more homogeneous population.

Conclusions

Self-esteem was higher in the participants who underwent vaginoplasty procedure compared to the control group. Lower use of immature and neurotic defense mechanisms by the vaginoplasty group supports this result. Ego-focused sexual satisfaction seems to be lower in women undergoing vaginoplasty compared to the healthy group. Further prospective studies are needed to establish a cause and result relationship for these results. However, the main results of our study indicate differences between the women who underwent vaginoplasty and healthy control subjects in terms of self-esteem, defense mechanisms, and coping strategies, suggesting the importance of both preoperative and postoperative psychiatric evaluations in cosmetic genital surgeries.

Data availability Data used in this study can be provided on reasonable request.

Declarations

Ethical approval Before the beginning of the study, the necessary approval was received from the Tokat Gaziosmanpasa University Clinical Research Ethics Committee with the 09/07/2020 dated and 20-KAEK-206 numbered decision, and written permission was obtained from the institution where the study was conducted (date: 20/03/2020; No. 18004). The participants were informed about the objectives of the study and gave written consent. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Conflict of interest Gökcen Erdogan, Bahadır Genis, Tulay Yilmaz Bingol, Nermin Gurhan, and Muhammet Hakan Aksu declare no competing interests.

Patient consent The participants were informed about the objectives of the study and gave written consent.

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