European Archives of Oto-Rhino-Laryngology (2019) 276:1533–1539
https://doi.org/10.1007/s00405-019-05391-y

MISCELLANEOUS

Psychosocial effects of otoplasty in adult patients: a prospective cohort study

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Received: 12 January 2019 / Accepted: 13 March 2019 / Published online: 18 March 2019

Abstract

Objective This prospective study investigated changes in psychosocial status following otoplasty.

Methods All patients who participated in the study filled a sociodemographic form that included age, gender, educational status and job preoperatively. Body Image Scale (BIS), Social Appearance Anxiety Scale (SAAS) and Rosenberg Self-Esteem scale (RSES) were completed prior to surgery and 6 months postoperatively.

Results A total of 20 patients completed psychometric measures of body image, social appearance anxiety, and self-esteem. Of the patients (6 males, 14 females) whose charts were reviewed, the mean age was 24.05 ± 8.25 years (median 22 years: range 18–49) years. Six months post operatively BIS total scores were increased significantly relative to that of the baseline values ($p = 0.005$).SAAS scores were decreased significantly relative to that of the baseline values ($p = 0.003$). Although the postoperative RSES score tended to improve, it was not significantly different from the baseline value. The RSES scores showed significantly strong correlation with the SAAS scores ($p < 0.001$) and moderate correlation with the BIS scores at baseline ($p = 0.013$). None of the patients admitted for surgery had low self-esteem at baseline, with all patients categorized as having either moderate ($n = 10$, 50%) or high ($n = 10$, 50%) self-esteem. Following surgery, only one patient improved from moderate to high self-esteem. The baseline and postoperative BIS, SAAS, and RSES scores did not significantly differ between women and men. None of the other sociodemographic characteristics showed significant relationships with the three scales.

Conclusions Otoplasty can provide significant positive psychosocial benefits, even in an adult population. Therefore, this type of surgery should be offered to any patient seeking a solution to prominent ear-related psychosocial problems regardless of age.

Keywords Psychosocial effect · Otoplasty · Prominent ear · Bat ear

Introduction

A prominent ear is the most frequent congenital abnormality in the head and neck region; it occurs in approximately 5% of the Caucasian population and is transmitted as an autosomal dominant trait [1]. This deformity is typically not related to other deformities or syndromes, but it may be perceived as an esthetic handicap by those affected. Although its physiological consequences are irrelevant, the psychological and esthetic outcomes can be substantially important to patients [2]. Teasing and related emotional disorders due to a prominent ear have been well emphasized, particularly in those belonging to the pediatric age group. The face is considered the most distinctive characteristic of an individual; therefore, the lack of satisfaction with any part of one's face may lead to psychosocial problems such as a negative perception

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of body image and social appearance as well as low self-esteem. Corrective surgery for prominent ears is the most common esthetic procedure performed in individuals aged below 18 years [3]. In the pediatric age group, otoplasty is a surgical procedure well known to provide considerable positive psychosocial outcomes such as decreased anxiety, increased self-esteem, and better body image perception [4–6].

Although numerous reports have studied the changes in body image perception and psychosocial issues following esthetic plastic surgery in children, there is a paucity of studies that have investigated the psychosocial effects of otoplasty in adults [7–11]. Moreover, all these studies retrospectively investigated quality of life and psychosocial effects, possibly leading to recall bias [7–11]. Considering the dearth of literature, we conducted a prospective study of adult subjects undergoing otoplasty to compare the psychosocial effects before and after the surgery.

Materials and methods

Study design

A clinical prospective observational study was conducted after obtaining approval from the Institutional Review Board of University of Kocaeli Medical School (KOU/GOAEK-2012/5).

Patient selection

A total of 87 patients were admitted to the Department of Otorhinolaryngology and Plastic and Reconstructive Surgery of our tertiary center with a request for otoplasty between October 2012 and October 2013. The exclusion criteria for this study included age under 18 years; co-existence of known chronic conditions that possibly affect self-esteem and body image perception such as skin disorders with skin lesions, diabetes, chronic pulmonary disorders, epilepsy, chronic heart disease, and chronic renal disorders [12, 13]; additional dissatisfaction about other facial or body features such as nasal deformity, complaints about the lips, chin, cheeks, or obesity; and psychiatric conditions known or detected during psychiatric interviews performed for all patients such as mental health disorders (axis I psychiatric disorder) and personality disorders and learning disabilities (axis II psychiatric disorder), according to the Diagnostic and Statistical Manual of Mental Disorders-IV [14]. After applying these exclusion criteria, 23 patients were included in this study. Written informed consent was obtained from all subjects. Subsequently, three patients were lost to follow-up at the 6th month of postoperative visit, resulting in a final cohort size of 20.

Surgical procedure

All patients underwent the same operative technique under local anesthesia. The mattress suture technique was used with approximately 1-cm-wide elliptical skin excision and permanent 4-0 scaphoconchal and 3-0 conchomastoid sutures (Ethibond; Ethicon, Somerville, NJ) [15].

Outcome parameters

Sociodemographic form

All patients who participated in the study were asked to complete a sociodemographic form developed by the investigators that included questions on age, sex, and educational and employment status.

Body image, social appearance anxiety, and self-esteem scales were completed to assess the psychosocial effects of otoplasty. Details of each psychosocial assessment tool are given below.

Body Image Scale (BIS)

BIS, developed by Secord and Jourand, is a Likert-type five-point scale that comprises a total of 40 items [16]. Each item has five possible choices, with scores ranging from 1 to 5: "I disagree strongly", "I disagree", "I am not sure", "I agree", and "I agree strongly". This scale measures the satisfaction levels of individuals with various parts of their body, and each item on the scale is linked to a body part or function. The total score varies between 40 and 200, with lower scores indicating higher levels of dissatisfaction with one's body, and there is no cut-off score for this scale [16]. Validity and reliability of BIS have been reported in a Turkish population by Hovardaoglu et al. [17]. In the present study, BIS was completed before and 6 months after surgery.

Social Appearance Anxiety Scale (SAAS)

SAAS is a 16-item self-report inventory that assesses anxiety in situations regarding the overall appearance with regard to one's body shape [18]. The scale provides a good internal consistency ($\alpha = 0.94$), high reliability (test–retest reliability $r = 0.84$), and good construct validity [18]. This scale measures the level of agreement on a five-point Likert scale with scores ranging from 1 (not at all) to 5 (extremely). Higher scores on SAAS relate to a greater disparity among self-reported actual and ideal physical attributes, dysfunctional schemes about the importance and meaning of appearance, feelings of unattractiveness, emphasis on appearance and its maintenance, and a preoccupation with being or

becoming overweight [18]. Its validity and reliability have been reported in a Turkish population by Dogan [19]. In the present study, SAAS was completed before and 6 months after surgery.

Rosenberg Self-Esteem Scale (RSES)

RSES is the most commonly used measure of self-esteem [20]. This scale is a self-administered questionnaire comprising ten items for self-esteem evaluation. Lower scores on this scale correspond to higher self-esteem [20]. Validity and reliability of RSES have been reported in a Turkish population by Cuhadaroglu [21]. In this study, RSES was completed before and 6 months after surgery.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences software version 20.0 for Windows (IBM Corp., Armonk, NY, USA). Shapiro–Wilk test and graphical examinations were used to test the normality of the data. Non-parametric tests were applied to non-parametric data and at instances when the sample size was small. Data are expressed as median values (first quartile and third quartile) for non-parametric data. The baseline and postoperative BIS, SAAS, and RSES scores were compared using Wilcoxon signed-rank test. Correlation analyses among the BIS, SAAS and RSES scores were performed using Spearman's correlation test. Further, Mann–Whitney *U* test was used to compare the baseline BIS, SAAS, and RSES scores between sociodemographic characteristics. The baseline and postoperative differences of each measure were also calculated. All differences associated with a chance probability of 0.05 or less were considered statistically significant.

Results

Of the 87 patients admitted to our institution, 62 patients who were under the age of 18 years and 2 patients who declined surgery were excluded from this study. No patient was excluded because of a psychiatric disorder. Prospectively planned data collection was performed on the 23 patients who participated in the study, and the final cohort comprised 20 patients with complete data collection. Of the 20 patients (6 men, 14 women) whose charts were reviewed, the mean age was 24.05 ± 8.25 years (median 22 years; range 18–49 years). The sociodemographic characteristics of the patients are shown in Table 1.

Table 1 Sociodemographic data of the participants

	n	%
Gender		
Female	14	70
Male	6	30
Marital status		
Married	4	20
Single	16	80
Educational status		
High school	4	20
College	16	80
Employment status		
Student	12	60
Employed	6	30
Unemployed	2	10

At 6-month follow-up, the BIS and SAAS scores showed significant improvement compared with the baseline scores ($p = 0.005$ and $p = 0.003$, respectively). Although the postoperative RSES score tended to improve, it was not significantly different from the baseline score. The median scores (first quartile and third quartile) for each psychosocial assessment tool are summarized in Table 2.

The RSES scores showed significant strong correlation with the SAAS scores and moderate correlation with the BIS scores at baseline ($p < 0.001$ and $p = 0.013$, respectively).The correlation coefficients among the three scales are summarized in Table 3. None of the patients admitted for surgery had low self-esteem at baseline, with all patients categorized as having moderate ($n = 10$, 50%) or high ($n = 10$, 50%) self-esteem. Postoperatively, only one patient had an improvement in self-esteem from moderate to high self-esteem.

Each assessment scale score was investigated in relation to sex. The baseline BIS, SAAS, and RSES scores did not show any significant sex-specific difference. Compared with the baseline scores, the postoperative improvement in the BIS and SAAS scores was significant in women but not in men ($p = 0.018$ and $p = 0.009$). Further, the postoperative BIS, SAAS, and RSES scores did not significantly differ between men and women. The baseline and postoperative BIS, SAAS, and RSES scores based on sex are summarized in Table 4. None of the other sociodemographic characteristics showed significant relationships with the three scales.

Discussion

Prominent ear correction surgery is primarily performed for a cosmetic purpose rather than for a medical purpose, and it aims to resolve a patient's negative body image perception and anxiety due to appearance during daily social interactions. In the present study, the psychosocial effects of otoplasty were investigated in 20 adult patients with prominent ears based on the evaluations of body image perception, social appearance anxiety, and self-esteem before and 6 months after surgery. To the best of our knowledge, this

Table 2 Body image, social appearance anxiety and self-esteem scores preoperatively and 6 months postoperatively

	Preoperative, median (Q1, Q3)	Postoperative, median (Q1, Q3)	*Z*	*p*
BIS	141 (124.5, 148.5)	146.5 (125, 156.5)	−2.803	0.005**
SAAS	47.5 (33, 60.5)	42 (32, 57.5)	−2.930	0.003**
RSES	1.13 (0.5, 1.84)	0.8 (0.5, 1.38)	−1.379	0.168

Q1: first quartile, Q3: third quartile

Z: Z test value

Wilcoxon signed-rank test

BIS Body Image Scale, *SAAS* Social Appearance Anxiety Scale, *RSES* Rosenberg Self -Esteem Scale

**$p < 0.01$

Table 3 Spearman's correlation of BIS, SAAS, RSES scores before surgery

	BIS	SAAS	RSES
BIS			
r (95% CI)	1		
p	–		
SAAS			
r (95% CI)	−0.350 (−0.733, 0.146)	1	
p	0.127	–	
RSES			
r (95% CI)	−0.547 (−0.846, −0.059)	0.731 (0.517, 0.841)	1
p	0.013*	< 0.001**	–

95% confidence intervals were calculated by bootstrapping method

BIS Body Image Scale, *SAAS* Social Appearance Anxiety Scale, *RSES* Rosenberg Self-Esteem Scale

*$p < 0.05$

**$p < 0.01$

is the first prospective study that psychosocially assessed an adult population before and after surgery. The significant changes in the SAAS and BIS scores after surgery indicate that adult patients with prominent ears consider themselves to have an improved appearance and enhanced body image with less anxiety following surgery.

Body image is recognized as the most substantial concept to study when assessing the effects of changes in appearance. Apprehension about body appearance affects a considerable amount of the population [22]. Some anxieties may be related to hereditary features such as body shape or facial features. Evaluation of body image concerns among individuals with disfigurement is complex considering different body sites, variability in severity, and the numerous individual and social characteristics that contribute to body image [23, 24]. In this study, we focused on the significance of a reduced body image in adult patients with prominent ears. Some studies in the literature have shown that disfigurement may result in reduced self-esteem, increased anxiety, behavior problems, and social withdrawal [25, 26]. However, most of these studies were performed in children or adolescents. In the present study, the significant increase in the postoperative BIS scores clearly demonstrates the positive effect of otoplasty on personal body image.

The psychosocial effects of otoplasty should not be underestimated. Previously, Songu et al. and Hao et al. reported that patients who sought otoplasty have higher incidence of co-existing psychiatric disorders than normal individuals [6, 27]. The exclusion of additional psychiatric disorders in our cohort created an opportunity for the evaluation of psychosocial pathology solely due to the prominent ear deformity and facilitated a more homogenous evaluation. Furthermore, Meningaud et al. reported that patients who requested for cosmetic surgery experienced higher anxiety, expressed as decreased self-confidence in the society, than the general population; after surgery, the social anxiety parameters undeniably improved [28]. The degree of psychosocial injury may be understood in the light of body image perceptions. The four dominant essentials of body image are actual physical appearance of a body part, perception of the body, relative importance of this body part, and degree of displeasure. Horlock et al. reported that psychosocial morbidity was more severe in adult patients than in children and that anxiety increased with the time (years) of exposure to the disfigurement [29]. Similarly, Rutter and Rutter described that children's social problems can be modified by positive experiences; however, with increasing age, the unpopularity can become increasingly fixed and less amenable to external influences [30]. Although the effects of otoplasty in adults, based on specific psychosocial questionnaires, have not been studied, psychosocial health status has been previously described as part of health-related quality of life questionnaires using the Glasgow Benefit Inventory [10, 11]. The beneficial impact of otoplasty on adult patients has been reported in these retrospective studies. In the present study, which compared baseline and postoperative data in an adult population, there were significant postoperative improvements in specific and validated psychosocial tools for body image and social appearance anxiety assessment. Therefore, otoplasty applied to adults clearly provided psychosocial

Table 4 Body image, social appearance anxiety and self-esteem scores preoperatively and 6 months postoperatively based on gender

	Female	Male	*Z*	p^a
BIS				
Preoperative, median (Q1, Q3)	136.5 (123, 144)	147 (136, 152)	−0.990	0.353
Postoperative, median (Q1, Q3)	143.5 (124, 156)	150 (140, 157)	−1.033	0.312
Difference	3.5 (1, 8)	4.5 (1, 5)	−0.124	0.904
p^b	0.018*	0.092		
SAAS				
Preoperative, median (Q1, Q3)	43 (30, 59)	53.5 (48, 64)	−1.486	0.153
Postoperative, median (Q1, Q3)	37 (27, 52)	51.5 (42, 60)	−1.693	0.091
Difference	−1.5 (−4, −1)	−2.5 (−4, 0)	−0.125	0.904
p^b	0.009**	0.104		
RSES				
Preoperative, median (Q1, Q3)	1.13 (0.25, 1.67)	1.04 (0.5, 2)	−0.249	0.841
Postoperative, median (Q1, Q3)	0.92 (0.5, 1.25)	0.63 (0.5, 1.5)	−0.415	0.718
Difference	0 (−0.5, 0)	0 (−0.16, 0)	−0.345	0.779
p^b	0.207	0.593		

Q1: first quartile, Q3: third quartile

BIS Body Image Scale, *SAAS* Social Appearance Anxiety Scale, *RSES* Rosenberg Self-Esteem Scale

*$p < 0.05$

**$p < 0.01$

[a]Mann–Whitney *U* test

[b]Wilcoxon signed-rank test

benefits and less significant social appearance anxiety even during the early post-treatment period.

A majority of patients psychologically benefit from otoplasty. However, in few cases, surgical correction does not result in the expected benefits [31]. Cooper-Hobson and Jaffe reported that this discrepancy may be because of extremely high expectations even with the best technical results [31]. This may also be due to the presence of additional dissatisfaction with more than one part of the body. These scales, which can be easily applied, can also be beneficial in providing physicians and patients with awareness of the satisfaction status related to other parts of the body, which will be useful in assessing outcome and modulating patient expectation.

Self-esteem has been reported to be positively affected after cosmetic surgery [32]. In this study, the RSES score was found to be correlated with the BIS and SAAS scores at baseline and modestly increased postoperatively, albeit not significantly. There might be more than one reason for this lack of a significant improvement in the RSES scores after surgery. First, the baseline self-esteem was generally quite high in our study group; this might explain why the patients did not seek surgery until adulthood. It could then be hypothesized that in the patients seeking surgical correction at an adult age, prominent ear-related disturbance was due to a negative body image perception rather than due to low self-esteem, which our findings appear to support. Sarwer et al. reported that patients with a poor body image whose self-esteem is reliant on their visual aspect would have sought esthetic plastic surgery at an earlier age [4]. Second, self-esteem is dependent on a wider range of factors rather than negative body image perception alone [33]. Lastly, although the RSES score tended to improve, we might have missed a possible significant change because of the small sample size due to a type 2 error, i.e., a false-negative finding [34]. Therefore, larger sample series results would help in resolving this issue.

A patient's sex could be a possible factor that influences body image and social appearance [35]. In this study, there were no sex-specific differences in terms of the baseline scores, but the postoperative improvement in the BIS and SAAS scores was significant in women and not in men. Although the actual differences in terms of the SAAS and BIS scores were greater in men than in women, they did not have any significant differences, probably due to a small sample size of six subjects. Similarly, other studies have previously reported that benefits do not differ according to sex [9–11]. Therefore, the psychosocial effects of otoplasty seemed to be independent of sex influences at least in our study sample.

Although the present study adds to the available literature on the psychosocial outcomes after otoplasty, it has several limitations. The main limitation of our series was the relatively small sample size and short follow-up period. Second, the reported results might have been affected by contradictory issues. A non-surgery control group was not used in

our study, and this limitation causes uncertainty about the reported improvements being due to the prominent ear surgery. Lastly, being a single-institution study prevents generalization of our results to other institutions. Due to these restrictions, associations should be interpreted with caution.

Nevertheless, our design that facilitated prospective evaluation of patients before and after surgery was an important strength of our study. In addition, we included only the subjects who sought surgery at an adult age. A scarce number of studies investigating the psychosocial effects of otoplasty in adults have been designed in a retrospective manner [7–11]. In addition, most of these studies were performed with a heterogeneous sample including children and adults [7–9, 11]. Furthermore, Papadopulos et al. included adults who were operated during their childhood in their adult age group [7]. Of these studies, only one study reported the results of a homogeneous sample of 14 patients operated at an adult age [10]. To the best of our knowledge, this is the first prospective study that has psychosocially assessed an adult population before and after surgery.

In conclusion, otoplasty can provide significant positive psychosocial benefits, even in an adult population. Therefore, this type of surgery should be offered to any patient seeking a solution to prominent ear-related psychosocial problems regardless of age. The implementations of BIS, SAAS, and RSES, which are extremely easy to apply as basic evaluation methods, could serve as complementary tools for more comprehensive management in terms of determining the psychosocial condition and expectation status of patients before surgery.

Acknowledgements The authors would like to thank Firdevs Aliyeva for statistical support, Aslihan Polat for her valuable discussions about statistical analysis of the results as well as Jeremy Jones for his linguistic revision.

Compliance with ethical standards

Conflict of interest The authors declare no competing interest. No financial support was received for this paper.

Ethical standards All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards (KOU/GOAEK-2012/5).

Informed consent Informed consent was obtained from all individual participants included in the study.

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