

Long-term psychosocial impact of otoplasty performed on children with prominent ears

M SONGU^{1,2}, A KUTLU³

Departments of ¹Otorhinolaryngology and ³Child and Adolescent Psychiatry, Dr Behcet Uz Children's Hospital, Izmir, and ²Department of Otorhinolaryngology, Izmir Katip Celebi University Atatürk Training and Research Hospital, Turkey

Abstract

Objectives: To investigate the psychosocial impact of prominent ears on children, and evaluate the outcomes of otoplasty two years after surgery, using the Child Behavior Checklist to comparatively evaluate patients' psychosocial profiles.

Method and results: A total of 198 otoplasty procedures were performed in 107 patients (85 per cent bilateral procedures). Otoplasty was performed solely in 86 patients and concurrently with other procedures in 21 patients. All children who underwent surgery obtained good post-operative results, with satisfactory correction of the deformity reported by the patients and their parents or guardians. There were statistically significant decreases in Child Behavior Checklist scores in the domains of: anxiety and depression ($p = 0.028$), social problems ($p = 0.018$), difficulties in thinking ($p = 0.012$), total behavioural problems ($p = 0.012$), internalising problems ($p = 0.020$) and externalising problems ($p = 0.044$), and near-significant decreases in scores for attention problems ($p = 0.055$) and aggressive behaviour ($p = 0.078$). There was a statistically significant increase in the score for total social competence ($p = 0.031$).

Conclusion: Psychological problems associated with anatomical deformities such as prominent ears can be reduced by means of appropriate corrective surgery. Psychological support is necessary for the patient.

Key words: Surgery; Adolescent Psychology; Ear, External; Congenital Abnormalities

Introduction

A prominent ear is the most common congenital deformity of the auricles, occurring in approximately 5 per cent of the Caucasian population.^{1,2} Although its physiological consequences are insignificant, the psychological and aesthetic consequences for the patient can be considerably important.³ A review comparing the data recorded before and after corrective surgical treatment reported improved self-esteem and minimised psychosocial anxiety following surgery.⁴ Though much research has been undertaken on the psychological and sociological impact of craniofacial deformities in children, only a few studies have concentrated on the psychosocial outcomes of otoplasty in the paediatric patient.^{2,5,6}

Most previous studies on the emotional and behavioural changes in children that occur following cosmetic surgery assessed psychological aspects based on non-standardised questionnaires. The reliability of the questionnaire items has not been verified and their standardisation was a futile endeavour. These limitations have resulted in the lack of objective comparisons

with other studies. The Child Behavior Checklist is a self-report form, for completion by parents, that is used to screen for emotional, behavioural and social problems, and it has been used in over 7000 published articles.⁷

This study aimed to investigate the psychosocial changes that occurred in children with prominent ears following surgery. Specifically, the Child Behavior Checklist was completed pre-operatively and two years after otoplasty surgery in order to comparatively evaluate changes in patients' psychosocial profiles.

Materials and methods

Study design

This prospective study comprised 107 consecutive children who underwent otoplasty procedures between March 2008 and July 2010 and were followed up for more than 2 years. Fifty-seven children were referred from the paediatric psychiatry clinic because of high anxiety and psychological distress concerning their protruding ears.

All procedures were performed by the senior author (MS). Evaluations conducted in the pre- and post-operative periods included patients' history, and clinical and routine laboratory examinations. In the interviews of the children and their parents or guardians, observations and complaints related to the problems associated with prominent ears were noted, and the deformities were documented by photography.

Child Behavior Checklist

The Child Behavior Checklist, which is routinely used for psychological and psychiatric assessment, was applied in the pre- and post-operative periods to evaluate patients' dissatisfaction and social maladjustment caused by the prominent ears.⁷ The Checklist is a standardised questionnaire used to assess the competencies, and behavioural and emotional problems, as reported by their parents, of children aged 4 to 18 years. The problems section contains 118 items scored on a 3-point scale (0 = not true, 1 = somewhat or sometimes true, and 2 = very true or often true).

The Checklist has been translated and validated for a Turkish paediatric population.⁸ The reliability and validity of the Turkish translation of the original American version were confirmed for the Turkish population.⁹

The Child Behavior Checklist yields a total score, eight syndrome scale scores and two higher order factor scale scores. The higher order factor scales are designated the internalising (withdrawn behaviour, somatic complaints, and anxiety or depression) and externalising (aggressive and delinquent behaviour) problem scales. Social problems, thought problems and attention problems are the other syndrome scales.

The raw scores of the eight syndrome scale items, the items comprising the two higher order factor scales and the total score were summed and transformed into standardised scores (T-scores) according to the norms provided in the test manual. The T-scores were used as a dependent variable in the statistical analysis.

It was necessary to determine cut-off Checklist T-scores in order to define patients as being moderately or severely disturbed. In accordance with Achenbach's suggestion, we regarded patients with syndrome scale scores of 67–70, and internalising and externalising scale scores and total scores of 60–63, as moderately disturbed; those with syndrome scale scores of equal to or more than 70, and internalising and externalising scale scores and total scores of equal to or more than 63, were classified as severely disturbed.

Procedure

After obtaining parental consent, a form assessing sociodemographics and a written copy of the Turkish version of the Child Behavior Checklist (for children aged 4–18 years) were provided to the parents. An interviewer read the Checklist items aloud and registered the parents' responses, in order to account for differences in parental reading abilities. Interviewers were instructed not to give examples or interpretations of

behaviour; however, they were allowed to answer parents' questions to help them describe their children's behaviour.

Statistical analysis

Results were analysed using the Statistical Package for the Social Sciences for Windows software (SPSS[®] version 16.0). Statistical analysis was performed on pure scores in the descriptive phase, using basic statistical measurements including mean, standard deviation, median and per cent. The non-parametric sign test for median values was used for the pre- and post-operative comparison. Significance was set at a *p* value of 0.05.

Results

A total of 198 otoplasty procedures were performed in 107 patients (85 per cent were bilateral procedures). Otoplasty was performed solely in 86 patients and concurrently with other procedures (adenoidectomy alone or in combination with tonsillectomy) in 21 patients. The mean patient age at time of surgery was 8.4 ± 3.2 years (range, 4–16 years), with a follow up of 37.15 ± 13.62 months (range, 24–52 months). The study enrolled 107 of 134 patients who underwent otoplasty procedures in our tertiary care centre. Twenty-seven children were excluded from the study because: the parents did not complete the questionnaires ($n = 12$), the scores could not be used because of a large number of missing items ($n = 11$) or the children had additional handicaps ($n = 4$). Data from the remaining 107 respondents were included in the analysis. The sociodemographic variables and clinical features of the study group are summarised in Table I.

All children who underwent surgery obtained a good post-operative result, with satisfactory correction of the deformity reported by the patient, and his or her parents or guardians.

Responses of the parents to the questions in the Child Behavior Checklist are summarised in Table II. There were statistically significant decreases in the Checklist scores in the domains of anxiety and depression ($p = 0.028$), social problems ($p = 0.018$), difficulties in thinking ($p = 0.012$), total behavioural problems ($p =$

TABLE I
PATIENTS' DESCRIPTIVE CHARACTERISTICS

Characteristic	Finding
Sex (<i>n</i> (%))	
– Male	64 (59.8)
– Female	43 (40.2)
Age at surgery (mean \pm SD (range); years)	8.4 ± 3.2 (4–16)
Parent's education level (<i>n</i> (%))	
– Illiterate	26 (24.3)
– Elementary school	30 (28)
– Secondary school	18 (16.8)
– High school	22 (20.6)
– University	11 (10.3)
SD = standard deviation	

TABLE II
CHILD BEHAVIOR CHECKLIST DATA

Variable	Pre-operative (mean)		Post-operative (mean)		<i>p</i>
	T-score	Original score	T-score	Original score	
Anxiety & depression	44.48	1.86	41.31	1.26	0.028
Social problems	45.76	5.96	42.76	4.13	0.018
Difficulties in thinking	48.38	0.36	46.88	0.33	0.012
Attention problems	46.62	2.45	44.76	1.88	0.055
Aggressive behaviour	43.64	3.05	40.21	3.02	0.078
Total social competence	19.52	4.38	20.67	4.63	0.031
Total behavioural problems	44.33	10.43	41.31	11.69	0.012
Somatic disorders	44.90	0.5	44.74	0.43	0.474
Delinquent behaviour	46.50	0.64	46.62	0.48	0.164
Internalising problems	43.69	3.26	40.52	2.33	0.020
Externalising problems	43.71	4.69	42.21	3.5	0.044

0.012), internalising problems ($p = 0.020$) and externalising problems ($p = 0.044$), and near-significant decreases in scores for attention problems ($p = 0.055$) and aggressive behaviour ($p = 0.078$). There was a statistically significant increase in the score for total social competence ($p = 0.031$). No changes were detected in the Checklist scores for somatic disorders ($p = 0.474$) or delinquent behaviour ($p = 0.164$).

Discussion

The current study demonstrates the benefits of corrective plastic surgery for prominent ears. Based on significant subjective evidence, it may be concluded that otoplasty is useful in improving psychosocial problems. In addition, nearly all parents reported increased social integration post-operatively, probably because of diminished self-conscious emotional behaviour and increased self-confidence.

Very little is known about the psychological characteristics of children seeking cosmetic surgery or about the effects these procedures have on children's psychological development.¹⁰ One concern is that children do not appreciate the relatively permanent effects these procedures have on their bodies. In addition, children are less likely to fully understand the risks and potential side effects of a procedure. We used a well-known questionnaire, the Child Behavior Checklist, which was completed by parents, to document the behavioural outcome of cosmetic surgery.⁷ The 118-item problems scale generates scores for: total behavioural problems, 2 higher order factor clinical scales (internalising and externalising problems) and 8 cross-informant syndrome subscales (withdrawn behaviour, somatic complaints, anxiety or depression, social problems, thought problems, attention problems, and delinquent and aggressive behaviour).

It is often recommended that prominent ears be surgically repaired before school age, and most surgeons seem to perform the surgery after five years of age hoping to correct the deformity before the time of socialisation, in order to minimise peer ridicule.¹¹ However, the substantial psychological pressure imposed on children with protruding ears by their peers during the

preschool period or in kindergarten is usually underestimated. Because of changing socioeconomic trends, an increasing number of parents work outside of the home. As a result, children are becoming increasingly exposed to peers' teasing in day-care centres well before the age of four or five years.^{2,12} This intense early exposure to peers' and caretakers' mockery outside the family may significantly and adversely affect the development of children's self-esteem. We observed that these children can provide information about their psychological strain or the possible problems experienced with other children associated with their protruding ears. Furthermore, these children can express concern about the abnormal appearance of their ears before the age of five years. In the present study, the mean age of our patients was 8.4 ± 3.2 years, and our series included 18 children under the age of 5 years who underwent otoplasty procedures.

Children with protruding ears are often exposed to substantial psychological pressure; for instance, as mentioned above they may be teased in school by their peers. Teasing may even occur within the family unit, which can have a serious impact on the psychosocial development and behaviour of the affected child.¹³ Gois *et al.* indicated that being teased at school is far more common than expected.¹⁴ Those children affected by some type of anatomical deformity, such as prominent ears, do not fit into the normal pattern or contemporary idea of beauty. The Brazilian Multiprofessional Association for the Protection of Childhood and Adolescence reported that among interviewed students aged 11 to 14 years, more than 40.5 per cent admitted the occurrence of bullying or being victims of bullying.¹⁵

Numerous studies attest to the psychological distress, emotional trauma and behavioural problems which protruding ears can inflict on children. Low self-esteem, general lack of self-confidence and social isolation are among the reasons why parents of affected children opt for otoplasty. Sheerin *et al.* conducted a study in which a cohort of 47 children with prominent ears was evaluated pre-operatively by a psychiatrist.¹⁶ The authors reported an increased tendency towards depression, lower achievements in school, lower self-esteem,

and socio-communicative problems in school and at home. In a study by Horlock *et al.*, 91 per cent of the paediatric participants reported improved self-confidence related specifically to ear reconstruction, which resulted in improved quality of life.¹⁷ Schwentner *et al.* interviewed patients before and after otoplasty, and showed a significantly improved attitude towards life, increased courage to face life and better self-confidence among the patients.¹⁸ However, despite the convincing arguments in favour of otoplasty, it should be kept in mind at the time of assessment that patients with protruding ears do not necessarily experience psychosocial problems. Fifty-three percent of our patients were referred from the paediatric psychiatry clinic because of the psychological distress they experienced concerning their ears. The current study detected post-operative improvements in education and learning achievements, in activities in and outside of school.

- **This study investigated the psychosocial impact of otoplasty on children with prominent ears, two years after surgery**
- **All children obtained a good post-operative result, with satisfactory correction of the deformity**
- **There were decreases in scores for anxiety and depression, social problems, difficulties in thinking, attention problems, aggressive behaviour, and internalising and externalising problems**
- **Psychological problems associated with prominent ears can be reduced by appropriate corrective surgery**

Our study has several limitations. First of all, the Child Behavior Checklist is a subjective rating scale and we did not conduct a standardised psychiatric or neuropsychological assessment. Secondly, our study did not employ a non-surgery control group; it is therefore uncertain whether the reported improvements in satisfaction and functioning can be primarily attributed to the intervention. Thirdly, we did not investigate maternal mental state, which is known to potentially bias the assessment of children's health.¹⁹

In the absence of empirically sound outcome-based research, it is difficult to draw firm conclusions regarding the psychological effects of cosmetic procedures. Nevertheless, the patient's pre- and post-operative psychological status plays a critical role in decisions regarding facial plastic surgery. Such outcome-based studies will help us to better understand the psychological benefits that cosmetic surgery can offer the rapidly increasing numbers of persons who seek these procedures.

In conclusion, psychological problems related to anatomical deformities such as prominent ears can be reduced by means of appropriate corrective surgery. Psychological support is necessary for the patient.

References

- 1 Songu M, Négrevérne M, Portmann D. Négrevérne otoplasty technique. *Ann Otol Rhinol Laryngol* 2010;**119**:27–31
- 2 Songu M, Adibelli H. Otoplasty in children younger than five years of age. *Int J Pediatr Otorhinolaryngol* 2010;**74**:292–6
- 3 Bradbury ET, Hewison J, Timmons MJ. The psychological and social outcome of prominent ear correction in children. *Br J Plast Surg* 1992;**45**:97–100
- 4 Sarwer DB, Pertschuk MJ, Wadden TA, Whitaker LA. Psychological investigation in cosmetic surgery: a look back and a look ahead. *Plast Reconstr Surg* 1998;**101**:1136–42
- 5 Gasques JA, Pereira de Godoy JM, Cruz EM. Psychosocial effects of otoplasty in children with prominent ears. *Aesthetic Plast Surg* 2008;**32**:910–14
- 6 Cooper-Hobson G, Jaffe W. The benefits of otoplasty for children: further evidence to satisfy the modern NHS. *J Plast Reconstr Aesthet Surg* 2009;**62**:190–4
- 7 Achenbach TM. *Manual for Child Behavior Checklist 4–18, 1991 Profile*. Burlington: University of Vermont, Department of Psychiatry, 1991
- 8 Erol N, Arslan BL, Akçakin M. The adaptation and standardization of the Child Behavior Checklist among 6–18 year-old Turkish children. In: Sergeant J, ed. *Eunethydis: European Approaches to Hyperkinetic Disorder*. Zurich: Fotorotar, 1995; 97–113
- 9 Erol N, Şimsek Z. Mental health of Turkish children: behavioral and emotional problems reported by parents, teachers and adolescents. In: Singh N, Leung JP, Singh AN, eds. *International Perspectives on Child and Adolescent Mental Health*. Oxford: Elsevier Science, 2000;223–47
- 10 Sarwer DB. Plastic surgery in children and adolescents. In: Thompson JK, Smolak L, eds. *Body Image, Eating Disorders and Obesity in Children and Adolescents*. Washington, DC: APA Press, 2001;341–66
- 11 Songu M. The surgical technique of otoplasty. In: Hathiram BT, Khattar VS, eds. *The International Atlas of Operative ENT and Head & Neck Surgery*. New Delhi: Jaypee Brothers Medical Publishers, 2013;3–21
- 12 Songu M. Négrevérne otoplasty technique. In: Shiffman MA, ed. *Advanced Cosmetic Otoplasty: Art, Science, and New Clinical Techniques*. Berlin: Springer, 2013;149–62
- 13 Keery H, Boutelle K, van den Berg P, Thompson JK. The impact of appearance-related teasing by family members. *J Adolesc Health* 2005;**37**:120–7
- 14 Gois A, Mena F, Werneck G. *Amiguinho da Onca*. Sao Paulo: Folha-Teen Folha de Sao Paulo, 2003;6–7
- 15 Malta DC, Silva MA, Mello FC, Monteiro RA, Sardinha LM, Crespo C *et al.* Bullying in Brazilian schools: results from the National School-based Health Survey (PeNSE), 2009 [in Portuguese]. *Cien Saude Colet* 2010;**15** (suppl 2):3065–76
- 16 Sheerin D, MacLeod M, Kusumakar V. Psychosocial adjustment in children with port-wine stains and prominent ears. *J Am Acad Child Adolesc Psychiatry* 1995;**34**:1637–47
- 17 Horlock N, Vögelin E, Bradbury ET, Grobbelaar AO, Gault DT. Psychosocial outcome of patients after ear reconstruction: a retrospective study of 62 patients. *Ann Plast Surg* 2005;**54**: 517–24
- 18 Schwentner I, Schmutzhard J, Deibl M, Sprinzl GM. Health-related quality of life outcome of adult patients after otoplasty. *J Craniofac Surg* 2006;**17**:629–35
- 19 McCormick MC, Athreya BH, Bernbaum JC, Charney EB. Preliminary observations on maternal rating of health of children: data from three subspecialty clinics. *J Clin Epidemiol* 1988;**41**:323–9

Address for correspondence:

Dr Murat Songu,
Department of Otorhinolaryngology,
Dr Behcet Uz Children's Hospital,
Izmir, Turkey

Fax: 0090 232 489 2315

E-mail: songumurat@yahoo.com

Dr M Songu takes responsibility for the integrity of the content of the paper

Competing interests: None declared