



Psychological and social outcome of prominent ear correction in children

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SUMMARY. The effectiveness of surgery to correct prominent ears in relieving the psychosocial distress of children has been analysed in this prospective study.

30 children and their families were assessed preoperatively and again 12 months postoperatively. It was found that whilst prominent ear correction improved the well-being of 90% of the children, there was a small group of acutely distressed children who remained dissatisfied with outcome. These were children who were socially isolated prior to surgery.

Careful screening and referral back to the family doctor of the more distressed children is recommended.

Prominent ear correction in children is a routine procedure in plastic surgery units. Children requesting surgery generally complain of being teased about their ears, with consequent anxiety and social distress. It has been suggested that children with ear anomalies who become the object of ridicule can become more distressed than those whose disfigurement elicits fear or aversion (McGregor, 1978).

The literature on otoplasties has concentrated on technical considerations, but those studies which have included a measure of patient satisfaction have found that it is the overall degree of prominence rather than fine detail which is the main concern of the child (McDowell, 1968) and that satisfaction is not related to any particular technique (Neilsen, 1985; Tan, 1986). These studies have been retrospective, and whilst their findings confirm the clinical impression that this is a successful operation for most children, they do not explain why some children are dissatisfied, nor do they assess the psychological and social gain for the child who has had a successful outcome.

There has been research carried out into the impact of surgery on children with other forms of craniofacial anomaly (Arndt *et al.*, 1986; Pillemer and Kaye, 1989), but although prominent ears correction is a common procedure, there has been no detailed analysis of the effects of prominence for the child, nor of the psychosocial outcome of surgery.

This paper describes a prospective study which evaluated the pre- and postoperative psychosocial state of 30 children who had this operation. For the purposes of the study, there was an emphasis on identifying those variables which affected satisfaction with outcome. Future papers will analyse other psychological and social variables which were examined in the study.

Patients and methods

All the children and adolescents between the ages of 5 and 16 on the NHS waiting list for prominent ear

correction in Bradford were contacted (n=48). Of these, 40 children and their families agreed to participate in the study. Three subsequently cancelled their operation, and another 7 had their surgery delayed because of personal circumstances, leaving 30 children in the study.

Preoperative assessment

Several weeks prior to surgery, an assessment of each child was carried out at home using the following measures:

A semi-structured interview. This was a detailed interview designed to record details about their personal history, school experience, and other relevant information. Both parents and child participated in this.

The Childhood Experience Questionnaire (CEQ). This was developed by the craniofacial team in Toronto (Pertschuk and Whitaker, 1982). It is a 20 item questionnaire using a 5 point scale for the child to report his or her social experience. In order to establish some norms, it was first given to 239 Bradford schoolchildren and 85 children in a residential school for boys with behavioural problems. Thus a normal control sample was used, as well as a sample of children who had been identified as having problems. All the children in the prominent ear group completed this independently of their parents.

The Moos Family Environment Scale. This is a measure to assess styles of family functioning, and was completed by all the families. The original American normative sample for this test comprised 1125 families, who were compared with 500 distressed families (Moos, 1986). The dimensions assessed include ways in which families dealt with control, cohesion and conflict. It was administered in order to discover whether the families of the study sample functioned differently from average families.

The Scale of Prominence.

- 1. Grading by the subjects.** Both parents and children independently graded the prominence of the ears on a 5 point ascending Likert scale, with 1 being no prominence and 5 being extremely prominent.
- 2. Grading by a panel.** Pre- and postoperative photographs were taken, and an independent lay panel consisting of 3 adults and 3 children graded the degree of prominence on the basis of these photographs using the same scale as the subjects. This was carried out in order to compare external assessment of prominence with that of the subjects, and a lay panel was used because of the social aspects of concern about prominent ears.

Postoperative assessment

This was carried out about 12 months postoperatively, once again in the child's home. All the measures outlined above (apart from the Moos family scale) were repeated. In addition, one further measure was used and the semi-structured interview concentrated on postoperative issues.

Satisfaction with outcome scale. A Likert rating scale was used to measure satisfaction with outcome, following a pattern commonly used to assess patient satisfaction. The 5 point scale ranged from very satisfied to very dissatisfied. This was completed independently by the child and the parents.

The semi-structured interview. The postoperative interview looked at the experience of surgery and its aftermath, and the family were encouraged to discuss the details of this. They were also asked to describe any psychological and social changes experienced by the child since the operation.

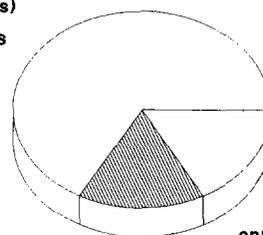
Results

What sort of children are these who have requested otoplasties? The majority of children requested this operation for psychological and social reasons, and 10% of the children had previously been referred to Child Psychiatry. This figure would have been higher if it had included those who cancelled surgery, 2 of whom had a psychiatric history. There was a very wide disparity in the age of onset of self-consciousness about the ears, ranging from 4 to 13 years old. Although some had notably prominent ears, the majority (63%) had ears which were rated by the independent panel as having a prominence of 3 (moderate) or less.

The subjects can be divided into 3 groups according to their reasons for requesting surgery; predominantly motivated by psychological and social distress (67%), predominantly motivated by aesthetic dissatisfaction with their ears (16%), and those who were not concerned but whose parents anticipated later problems (17%) (Fig. 1). These differences in motivation were not always apparent at the initial clinical consultation.

The Childhood Experience Questionnaire looked at specific areas of social experience. The results (Fig. 2)

psychosocial 67%
(range 6 - 14 yrs)
14 boys, 5 girls



cosmetic 16%
(range 10 - 16 yrs)
5 girls, 1 boy

anticipated distress 17%
(range 5 - 8 yrs)
4 boys, 1 girl

Fig. 1

Figure 1—The reasons for requesting surgery as expressed during the preoperative interview.

demonstrate that younger children with prominent ears report a significantly higher level of teasing than the normal population, as calculated by an independent t-test ($p < 0.05$). After the age of 13, there is no significant difference between the groups. The high levels of teasing reported by both groups suggests that teasing is a common experience of childhood and adolescence. Using Pearson's Correlation Coefficient, there was no association found between severity of preoperative teasing and the child's satisfaction with postoperative outcome.

However, there was a strong association between more serious problems such as levels of social isolation as assessed by the Childhood Experience Questionnaire and the interview, and continued teasing and social isolation following surgery. This was the most significant correlation to emerge from the statistical analysis ($p < 0.001$).

Figure 3 describes the result of the Moos Family Environment Scale, and illustrates that these British families present a very similar picture to the American control samples.

The scale of prominence as assessed by the lay panel was used to obtain an objective assessment of

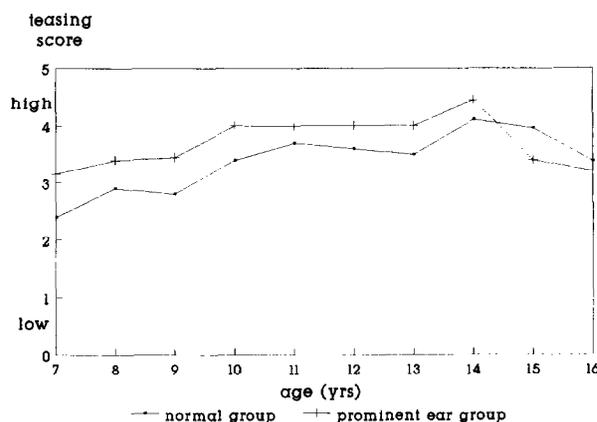


Fig. 2

Figure 2—The frequency of teasing experienced by the prominent ear group as compared to the control sample of normal Bradford schoolchildren. Teasing score: 1=never, 2=hardly ever, 3=sometimes, 4=often, 5=very often.

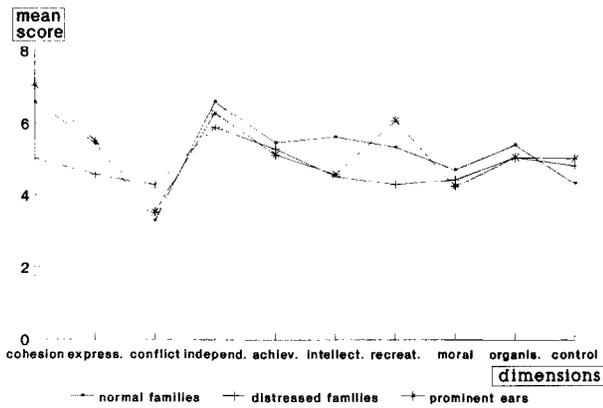


Fig. 3

Figure 3—The results of the Moos family environment scale, comparing the prominent ear group with normal and distressed families from the American control samples. The families are assessed on the basis of 10 dimensions measuring the way the members of the families relate to each other, and to the outside world. These dimensions or sub-scales are: cohesion, expressiveness, conflict, independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious emphasis, organisation and control.

prominence. The reliability of this scale was calculated by comparing the ratings of individual panel members using Spearman's Rank Order Correlation Coefficient. There was found to be a significant degree of between-rater correlation (median value of correlation coefficient = 0.56; for all values, $p < 0.05$). Thus external observers were able to agree on the degree of prominence of these subjects.

No correlation was found between the panel's grading of prominence and levels of preoperative distress, whether that distress was measured by levels of teasing or degree of social isolation. It was not possible to predict how concerned the subjects would be about their ears on the basis of objective assessment of prominence—the child with very prominent ears was not necessarily the most distressed, and some children with minor prominence were very distressed about their ears.

Furthermore, there was no significant correlation between postoperative correction of prominence and the child's satisfaction with outcome, despite the importance placed on degree of prominence by the children. Are the panel members and the children rating prominence in the same way? No significant correlation was found between the ratings of the children and the panel, the parents and the panel, or the children and their parents. A highly significant correlation was, however, found between postoperative satisfaction and the child's rating ($p < 0.001$), indicating that satisfaction with outcome may influence judgment of prominence.

The postoperative course was often stressful for the child (Fig. 4); 67% of the children had their ears rebandaged, on average 2.5 times. These tended to be the younger children, who were very intolerant of the itching. Some parents rebandaged the ears themselves, or asked a local nurse to do so, despite being requested to return to the hospital if this should occur. The

majority of these complications were not reported back and thus did not appear in the case notes.

Despite these difficulties, the satisfaction as assessed on the rating scale was high. 90% of the children and 80% of the parents rated themselves extremely satisfied. There was a small group of children who were dissatisfied with surgery, and for whom it achieved nothing. These were 4 boys between the ages of 9 and 13. During the postoperative interview there was some suggestion of more distress than before, as they could no longer find a reason for their problems.

The postoperative interview also revealed the extent to which the children and their families perceived changes in the child's psychological and social state since the operation. The majority of families (63.3%) reported that the child was happier and more confident, but only 13% reported improvements in the child's social experience in terms of better integration with other children. There was no obvious difference reported in the quality or quantity of friendships, nor in how others reacted socially to them, and although many were still teased on occasion (47%), those who were pleased with outcome were no longer troubled by this. Using the Sign Test (a non-parametric procedure to test the hypothesis that the distributions of emotional and social outcome were the same, regardless of the shape of these distributions), it was found that there was a highly significant difference between emotional and social outcome ($p < 0.001$). Improvement in personal happiness was thus significantly greater than improvement in social experience.

Discussion

This was a successful operation for the large majority of the children, in that it improved their sense of personal happiness and confidence as they lost their self-consciousness about their ears. It could be anticipated that social changes would be slower to occur than psychological ones, but for some of these children, there were clear social gains, which probably resulted from increased self-confidence.

However, it seems that an operation to correct prominent ears, however well executed, cannot guar-

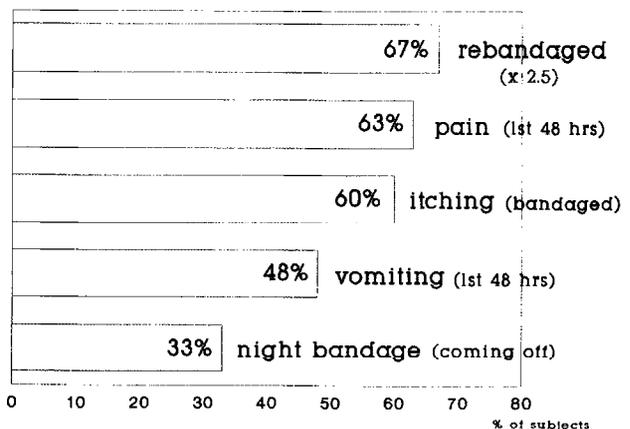


Fig. 4

Figure 4—Postoperative complications.

antee that the child will feel happier afterwards. Preoperative distress cannot be predicted from the degree of prominence, nor postoperative satisfaction from the quality of surgical correction, but come from more complex and elusive factors.

The physical problems inherent in the postoperative course makes it particularly stressful for the child who is too young or unmotivated to be a willing participant. Evidence suggests that children can suffer long term emotional consequences from invasive and painful medical procedures (Chapman, 1956; Bush, 1987), and it would be better for the child if he or she was well motivated for surgery. The degree of prominence does not seem to predict levels of distress, and it cannot be assumed that the child will develop self-consciousness, nor can the age when any self-consciousness develops be predicted. Children in this sample reported onset of self-consciousness as anywhere between 4 and 13 years. A decision about surgery should be based on the needs of the child, not on pressure from parents or the referring doctor.

There was a small group of children who were very dissatisfied with surgery, and for whom it has achieved nothing. These boys seemed more distressed than before, as they could no longer find a reason for their problems. When a child presents for this operation showing evidence of marked social isolation and acute distress, it would be prudent to refer the child back to the family doctor for consideration of appropriate referral, for example to a Child Psychology Unit or to Child Guidance, before carrying out any surgery.

There are parallels between this surgery and adult aesthetic surgery. Successful outcome appears to be strongly influenced by the loss of self-consciousness (Harris, 1982), and this is tolerant of a range of technical results. There are some individuals of any age whose problems are too extensive to be solved by surgery, and whose perception of technical outcome is greatly influenced by their sense of disappointment with surgery. As with adults, it is interesting to note that males are more likely to figure in this group than females (Pertschuk, 1991).

There is scope for further research looking at larger groups of children with visible congenital deformities in order to assess the impact these have on their development and psychosocial functioning, and to evaluate the role played by plastic surgery in improving their emotional well-being.

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References

- Arndt, E. M., Lefebvre, A., Travis, F. and Munro, I. R. (1986). Fact and fantasy: psychosocial consequences of facial surgery in 24 Downs Syndrome children. *British Journal of Plastic Surgery*, **39**, 498.
- Bush, J. P. (1987). Pain in children: a review of the literature from a development perspective. *Psychology and Health*, **1**, 215.
- Chapman, A. H., Loeb, D. G. and Gibbons, M. J. (1956). Psychiatric aspects of hospitalizing children. *Archives of Pediatrics*, **73**, 77.
- Harris, D. L. (1982). The symptomatology of abnormal appearance: an anecdotal survey. *British Journal of Plastic Surgery*, **35**, 312.
- McDowell, A. J. (1968). Goals in otoplasty for protruding ears. *Plastic and Reconstructive Surgery*, **41**, 17.
- McGregor, F. (1978). Ear deformities: social and psychological implications. *Clinics in Plastic Surgery*, **5**, 347.
- Moos, R. and Moos, B. (1986). *Family Environment Scale manual*. Palo Alto, California, Consulting Psychologists Press.
- Nielsen, F., Kristensen, S. and Crawford, M. (1985). Prominent ears—a follow-up study. *Journal of Laryngology and Otology*, **99**, 221.
- Pertschuk, M. J. (1991). Psychosocial considerations in interface surgery. *Clinics in Plastic Surgery*, **18**, 11.
- Pertschuk, M. J. and Whitaker, L. A. (1982). Social and psychological effects of craniofacial deformity and surgical reconstruction. *Clinics in Plastic Surgery*, **9**, 297.
- Pillemer, F. G. and Kaye, V. C. (1989). The psychosocial adjustment of pediatric craniofacial patients after surgery. *Cleft Lip and Palate Journal*, **26**, 201.
- Tan, K. H. (1986). Long-term survey of prominent ear surgery: a comparison of two methods. *British Journal of Plastic Surgery*, **39**, 270.

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