

Otoplasty in children younger than 5 years of age

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ABSTRACT

Objective: The prominent ear is the most common congenital deformity of the auricle. It is often recommended that prominent ears be surgically repaired before children start school and most surgeons seem to perform the surgery after 5 years of age. The aim of our study is to summarize the rationale of performing otoplasty procedure in children under the age of 5, to discuss the advantages and disadvantages, and to review the patient (parent) satisfaction.

Methods: A retrospective study was performed on 10 children under the age of 5 who underwent otoplasty procedure and was followed for over a year.

Results: Ten patients (3 boys and 7 girls) between the ages of 48 months and 59 months, with a median age of 51.5 months were evaluated. Otoplasty was bilateral in 8 patients and unilateral in 2 patients. Global Aesthetic Improvement Scales of the patients were rated as "improved" or "better" at 52 weeks. The patient (parent) satisfaction was measured by a telephone survey. Parents revealed that 9 out of 10 were "very" or "completely" satisfied with the appearance and symmetry of their children's ears. We did not observe any visible disturbance or growth restriction in our patients, even in the unilateral operated group.

Conclusion: Timing of surgery is an issue of concern with regard to otoplasty in children. There may be significant psychosocial benefit to early intervention, particularly in light of changing norms for interaction with peers at ages considerably earlier than what had previously been thought of as the "school age." Our preference is to plan the otoplasty as young as four years of age, after the child has expressed some concern about the deformity.

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1. Introduction

The prominent ear is the most common congenital deformity of the auricle, occurring in approximately 5% of the Caucasian population, and is inherited as an autosomal dominant trait [1]. Although the physiological consequences are insignificant, the psychological and aesthetic consequences for the patient can be considerable [2].

It is often recommended that prominent ears be surgically repaired before children start school and most surgeons seem to perform the surgery after 5 years of age [3]. The hope is to correct the malformation before the time of socialization in order to minimize peer ridicule. However, substantial psychological pressure exposed to children with protruding ears among peers during the preschool period or in kindergarten is usually underestimated. Changing socioeconomic trends have increased the

proportion of families in which both parents work outside the home. As a result, children have been increasingly exposed to peers through daycare centers well before the age of 4 or 5. This intense early exposure to peers and caretakers outside the family may significantly affect the development of self-esteem. We observed that these children can provide information about their psychological strain or possible problems with other children associated with their protruding ears. Furthermore, these children can also express concern about the abnormal appearance of their ears before age 5.

The aim of our study is to summarize the rationale of performing otoplasty procedure in children under the age of 5, to discuss the advantages and disadvantages, and to review the patient (parent) satisfaction.

2. Methods

A retrospective study was performed on 10 children under the age of 5 who underwent otoplasty procedure and was followed for over a year. Otoplasty has been performed solely on 4 patients and concurrently with other procedures (adenoidectomy alone or in combination with tonsillectomy) on 6 patients. Rather than

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subjecting the patient to an additional surgical procedure in these 6 patients, otoplasty was performed at the time of the concomitant procedure (Figs. 1 and 2). Three of the 4 patients that had undergone solely the otoplasty procedure, were referred from the pediatric psychiatry clinic due to high anxiety and psychological distress about their protruding ears (Figs. 3 and 4). All procedures were performed by the senior author (M.S.). The author's preferred posterior cartilage-scoring technique for otoplasty has been previously described [4].

A blinded nonparticipating observer (H.A.) performed photographic assessments of 8 patients whose parents consented to "medical photography" to evaluate the effect of treatment using the Global Aesthetic Improvement Scale [5]. After comparing the preoperative and 1-year-postoperative photographs, the nonparticipating observer was asked to describe the degree of improvement. Possible responses were (1) very much improved, (2) much

improved, (3) improved, (4) no change or (5) worse (Table 1). Outcomes in facial plastic surgery are highly subjective and measured by an unclear concept of "patient satisfaction" [6]. Nevertheless, there is no validated instrument with test-retest reliability and internal consistency scores for assessing the outcomes of otoplasty procedure [7]. However, a telephone survey was performed among the parents of 10 patients aiming to give general information about the parents' degree of satisfaction about the procedure.

3. Results

Ten patients (3 boys and 7 girls) between the ages of 48 months and 59 months, with a median age of 51.5 months were evaluated. Otoplasty was bilateral in 8 patients and unilateral in 2 patients. One patient required revision surgery under local anesthesia for

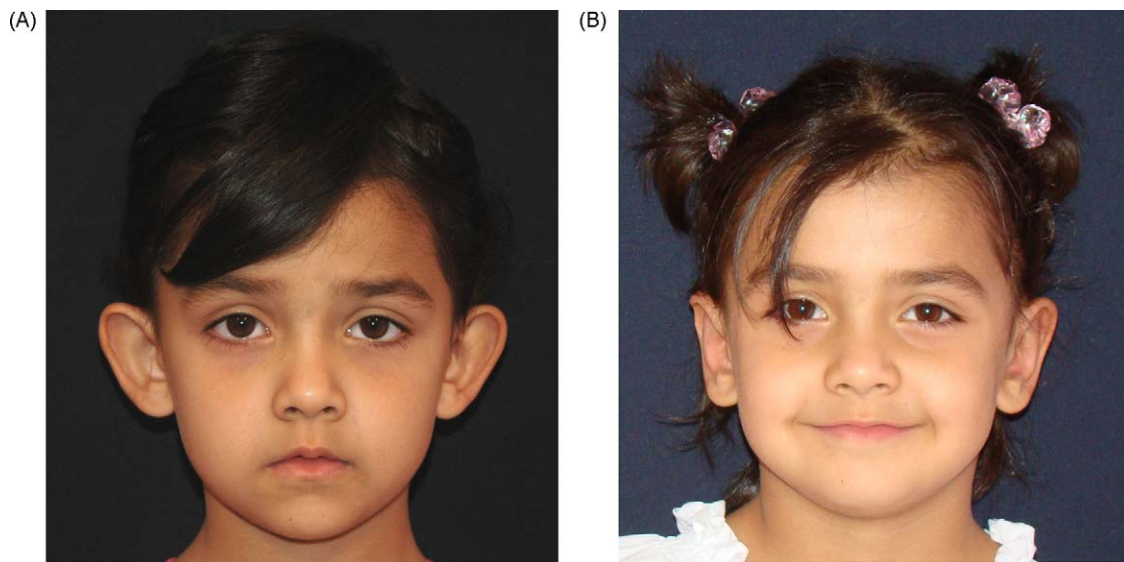


Fig. 1. Preoperative (A) and postoperative (B) photographs of the patient who underwent bilateral otoplasty and adenoidectomy in combination with tonsillectomy. The ears remain relatively symmetric postoperatively.



Fig. 2. Preoperative (A) and postoperative (B) photographs of the patient who underwent bilateral otoplasty and adenoidectomy. The mouth is closed due to adenoidectomy during the postoperative period but despite lobuloplasty, lobul is not in the desired position bilaterally.

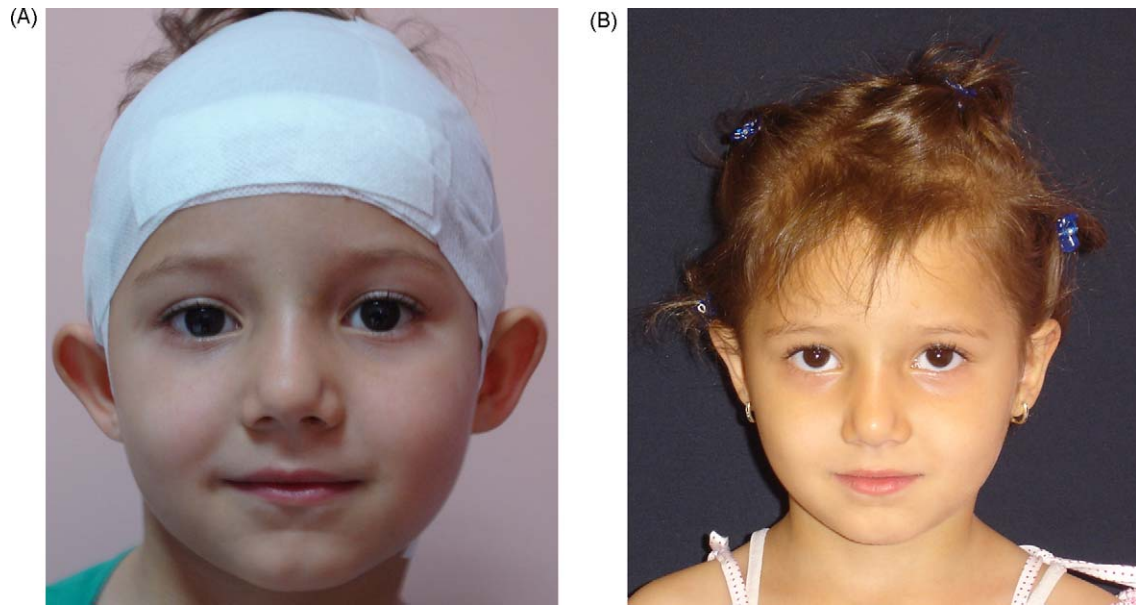


Fig. 3. Preoperative (A) and postoperative (B) photographs of the patient who underwent bilateral otoplasty.



Fig. 4. Preoperative (A) and postoperative (B) photographs of the patient who underwent bilateral otoplasty. Due to high anxiety level, taking a photograph could be achieved preoperatively under the preoperative sedation. Smiling face postoperatively showing no signs of psychological pressure furthermore.

Table 1
Global Aesthetic Improvement Scale (GAIS).

Rating	Description
Very much improved	Optimal cosmetic result
Much improved	Marked improvement in appearance from initial condition but not completely optimal for this patient; a touch-up would slightly improve the result
Improved	Obvious improvement in appearance from the initial condition, but touch-up or retreatment indicated
No change	Appearance essentially the same as the original condition
Worse	Appearance worse than the original condition

retroauricular skin incision re-suturing due to an external trauma. Another patient who had undergone a bilateral otoplasty procedure had recurrence on 1 ear; yet as the parents were satisfied with the procedure they did not give consent for revision surgery. Recurrence rate consisted of 10% of the patients who were operated on and 5.5% of the ears that had been operated on. Global Aesthetic Improvement Scales (GAIS) of 8 patients were rated as improved or better on the GAIS at 52 weeks. Four patients had GAIS ratings of very much improved, 2 were rated as much improved, and 2 as improved. There were no ratings of “no change” or “worse”. The telephone survey conducted among parents revealed that 9 out of 10 patients were “very” or “completely” satisfied with the appearance and symmetry of their children’s ears. We did not

observe any visible disturbance or growth restriction in our patients, even in the unilateral operated group.

4. Discussion

Children with protruding ears are often exposed to substantial psychological pressure, such as being teased in school among their peers. Teasing may even occur within the family unit and can have a serious impact on psychosocial development and behavior [8]. Numerous studies attest to psychological distress, emotional trauma, and behavioral problems this deformity can inflict on children [8–10]. Low self-esteem, general lack of self-confidence, and social isolation are among the reasons why parents of affected children decide for otoplasty [2,8]. In a study by Sheerin et al., a cohort of 47 children with prominent ears was evaluated by a psychiatrist before undergoing surgical correction [9]. An increased tendency towards depression, lower achievements in school, lower self-esteem, and socio-communicative problems in school and at home was observed. Horlock et al. found 91% of children reported an improvement in self-confidence resulting in improved quality of life with respect to ear reconstruction specifically [10]. 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 [11]. However, despite of the convincing arguments in favour of otoplasty, it should be kept in mind at the time of assessment that protruding ears not necessarily result in the affected patients experiencing psychosocial problems. Three of our patients were referred from the pediatric psychiatry clinic due to psychological distress about their ears. The level of anxiety decreased to normal limits in the postoperative period.

In light of these problems, it is recommended to perform otoplasty in children suffering from protruding ears, prior to the start of schooling. However, psychological pressure exposed to children with protruding ears at the preschool period or in kindergarten is usually underestimated. Preschool education is the provision of education for children before the commencement of statutory education, usually at the ages of 4 and 5, between the toddler and school stages. It has to be considered that children at

preschool period can also provide information about their psychological strain or possible problems with other children associated with their protruding ears. Furthermore, children can also express concern about the abnormal appearance of their ears before age 5.

Like many procedures involving the child's face, there is a concern about how the operative site will respond to pressures of normal growth. Until recently, very few surgeons felt comfortable operating on the ear of a young child due to concerns about longevity and altered growth. Adamson et al. studied the growth patterns of the external ear of 2300 ears and showed that the ear reaches 85% of its adult size by 3 years of age [12]. On the other hand, Farkas differed some in his measurements stating that the ears reach 85% of full size by age 6, 90% by age 9, and 95% by age 14 [13]. Balogh and Millesi were the only authors to objectively study growth alterations following otoplasty, and concluded that growth of the ear is not arrested following otoplasty [14]. Recently, Gosain et al. reported that otoplasty can be safely performed under age 4 and as young as 9 months without significant effect on ear growth in a cohort of 12 patients with prominent ears [15,16]. This was well demonstrated in 3 unilateral cases where comparison could be made with the contralateral ear. Due to our limited experience, in unilateral "Jumbo" ears, we observed that the protruding ear is usually bigger than the unaffected ear in all dimensions (Fig. 5). Growth alteration should be a desired consequence among these patients and this desire is another rationale for the early surgical intervention. Nevertheless, we did not observe any visible disturbance or growth restriction in our patients, even in the unilateral operated group.

An important advantage of performing otoplasty at these younger ages is the increased malleability of the auricular cartilage, decreasing the need to use cartilage-cutting techniques. At this age, the auricular cartilage is characteristically pliable; however, elasticity decreases with advancing age, often demanding more aggressive treatment. The softer the auricular cartilage, the easier it is to shape the cartilage or auricle into the appropriate form and pin it back, using gentle surgical techniques. We have previously published the surgical technique we prefer for management of the prominent ears [4]. The Négrevergne otoplasty technique was developed by Michel Négrevergne and adopted in

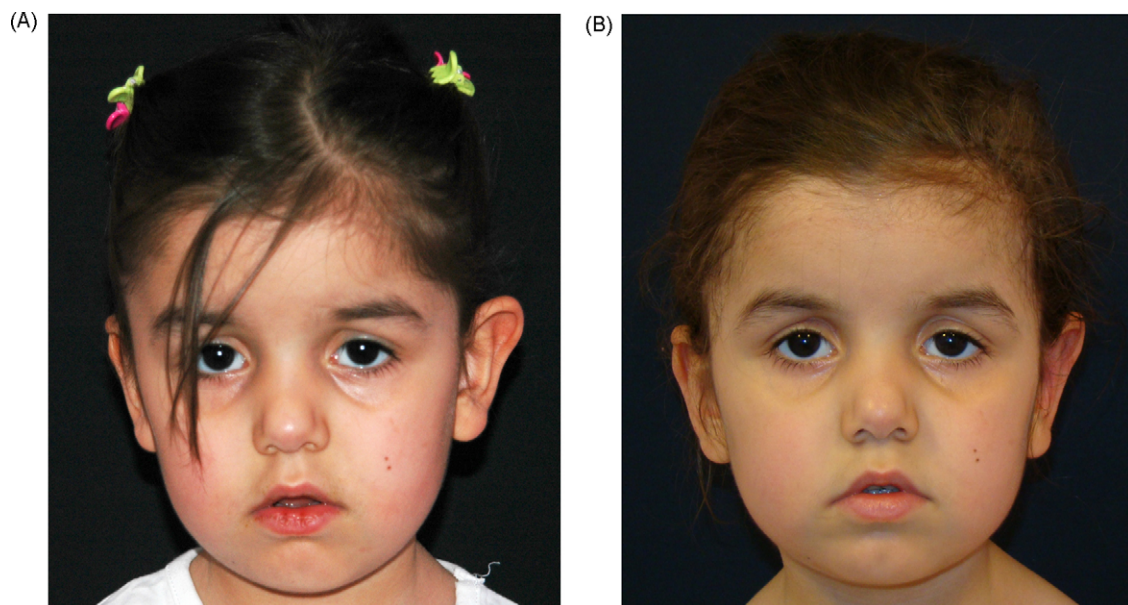


Fig. 5. Preoperative (A) and postoperative (B) photographs of the patient who underwent left unilateral otoplasty and adenoidectomy are shown to demonstrate the normal growth of the ear that had been operated on relative to the unaffected ear. The mouth of the patient is closed in the postoperative period.

the Georges Portmann Institute in France. The technique includes partial-thickness posterior scoring of the auricular cartilage using monopolar cutting diathermy. Because the ear cartilage is weak under age 5, cartilage-scoring can be conservative, sufficient to release the cartilage spring only. Since our preferable technique is suture-free, common complications such as suture failures and extrusions, suture material induced foreign-body granulomas, and wound breakdown are never observed. The potential risk of cartilage necrosis and hematoma formation in dead-space must be kept in mind but was not observed in our patients. Global Aesthetic Improvement Scales of 8 patients who consented to medical photography were rated as improved or better on the GAIS at the end of 52 weeks. There were no ratings of “no change” or “worse”. The telephone survey conducted among parents revealed that 9 out of 10 patients were “very” or “completely” satisfied with the appearance and symmetry of their children’s ears. One patient who had undergone a bilateral otoplasty procedure had recurrence on one ear; yet as the parents were satisfied with the procedure they did not give consent for revision surgery. Relapse is usually a function of cartilage recoil from its intrinsic memory and is seen specifically in patients with stiff cartilage.

The main disadvantage of the surgery before age 5 is postoperative difficulties dealing with the dressing. The procedure is best performed when the auricle has reached maturation and the child is old enough to cooperate with the postoperative care. It must be kept in mind that correction before age 5 may complicate the postoperative course when the child, even if not intentionally pulls apart the bandage and potentially disrupts the repair. Our practice has shown that, all of the study patients were followed by multiple extra visits for redressings, and as their fingers were constantly inside the bandage this resulted in more swelling and certainly greater risk of postoperative complications. One patient required revision surgery under local anesthesia for retroauricular skin incision re-suturing due to an external trauma. Nevertheless, at the end of the follow-up period, no serious complications occurred and the patient showed full recovery.

5. Conclusion

Timing of surgery is an issue of concern with regard to otoplasty in children. Given that children often start preschool at age 4, this is an important social landmark for children with visual deformities. There may be significant psychosocial benefit to early intervention, particularly in light of changing norms for interaction with peers at ages considerably earlier than what had previously been thought of as the “school age.” Of the 10 patients who underwent otoplasty procedure in our study group, none demonstrated visible

disturbance in ear growth, further confirming that otoplasty did not negatively affect subsequent ear growth.

There is no absolute rule about when otoplasty should be performed. Our preference is to plan the otoplasty as young as 4 years of age, after the child has expressed concern about the deformity. There will certainly be some patients with significant deformities where the parents are more concerned about the child’s deformity than the child themselves and in these cases it is up to the surgeon and the parents to decide if it is appropriate to proceed or to delay the procedure.

Conflict of interest

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

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