

**REVIEW ARTICLE****HEALTH RELATED QUALITY OF LIFE AFTER OTOPLASTY IN CHILDREN WITH PROMINENT EARS****Authors**

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Prominent ear deformity is the most common congenital abnormality of the external ear. It affects both sexes equally. The failure of antihelical fold structure, a deep conchal bowl or combination of the two problems may result in prominent ears. The aim of otoplasty should be reshape these anatomical problems. Otoplasty is a frequent aesthetic operation among pediatric population. The deformity has an autosomal-dominant hereditary pattern. Otoplasty is a procedure that can be performed by different disciplines as facial plastic surgery including otorhinolaryngology, plastic surgery and maxillofacial surgery. Cartilage-incision techniques and suture-placement techniques are the approaches for correction the prominent ears. Prominent ears are very important in diary social life. This situation is more important among children. Physiological distress, emotional trauma and behavioral problems can cause a complicated situation. Today, in modern medicine, it has been getting more important to obtain the benefit of any surgical procedure among children and adults. There is a little data about Health-Related Quality Of Life (HRQOL ) or health status impact after this operations.

In this review we wanted to underline the importance of the Health-Related Quality Of Life among children after otoplasty, by the help of the literature.

**KEY WORDS:** Health-Related Quality Of Life, Otoplasty.

## 1.PATHOPHYSIOLOGY

Prominent ears, can be entitled as 'lop ears' or 'cup ear'. This anatomical defect includes deformities of the auricular composition, concha valga, differences of auricular - cranium angle; lack of antihelix and a hypertrophied concha. Prominent ear is a congenital problem and its incidence is approximately 5 % (1).

The pinna takes shape in utero about 5 week from six mesenchymal augmentation that circling the first pharyngeal cleft and arises to the side of the head at the plane of the eyes. Pinna is formed by helix, superior and inferior crura originating antihelix structure, concha and the lobule. In prominent ears; a misfolding of these cartilage structure may be seen. The failure of antihelical fold structure, a deep conchal bowl or combination of the two problems may result in prominent ears. The aim of otoplasty should be reshape these anatomical problems (2).

Adamson et al. reported that approximately 85 % of ear growth is complete at age of 3 by their study on 2300 ears. Spira declared the development of ear in its vertical dimension; well into adulthood (3-5).

Prominent ear deformity is transmitted by an autosomal -dominant pattern (6). Not only genetically but also, environmental factors can effect the auricular growth during second trimester to postpartum. An insufficiently

shaped or distinctive antihelix, a prominent lobulus, hyperplasia of the cavum conchae are the types of pathologies can cause prominent ears. A deficient antihelix can lead to perception of pseudohyperplasia of the cavum conchae. This kinds of malformations cause exaggerated width of the ear, that can be differ in frontal view 20+- 4 mm (7-9).

## 2.SURGICAL PROCEDURE

Otoplasty is a procedure that can be performed by different disciplines as facial plastic surgery including otorhinolaryngology, plastic surgery and maxillofacial surgery. Cartilage-incision techniques and suture-placement techniques are the the approaches for correction the prominent ears. The aim of these methods is to maintain the abnormal ear shape, the antihelical fold and concha protrusion (10).

To reshape prominent ear deformity more than 20 techniques have been described (11). The major approaches can be categorized as; cartilage- cutting techniques (CT), cartilage - sparing techniques (CST) and incisionless techniques. These methods should be individualized according to the deformity. Prominent ears do not affect the hearing function of the ears, but they may cause emotional trauma, psychological stress, behavioral disorders, especially among

paediatric population. Cartilage -sparing methods can be confident younger ages, that do not require cartilage-cutting. Cartilage-cutting methods are useful in the existence of stiff and thick cartilage. This technique provides to shape an antihelical curve by breaking the elastic resistance of the auricular cartilage. Incisions are carried out from the front and/ or rear aspect of the antihelical cartilage. Cartilage- sparing techniques, provide a reduced cartilage resistance by partial incisions or scorings, by maximum protection of cartilage support, decreased scar contour formation. A reversible change can be made on cartilage by this way. This method is suitable for less stiffness; otherwise; in stiff cartilages results may not be beneficial. Mustarde defined multiple horizontal mattress sutures to shape an antihelical curve. Recurrence is the most important limitation for suture techniques. The cartilage memory can not be ignored, and within 1 year, about 40 % of ears can return to their preoperative shapes. Fritsch used an incisionless otoplasty method by percutaneous permanent subcutaneous horizontal sutures. The anterior surface is scored subcutaneously by the help of a no. 21 needle to reshape an antihelical curve. Three placed percutaneous Mustarde sutures create the antihelical curve (12-14).

Prominent ears often affect bilaterally. The goal of otoplasty should be reshape prominent ears by maintaining the distance from

the helical rim to skull (normally 15-20 mm) and to maintain symmetry between the two auricles with no signs of an operation (15,16).

Different reference points for auriculocephalic dimension have been defined in literature. Adamson et al. measured the point of maximal lateral projection of superior pole to mid-auricular level. Crysedale and Messner measured the Frankfort horizontal plane between the infraorbital rim and the superior aspect of the external auditory meatus. Their measurement points were the most superior point of the auricle, the lateral aspect of the helix, the superior point of the helix insertion, and the lowest point of the conchal bowl on the helical rim. These measurements are generally between 25 and 35 mm preoperatively, and 13-15 mm postoperatively (16-19).

Mustarde defined a pure suture technique in 1963, he used non- resorbable suture of the cartilage to shape the antihelix fold via posterior access in this technique. Stenstrom described an approach by utilizing the flexible features of cartilage, without any sutures. Joseph developed Ely's technique defined in 1881, including elliptical skin excision with additional cartilage excision. Converse described a combination of incomplete cartilage incisions and posterior fixing sutures. Goldstein provided immobilized cartilage of cavum conchae to the mastoid and maintained a total rotation of the cavity and a

conchal setback by this way. Furnas conchal-mastoid suture technique is also very popular (20-26).

Little is known about the appropriate time for otoplasty. 5 years of age has been advised by many surgeons. The possible fears about younger otoplasty are due to the aesthetic risk and failure of auricular development. Many families suggest earlier otoplasty, before 4 years due to the negative effect of prominent ears on their children's self image. There is not enough data for comparing the psychological effect of otoplasty after age of 5 years. Otoplasty can be carried out combined with other operations if the child has any other congenital deformity to avoid recurrent anesthesia exposure. Gosain et al. stated the different technical characteristics of otoplasty in younger than 3 years of age. They stated malleability of the auricular cartilage to provide easily shaped intraoperatively. They observed that; suturing methods to reshape the antihelix or to recreate the auricle were enough that; there were no need for additional methods including scoring, rasping or burring. These additional methods may be required in older children. And they advised a minimal postauricular skin excision to avoid distortion of the ear after otoplasty from a tight postauricular sulcus. Further tightening of the postauricular sulcus can be result in secondary contracture of the sulcus. To avoid this

complication; the surgeon should lean toward incision rather than excision of skin in the postauricular sulcus (5).

### 3.DISCUSSION

To be accepted by the society depend on the physically well-being. This matter is especially important among children. Unhappiness with body image canalizes the person for aesthetic surgery. This dissatisfaction may cause anxiety, behavioral problems, social withdrawal, decreased self-esteem. This result in excessive aggression and social avoidance as an protection mechanism (27).

The health is defined by the World Health Organization as " complete physical, mental, and social well-being, not only the lack of illness or disability."According to this description the importance of mental or emotional status of the patient, and also social functioning. Today the studies have been focused on the result of aesthetic procedures including patient satisfaction, functional outcome and quality of life. The measurement of quality of life and patient satisfaction is very important that allow the the comparison the different surgical procedures. The displeasure with body; gives rise to think an aesthetic operation to the patient. This was reported by Sarwer et al. (27-30).

The displeasure causes psychological distress, especially among children. Health-related quality of life (HRQOL) evaluates the clinical effectiveness of the surgical procedures (10).

Prominent ears are very important in diary social life. This situation is more important among children. Prominent ears can attract attention by other children and this emotional pressure can cause psychological discomfort, that invites low school performance or if an adult job performance, asocial character and missing of self-twist. HRQOL is an condition: that should be handled physical, psychological, and social parts. Now; it is accepted as an important parameter in the assessment of an aesthetic procedure benefit on the patient (9).

Children who have prominent ears can not feel normal pattern or idea of beauty. Psychological distress, emotional trauma and behavioral problems can cause a complicated situation. Sheerin et al prefer an psychiatric evaluation for their 47 children in their children with prominent ears (31,32).

Gasques et al found that; prominent ears causes more serious problems among boys than girls. Boys can not hide their prominent ears with their hair. This deformity can be a nightmare for a school child. He may not want to go school, to study. Their parents suffer from a 'fearful, sad, untidy 'child. Parents feel like

their children and they posses the problem. In smaller ages, parents may help the child to hide the prominent ears by carrying devices and than the problem is stayed limited within the home. When the child becomes a school-child; he may be exposed the aggressive impulses, teasing from other children. Children are vulnerable, the earlier ages are very important their personality. It may be reinforced or modified in this earlier phases. Children tend to socialize and cooperate with colleagues. When they are rejected they may develop negative behaviours. Due to the nicknames, bullying and teasing because of the prominent ears, children often cry and ask for help from their parents. Life becomes hard for the children and they become anxious, worried and seperated from the society. If the circumstances do not improve they may become aggressive, violent adults. Gasques et al. evaluated the changes experienced on children pre-and postoperative period. They found that 7% of children suffering from moderate depression before the operation, improved after operation and there was a mild depression. The use of State-trait Anxiety Inventory, at the same study; showed that the anxiety sensation decreased after otoplasty (1).

Otolaryngological surgeries are the most common procedures among paediatric population. There is a little data about HRQOL or health status impact after this operations. HRQOL can be described as 'the extend to

which ones usual or expected physical, emotional and social-well-being are affected by a medical condition or its treatment' HRQOL measurement may be difficult especially among paediatric population. In this situation evaluation can be made by the help of the patients parents ' opinion for the influenced child. Glasgow Benefit Inventory (GBI) is a tool for HRQOL assessment (33).

GBI is a scoring system; that has been handled to evaluate the influences of a clinical procedure and the effect of the intervention on the patient's own life (34,35). It includes 18 questions on a likert scale rated from 1 to 5. The paediatric adapted form of the questionnaire includes additional questions. The answers of the questionnaires are entered into a algorithm giving the patient a total score from -100 to + 100 (36). 12 questions related to general change in health status, defined as ' general'. Other 3 questions focused on the amount of social support required in relation to the situation; being evaluated (social) and the rest 3 questions deal with physical health status; including medical treatment needed and number of visitations to doctor required 'physical' (34).

HRQOL should be handled physical, psychological and social aspects. HRQOL is used to evaluate therapy regimen, especially for aesthetic surgery. The major goal of the aesthetic procedure should maintain a subjective

benefit for the patient. There are few studies about HRQOL after otoplasty (19,37-39).

According to the most studies, surgery was reported as a beneficial procedure for patients and have a positive effect on the quality of the patient's life. Meningaud et al. reported that aesthetic procedures provide psychological well-being. Rankin et al showed a betterment in composite quality of life scores in the first month postoperative visit and pointed out this important progress that lasts for a long time (40,41). Braun et al stated that; in their study of quality of life with 62 patients, with GCBI ( Glasgow Children's Benefit Inventory) an adequate quality of life for children and adults. Schwentner et al. a similar result in their study with 40 patients. Hao et al. reported their study with 50 patients evaluated by GCBI and the Pediatric Quality of life Inventory. Approximately 88 % of patients were reported as pleased with their ears after operation (10,32).

Toplu et al. reported 132 ears of 77 patients with prominent ears. They divided the patients into two groups; including; cartilage resection group and suturing method group. They compared operation time, clinical results, complication rates, postoperative satisfaction rates and HRQOL in two groups. The GBI score used for patients older than 13 years was 36 in suturing group and 32.4 in cartilage resection

group. This showed that patients benefitted from their otoplasty procedure (19).

Gasques et al reported a significant improvement of the psychological problems as a result of anatomical changes that are detected in children with ear surgery (1).

Bradbury et al. evaluated 30 children who experienced otoplasty due to their prominent ears. They studied pre-and postoperative psychosocial state of these children and their parents. They used the Childhood Experience Questionnaire (CEQ), which was developed in Toronto, in 1982. It includes 20 item questionnaire using a 5 point scale for the child to report his or her social experience. For their parents they used the Moos Family Environment Scale to detect styles of family functioning. They found approximately 90 % psychological improvement of the children (42).

Songu and Kutlu showed a high rate of patient satisfaction in children after otoplasty (94% ,63/67 children) (32).

The negative effect of prominent ears was cited in even animated movie; the story of Dumbo the Flying Elephant (1939). This Disney production pointed out this phenomenon to all age of viewers. Bullying has an important effect on the social development of a child. This is the most common problem at schools (43).

#### 4.CONCLUSIONS

Prominent ears have been accused for low cognitive performance at school, immaturity, decreased self-confidence and social avoidance. This may be result in low social functionality. There is a strong relationship between visual deformities and high psychological distress. Children can be more sensitive for small differences in apperance between themselves and others. The attractiveness of a person effects strongly the perception of the personality by the observer. An attractive individual is perceived as nice, friendly and intelligent.

HRQOL should be handled physical, psychological and social aspects. HRQOL is used to evaluate therapy regimen, especially for aesthetic surgery. The major goal of the aesthetic procedure should maintain a subjective benefit for the patient. Poor psychosocial outcomes may be due to young age, male sex, unrealistic expectations, unsatisfactory surgery history, minimal deformity, depression history, anxiety and personal disorders.

There is a little data about the psychological characteristics of children seeking cosmetic surgery and the procedures affecting psychological development. In conclusion otoplasty is an useful method for improving psychosocial problems among children.

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