

Ventilation Tubes in Secretory Otitis Media Associated with Cleft Palate: A Retrospective Analysis

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Aim: The insertion of ventilation tubes at the time of cleft palate surgery is a controversial issue. We assessed the status of hearing and the middle ear in long-term follow-up after the treatment of cleft palate.

Materials and Methods: 56 patients with cleft palate repair at the ages of 15 to 24 months were included in the study. The control group consisted of 15 patients in whom ventilation tubes were inserted previously for secretory otitis media. They all had audiologic analyses.

Results: In the control group, only one patient was found to have perforation of tympanic membrane on one side. In the study group, tympanograms in those with intact tympanic membranes showed no abnormalities. The pure tone audiometric tests showed conductive hearing loss only in five cases. Their hearing threshold varied from 25 dB to 45 dB. No patients in the control group had conductive hearing loss. There were no statistically significant differences between the two groups ($P = 0.42$) with respect to complications in the long-term.

Conclusions: The findings in our study show that there may be no need for ventilation tubes on a routine basis in cleft palate patients especially when the long-term results in those patients are taken into consideration.

Key Words: Cleft palate, secretory otitis media

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Yarık Damaklı Hastalarda Görülen Effüzyonlu Otitiste Ventilasyon Tüp Kullanımı: Retrospektif Çalışma

Amaç: Ventilasyon tüplerinin yarık damak cerrahisi onarımı esnasında yerleştirilmesi tartışmalı bir konudur. Bu retrospektif çalışmada yarık damak onarımı sonrasında uzun dönemde işitme ve orta kulak değerlendirmesi yapılmıştır.

Yöntem ve Gereç: 15-24 aylıkken damak onarımı yapılan 56 hasta çalışmaya dahil edilmiştir. Kontrol grubuna seröz otit medya nedeniyle opere edilen 15 hasta dahil edilmiştir. Hastaların hepsinde odyolojik değerlendirmeler yapılmıştır.

Bulgular: Kontrol grubunda sadece bir hastada tek taraflı timpanik membran perforasyonu saptanmıştır. Çalışma grubundaki hastaların timpanik membran intakt olan hastalarda timpanogramlar normal olarak değerlendirilmiştir. Saf ton odiyometri sadece 5 hastada iletim tipi işitme kaybı saptandı. İşitme eşiği 25-45 desibel arasında idi. Kontrol grubundaki hastalarda işitme kaybına rastlanmadı. Her iki grup istatistiksel olarak karşılaştırıldığında anlamlı fark saptanmadı ($P = 0.42$).

Sonuç: Çalışmamızdaki geç dönem bulgular dikkate alındığında, yarık damak onarımıyla eş zamanlı olarak rutin ventilasyon tüp yerleştirilmesinin gerekli olmadığı düşünülmektedir.

Anahtar Sözcükler: Cleft palate, secretory otitis media

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Introduction

Secretory otitis media with effusion is a common occurrence in children with cleft palate. This association was first reported more than a century ago (1). Since then, numerous studies have reported on this association and it is accepted that there is a greater than 90% incidence of otitis media with effusion in children with cleft palate (2-6). The cause of secretory otitis media in cleft palate is attributed to the dysfunction of the eustachian tube, often exacerbated by recurrent upper respiratory tract infections and allergies (7,8). However, the etiology is not clearly defined yet.

There is a high incidence of hearing loss in children with cleft palate even after repair (8). However, there is a lack of evidence to suggest an aggressive treatment of secretory otitis media in cleft palate to prevent hearing loss. Two major studies failed to show improved hearing or decreased incidence of chronic otitis media in the long-term (9,10).

In this study, we assessed the long-term status of hearing and the middle ear in patients operated for cleft palate. We aimed to assess the natural progress of secretory otitis media in cleft palate not treated with ventilation tubes.

Materials and Methods

In this study, 56 patients with a history of cleft palate repair at the ages of 15 to 24 months were evaluated. The control group consisted of 15 patients who had had ventilation tubes inserted for secretory otitis media in the past. They were selected from patients within the same age range who had ventilation tube insertion around the same time period in the Ear Nose and Throat Department. There were no patients with cleft palate in the control group. The study was carried out from 2001 to 2005 and was based on the chart reviews and audiologic and otoscopic evaluations carried out by the same Ear Nose and Throat team. The patient group had cleft palate repair with V-Y push-back palatoplasty technique consisting of intravelar veloplasty between 1985 and 1996. After chart reviews, a physical examination was performed to determine the status of the palate and speech. They all then had audiologic evaluations. Tympanograms were performed upon confirmation of an intact tympanic membrane. None of these patients had ventilation tubes inserted at the time of cleft palate repair.

Results

A total of 56 patients (30 F, 26 M) were involved in the study upon invitation by mail and telephone. The age of the patients varied from 8 to 19 years. The mean age of patients at the time of audiometric evaluation was 12.4. Of the 56 patients, 36 had cleft of secondary palate and 20 patients had cleft of primary and secondary palate

at the time of repair. The otologic assessment was performed by the surgeons of the Department of Otorhinolaryngology. The cleft surgery was performed by plastic surgeons. None of the patients in the study group had ventilation tubes inserted before or after cleft repair. Of all the patients evaluated on physical examination, only three patients had tympanic membrane perforation consistent with chronic otitis media (Table 1). Five patients had myringosclerosis on the tympanic membranes. Tympanometric studies on intact tympanic membranes showed no abnormalities. The pure tone audiometric tests showed conductive hearing loss in only five cases (Table 2). Their hearing threshold varied from 25 dB to 45 dB. Nine patients had speech problems due to velopharyngeal insufficiency. Eight patients had retraction of the tympanic membrane. Eight patients were found to have palatal fistulas during assessment, and they all underwent fistula repair subsequently.

There were no patients in the control group with conductive hearing loss. The results were statistically compared using the two sample proportion test. There were no statistically significant differences between the two groups (P = 0.42) with respect to complications in the long-term.

Table 1. Otosopic findings in the study and control groups.

Otosopic Findings	Patients (Study Group)	Patients (Control Group)
Normal	46	0
Perforation	3	1
Myringosclerosis	5	0
Cholesteatoma	0	0
Retraction	2	0

Table 2. Distribution of results by audiometric evaluation in the study group.

	Number of Patients
Normal	51
Conductive Hearing Loss	5
Sensorineural Hearing Loss	0
Mixed Hearing Loss	0

Discussion

This study questions the routine simultaneous insertion of ventilation tubes at the time of palatal surgery. It is accepted that the existence of secretory otitis media is the sine qua non of cleft palate. The main cause for the increased incidence of secretory otitis media in cleft palate is speculated to be the failure of the eustachian tube to open, secondary to abnormal insertion of the tensor and levator veli palatini muscles, resulting in functional tubal obstruction and negative middle ear pressure (11).

The purpose of ventilation tube insertion in cleft palate patients is to improve hearing at an important cognitive and language learning time and also to try and prevent long-term ear disease (12). However, the insertion of ventilation tubes should not solely be based on the presence of fluid in the middle ear.

The peak age incidence for otitis media with effusion among children without clefts is between 2 and 6 years of age. After this age, morphological changes in the eustachian tube occur, leading to improved tubal function and consequently improved otological status (8). It was also reported that middle ear problems persist in cleft palate children until 10-12 years of age (13). It has been shown that untreated secretory otitis media might result in chronic otitis media in the long-term (14,15). The severity of ear disease in cleft palate cases varies. In one study, it was shown that children who underwent a greater number of ventilation tube insertions had a significantly increased incidence of below-normal hearing (13).

There are some studies reporting a higher incidence of tympanic membrane abnormalities and hearing loss associated with ventilation tube insertions than in those without ventilation tubes (7,9,10,16). The findings in these reports demonstrate that long-term benefits of ventilation tubes in regard to hearing and prevention are questionable and may even be more harmful. Particularly repeated insertions of ventilation tubes may have grave consequences. Hubbard and Paradise (17) demonstrated that there are no long-term benefits of ventilation tubes with regard to speech and language development.

There are various studies reporting on the persistence of ear problems despite the insertion of ventilation tubes in cleft palate patients. Hubbard et al. (17) compared two groups of patients, in which one group was treated

aggressively with ventilation tubes and the other was treated only as clinically indicated. They found no difference in otological or audiological findings between the two groups. These findings were substantiated by Robson et al. (10).

Ventilation tube insertion is associated with complications such as atelectasis, perforation and tympanosclerosis, which may also result in hearing loss. In some studies, the tympanosclerosis was more frequently seen in the treated groups (12). In a recent study evaluating hearing thresholds by auditory brainstem response (ABR) in children of less than three months of age, it was shown that only 28-35% of those children were eligible for ventilation tube insertion (2).

The findings in our study show that there is no need for routine insertion of ventilation tubes during cleft palate surgery. This is consistent with various reports in the literature suggesting that a conservative approach for secretory otitis media is safe (8,10,17-19). The correction of cleft palate anomaly seems to correct the pathology leading to secretory otitis media. The morbidity associated with liberal insertion of ventilation tubes may have grave consequences. However, it is prudent that those children with cleft palate should be routinely followed up for their ear problems with sequential otoscopic examinations and tympanometric studies. In cases where there is no improvement in secretory otitis media despite cleft palate repair, we should not be reluctant to insert ventilation tubes.

Our study is limited since it is a retrospective study. A prospective study with a controlled group may have been more effective in determining the outcomes. However, a retrospective study precludes biases. The control group consisted of otherwise normal non-cleft patients because there was no group of cleft palate patients in whom ventilation tube insertion was performed. Incidence of acute otitis media may also be a measure of outcomes. However, these patients were called up for one time only. We strongly believe that the routine insertion of ventilation tubes should be abandoned in cleft palate cases. However, otoscopic and audiologic evaluation should be a routine part of initial assessment of a cleft palate child. Various studies have already reported that the complications in treated groups may be much higher than in the untreated cases of secretory otitis media in cleft palate.

In light of the findings in our study and the past reports concerning the management of otitis media with effusion in cleft palate children, we suggest that the routine insertion of ventilation tubes be cautiously

practiced. While the controversy still remains, it is a concrete fact that the correction of the main pathology of cleft palate corrects the anatomy and therefore provides a functioning pair of eustachian tubes.

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