**ABSTRACT**

**Objectives:** The purpose of the study is to assess the outcomes and complications that occur in patients that have cochlear implants and tympanostomy tubes.

**Methods:** Retrospective chart review of pediatric patients that have cochlear implants and tympanostomy tubes placed either before or after cochlear implantation. Patients were identified by billing codes from 1999-2007.

**Results:** The incidence of otitis media decreased after cochlear implantation. There were no cochlear implant related complications in this case series. The complications that occurred were tube related. There was no incidence of meningitis in this population. There were four hospitalizations, all related to an episode of acute otitis media that required intravenous antibiotics.

**Conclusions:** Otitis media will continue to occur in this pediatric age group. As demonstrated in this study, tympanostomy tubes appear to be safe and do not increase the incidence of cochlear implant related complications.

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**INTRODUCTION**

The most common bacterial infection in the pediatric population is otitis media (OM). Eighty-four percent of all children have at least one episode of OM and 50% have three or more episodes during childhood (1). Otitis media generally involve the mucosal surfaces of middle ear and contiguous mastoid. Due to the presence of a foreign body in communication with the coochlea, OM poses a potential for increased risk of complications with cochlear implantation (CI). These potential complications include intracranial complications, meningitis, device extrusion, or need for removal of implant. Fortunately, there have been few studies to support this concern. In contrast, studies have found a decrease in OM in patients after CI. This is most likely a result of the mastoidectomy, performed during the implantation and the natural decline of OM with advancing age (2).

Tympanostomy tubes are often required for treatment of chronic OM. Furthermore, tympanostomy tubes may also be placed to more accurately evaluate the cause of hearing loss and eliminate the possibility of middle ear fluid as a factor. Controversy exist about how we should manage tympanostomy tubes in patients that have cochlear implants and patients that are good cochlear implant candidates. The potential risk of opening the inner ear in a “nonsterile” environment and seeding a foreign body that communicates with the inner ear has to be weighed against the advantages of better language development with earlier implantation. In a study by Shelton, only 56% of otologist reported that they would proceed with a CI in patients with a clean, dry tympanostomy tube in place. Furthermore, greater than 33% said that they would be less likely or would not place a tympanostomy tube in a patient with a cochlear implant (3).

The purpose of this study is to evaluate the safety of ventilation tubes in patients with cochlear implants for treatment of recurrent or chronic otitis media.

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**METHODS AND MATERIALS**

This study is a retrospective chart review. Patients were identified by billing codes between the years 1999 to 2007.

**Inclusion criteria:**
- Age < 18 years old
- Diagnosis of profound bilateral SNHL
- Tympanostomy tube placement before or after CI
- Data regarding the prevalence of AOM before and after implantation, age at implantation, complications related to tympanostomy tubes and complications related to cochlear implantation were recorded.

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**RESULTS**

**Patient characteristics:**
- 13 patients = 17 ears
- Age at implant:
  - Average: 31 mo
  - Range: 5mo-6 yrs
- M:F ratio: 3:10
- Multiple tubes: 4 ears
- Follow up: 27 mo (2-76mo)

**Diagnosis:**
- 13 patients with idiopathic SNHL, 1 patient with Noonan’s, 1 patient with cleft lip palate, 1 patient with craniofacial anomaly, and 1 patient with congenital facial nerve palsy

**Cochlear implant used:**
- Nucleus freedom = 10
- Nucleus contour = 7

**Hospitalizations:**
- 4 for AOM and IV antibx treatment
- No Meningitis

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**CONCLUSIONS**

- Decrease incidence of OM after CI.
- AOM will continue to occur
- No complications associated with CI were identified.

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**REFERENCES**