

myringoplasties between 2002 and 2012 to study revision surgery and the complications reported in the register.

The reported complications 6–12 months after surgery are taste disturbances of corda tympani, new or persistent tinnitus and postoperative infections. National results as well as detailed results from 2 ENT clinics in Sweden, County hospitals have been analyzed to compare the frequency of complications.

A review of the patient records were made to further analyze the patients report of postoperative infections from the 2 county hospitals. To further analyze if taste disturbances and tinnitus is still persistent after a longer period after surgery a survey was sent home to all the reporter cases in the nation.

In summary patients have an increased risk for reoperation after revision surgery.

Men has a higher risk for tinnitus compared to women, an women have a greater risk for taste disturbances compared to men. Postoperative infections seem to be over reported. Tinnitus seems to be persistent long time after surgery.

doi:10.1017/S0022215116007234

#### ID: IP227

### Comparisons of Auditory Performance and Speech Intelligibility after Cochlear Implant Reimplantation in Mandarin-Speaking Users

Presenting Author: **Che-Ming Wu**

Che-Ming Wu, Chung-Feng Hwang  
Chang-Gung Memorial Hospital

*Learning Objectives:* This study documented the incidence of complications and revisions following CI and analyze causes and management outcomes in order to understand what could be learned from the experiences of revision CI surgery.

*Introduction:* Complications of Cochlear implantation (CI) sometimes lead to revision surgeries or even reimplantation. However, the auditory performance and speech intelligibility subsequent to reimplantation are not often discussed, especially in Mandarin-speaking users. This study review our experience with CI surgeries in Mandarin speaking users over a 16-year period, emphasizing causes, auditory performance, and speech intelligibility after reimplantation.

*Methods:* 589 patients who underwent CI in our medical center between 1999 and 2014 were reviewed retrospectively. Data related to demographics, etiologies, implant-related information, complications, and hearing and speech performance were collected.

*Results:* 22 (3.74%) cases were found to have major complications. Infection (n = 12) and hard failure of the device (n = 8) were the most common major complications. The incidence of minor complications was 11.04% (n = 65). In total, 18 (3.06%) patients underwent revision surgeries due to infection

(n = 9), device failure (n = 8), and severe hematoma (n = 1). Among them, 13 were reimplanted in our hospital. The mean scores of the Categorical Auditory Performance (CAP) and the Speech Intelligibility Rating (SIR) obtained before and after reimplantation were 5.5 versus 5.8 and 3.7 versus 4.3, respectively. The SIR score after reimplantation was significantly better than pre-operation.

*Conclusion:* The Mandarin-speaking patients who received reimplantation had restored auditory performance and speech intelligibility after surgery. Device soft failure was rare in our series, calling special attention to Mandarin speaking CI users requiring revision of their implants due to undesirable symptoms or decreasing performance of uncertain cause.

doi:10.1017/S0022215116007246

#### ID: IP228

### MicroRNA-21 Promotes the Proliferation and Invasion of Cholesteatoma Keratinocytes

Presenting Author: **Chen Xiaohua**

Chen Xiaohua<sup>1</sup>, Zhaobing Qin<sup>2</sup>

<sup>1</sup>The First Affiliated Hospital of Zhengzhou University, <sup>2</sup>Otolaryngology Department of the First Affiliated Hospital of Zhengzhou University

*Learning Objectives:* Cholesteatomas is characterized by a more rapid growth and extensive bone destruction in the middle ear and mastoid cavities. MicroRNAs (miRNAs) are posttranscriptional regulators of gene expression. The goal of this study was to investigate the posttranscriptional regulatory effects controlling proliferation, apoptosis and invasion in cholesteatoma keratinocytes. Specifically, the potential role of microRNA-21(miR-21) was focused on in this study.

*Methods:* Cholesteatoma tissues, taking from the patients at the time of surgery, were processed for RNA and cell culture. The cholesteatoma keratinocytes were transfected with miR-21 mimics, miR-21 inhibitor or negative control miRNA, and then growth curves were drawn. Real-time reverse-transcription polymerase chain reaction was used to assess the expression levels of miR-21. EdU incorporation assay and TUNEL staining were used to assess the proliferation and apoptosis of cholesteatoma keratinocytes, respectively. The invasive abilities of cholesteatoma keratinocytes were examined using 6-well Transwell plates.

*Results:* MicroRNA-21 showed an up-regulation respectively cholesteatoma keratinocytes transfected miR-21 mimics as compared with cells transfected miR-21 inhibitor or control miRNA. The number of proliferative EdU-positive(EdU+) cells increased in cholesteatoma keratinocytes transfected miR-21 mimics, as compared with cells transfected miR-21 inhibitor or control miRNA. The number of TUNEL-positive cells was increased in cholesteatoma keratinocytes transfected

miR-21 mimics, as compared with cells transfected miR-21 inhibitor or control miRNA. The migrated cholesteatoma keratinocytes transfected miR-21 mimics was higher, as compared with the migrated cells transfected miR-21 inhibitor or control miRNA.

**Conclusions:** The present study showed that miR-21 promotes proliferation and invasion of cholesteatoma keratinocytes. The results give a partial explanation for the more aggressive clinical behavior observed in cholesteatoma.

doi:10.1017/S0022215116007258

## ID: IP229

### The selection of surgical technique for middle ear cholesteatoma in pediatric patients

Presenting Author: **Chen Xiaohua**

Chen Xiaohua, Zhaobing Qin  
The First Affiliated Hospital of Zhengzhou University

#### Learning Objectives:

**Method:** A retrospective analysis of all cases of pediatric primary acquired cholesteatoma aged 6–14 years old between May, 2005 and August, 2009 was conducted. 86 patients(89 ears) were treated and followed from 1 to 7 years[ the average is  $(3.8 \pm 2.5)$  years].

**Result:** During the follow-up, intact canal wall mastoidectomy with tympanoplasty(ICW) was the primary surgical treatment in 38 patients(38 ears) initially, the recidivism rate was 18%(7/38), 48 patients(51 ears) underwent canal wall down mastoidectomy with tympanoplasty(CWD), the recidivism rate was 6%(3/51), the achieved rate of PTA was 68%(35/51).

**Conclusion:** ICW had the advantage which could preserve the physical structure of external auditory canal, however, the cholesteatomas in pediatric patients are more wide spread and erosive. The surgery should completely remove the diseased tissues and then preserve the hearing. Surgical techniques should be depending on the lesions extension, generally the tympanoplasty with open technique was more suitable.

**Objective:** To discuss the best strategy in surgical treatment for middle ear cholesteatoma in pediatric patients.

**Method:** A retrospective analysis of all cases of pediatric primary acquired cholesteatoma aged 6–14 years old between May, 2005 and August, 2009 was conducted. 86 patients(89 ears) were treated and followed from 1 to 7 years[ the average is  $(3.8 \pm 2.5)$  years].

**Result:** During the follow-up, intact canal wall mastoidectomy with tympanoplasty(ICW) was the primary surgical treatment in 38 patients(38 ears) initially, the recidivism rate was 18%(7/38), 48 patients(51 ears) underwent canal wall down

mastoidectomy with tympanoplasty(CWD), the recidivism rate was 6%(3/51), the achieved rate of PTA was 68%(35/51).

**Conclusion:** ICW had the advantage which could preserve the physical structure of external auditory canal, however, the cholesteatomas in pediatric patients are more wide spread and erosive. The surgery should completely remove the diseased tissues and then preserve the hearing. Surgical techniques should be depending on the lesions extension, generally the tympanoplasty with open technique was more suitable.

doi:10.1017/S002221511600726X

## ID: IP230

### MicroRNA-17 Control Osteoclasts Through RANKL Targeting in cholesteatoma

Presenting Author: **Chen Xiaohua**

Chen Xiaohua, Qin Zhaobing  
The First Affiliated Hospital of Zhengzhou University

#### Learning Objectives:

**Objective:** Cholesteatoma is characterized by an extraordinary extensive bone destruction in the middle ear and mastoid cavities. MicroRNAs (miRNAs) are posttranscriptional regulators of gene expression. The goal of this study was to investigate the posttranscriptional regulatory effects controlling bone destruction in cholesteatoma. Specifically, the potential role of microRNA-17 is to control osteoclasts through RANKL targeting in cholesteatoma.

**Methods:** Cholesteatoma, taking from patients at the time of surgery, were processed for RNA and protein extraction. Specimens of cholesteatoma and normal post-auricular auditory skin served as the control. Real-time reverse-transcription polymerase chain reaction was used to assess the expression levels of microRNA-17. Also, western blot analyses were used to assess microRNA-17's downstream target protein.

**Results:** MicroRNA-17 showed a down-regulation in cholesteatomas compared to normal skin. MicroRNA-17 showed 2.75 fold higher in expression in skins as compared to cholesteatomas ( $P = 0.019$ ). The downstream target of miRNA-17, RANKL protein, was found to greatly increase in cholesteatomas.

**Conclusions:** This study specifically identified the down-regulation of miRNA-17 concurrent with the up-regulation of the receptor activator of NF-[Kappa]B ligand (RANKL), which activates osteoclasts and plays a significant role in the mechanism of bone destruction in cholesteatoma.

The results give a partial explanation for the more extensive bone destruction in the middle ear and mastoid cavities which has been observed in cholesteatoma.