ABSTRACT

Objective

To compare the combined posterior tympanotomy/endomeatal approach for cochlear implantation with traditional suprameatal approach.

Methods

A prospective non-randomized clinical study was performed on 54 patients (26 male, 28 female; range 28-81 years, mean age 54 ± 8 years). All patients were operated on by the same experienced surgeon. The patients were divided into two groups: Group A had combined posterior tympanotomy/endomeatal approach and Group B had traditional suprameatal approach. Both groups were compared as regards complications and outcomes.

Results

The complications in terms of implant success rate were similar in both groups. However, the surgical time was shorter in Group A (p = 0.01). The post-operative pain and recovery were better in Group A. Overall, the outcomes were better in Group A.

CONCLUSIONS

The combined posterior tympanotomy/endomeatal approach allows a double way access, double viewing and manipulation and better results with combined access in comparison to the traditional suprameatal approach.

INTRODUCTION

Alternative techniques for cochlear implant surgery have been described as endomeatal or suprameatal approaches. A combined approach was also proposed as a way to enhance surgical safety and effectiveness.

METHODS AND MATERIALS

64 patients, 36 men and 28 women, mean age 54 ± 8 years (range 28-81 years), 28 pre-verbal and 36 post-verbal, were submitted to cochlear implantation. 32 by means of a combined posterior tympanotomy/endomeatal approach (group A; table 1) and 32 with traditional suprameatal approach (group B; table 2). In group A, the skin of the external ear canal was incised and freed from the posterior part of the tympanic membrane and the promontory flap was elevated. In group B, the combined access was used in the middle ear (figure 1).

RESULTS

Good anatomic and functional results were observed with intraoperative improvements in visibility and accessibility of cochleostomy site in difficult cases within any complication such as tympanic membrane perforation, external canal skin lesions or extrusion. No significant differences were found with traditional technique complication rates ranging for main content data with statistically significant better results with combined access.

DISCUSSION

Cochlear implant traditional posterior tympanotomy approach is a standardized procedure with known good results and low complication rates. The access through the mastoid cavity exposes the facial nerve lesions (<1%) or chorda tympanica lesions and relies also on surgeon experience. In some cases, as bleeding, small, bony, abnormal anatomy, surgery should be limited by diameters of posterior tympanotomy, with a sequel bad exposure of cochleostomy site and often very long space for surgical instruments manipulation. In these cases, surgeons should alternate bad vision with good instruments manipulation with the contrast and the unique incision is not ever successful in order to have better middle ear wall not exposition, and a good skill of orientation for cochleostomy. The necessity to have a wider, supplementary and different viewing may access in some cases is very important. Alternative techniques without posterior tympanotomy are reported, 1) the translabyrinthine approach, 2) the transotic approach. Both use of proposed alternative approaches allows a double way with different perspective views and widening of surgical manipulation possibilities, mainly in difficult surgical conditions. As demonstrated in our work, this technique allows as good surgical results as the traditional posterior tympanotomy alone cases with, some important improvements as for safety as for effectiveness.

CONCLUSIONS

The combined posterior tympanotomy/endomeatal approach facilitates the array insertion in conditions of bad exposition/accessibility of promontory and round window. Moreover, this double way access avoids an incomplete or incorrect positioning. It should be always considered as an alternative to the traditional posterior tympanotomy one way access.