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ANALYSIS OF THE EFFECTIVENESS OF SURGICAL TREATMENT OF PATIENTS WITH TYMPANOSCLEROSIS

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Abstract

The aim of this study was to comparative analysis of the auditory function of the ear before and after surgical treatment of tympanosclerosis. Study of the clinical and audiological conditions of patients with tympanosclerosis. During the examination from December 2021 to May 2022 (6 months), 27 patients with tympanosclerosis were examined. The patients underwent the following examinations: general ENT examination (otoendoscopy, otomicroscopy), audiometry, multislice computed tomography of the temporal bones.

According to the results of the above studies, all examined patients were conditionally divided into 3 groups. Due to the absence of perforation of the tympanic membrane and hearing loss in patients of I group, dynamic monitoring of patients was proposed. Patients of II group were offered surgical treatment. During the operation, the tympanic cavity of the patients was cleaned from tympanosclerotic plaques, the handle of the malleus and the rest of the tympanic membrane. The mobility of the auditory ossicles after the removal of the plaques was completely restored. Patients of III group were also recommended surgical treatment. During the operation, tympanosclerotic plaques were removed from the tympanic cavity and around the auditory ossicles. Except the tympanoplasty to the patients who had non-restoration of movements of ossicles were used prosthesis PORP or TORP. If in such cases fixation of the malleus and anvil of the bones is observed, it is necessary to remove the head of the malleus and incus, if the movement of the stirrup is not restored in these patients, it is indicated to prepare for the operation a secondary total ossiculoplasty.

Keywords: tympanosclerosis, ossiculoplasty, tympanoplasty

Introduction. Tympanosclerosis is a non-purulent disease of the middle ear, characterized by the formation in the mucous membrane of peculiar foci (tympanosclerotic plaques) that limit the mobility of the tympanic membrane and / or auditory ossicles. Nowadays, surgical treatment is considered the only effective way to rehabilitate hearing in patients with tympanosclerosis. The tactics of surgical treatment of patients with tympanosclerosis is determined by the form of the disease, the prevalence and localization of tympanosclerotic foci, as well as the nature of intraoperative findings: the safety of the superstructures of the stirrup, the condition of the tendon of the stapedius muscle, the features of the ingrowth of the epidermis into the tympanic cavity, the condition of the tympanic foramen-auditory tube.

Aim. Comparative analysis of the auditory function of the ear before and after surgical treatment of tympanosclerosis.

Research objectives. Study of the clinical and audiological conditions of patients with tympanosclerosis.

Methods and materials. During the examination from December 2021 to May 2022 (6 months), 27 patients with tympanosclerosis were examined. The patients underwent the following examinations: general

ENT examination (otoendoscopy, otomicroscopy), audiometry, multislice computed tomography of the temporal bones.

According to the results of the above studies, all examined patients were conditionally divided into 3 groups:

I group - 3 patients (11%) without tympanic perforation with tympanosclerotic plaques in the tympanic membrane. On audiometric examination hearing was preserved in these patients;

II group - 18 patients (67%) with perforation of various sizes in the stretched part of the tympanic membrane. Tympanosclerotic plaques were found in the remaining parts of the tympanic membrane and on the malleus handle. When examining patients by audiometry, it was found that conductive and mixed hearing loss with an air-bone interval was up to an average of 20 dB;

III group - 6 patients (22%), with perforations of various sizes, tympanosclerotic plaques in the remaining parts of the tympanic membrane, on the medial wall of the tympanic cavity, around the malleus, anvil and stirrup. An audiometric examination of these patients revealed conductive and mixed hearing loss with a bone-air interval of 20 dB or more.

Results:

Due to the absence of perforation of the tympanic membrane and hearing loss in patients of I group, dynamic monitoring of patients was proposed.

Patients of II group were offered surgical treatment. During the operation, the tympanic cavity of the patients was cleaned from tympanosclerotic plaques, the handle of the malleus and the rest of the tympanic membrane. The mobility of the auditory ossicles after the removal of the plaques was completely restored. The fascia of the temporal muscle was established by the UNDERLAY method (type I according to Woolstein). After 2 months, with repeated audiometric examination of these patients, the hearing increased by an average of 10 dB, after 3 months by an average of 17.8 dB compared to the initial value.

Patients of III group were also recommended surgical treatment. During the operation, tympanosclerotic plaques were removed from the tympanic cavity and around the auditory ossicles. In 1 patient, in connection with the restoration of bone mobility, type I tympanoplasty (according to Woolstein) was performed (the prepared fascia from the temporal muscle was laid using the UNDERLAY method). In 3 patients, due to non-restoration of movements, the head of the malleus and the incus were removed, and a prosthesis PORP was placed on the head of the stirrup. In the remaining 2 patients, the spread of the tympanosclerotic process into the oval window with fixation of the base of the stirrup was found, which could not be completely restored by removing the tympanosclerotic plaques. In these patients, the integrity of the tympanic membrane was restored, and ossiculoplasty was postponed to the second stage in order to prevent infection of the labyrinth and its consequences. With the exception of those preparing for the second stage of the operation, hearing increased by an average of 20 dB after 2 months and by an average of 2.5 dB after 3 months.

Conclusions. The study showed that the maximum audiological recovery of hearing after the surgical period occurs after 2 months, which explains the feasibility of a complete hearing examination 2 months after complete rehabilitation. Restoring the integrity of the tympanic membrane may not always allow full restoration of hearing, since the immobility of the auditory ossicles can adversely affect the result of the operation. But the restoration of the mobility of the auditory ossicles in the second stage allows to restore hearing. This fact shows us that it is necessary to introduce patients to the course before the operation, that the operation can be performed at the second stage, since the operation at the first stage is fraught with complications.

Since it is impossible to predict the outcome of the operation by 100% before the operation, the surgeon must be prepared for any outcome and preferably have all types of prostheses at hand, which allows avoiding unnecessary surgical interventions.

Based on the results of the observations, the following conclusion was made.

If patients with tympanosclerosis have hearing loss, perforation of the tympanic membrane and conductive hearing loss, treatment of these patients with surgery and restoration of the integrity of the tympanic membrane is indicated. After the restoration of the tympanic membrane, it is not always possible to restore hearing if there are tympanosclerotic plaques in the tympanic cavity. To restore hearing, it is necessary to

remove tympanosclerotic plaques and restore the movement of the bones. Sometimes the mobility of the bones may not be restored. If in such cases fixation of the malleus and anvil of the bones is observed, it is necessary to remove the head of the malleus and incus, it is necessary to install a PORP prosthesis on the head of the stirrup. If the movement of the stirrup is not restored in these patients, it is indicated to prepare for the operation a secondary total ossiculoplasty.

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