



FOR THE ISSUE OF TREATMENT OF LATENT MASTOIDITIS

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ABSTRACT

Urgency of latent mastoiditis gains more and more significance in the later period because of higher risk of intracranial complications. Its timely diagnosis and targeted treatment is one of the priorities of modern medicine, while surgical treatment is deemed to be an unambiguous effective treatment method. Invasive method in turn is a risk for number of post-surgical complications; accordingly, the surgeon's goal is always less than the gaining of a maximum result in less traumatic terms.

We have been produced multiple osteoperforations of bone wall of external auditory canal for treatment purposes. For this reason, the entire bone of the external auditory canal was retained, and the complete sanation of the cavity was not hampered. 131 operations among 134 were successful. The patients have not yet demonstrated any sign of a relapse. Only 3 patients applied the clinic with purulent process. Effective results have been obtained by using of osteoperforations on the background of maintaining the bone wall of external auditory canal, which is the basis for preventing a number of postoperative complications.

The research aimed at developing a surgical approach that would keep completely safe the acoustic duct wall in a way as not to encumber sanation of purulent masses and granulation tissue.

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INTRODUCTION

Latent mastoiditis is the type of acute mastoiditis. In recent times, the mentioned pathology has attracted the great attention from the researchers. Disease occurs without any clinical dysfunction (there is no earaches, swelling-hyperemia or suppuration from ear) for a certain period of time. It occurs in the late stages in the form of intracranial complications: irreversible decreased hearing, otogenic meningitis, peripheral pares of facial nerve, sigmoid sinus thrombosis, brain abscess.

The latent diagnosis late diagnostics makes inevitable the use of surgical method (1,2,3,4). There are two types of surgical interventions in the literature: 1) functional *mastoidectomy*, which uses the extra-auricular approach, when the bone wall of the external auditory canal is maximally thinned, resulting in a maximum revision of the middle ear cavities; after sanation of purulent masses, caries and granules the eardrum along with the skin of the external auditory canal is placed and the wound is sutured on the background of setting the drainage. 2) Reconstructive osteoplastic *mastoidectomy* (5,6,7,8,9), which uses the extra-auricular approach-the peak of the mastoid bone is opened, the skin of the bone wall of the external auditory canal along with the eardrum is placed in the form of an

uniform tissue sprout in the front and side parts. After the mentioned the bone wall of the external auditory canal shall be restored with a bone transplant taken from the mastoid bone, the drainage shall be remained in the middle ear, the eardrum along with the skin of the external auditory canal is placed and the wound-sutured.

During this operation the subject matter of the discussion is always related to the bone wall of the external auditory canal. All researches regarding the mastoidectomy are based on removal-non-removal of this area. The part of researchers believe that in order to maximize the sanation of the middle ear cavities, it is necessary to remove the bone wall of auditory canal completely; to justify this approach they refer to the recurrence avoiding; the second part of the researchers think that the bone wall of the external auditory canal should be thoroughly thinned and removed incompletely, otherwise a number of postoperative complications will be inevitable.

The purpose of our research was to develop an optimal surgical method that would be golden intermediate in the dispute around mastoidectomy, in particular, the issue of maintaining the bone wall of the external auditory canal, which in turn would not prevent the full sanation of granular tissue, purulent mass and caries.

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METHODS

The research has been conducted in Georgia, using the facilities of the Department of Pathology of IvaneJavakhishvili Tbilisi State University and of Simon Khechinashvili University Clinic.

284 patients with latent mastoiditis diagnose have been studied who underwent treatment in Simon Khechinashvili University Clinic in 2007-2016. Mastoidectomy, a surgical method, with an extra-auricular approach was used for the purposes of achieving the research goal. The patients were divided into two main groups: the first one consisted of 150 patients with latent mastoiditis diagnose who underwent treatment by application of classical mastoidectomy method in 2007-2016. The second group consisted of 134 patients with latent mastoiditis diagnose who underwent treatment in 2007-2016 by application of mastoidectomy approach conducted by osteoperforation that has been developed by us. The second study group in turn was divided into two subgroups: 71 patients who underwent osteoperforations of acoustic duct osseous wall by use of an electric drill, and 69 patients who underwent osteoperforations by use of diode laser.

The operation material morphology has been studied in the Department of Pathology of IvaneJavakhishvili Tbilisi State University.

All patients were informed and expressed their consent prior to operation. The research was approved by Ethics Commission.

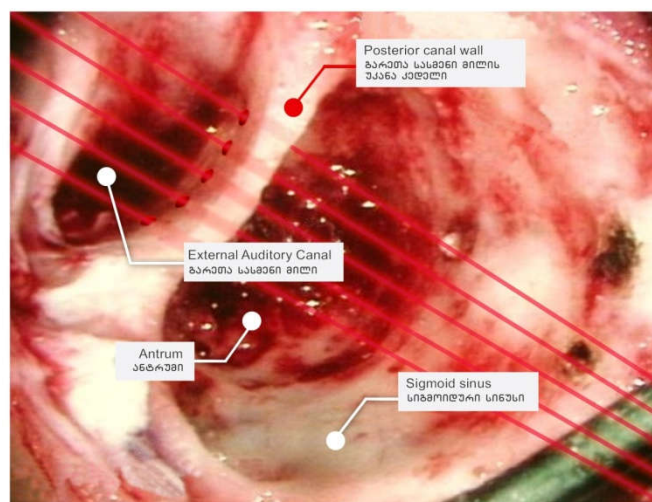
The research design is of a prospectus type.

RESULTS

284 patients with latent mastoiditis diagnose have been studied who underwent treatment in Simon Khechinashvili University Clinic in 2007-2016. Mastoidectomy, a surgical method, with an extra-auricular approach was used for the purposes of achieving the research goal. 150 patients underwent treatment by application of classical mastoidectomy method, and 134 patients were treated by application of mastoidectomy with osteoperforation that has been suggested by us. In all of the cases, mastoidectomy with an extra-auricular approach was used. An oblique section was made in the rear area of an ear, soft tissues were disabled, antrum, middle ear cavity, was completely opened by bone trepanation with an electric drill. Caries, purulent masses and granulation tissues were observed therein. Wounds were treated within healthy tissues under a surgical microscope.

In the first study group wherein classical masoidectomy was in use, acoustic duct osseous wall was thinned to the maximum extent and in majority of cases it completely opened due to the strong caries.

In the second study group, acoustic duct osseous wall was thinned to the maximum extent, but it was not completely opened despite caries and existing granulation tissue. After the thinning to the maximum, multiple osteoperforations were made onto an acoustic duct osseous wall instead of detaching it. In 71 patients, osteoperforations were performed by use of an electrical drill, and in 69 patients, they were performed by use of a diode laser. The research aimed at keeping safe the acoustic duct osseous wall based on multiple osteoperforations.



(Laser beams passing through an acoustic duct osseous wall, multiple osteoperforations)

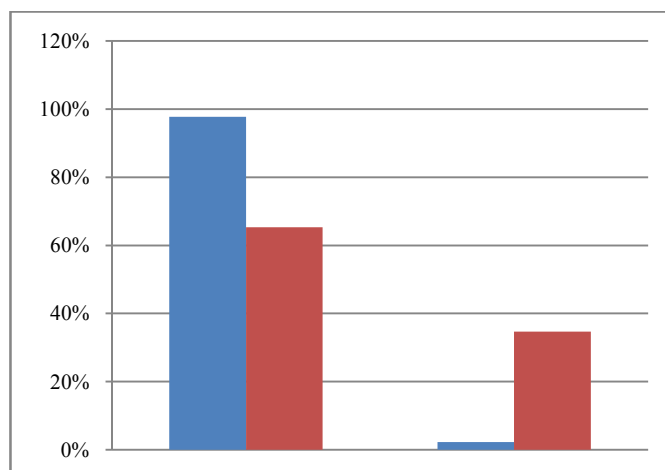
In a study group wherein the treatment was conducted by application of classical mastoidectomy, relapse occurred in 52 patients, and the rehabilitation period was long-term, as long as 2-3 months. And in the second study group, wherein the treatment was conducted by application of mastoidectomy with osteoperforations, as few as 3 cases of relapse was observed out of 134 patients, and, besides, postoperative rehabilitation period was as short as about 1-2 months.

Unlike the classical mastoidectomy, highest possible effect was achieved by the technical element introduced by us, with minor traumatizing results.

CONCLUSION

Keeping the bone wall of the external auditory canal in the postoperative period is a significant achievement for the surgeon. The main thing is not to restrict the sanation of granulation tissue, purulent process and caries in parallel to the keeping above, otherwise the patient may return to the clinic with relapse.

In the study process two groups were compared: the first - when the operation was made by classical mastoidectomy (150 patients) and the second group - when we performed multiple osteoperforations of the bone wall of the external auditory canal (134 patients). In the second case, the recurrence rate was much lower, which indicates the superiority of the method proposed by us.



(Osteoperforation method (blue colour); classical mastoidectomy (red colour); without relapse; with relapse)

Thanks to the method used by us – osteoperforations – we managed not only to maintain the bone wall of the external auditory canal, but it was possible to manage the full sanitation of the cavities of the middle ear as well. The recurrence was demonstrated only to 3 patients among 134. The osteoperforations applied by us first provide maximum sanitation of postoperative inflammatory-destructive masses, which would prevent the development of relapse.

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