

# PATIENT BROCHURE

*ENT |*

*Ear surgery*

*Acibadem Amsterdam*



The purpose of this folder is to provide you with information about hearing-improving (reconstructive) ear operations as well as cleansing (remedial) ear operations. Because these two types of ear operations are often performed in combination, everything is discussed in one folder.

## Preface

Before discussing the “why”, “when” and “how” in more detail, it is useful to briefly explain how the ear works.

## The ear can be divided into:

- The external auditory canal;
- The eardrum with the middle ear behind it. It contains three ossicles, which together form the ossicle chain: the hammer (malleus), the anvil (incus) and the stirrup (stapes). The middle ear is connected to the nasopharynx via the Eustachian tube;
- The hearing organ; also known as the cochlea, which, together with the vestibular organ, is called the inner ear.

Sound consists of air vibrations. These vibrations reach the eardrum through the ear canal. The eardrum and the ossicles strengthen and conduct the vibrations to the cochlea. In the cochlea the sensory (nerve) cells convert the vibrations into nerve impulses. These nerve impulses are carried via the auditory nerve to the brain, where they are translated into “hearing”. Under normal circumstances, the middle ear is filled with air, which has the same pressure and composition as outside air. The Eustachian tube allows exchange, so that the air pressure in front of and behind the eardrum is the same.

## Hearing loss

There are two types of hearing loss;

- Inner ear loss

With an inner hearing loss (loss of perception / sensory loss), damage has occurred in the nerve part of hearing. Unfortunately, this cannot be solved with surgery.

- Loss of conduction

The conductive hearing loss (usually middle ear hearing loss) is caused by an insufficient transmission of sound from the outer ear to the cochlea. The abnormalities are in this case located in the ear canal, the eardrum and / or in the middle ear. Possible causes are, for example: blockage of the ear canal by ear wax, a hole (perforation) in the eardrum or an interruption of the auditory bone chain. These abnormalities can often be corrected surgically.

## Treatment of hearing loss

If there are complaints of hearing loss, the ENT doctor will explain the cause of the hearing loss. Then the treatment option can be explained.

- In case of nerve hearing impairment, fitting of a hearing aid is usually the only treatment option.
- If the hearing loss is caused by a middle ear problem and the sound arrives at the cochlea in this way attenuated (conduction hearing loss), this can usually be treated with hearing-improving ear surgery. Fitting of a hearing aid is sometimes also a possibility.
- If the hearing loss is caused by an ear infection, treatment depends on the type of ear infection. Curing the ear infection is the first step. Medicines are usually required and sometimes cleansing ear surgery is required, possibly in combination with hearing improvement surgery.

## Ear infections

Before discussing the different forms of cleaning ear surgery, the different forms of ear infection should be discussed first. We distinguish an acute and a chronic middle ear infection, each of which has its own treatment;

### Acute middle ear infection

Acute middle ear infection usually occurs in young children, often in the course of a cold and is often accompanied by ear pain and fever. However, it can also occur in older children and adults. The inflammation is in the middle ear and the bone behind the ear (mastoid). The inflammation can “breakthrough”, tearing the eardrum and causing inflammatory fluid (pus) to leak out of the ear canal.

The treatment of most acute middle ear infections consists of medicines (initially painkillers, possibly supplemented later with a course of antibiotics).

Only in exceptional cases, an acute ear infection requires surgical treatment, such as inserting an ear ventilation tube or surgically cleaning the mastoid.

### Chronic middle ear infection

With a chronic middle ear infection, the mucous membrane in the middle ear and mastoid is inflamed for a prolonged time. The mucous membrane is thickened. An abnormal amount of mucus is formed and sometimes polyps form in the mucous membrane. There is almost always a defect in the eardrum. Patients with a chronic middle ear infection usually have little pain.

They do “feel” their ear and from time to time fluid comes out of the middle ear through a hole in the eardrum (running ear). This moisture usually has a foul, sickly odor. As a result of the inflammation, the hearing is usually reduced, in which the hole in the eardrum and possible damage to the ossicles play a role.

## Chronic middle ear infection with cholesteatoma

In some cases of chronic middle ear infection, skin tissue of the eardrum grows into the middle ear. These skin cells (called cholesteatoma) should not be in middle ear and can damage the bone and other structures of the middle ear.

When cholesteatoma is present, the risk of serious complications is higher, such as:

- Damage to the ossicles, which gradually increases the hearing loss (of the conduction type).
- Meningitis; due to breakthrough from the mastoid to the meninges.
- A brain abscess due to breakthrough through the meninges to the brain.
- Paralysis of the facial nerve which runs through the middle ear.
- Dizziness due to damage to the vestibular system.
- Severe inner hearing loss and even deafness due to cochlear involvement.

A chronic middle ear infection can often be calmed down with a course of antibiotics (ear drops and / or tablets), but a cure is rarely achieved. Curing the disease requires a cleansing operation: the diseased mucosa and, if present, the cholesteatoma are removed, and the hole in the eardrum is closed, if possible.

## The difference between hearing improvement and cleansing ear surgery

The hearing-improving ear operations are aimed at restoring the function of the middle ear. Cleansing (remediation) ear operations are performed in case of an acute or chronic inflammation in the middle ear. We will discuss hearing enhancement surgeries first and then ear cleansing surgery. As stated earlier, these operations can be performed in combination.

## Hearing improving (reconstructive) ear surgery

Which hearing-improving (reconstructive) ear operations can be performed?

### Eardrum closure (myringoplasty): closure of a hole in the eardrum

If there is a hole (perforation) in the thin eardrum, there is less eardrum left to receive the sound. This creates hearing loss. In the case of a hole in the eardrum, swimming, bath or shower water can run directly into the middle ear and cause inflammation there. The reason for myringoplasty can therefore be complaints of hearing loss as well as the wish to be able to bathe and swim carefree again. An eardrum can also be surgically closed to make an ear suitable for a hearing aid.

### Operation technique

The ENT doctor can approach the eardrum through the ear canal or behind the pinna, after which the hole is closed under microscopic view. Your ENT doctor will usually use your own tissue for this. This can be the fascia (the layer of tendons around each muscle) of a muscle above or behind the pinna or cartilage from the pinna. In some cases, an artificial material can be chosen.

### Important

Because the new eardrum cannot be stitched, but is glued, it is important for the patient not to blow their nose after surgery. Otherwise there is a risk that the new film will be blown loose.

### Chance of success

The chances of a successful closure are generally good and are discussed in advance.

### Middle ear surgery (tympanoplasty): restoration of middle ear function by repair of an interrupted chain of auditory bones

Acute or chronic inflammations of the middle ear (see further under cleansing ear operations) may cause damage to both the eardrum and the chain of the auditory bones. The tiny ossicles can be partly affected by the inflammation. The ossicles no longer form a chain, so that the sound is no longer conducted to the cochlea.

## Operation technique

The ENT specialist can approach the middle ear under microscopic view and make micro-reconstructions to bridge the defect in the auditory bone chain. For example, a new connection can be made between the stirrup head and the hammer handle (in case of a lost anvil) or between the foot plate of the stirrup and the hammer handle (in case of a partially disappeared anvil and stirrup). Artificial materials are often used for this reconstruction / bridging, and sometimes the patient's own bone tissue.

## Important

After surgery to restore continuity of the auditory bone chain, you should avoid sports and heavy work for the first 4 weeks after surgery.

## Chance of success

The chance of success depends on many factors; an ENT specialist will be able to provide more information about this.

## Stirrup surgery for otosclerosis

The explanation of this operation can be found in detail in the folder otosclerosis.

## Cleansing (remedial) ear surgery

This operation is performed through the ear canal, through an incision behind the pinna or through a combination of both access routes, and aims to make the infected ear healthy.

Ear cleansing surgery may require the removal of part of the auditory bone chain. This will especially be the case with cholesteatoma, because cholesteatoma often grows around or between the ossicles. This creates enough space to clear up the inflammation and reduces the risk of damage to the cochlea by cleaning the ossicles. In the presence of cholesteatoma, damage to the auditory bone chain will usually have occurred before surgery. The removed ossicles (or parts thereof) can often be reused to improve hearing at the same time or at a later stage. The eardrum is repaired with connective tissue (fascia) or cartilage (see eardrum closure).

The goal of ear cleansing surgery is to obtain a calm, dry and safe middle ear with an intact eardrum. When no cholesteatoma present, hearing will often improve after surgery. When cholesteatoma is present, hearing will usually not improve or even (temporarily) be deteriorated.

If the hearing cannot be improved during the operation, this is usually still possible during a second operation, which is usually done after 6-12 months.

The ENT doctor will always prefer a safe ear to a better hearing ear in case of cholesteatoma.

## Residual / recurrent cholesteatoma

Cholesteatoma can come back after surgical removal for two reasons:

- Residual disease: there may be cholesteatoma residues that have re-grown;
- Recurrent disease - new cholesteatoma can form again from the eardrum, in a similar way to the original cholesteatoma.

Cholesteatoma is generally believed to have a significant recurrence tendency. In order to be able to determine a residue, it may be decided to perform a second operation 6 to 12 months after a cleaning ear operation in which cholesteatoma has been removed (a so-called "second look" operation). This second operation checks whether the middle ear is clean. If necessary, an attempt can be made at the same time to repair the auditory bone chain in order to improve hearing. For this reconstruction the own auditory ossicles or ossicles made of artificial materials can be used. In addition, it can sometimes be decided to restore the auditory bone chain during the first, cleansing operation. If the hearing has already been restored during the first operation, the second look surgery can be replaced by a MRI scan using a new technique for visualization of the possible residual cholesteatoma.

## Obliteration technique

Since the beginning of this century, there has been a new operating technique: obliteration of the mastoid. The middle ear sinuses (mastoid and attic) are completely filled with artificial bone, so that only an aerated middle ear remains, which can still function properly, but is safer from invasion through skin (cholesteatoma). This operation is followed by a MRI scan at regular intervals postoperatively to rule out residual cholesteatoma, usually 1, 2 and 5 years after surgery.

The operation is performed through the ear canal, through a cut behind the pinna or through a combination of both access routes.



## Postoperative course

Hearing enhancing operations and cleansing operations are performed under general anesthesia. Most procedures will be performed in day care. Sometimes a pressure bandage is applied after surgery, which is removed at the outpatient clinic the day after surgery.

## Course

In general, there are few pain complaints shortly after the operation and if any, these can be treated well with painkillers.

After the operation, (bloody) fluid may still come out of the ear for a few days. If this lasts longer than a week, in consultation with an ENT specialist, it can be decided to treat this with ear drops or a course of antibiotics.

If stitches are placed behind the ear, the ear should not get wet until the stitches have been removed, usually after 7-10 days. If a tampon is left in the ear, it will be removed at the same time as the stitches.

After a cleansing ear operation, an outpatient check-up is still necessary for some time; the duration and frequency varies per patient.

**There are a number of reasons to contact the clinic in the first days after each ear surgery if the following symptoms occur:**

- **When a fever develops (rectally measured body temperature of 38.5 degrees Celsius and higher).**
- **If there is a large / tense swelling behind the operated ear**
- **In case of severe dizziness with nausea and vomiting.**
- **If there is a lot of bright red blood loss where the patch has to be changed again after a few minutes.**

## Swimming, flying, sports

For the sake of caution - depending on the operation - most ENT doctors observe a healing period of six weeks (no swimming, flying and sports, for example). The subsequent limitations will be discussed by the ENT doctor and depend on your personal situation and type of surgery.

## Risks

Fortunately, there are hardly any for hearing-enhancing operations, otherwise it would not be justified to perform such an operation for not directly serious or life-threatening conditions, as described above.

With ear cleaning surgery, the risk of complications is higher, but still very low. You should also consider that the presence of a chronic inflammation in the ear itself can also lead to problems (the same).

## Hearing

With any ear surgery, there is a very small risk of permanent hearing loss due to damage to the cochlea. By clearing up inflammation and cleaning the ossicles, damage to the cochlea can very seldom occur. The resulting hearing loss can be severe and will be permanent.

## Balance

Because the vestibular organ is in the area of surgery, balance disturbances can occur, but they will usually disappear within a few days.

## Facial nerve

There is a very small risk of damage to the facial nerve that runs through the middle ear. This nerve provides the facial expression of the face. The ENT doctor uses a monitor during an operation that gives an alarm if he gets too close to the nerve, to minimize the risk of damage.

## Taste nerve

A small nerve (chorda tympani) runs through the middle ear and provides the taste for the side part of one side of the tongue. Operations of the middle ear can seldomly cause nerve damage - partially or completely. In case of partial damage, a temporary taste disturbance can develop (in about 5% of ear operations). It is sometimes necessary to cut the nerve to properly remove inflammation in case of cholesteatoma surgery. When the taste nerve is completely damaged, the taste disturbance will almost always disappear gradually (up to 6 months).

## FINANCIAL ASPECTS

This information concerns the insurance and reimbursement of your treatment. Do you have a referral from your doctor? Then your health insurance will cover 60%-100% of your treatment. We reimburse the remaining 40%-0% for you. So you don't pay anything extra.

## Questions or suggestions?

If you have any questions after reading this brochure, please contact us at telephone number: 020 238 8800.

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