CONDITION

Keratosis obturans

Keratosis obturans is a build-up of tightly packed skin cells that blocks and widens the ear canal.

WHAT IT IS
Tightly packed skin cells blocking the ear canal

BODY SYSTEM
Ears and hearing

MAIN SYMPTOMS
Deep ear pain, blocked ear, hearing loss, ear discharge

WHAT CAUSES IT
Disrupted skin shedding; exact trigger often unknown

HOW IT IS DIAGNOSED
Magnified ear examination and removal of the keratin plug

MAIN TREATMENT
Specialist removal and regular ear-canal cleaning

CAN IT BE CURED?
Sometimes - inflammatory cases may settle after clearance

IS IT AN EMERGENCY?
Sometimes - new facial weakness or spreading infection

LONG-TERM OUTLOOK
Usually manageable, but recurrent cases need regular cleaning

Overview

Keratosis obturans is a build-up of keratin inside the external ear canal. Keratin is the tough protein found in the outer layer of skin, hair, and nails. In this condition, shed skin cells collect in layers rather than moving naturally out of the ear.

The layers can form a firm plug that presses against the ear canal. This may cause severe pain, a blocked feeling, and reduced hearing. Over time, pressure and inflammation can widen the bony part of the canal.

Keratosis obturans is not the same as ordinary earwax. Earwax contains oils, skin cells, and other material and is usually softer. A keratin plug can be tightly attached to the canal lining, so attempting to pull it out without a clear view may cause pain or injury.

It is also different from an external auditory canal cholesteatoma. Both involve trapped keratin, but a cholesteatoma usually causes a more localised area of bone damage. Keratosis obturans more often produces smooth, widespread widening around the canal. This distinction matters because the follow-up and possible complications are different.

One or both ears may be affected. Some cases settle after the plug and inflammation are treated. Others return and require planned ear cleaning over months or years.

Symptoms

Symptoms may develop as the plug enlarges. Pain can become marked because the keratin stretches the sensitive skin lining the ear canal.

Common symptoms include:

The hearing loss is usually conductive. This means sound is being physically blocked from reaching the eardrum rather than the inner ear being damaged. Hearing often improves when the obstruction is safely removed, although another hearing problem may also be present.

Some people have few symptoms until the plug becomes large. Recurrent cases may be found during routine ear follow-up before severe pain develops.

Blood-stained discharge, worsening swelling, fever, or weakness of the face are not typical features of an uncomplicated plug. These symptoms need prompt assessment.

- Deep or intense ear pain
- A blocked, full, or pressured feeling
- Reduced or muffled hearing
- Ringing or buzzing in the ear
- Ear discharge, especially if inflammation or infection is present

Causes and risk factors

The skin of a healthy ear canal normally moves slowly outward, carrying shed skin and wax toward the opening. In keratosis obturans, this self-cleaning process becomes disrupted. Layers of dead skin then collect and become compressed.

The exact reason is often unclear. Inflammation may temporarily disturb normal skin movement in some people. In others, abnormal skin shedding continues after the first plug has been cleared, leading to repeated blockage.

Keratosis obturans has been reported alongside chronic sinus inflammation and bronchiectasis, a long-term lung condition in which damaged airways become widened. These associations do not mean that everyone with keratosis obturans has a sinus or lung condition, or that one directly causes the other.

It may affect children or adults. Bilateral disease, meaning both ears are involved, has been described more often in younger people. However, age alone cannot confirm or rule out the condition.

It is not caused simply by poor hygiene. Cotton buds and other objects may push material deeper or damage the canal, but they are not considered the underlying cause.

Diagnosis

Diagnosis begins with an examination of the ear canal, usually with an otoscope or a microscope. These instruments provide light and magnification. The plug may initially resemble impacted earwax, especially if its deeper layers cannot be seen.

Keratosis obturans is often confirmed during careful removal. A clinician may find a dense plug made of multiple pale or white layers of keratin. The skin underneath may be inflamed, and the canal may be smoothly widened around much of its circumference.

The eardrum may be hidden until the material has been removed. Once visible, it is checked for inflammation, injury, or perforation.

An audiogram, or hearing test, may be arranged if hearing remains reduced, if the degree of hearing loss is uncertain, or if another ear disorder is suspected.

A computed tomography, or CT, scan is not needed for every uncomplicated case. It may be used when there is concern about bone erosion, an unusual examination, persistent discharge, complications, or a possible external auditory canal cholesteatoma. CT creates detailed images of the ear canal and nearby bone.

A sample of discharge may be tested if infection is suspected. Bacterial or fungal testing does not confirm keratosis obturans itself.

Treatment and management

The main treatment is complete, careful removal of the keratin plug. This is usually performed with magnification by an ear, nose, and throat specialist or another clinician experienced in ear-canal procedures.

Removal may involve fine instruments, suction, or both. The material can be tightly attached to tender skin, so it may need to be removed gradually. A softening liquid may sometimes be used before or between appointments.

Pain control is important. Local anaesthetic may be suitable in some circumstances. A general anaesthetic may occasionally be needed when the plug is particularly painful or difficult to remove, or when a child cannot remain still enough for safe treatment.

After clearance, the canal is examined for exposed bone, infection, skin inflammation, and damage to the eardrum. Medicated ear drops may be used when there is significant inflammation or a bacterial or fungal infection. The choice depends on the examination, including whether the eardrum is intact.

Some people need only short-term review after the canal heals. Others produce further keratin and require planned microscopic cleaning. Follow-up intervals are based on how quickly material returns and whether symptoms develop between visits.

Surgery is not routine. In selected, persistent cases, an operation to widen or reshape the canal may be considered to improve access, drainage, or skin migration. Surgery does not suit every case and does not guarantee that keratin will never return.

Do not try to remove a suspected plug with cotton buds, hairpins, ear candles, or similar objects. Home irrigation may be painful or unsafe if the diagnosis is uncertain, the eardrum has a hole, or the canal is badly inflamed.

Complications

Most cases can be managed by clearing the canal and monitoring for recurrence. Possible complications include:

Facial nerve weakness is uncommon. Because the facial nerve passes through bone close to the ear, new facial drooping or difficulty closing one eye needs urgent assessment.

Persistent pain or discharge may also suggest that the original diagnosis should be reviewed, particularly to exclude an external auditory canal cholesteatoma or another ear condition.

- Repeated blockage and conductive hearing loss
- Ongoing inflammation or infection of the ear canal
- Persistent widening or erosion of canal bone
- Injury to the eardrum during severe disease or difficult removal
- Rare spread of inflammation to nearby structures

Prevention

There is no proven way to prevent keratosis obturans from first developing. It is not simply the result of unclean ears.

If the condition returns, scheduled ear examinations and professional cleaning can prevent a large, painful plug from building up. Keeping follow-up appointments is more useful than repeatedly trying to clean deep inside the canal at home.

Avoid inserting objects into the ear. If you use hearing aids or earplugs, keep them clean and report increasing pain, discharge, or blockage rather than continuing to wear them over an irritated canal.

Living with it and what to expect

The course is not the same for everyone. A plug associated with a period of inflammation may not return after complete removal and healing. In other people, the abnormal build-up continues and becomes a long-term condition.

When recurrence occurs, it may take weeks, months, or longer for enough keratin to collect and cause symptoms. Regular examinations can allow it to be removed before marked pain or hearing loss develops. The timing of follow-up may change according to what is found at each visit.

Most day-to-day activities are not restricted once the canal has healed. Hearing often improves after blockage is cleared. If it does not, a hearing test can look for another cause.

Repeated procedures can be uncomfortable, and anticipating ear pain may be stressful. Tell the clinic if a previous cleaning was difficult. This allows time to discuss softening the plug, pain relief, staged removal, or other ways to make treatment more manageable.

Seek review between planned appointments if the ear becomes blocked, painful, or starts discharging. An earlier cleaning may prevent symptoms from becoming more severe.

When to get medical help

Arrange a routine appointment if you have persistent ear blockage, gradual hearing reduction, recurring plugs, or discomfort that does not settle. These symptoms have many possible causes and do not confirm keratosis obturans.

If you have already been diagnosed, contact your ear clinic when familiar symptoms return

rather than waiting for a scheduled visit if the blockage is becoming painful.

Seek urgent, same-day medical assessment for:

Seek emergency help for new facial drooping, difficulty closing one eye, confusion, severe dizziness with neurological symptoms, or weakness affecting an arm or leg. These are not expected symptoms of an uncomplicated keratin plug and may indicate a serious complication or another condition.

- Rapidly worsening or severe ear pain
- Fever with ear discharge or increasing redness
- Swelling or tenderness behind the ear
- Bloody discharge without a clear minor cause
- Sudden hearing loss, especially if the canal does not feel blocked
- Severe pain in someone with diabetes or a weakened immune system

Common questions

Is keratosis obturans just hard earwax?

No. It is mainly made from tightly layered skin cells rather than ordinary earwax. It can be difficult to distinguish from wax until the ear is examined under magnification and the material is removed.

Can I remove keratosis obturans at home?

Home removal is not recommended. The plug may be firmly attached to inflamed skin, and the eardrum may not be visible. Digging, suction devices, or irrigation can cause bleeding, infection, or eardrum injury.

Will my hearing return after the plug is removed?

Hearing often improves because sound can once again travel through the ear canal. Persistent hearing loss may have another cause and should be assessed with an ear examination and, when appropriate, a hearing test.

Does keratosis obturans keep coming back?

It can. Some inflammatory cases settle after treatment, while other cases repeatedly produce keratin. People with recurrent disease may need long-term professional cleaning even when the ear feels normal.

Is keratosis obturans cancerous?

No. Keratosis obturans is not cancer. However, persistent pain, bleeding, discharge, or abnormal tissue still needs assessment because other ear-canal conditions can cause similar symptoms.

What is the difference between keratosis obturans and an ear-canal cholesteatoma?

Keratosis obturans usually forms a central plug and causes smooth widening around the canal. An external auditory canal cholesteatoma more often causes a local pocket of trapped skin with focal bone erosion. Examination during removal and, in some cases, CT imaging help distinguish them.

Sources

- Piepergerdes MC, Kramer BM, Behnke EE. "Keratosis obturans and external auditory canal cholesteatoma." The Laryngoscope . 1980;90(3):383-391.
- Persaud RAP, Hajioff D, Thevasagayam MS, Wareing MJ, Wright A. "Keratosis obturans and external ear canal cholesteatoma: how and why we should distinguish between these conditions." Clinical Otolaryngology and Allied Sciences . 2004;29(6):577-581.
- Chong AW, Raman R. "Keratosis obturans: a disease of the tropics?" Indian Journal of Otolaryngology and Head & Neck Surgery . 2017;69(4):455-460.
- Heilbrun ME, Salzman KL, Glastonbury CM, Harnsberger HR, Kennedy RJ, Shelton C. "External auditory canal cholesteatoma: clinical and imaging spectrum." American Journal of Neuroradiology . 2003;24(4):751-756.