

Glue ear

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Glue ear is a condition where the middle ear fills with glue-like fluid instead of air. This causes dulled hearing. In most cases it clears without any treatment. An operation to clear the fluid and to insert ventilation tubes (grommets) or temporary use of hearing aids may be advised if glue ear persists.

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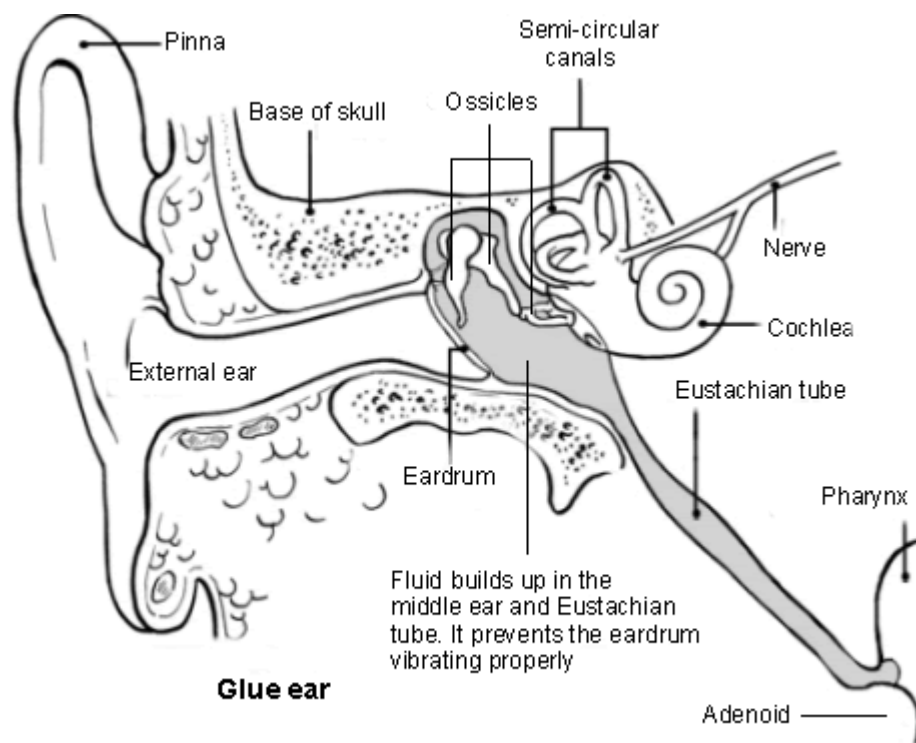


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What is glue ear?

Ear diagram and glue ear



Glue ear means that the middle ear is filled with fluid that looks like glue. It can affect one or both ears. The fluid has a deadening effect on the vibrations of the eardrum and tiny bones (ossicles) created by sound.

These affected vibrations are received by the cochlea and so the volume of the hearing is turned down. Glue ear usually occurs in young children, under the age of 8, but it can develop at any age. Glue ear is sometimes called otitis media with effusion (OME).

Glue ear symptoms

Dulled hearing

This is the most common symptom of glue ear. Your child's hearing does not go completely and the temporary hearing loss is often mild. However, the severity of hearing loss varies from child to child, is sometimes quite severe and can vary from day to day in the same child.



Hearing varies according to the thickness of the fluid and other factors. For example, it is often worse if the child has a cold.

Older children may say if their hearing is dulled. However, you may not notice dulled hearing if your child is younger, particularly if only one ear is affected. You may find that your child turns the TV or radio up loud, or often says "What?" or "Pardon?" when you talk to them. Their hearing difficulties may be more apparent when there is lots of background noise; the first person to recognise their hearing difficulty may be a member of staff if the child attends school or nursery. Babies may appear less responsive to normal sounds.

Pain

This is not usually a main symptom but mild **earache** may occur from time to time. Children and babies may pull at their ears if they have mild pain.

However, the gluey fluid is a good food for germs (bacteria) and ear infections are more common in children with glue ear. This may then cause bad earache for the duration of an infection. Always have a painkiller such as paracetamol in your home in case earache develops.

Development and behavioural changes

If dulled hearing is not noticed then children may not learn so well at school if they cannot hear the teacher. Your child may also become frustrated if they cannot follow what is going on. They may feel left out of some activities. They can become quiet and withdrawn if they cannot hear so well. If they are unable to hear they may appear to lack attention and concentration which may seem as though they have behavioural difficulties.

Dulled hearing from glue ear may cause problems with speech and language development, particularly if it has been present for a long time. Therefore, if a child has speech delay, one of the first assessments that is requested is a hearing test.

Other symptoms

Older children with glue ear may also report tinnitus (hearing sounds in the affected ear like ringing or buzzing). Some may experience mild clumsiness or balance problems.



All of the symptoms described are usually temporary, lasting as long as the glue ear is present. Symptoms resolve either on their own when the glue ear naturally resolves or if it is treated.

What causes glue ear?

The cause is probably due to the eustachian tube not working properly.

The balance of fluid and air in the middle ear may become altered if the eustachian tube is narrow, blocked, or does not open properly. Air in the middle ear may gradually pass into the nearby cells if it is not replaced by air coming up the eustachian tube. A vacuum may then develop in the middle ear. This may cause fluid to seep into the middle ear from the nearby cells.

Some children develop glue ear after a **cough, cold**, or **ear infection** when extra mucus is made. The mucus may build up in the middle ear and not drain well down the eustachian tube. However, in many cases glue ear does not begin with an ear infection.

Children are particularly prone to glue ear due to the shape and position of their eustachian tubes. In adults, the eustachian tubes are wide with a steeper angle but in children they are narrow and more horizontal so they do not drain as effectively as in adults.

How common is glue ear?

Glue ear is common. By 10 years of age, 8 out of 10 children will have had at least one case of glue ear. It is most common between the ages of 2 and 5 years. Boys are more commonly affected than girls. Most cases occur in winter. It is more common in children who:

- Are in daycare.
- Have an older brother or sister.
- Live in homes where people smoke.
- Have cleft palate, or other reasons for altered facial development such as **Down's syndrome** which can affect how well the eustachian tube works.
- Have specific sucking habits (finger or dummy sucking for example).



- Have **allergic rhinitis** – eg, hay fever.

Ear infection or glue ear?

Glue ear is quite different from an ear infection. Glue ear is characterised by a collection of fluid in the middle ear space (behind the ear drum), without any signs or symptoms of inflammation. The fluid may be present in the middle ear for several weeks, especially in children. Whereas a middle ear infection occurs when a cold and the presence of germs such as bacteria or viruses led to the formation of pus and mucus behind the ear drum causing ear pain and fever, typically for just a few days.

How is glue ear diagnosed?

A referral to an audiologist or an ear, nose and throat (ENT) specialist may be advised at some point. This may be straightaway for babies who have hearing loss. (This is to rule out other serious causes of hearing loss.) It may be after a period of watchful waiting in older children who previously had good hearing. Hearing tests and ear tests can confirm the cause of hearing loss and show the degree of hearing loss if it is present.

Glue ear treatment

Can medication clear glue ear?

Various medicines have been tried to help clear glue ear. For example, antihistamines, steroids, decongestants, antibiotics and medicines to thin mucus. However, research studies have shown that none of these medicines works in the treatment of glue ear.

Wait and see (watchful waiting)

No treatment is usually advised at first as the outlook is good. Typically, a doctor may advise that you wait three months to see if the glue ear clears. Watchful waiting is sometimes called active monitoring. Watchful waiting isn't usually an option for some children – eg, those with **Down's syndrome** or cleft palate.



Balloon treatment

For this treatment a special balloon is blown up by the child using their nose. This is called auto-inflation. It puts back pressure into the nose and may help to open up the eustachian tube and allow better drainage of the fluid. The child needs to do this regularly until the fluid clears. They also need to be old enough to coordinate blowing up the balloon and understand how to use the device. The research studies that looked into this treatment found that it seems to help in some cases but not all.

It may improve middle ear function and reduce the need for an operation. It is difficult for young children to do properly. For well-motivated older children who can use the device, it may be worth a try. It is not thought to cause any side-effects or problems. You can get an auto-inflation kit called **Otovent**® (<http://www.gluear.co.uk/>) on prescription, or you can buy it from pharmacies.

Surgery

A small operation may be advised by an ear specialist if your child's glue ear persists, or is severe. This involves inserting small tubes called grommets (see below). The operation isn't done as often as it used to be because it is now realised that most cases of glue ear get better without treatment.

Hearing aids

Hearing aids are an option instead of an operation to insert grommets in children with hearing loss who have glue ear in both ears. The hearing aids would usually only be used for the time until the glue ear clears away. There are different types of hearing aids that can be used mainly depending on whether the hearing is fluctuating or not.

You and your child should have an opportunity to discuss this option with the specialist and your views should be taken into account. The anxiety caused to some children by having to wear aids sometimes outweighs the benefits.

What can I do for my child with glue ear?

The main thing is to be aware that your child may have dulled hearing until the condition goes away or is treated. The following are some tips:

- Talk clearly and more loudly than usual (but you don't have to shout)



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- Attract your child's attention before speaking to him or her. Talk directly face to face and at their level.
- Cut out background noise when you talk to your child (for example, turn off the TV).
- Understand that your child's frustration or bad behaviour may be due to dulled hearing.
- Discuss the problem with the teacher if your child is at school or nursery. Sitting your child near to the teacher may help. Often in a class there are several children with glue ear and raising awareness of glue ear with teachers is helpful.
- Don't let anybody smoke in the presence of your child.

Even after an episode of glue ear has cleared up, remember the problem may return for a while in the future. In particular, after a cold or after an ear infection.

Are children routinely checked for hearing?

Yes. All children should have a routine hearing test shortly after birth. However, most cases of glue ear develop in children aged 2–5 years. Therefore, hearing may have been fine at the routine hearing test but then become dulled at a later time. Hearing tests are also performed routinely in many areas of the UK when children enter school (in state education settings), although this is not universal. See a doctor if you suspect your child has dulled hearing at any age.

How long does glue ear last?

The outlook is usually good. Many children only have symptoms for a short time. The fluid often drains away gradually, air returns and hearing then returns to normal.

- Hearing is back to normal within three months in about 5 in 10 cases.
- Hearing is back to normal within a year in more than 9 in 10 cases.
- Glue ear persists for a year or more in a small number of cases.

Some children have several episodes of glue ear which cause short but repeated (recurring) episodes of reduced hearing. The total time of reduced hearing in childhood may then add up to many months.



Does glue ear go away?

As children grow older, problems with glue ear usually go away. This is because the eustachian tube widens and the drainage of the middle ear improves. In general, the older the child, the less likely that fluid will build up in the middle ear. Also, in older children, any fluid that does build up after a cold is likely to clear quickly.

Glue ear rarely continues (persists) in children over the age of 8. In nearly all cases, once the fluid has gone, hearing returns to normal. Rarely, some adults are troubled with glue ear.

Rarely, long-term glue ear may lead to middle ear damage and some permanent hearing loss.

Can glue ear be prevented?

The cause of glue ear is not fully understood and there is no way of preventing most cases. However, the risk of developing glue ear is less in children who live in homes free of cigarette smoke and who are breast-fed.

Glue ear grommets

What happens during the operation?

The operation is usually done as a day case, and usually an overnight stay in hospital is not needed. Your child will need to be put to sleep for a short time (have a **general anaesthetic**).

The operation involves making a tiny cut (about 2–3 mm) in the eardrum, whilst the child is under anaesthetic. The fluid is drained and a ventilation tube (grommet) is then usually inserted.

A grommet is like a tiny pipe that is put across the eardrum. The grommet lets air get into the middle ear. Hearing improves immediately. This improvement in hearing only lasts as long as the grommet stays in place.



Grommet in place

What happens to the grommet after it is put into the ear?

A hearing test is undertaken about 6 weeks after the grommets are inserted. Grommets normally fall out of the ear as the eardrum grows, usually after 6–12 months. The grommet is so small that you probably won't notice it. By this time the glue ear has often gone away. The hole in the eardrum made for the grommet normally heals quickly when the grommet falls out. Sometimes grommets need to be put in on more than one occasion if glue ear returns (recurs).

Are there any complications?

Most children have no problems after surgery. Discharge and infection are the most common complications. Rarely, a condition called tympanosclerosis occurs in which a chalky sort of substance develops in the eardrum. This is a scar on the ear drum and it usually does not cause any long-term problems.

A small hole (perforation) of the eardrum occasionally persists in the eardrum after the grommet has come out. This usually heals without treatment but occasionally a small operation is needed to fix it. Minor damage and scarring to the eardrum may occur but this is unlikely to cause any problems.

All general anaesthetics carry a risk, but only a very tiny one. Your anaesthetist will explain this to you.



Advice for children with grommets

Children with grommets can go swimming but should avoid diving. Swimming caps and earplugs are not necessary. You should avoid ducking your child's head in soapy water. Children with grommets do not need to avoid flying in an aeroplane. If anything, they will have less pain with taking off and landing as the pressure between the middle and outer ear will be more equal.

Further reading and references

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