TEST

Eustachian tube patency

Eustachian tube patency testing checks whether the passage between your middle ear and the back of your nose opens properly.

WHAT IT MEASURES
Whether the Eustachian tube opens to equalize middle-ear pressure

SAMPLE
None

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 15 to 30 minutes

RESULTS IN
Usually same visit; turnaround varies by laboratory or clinic

USED FOR
Diagnosis and treatment planning

MAIN LIMITATION
No single method reliably detects intermittent opening problems

Overview

The Eustachian tube is a narrow passage connecting your middle ear to the back of your nose. It normally opens briefly when you swallow, yawn, or chew. This allows air to move through the tube and keeps pressure similar on both sides of your eardrum.

Eustachian tube patency testing checks whether that passage opens. "Patent" means open. The test may also assess how effectively the tube balances middle-ear pressure.

There is no single standard patency test. Your appointment may involve looking at the eardrum, measuring middle-ear pressure, and repeating measurements while you swallow or gently blow against a closed nose. Specialist clinics may use sound or controlled air pressure to detect the tube opening.

Patency is not the same as normal function. A tube may open during the appointment but fail to open reliably during a flight, a cold, or an allergy flare. It may also remain abnormally open, known as a patulous Eustachian tube.

Why the test is ordered

The test may help investigate symptoms that suggest poor pressure control in the middle ear. These can include:

Testing may also be performed before or after treatment for Eustachian tube dysfunction. It can help determine whether symptoms fit an obstructed tube, an abnormally open tube, or another ear condition.

The result is considered alongside your symptoms, an examination of your ear, and usually a hearing test. Patency testing alone cannot identify every cause of ear pressure or hearing changes.

- Ear pressure, fullness, popping, or crackling
- Muffled or fluctuating hearing
- Ear discomfort during flying, diving, or altitude changes
- Repeated middle-ear fluid or pressure problems
- Hearing your own voice or breathing unusually loudly

Who should have the test

An audiologist or ear, nose, and throat specialist may offer testing when your symptoms, examination, or hearing results suggest a middle-ear pressure problem.

It may be particularly useful when symptoms occur with altitude changes, when fluid remains behind the eardrum, or when treatment is being considered for suspected Eustachian tube dysfunction.

Young children may not be able to complete tests that require timed swallowing or blowing. Tympanometry, which measures eardrum movement and middle-ear pressure, can often still provide useful information.

The test is not routinely used to screen people without symptoms or relevant ear findings.

How to prepare

You can usually eat and drink normally. Coffee does not directly affect the result.

Tell the clinic if you currently have a cold, nasal congestion, an allergy flare, ear discharge, or significant ear pain. These conditions may affect how the tube opens and may influence

whether testing should proceed.

Also mention:

Do not stop prescribed medicines unless the clinician arranging the test tells you to. If you use hearing aids, you may be asked to remove them during testing.

- Previous ear, nasal, or sinus surgery
- A hole in the eardrum or a ventilation tube, sometimes called a grommet
- Recent flying, diving, or rapid altitude change
- Nasal sprays, decongestants, antihistamines like cetirizine or loratadine , or other relevant medicines
- Difficulty clearing your ears by swallowing or gentle blowing

What happens during the test

The clinician usually begins by looking into your ear with an otoscope. This checks the ear canal and eardrum for wax, fluid, infection, a perforation, or other findings that may change how the result is interpreted.

You may then have tympanometry. A soft probe is placed at the entrance to your ear canal to form a seal. The instrument changes the air pressure slightly and measures how your eardrum moves. You may feel brief pressure, but the test should not be painful.

Measurements may be repeated after you:

A change in middle-ear pressure suggests that air passed through the Eustachian tube.

Specialist centres may use sonotubometry, which plays a sound near the back of the nose and detects whether it reaches the ear when the tube opens. Tubomanometry uses controlled nasal air pressure while you swallow.

Sometimes a thin flexible camera is passed through the nose to examine the area around the tube opening. This is nasal endoscopy and is a separate examination rather than a direct measurement of patency.

- Swallow water
- Yawn
- Pinch your nose and swallow, called the Toynbee manoeuvre
- Gently blow against a pinched nose, called the Valsalva manoeuvre

Understanding your results

Results may be descriptive, such as "opened" or "did not open," or they may include pressure measurements and instrument-specific values. There is no universal normal range for every Eustachian tube test.

An observed pressure change after swallowing or gentle blowing supports that the tube opened during that attempt. No change may suggest reduced opening, but it can also happen if the manoeuvre was not performed effectively or the equipment did not maintain a seal.

Negative middle-ear pressure or reduced eardrum movement can support obstructive Eustachian tube dysfunction. These findings are not specific: middle-ear fluid and other ear conditions can produce similar results.

A normal result does not always exclude a problem. Eustachian tube opening is brief and intermittent, so the tube may work during testing but not when your symptoms occur.

Interpretation varies by clinic or laboratory, test equipment, age, sex, pregnancy status, medicines, eardrum condition, and clinical context. Your symptoms and ear examination remain important.

What affects the results

Several factors can change the result without indicating a permanent Eustachian tube problem.

A cold, sinus inflammation, or active nasal allergies can temporarily swell the tissue around the tube opening. Pregnancy can also increase nasal congestion and alter tube function.

Recent flying or diving may leave temporary middle-ear pressure changes. Nasal decongestants, steroid like prednisone or hydrocortisone sprays, or antihistamines may change congestion, particularly if taken shortly before the appointment.

Wax, middle-ear fluid, an eardrum perforation, ventilation tubes, and previous ear surgery can affect tympanometry or require a different testing method.

The result also relies on technique. A poor probe seal, swallowing at the wrong time, or blowing too weakly can make an open tube appear blocked. Forceful blowing may create a pressure change that does not reflect ordinary swallowing.

Age and ability to follow the instructions matter, especially in young children. Unlike blood tests, food, hydration, exercise, and time of day generally have little direct effect.

Accuracy and limitations

No available test perfectly captures everyday Eustachian tube function. The tube is normally closed most of the time and opens only briefly, making a single measurement easy to miss.

Simple swallowing or Valsalva tests may say the tube did not open when the real problem was timing, effort, or an inadequate equipment seal. This is a false abnormal result.

They may also show successful opening even though the tube fails at other times. This is a false reassuring result and is more likely when symptoms are intermittent or happen only with altitude changes.

Tympanometry measures the eardrum and middle-ear pressure rather than directly viewing the tube. Sonotubometry and tubomanometry can provide more direct evidence of opening, but their methods and interpretation are not fully standardized across centres.

Testing for a patulous, or abnormally open, tube may be more useful while symptoms are happening. Measurements linked to breathing, examination during symptoms, or specialist testing may be better than a routine pressure-opening test.

Risks and complications

Otoscopy, tympanometry, and sound-based testing are non-invasive and carry little risk. You may notice temporary pressure or mild discomfort.

Swallowing and gentle pressure manoeuvres are usually well tolerated. Do not blow forcefully; tell the clinician if you develop pain or dizziness.

If nasal endoscopy is also performed, it can cause temporary irritation, watering eyes, sneezing, or a small nosebleed. The clinician should explain its separate risks before proceeding.

What happens next

Your results may be discussed immediately or reviewed with your hearing test and ear examination. If findings are normal and symptoms are mild or occasional, routine follow-up may be appropriate.

If testing suggests poor tube opening, the next step depends on the likely cause and how much the symptoms affect you. This may include observation, treatment of relevant nasal inflammation, repeat testing during symptoms, or assessment by an ear, nose, and throat

specialist. Procedures are considered separately and require their own discussion of benefits and risks.

Arrange prompt medical assessment for persistent ear discharge, worsening pain, fever with ear symptoms, or a marked change in hearing.

Sudden hearing loss in one or both ears needs urgent same-day assessment, even if it feels like pressure or blockage. Seek emergency help for ear symptoms accompanied by new facial weakness, severe ongoing dizziness, difficulty speaking, or other sudden neurological symptoms.

Common questions

Can I drink coffee before the test?

Yes. Coffee does not usually affect Eustachian tube patency testing, and fasting is not required.

Does the time of day matter?

Usually not. If your symptoms occur at a particular time or only during allergy flares, tell the clinic because testing during symptoms may be more informative.

Can I exercise beforehand?

Yes. Ordinary exercise is not known to alter the result significantly. Allow your breathing to settle before a test that requires timed swallowing or listening for airflow.

Should I use my nasal spray before the appointment?

Follow the clinic's instructions. Nasal medicines can reduce congestion and change tube opening, but you should not stop a prescribed medicine without advice.

Can I have the test when I have a cold?

Often, but a cold can temporarily block the tube and affect the result. Contact the clinic if you are significantly congested, unwell, or have severe ear pain.

Will the test hurt?

It should not be painful. Tympanometry can create a brief feeling of pressure, similar to an altitude change, and nasal endoscopy may feel uncomfortable for a short time.

Sources

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