CONDITION

Labyrinthine positional nystagmus

Labyrinthine positional nystagmus is an inner-ear eye movement triggered by certain changes in head position.

WHAT IT IS
Position-triggered eye movement arising from the inner ear

BODY SYSTEM
Inner ear and balance system

MAIN SYMPTOMS
Brief spinning, positional dizziness, jerking eyes, nausea

WHAT CAUSES IT
Usually displaced inner-ear crystals

HOW IT IS DIAGNOSED
Positional tests while eye movements are observed

MAIN TREATMENT
Canal-specific repositioning maneuvers

CAN IT BE CURED?
Sometimes - maneuvers clear it, but recurrence is common

IS IT AN EMERGENCY?
Sometimes - new stroke-like symptoms need emergency care

LONG-TERM OUTLOOK
Most episodes improve, though recurrence is common

Overview

Labyrinthine positional nystagmus is a pattern of involuntary eye movement caused by a problem in the inner ear's balance system. "Labyrinthine" refers to the inner ear. "Positional" means it is brought on by moving the head into certain positions. "Nystagmus" means repetitive, uncontrolled eye movement.

The most common cause is benign paroxysmal positional vertigo, usually shortened to BPPV. In BPPV, tiny calcium carbonate particles become displaced inside the inner ear. These particles are often called crystals, although their medical name is otoconia.

Head movement makes the particles shift. This sends a false movement signal to the brain, even though the head has stopped moving. The mismatch can cause brief spinning and a characteristic pattern of eye movement.

Labyrinthine positional nystagmus is considered peripheral, meaning it begins in the inner ear rather than the brain. Positional nystagmus can occasionally come from the brain or brainstem instead. The direction, timing, and duration of the eye movement help distinguish these causes.

The condition is not usually dangerous, but sudden dizziness can affect walking, driving, work, and confidence. Correct assessment matters because treatment depends on which part of the inner ear is involved.

Symptoms

Symptoms usually begin after a particular head movement. Common triggers include:

You may feel as if you, the room, or the bed is spinning. This sensation is called vertigo. It generally starts shortly after the triggering movement and often settles within a minute, although unsteadiness or nausea may last longer.

Nystagmus itself may not be noticeable to you. Another person may see your eyes make rhythmic jerking or rotating movements during an attack.

Some people feel mildly unsteady between attacks. They may become cautious about turning their head or walking in dim light.

Typical inner-ear positional nystagmus does not usually cause fainting, weakness, speech difficulty, a severe headache, or continuous vertigo lasting many hours. BPPV also does not normally cause new hearing loss. These symptoms need a separate medical assessment.

- Rolling over or sitting up in bed
- Looking upward or bending down
- Lying back at a hairdresser, dentist, or exercise class
- Turning the head quickly

Causes and risk factors

The inner ear contains three fluid-filled semicircular canals that sense head rotation. Nearby structures contain otoconia, which normally help detect gravity and straight-line movement.

In most cases, positional nystagmus develops when otoconia move into a semicircular canal. This is called canalithiasis. When the head changes position, the particles move through the canal and disturb its fluid. The brain receives an incorrect signal that the head is still turning.

Less often, particles attach to a motion-sensing structure inside a canal. This is called cupulolithiasis and may produce nystagmus that lasts longer while the head remains in the triggering position.

The posterior semicircular canal is affected most often. Horizontal and anterior canal forms can occur and produce different eye-movement patterns.

There is often no clear reason why the particles became displaced. Recognised associations include:

Having one of these factors does not mean you will develop the condition. More than one cause may also be possible.

- A previous head injury
- A recent inner-ear inflammation or illness
- Increasing age
- Long periods of bed rest
- Migraine
- Other disorders affecting the inner ear

Diagnosis

Diagnosis is based on your symptoms and the eye movements produced during positional testing. A healthcare professional will ask which movements trigger the dizziness, how long it lasts, and whether you have hearing or neurological symptoms.

For suspected posterior-canal BPPV, the usual assessment is the Dix-Hallpike test. You begin sitting upright. Your head is turned, and you are then helped into a lying position with the head supported. The clinician watches for vertigo and a particular direction of nystagmus.

A supine roll test may be used if the horizontal semicircular canal is suspected. You lie on your back while your head is turned to each side.

Special goggles or video equipment can make the eye movements easier to see. The pattern may identify the affected ear and canal, which guides treatment.

Symptoms alone cannot always confirm the cause. Findings that are unusual for an inner-ear disorder include nystagmus that does not match a recognised canal pattern, does not become weaker with repeated testing, or occurs with other neurological signs. Further assessment may then include an eye-movement examination, hearing tests, balance testing, or brain imaging.

Scans are not routinely needed when the history and positional tests show a typical BPPV pattern and there are no concerning additional symptoms.

Treatment and management

Treatment aims to move displaced particles out of the affected semicircular canal. This is done with a sequence of controlled head and body movements called a canalith-repositioning maneuver.

For posterior-canal BPPV, the Epley maneuver is commonly used. Other maneuvers may be chosen for horizontal- or anterior-canal forms. Correctly identifying the affected canal is important because the movements are not interchangeable.

One treatment session may be enough, but some people need the maneuver repeated. Short-lived vertigo or nausea can occur during treatment because the particles are moving through the canal.

A clinician or vestibular therapist may teach you a home maneuver if the diagnosis and affected side are clear. Home treatment should be approached cautiously if you have major neck or back problems, restricted movement, blood-vessel conditions, or uncertainty about which ear is affected.

Balance exercises may help if unsteadiness continues after the positional vertigo has settled. Brandt-Daroff exercises are sometimes used for persistent or recurrent symptoms, although they are not the same as a canal-specific repositioning treatment.

Medicines that reduce dizziness or nausea do not return the particles to their correct location. They are not usually the main treatment for BPPV, though short-term symptom relief may sometimes be considered.

Surgery is rarely needed. It is reserved for carefully confirmed, severe cases that continue despite appropriate repositioning treatment.

Routine follow-up is appropriate if symptoms do not improve after treatment, return repeatedly, or change in character. The diagnosis and affected canal may need to be checked again.

Complications

The main practical risk is falling during an attack. This is more likely when getting out of bed, using stairs, or reaching upward. Sudden vertigo may also make driving, working at height, or

operating machinery unsafe.

Some people continue to feel mildly unsteady after the brief spinning has stopped. Fear of triggering symptoms can lead to reduced activity, stiff head movements, or anxiety.

Positional vertigo can return after successful treatment. A recurrence does not necessarily mean that treatment failed; particles may move into a canal again.

A more serious concern is assuming all positional dizziness comes from the inner ear. New neurological symptoms or an atypical nystagmus pattern may point to another cause that needs prompt assessment.

Prevention

Labyrinthine positional nystagmus often cannot be prevented. The particles may become displaced without an identifiable trigger, and there is no established routine treatment that guarantees it will not return.

Protecting your head during activities with an injury risk may reduce avoidable trauma, but it cannot prevent every episode.

After a successful repositioning maneuver, strict sleeping positions or routine movement restrictions are generally not needed. Follow any specific instructions given because of your mobility or another health condition.

If symptoms recur, early recognition can reduce fall risk and help you seek reassessment before returning to activities that require reliable balance.

Living with it and what to expect

An untreated BPPV episode may settle as the particles disperse or stop producing a strong signal. This can take days to weeks and cannot be predicted for an individual person. Repositioning maneuvers often bring faster relief.

Mild imbalance can continue for a while after the spinning attacks stop. Gradually returning to ordinary head movement and walking may help the balance system readjust, provided it is safe to do so.

During active symptoms, get out of bed slowly and pause before walking. Use a handrail on stairs, keep frequently used items within easy reach, and avoid ladders or other situations where brief vertigo could cause injury.

Do not drive or operate machinery while head movements can trigger sudden vertigo. Rules

about driving and medical conditions differ by location, so check the requirements that apply to you.

Recurrences can happen months or years later. They may affect the same ear, the other ear, or a different semicircular canal. Many people return to their usual activities between episodes. Reassessment can confirm whether a repeated episode is the same condition rather than a new cause of dizziness.

When to get medical help

Arrange a routine appointment if positional dizziness is new, keeps returning, interferes with daily activities, or has not improved after a repositioning maneuver. You should also be assessed if you develop ear pain, ongoing imbalance, ringing in one ear, or a change in hearing.

Seek urgent medical assessment for sudden hearing loss, especially in one ear. Sudden hearing loss is not typical of BPPV and may need time-sensitive treatment.

Call emergency services for dizziness or nystagmus accompanied by:

These features can occur with stroke or another serious neurological problem. Continuous severe vertigo that is not tied to head position also needs prompt assessment, particularly when it is new.

- New facial drooping, arm or leg weakness, or numbness
- Trouble speaking, understanding speech, or swallowing
- New double vision or loss of vision
- A sudden severe headache
- Inability to stand or walk, especially without brief positional attacks
- Collapse, loss of consciousness, or new confusion

Common questions

Is labyrinthine positional nystagmus the same as BPPV?

The terms are closely related but not identical. Labyrinthine positional nystagmus describes an inner-ear pattern of eye movement caused by position. BPPV is the condition responsible for most cases. Other inner-ear problems can occasionally produce positional nystagmus.

Why do my eyes move when the problem is in my ear?

The inner ears and eyes work together to keep vision steady while your head moves. When

one inner ear sends a false movement signal, the brain automatically moves the eyes as if the head were turning. This creates nystagmus.

Can it go away without treatment?

It sometimes settles without treatment, but the timing is unpredictable. A correctly chosen repositioning maneuver may resolve an episode more quickly. Persistent symptoms should be reassessed rather than repeatedly treated without confirming the affected canal.

Can I do the Epley maneuver at home?

Some people can, once a healthcare professional has confirmed posterior-canal BPPV and identified the affected side. Using the wrong maneuver may not help and can move particles into another canal. Seek guidance first if the diagnosis is uncertain or you have significant neck, back, mobility, or blood-vessel problems.

Will it keep coming back?

It can recur even after treatment has completely relieved an earlier episode. Recurrence may happen after months or years, but it is not certain. A familiar sensation is still worth reassessing if it lasts longer, feels different, or comes with new symptoms.

Does positional nystagmus mean I have a brain problem?

Usually not when testing shows the characteristic pattern of an inner-ear canal disorder. However, positional nystagmus can occasionally arise from the brain. Neurological symptoms, an unusual eye-movement pattern, or poor response to appropriate treatment may lead to further investigation.

Sources

- Bhattacharyya N, Gubbels SP, Schwartz SR, et al. Clinical Practice Guideline: Benign Paroxysmal Positional Vertigo (Update) . Otolaryngology-Head and Neck Surgery . 2017;156(3 Suppl):S1-S47.
- von Brevern M, Bertholon P, Brandt T, et al. Benign paroxysmal positional vertigo: Diagnostic criteria . Journal of Vestibular Research . 2015;25(3-4):105-117.
- Hilton MP, Pinder DK. The Epley manoeuvre for benign paroxysmal positional vertigo . Cochrane Database of Systematic Reviews . 2014;2014(12):CD003162.
- Kim JS, Zee DS. Benign paroxysmal positional vertigo . New England Journal of Medicine . 2014;370:1138-1147.

- American College of Radiology. ACR Appropriateness Criteria: Dizziness and Ataxia . Revised 2023.
- Macdonald NK, Kaski D, Saman Y, Al-Shaikh Sulaiman A, Anwer A, Bamiou DE. Central positional nystagmus: A systematic literature review . Frontiers in Neurology . 2017;8:141.