

Benign Paroxysmal Positional Vertigo (BPPV)

What is BPPV?

Benign paroxysmal positional vertigo (BPPV) is the most common disorder of the organs of balance (vestibular system) in the inner ear. It causes sudden attacks of brief vertigo that may last less than 3 minutes at a stretch, usually brought on by specific changes in head position.

Each word in the name describes part of the disorder:

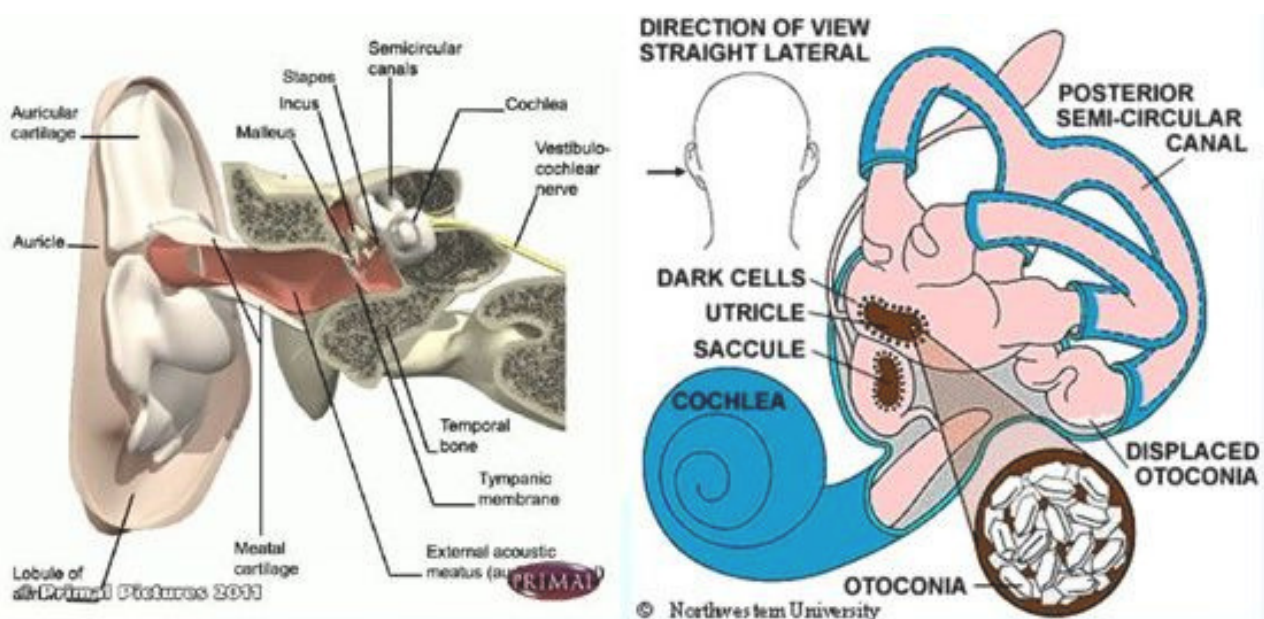
- Benign – not due to a serious cause
- Paroxysmal (pa-rocks-iz-mal) – the symptoms come and go quickly
- Positional – happens with certain changes in head position
- Vertigo – like you or the room is spinning; You may feel as though the world is spinning around you and you may feel very unsteady.



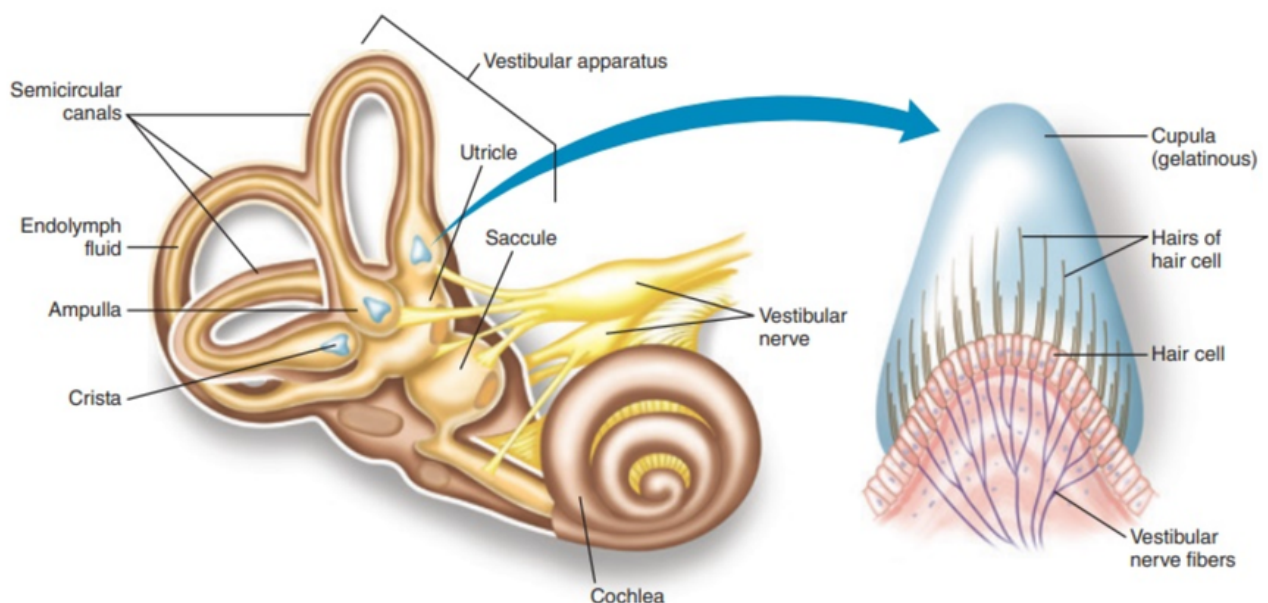
Why does BPPV happen?

To understand what causes BPPV, it is important to have a basic understanding of how the organs of balance in inner ear (vestibular system) works.

- The inner ear houses the snail-like organ of hearing called cochlea, as well as the organs of balance called utricle, saccule and three semi-circular canals. All of them are connected by inner ear fluid (endolymph) and have tiny hair cells at the end area.



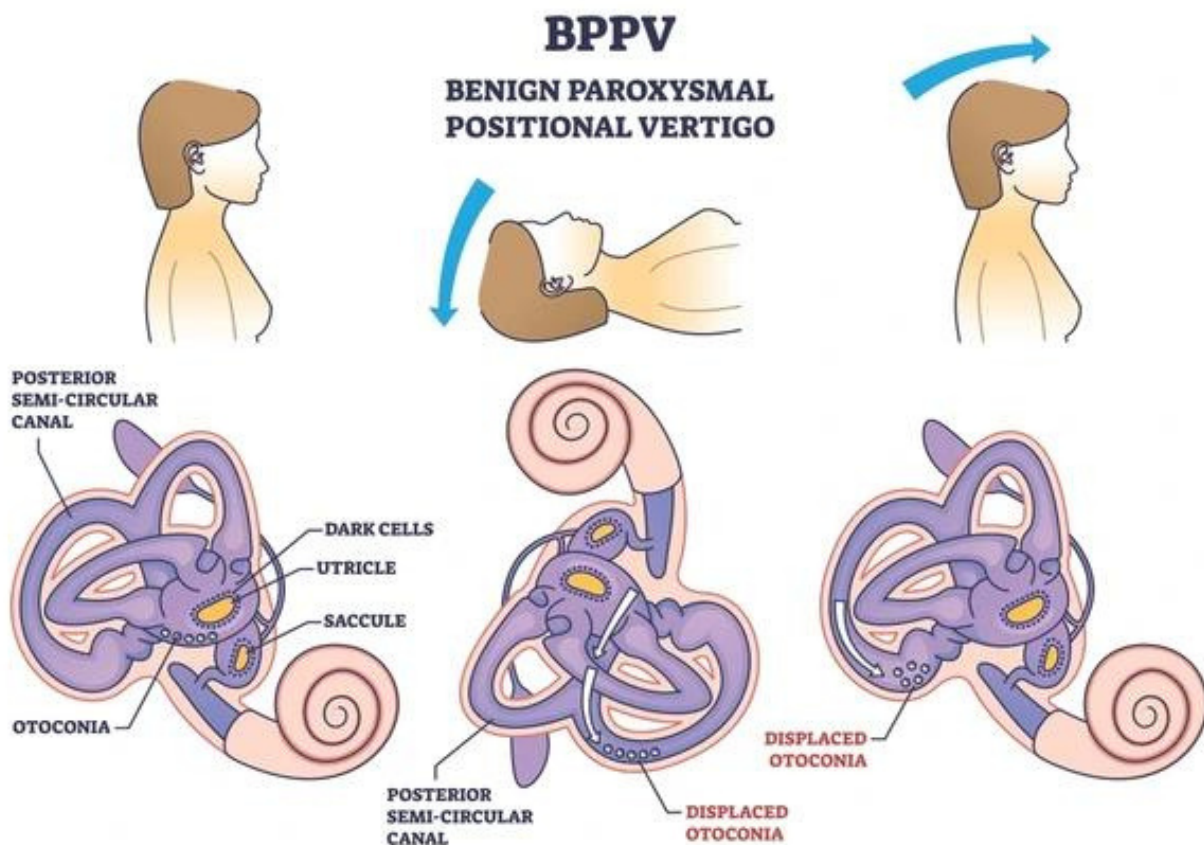
Source: https://www.physiocaresevenhills.com.au/benign_paroxysmal_positional_vertigo_bppv



Source: <https://www.neurolab360.com/blog/vestibular-system-and-balance>

Why does BPPV happen?

- As the inner ear fluid moves, the hair cells move, activating nerves that connect to the brain and tell the eyes what to do.
- The semi-circular canals lie at 90 degrees to one another. The horizontal canal sits parallel to the floor, the posterior at the back and the anterior at the front.
- The utricle responds to gravity and tells your brain whether you are moving up or down, the horizontal canal tells whether you are turning right, or left, or backwards (posterior semi-circular canal) or forwards (anterior semi-circular canal). This gravity receptor area houses tiny crystals of calcium carbonate (otoconia) on a jellylike membrane.



Source: <https://www.nolanhillphysiotherapy.ca/blog/bppv-treatments/physiotherapy-interventions-for-bppv-in-older/>

What causes BPPV?

BPPV happens when some of these calcium crystals inside the ear become loose, float freely in the inner ear fluid into either of the semi-circular canals.

When this happens, moving your head in certain positions will cause these crystals to shift and travel within the fluid of the semi-circular canal. When crystals fall into a canal, normal interaction between the fluid and hair cells is disrupted. This will irritate the balance organ inside your inner ear, and will send false signals to your brain. It is this disruption that makes you feel as though you or your surroundings are spinning.

Primary BPPV

Most cases of BPPV are idiopathic, meaning they happen for no apparent reason. This type of BPPV is also referred to as primary BPPV.

The following can make you prone to having idiopathic BPPV:

- Older age
- Female gender
- Unusual head positions, for example watching videos on phone
- Vitamin D deficiency: may contribute to a seasonal form of BPPV
- Osteopenia and osteoporosis: age-related deterioration of structures in the inner ear or of the crystals may contribute to the crystals becoming dislodged and the development of BPPV.

Secondary BPPV

Secondary BPPV is associated with a range of conditions that cause damage to the inner ear and lead to crystals coming loose.

These include:

- Ear surgery
- Head injuries including concussion
- Jarring activities such as heading a soccer ball
- Ear infections
- Inner ear diseases such as Ménière's disease or vestibular neuritis
- Medications that damage the balance structures in the inner ear (vestibular toxins)
- Lying in bed for long periods of time

What are the symptoms of BPPV?

The hallmark symptom of BPPV is vertigo (spinning sensation) that usually lasts less than 60 seconds. It most often occurs in spells.

Many people with BPPV say that one symptom they have is a short spinning (vertigo) or falling sensation that happens when they sit up to get out of bed, roll over or lie back in bed or, looking up or bend forward to pick up something on the ground. Some may also feel nauseated afterward.

How to diagnose BPPV?

The diagnosis is made based on history, physical examination and sometimes with hearing or balance testing.

Other diagnostic tests may be required: for example, a CT or MRI may be required for cases that don't fit the usual pattern. It is possible to have BPPV in both ears, which may make the diagnosis and treatment more challenging.

As part of physical examination, to confirm the diagnosis, your doctor / therapist may put your head through a series of guided movements (tests) called the Dix-Hallpike maneuver or roll test. This causes the crystals in the canal to move, which activates the receptors in the semi-circular canal, causing your eyeballs to move quickly (nystagmus) and making you feel as though you are spinning.

The direction of your eye movements is used as a clue to diagnose which ear and canal contains the crystals.

As the movement is sometimes very rapid, you might be asked to put on special goggles; these connect to a computer monitor that clearly graphs your eye movements.

What are the treatment options for BPPV?

Effective treatment depends on accurate identification of the affected ear and semi-circular canal. Most people (about 85%) recover from specific manoeuvres, performed by the doctor or physiotherapist, which are designed to move the crystals back into place. Research shows that the repositioning manoeuvre works on the first effort, 80-90% of the time.

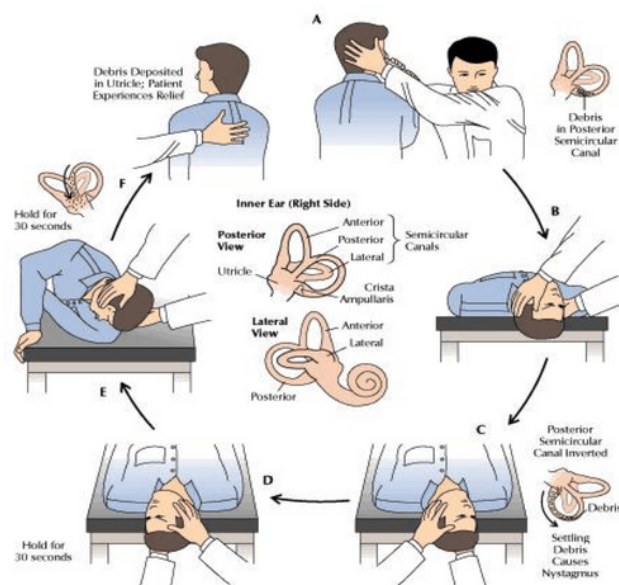
Treatments include:

The Epley manoeuvre / Semont manoeuvre:

This is a simple technique which may be performed by the doctor or therapist in order to reposition the crystals (otoconia) from the semi-circular canal into the vestibule where they settle and cause no symptoms. It is done by a series of head movements.

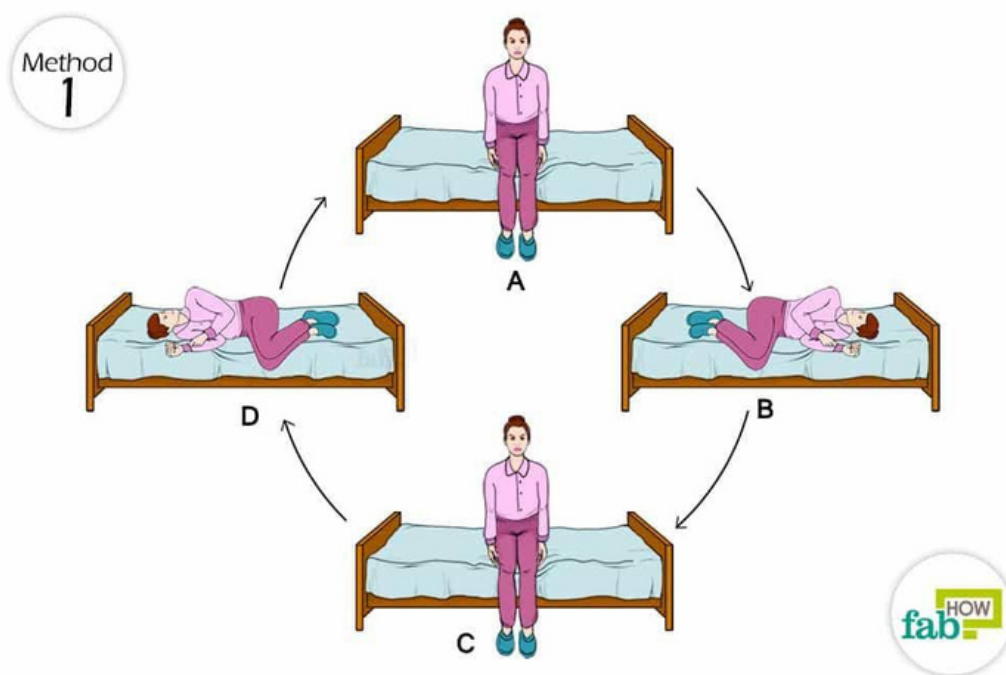
If the technique is not done correctly, some crystals may fall into another canal. Sometimes the examiner sees a different and unexpected eye movement; this indicates that the particles have moved into another canal requiring a different manoeuvre to fix the problem.

If you find these manoeuvres too difficult, you can proceed to Brandt Daroff exercises.



Brandt Daroff exercises:

1. Sit on the edge of bed; turn head slightly to left side (approximately 45% degrees).
2. While maintaining this head position, lie down quickly on the right side, so that the back of the head is resting on the bed. Wait for any dizziness to stop, and then wait another 30 seconds. If there is no dizziness, wait 30 seconds.
3. Sit up straight, again waiting as above.
4. Turn head slightly to right side and repeat sequence in the opposite direction. Continue as above for 3 – 5 repetitions to each side, 3 times per day.



Source: <https://www.anwar-ent.com/wp-content/uploads/brandt-daroff-exercises-.pdf>

Are there any possible side effects or complications with these manoeuvres?

You may have vertigo and nausea during any of the repositioning manoeuvres, but this should settle within few hours. You may also feel slightly off-balance and have a sick feeling, which also will resolve soon.



Medications

As BPPV is essentially a mechanical disorder, taking medication cannot cure it. Some medications, such as antihistamines and sedatives, act as vestibular suppressants and reduce the spinning sensation of vertigo. Using them for a short period of time can help control severe nausea and vomiting.



Surgery

Surgery to block a canal may be considered. Blocking a canal is not a common procedure and is only done after every other treatment has been tried.

Contributed by Physiotherapy, Rehabilitation, Allied Health Services

This brochure is produced for educational purposes and should not be used as a substitute for medical diagnosis or treatment. Please seek the advice of a qualified healthcare provider before starting any treatment or if you have any questions related to your health or medical condition.

Information shared is accurate as of April 2024 and subject to revision without prior notice.



Scan QR code to download e-brochure