

# BENIGN PAROXYSMAL POSITIONING VERTIGO (BPPV)

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The most common cause of vertigo

The typical symptom is brief episodic vertigo upon changing head or body position, Patients may have a residual sensation of disequilibrium between episodes.

# ETIOLOGY

- The common etiology is idiopathic or posttraumatic.
- Within the labyrinth of the inner ear lie collections of calcium crystals known as otoconia or otoliths.
- In people with BPPV, the otoconia are dislodged from their usual position within the utricle, and over time, migrate into one of the semicircular canals (the posterior canal is most commonly affected due to its anatomical position).
- When the head is reoriented relative to gravity, the gravity-dependent movement of the heavier otoconial debris (colloquially "ear rocks") within the affected semicircular canal causes abnormal (pathological) endolymph fluid displacement and a resultant sensation of vertigo. This more common condition is known as *canalithiasis*.



# SYMPTOMS:

- Paroxysmal—appears suddenly, and in episodes of short duration: lasts only seconds to minutes
- Positional—is induced by a change in position, even slight
- Vertigo—a spinning dizziness, which must have a rotational component
- Torsional nystagmus—a diagnostic symptom where the top of the eye rotates toward the affected ear in a beating or twitching fashion, which has a latency and can be fatigued (vertigo should lessen with deliberate repetition of the provoking maneuver): nystagmus should only last for 30 seconds to one minute
- Pre-syncope—(feeling faint) or syncope (fainting) is unusual, but possible
- Visual disturbance—due to associated nystagmus, making it difficult to read or see during an attack
- Nausea—is often associated
- Vomiting—is common, depending on the strength of vertigo itself and the causes

# EXAMINATION

- The condition is diagnosed by the person's history, and by performing the Dix–Hallpike test or the roll test, or both
- The Dix–Hallpike test is a common test performed by examiners to determine whether the posterior semicircular canal is involved.
- The head is rotated 45 degrees away from the side being tested, and the eyes are examined for nystagmus. A positive test is indicated by the patient report of a reproduction of vertigo and clinician observation of nystagmus.





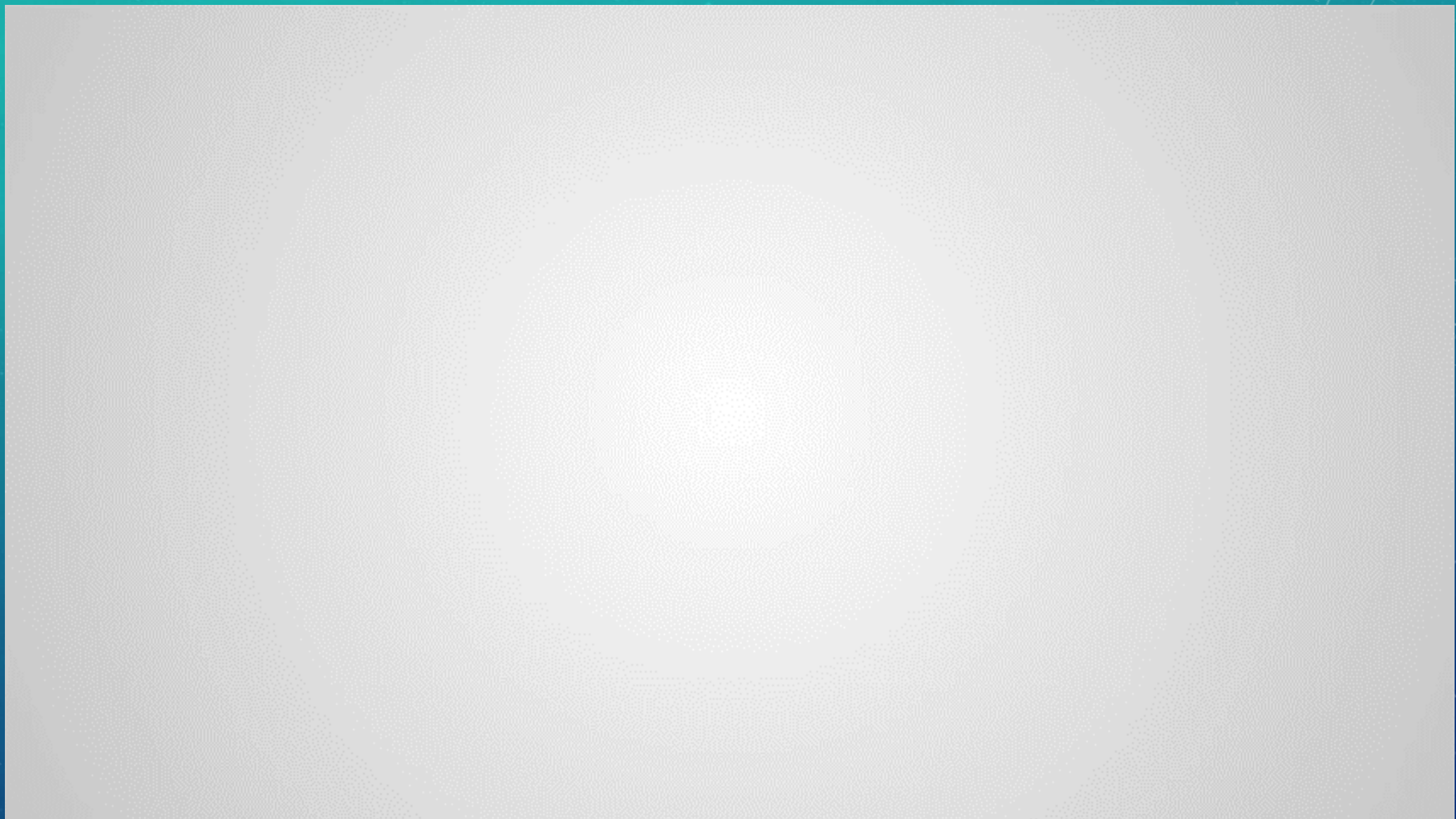
- The roll test can determine whether the horizontal semicircular canal is involved.
- The roll test requires the person to be in a supine position with their head in 30° of cervical flexion. Then the examiner quickly rotates the head 90° to the left side, and checks for vertigo and nystagmus. This is followed by gently bringing the head back to the starting position.

# TREATMENT

- Medications are not effective in the treatment of BPPV.
- Epley maneuver , **Semont maneuver**



- The patient begins in an upright sitting posture, with the legs fully extended and the head rotated 45 degrees toward the side in the same direction that gives a positive Dix–Hallpike test.
- Then the patient is quickly lowered into a supine position (on the back), with the head held approximately in a 30-degree neck extension (Dix-Hallpike position), with the head remaining rotated to the side.
- The clinician observes the patient's eyes for “primary stage” nystagmus.
- The patient remains in this position for approximately 1–2 minutes.
- Then the patient's head is rotated 90 degrees in the opposite direction, so that the opposite ear faces the floor, while maintaining 30 degrees of neck extension.
- The patient remains in this position for approximately 1–2 minutes.
- Keeping the head and neck in a fixed position relative to the body, the patient rolls onto the shoulder, rotating the head another 90 degrees in the direction being faced. Now the patient is looking downward at a 45-degree angle.
- The eyes should be observed immediately by the clinician for “secondary stage” nystagmus (this secondary stage nystagmus should be in the same direction as the primary stage nystagmus).
- The patient remains in this position for approximately 1–2 minutes.
- Finally, the patient is slowly brought up to an upright sitting posture, while maintaining the 45-degree rotation of the head.
- The patient holds a sitting position for up to 30 seconds.
- These steps may be repeated twice, for a total of three





## Semont maneuver

- The Semont maneuver has a cure rate of 90.3%. It is performed as follows:
- The person is seated on a treatment table with their legs hanging off the side of the table. The therapist then turns the person's head 45 degrees toward the unaffected side.
- The therapist then quickly tilts the person so they are lying on the affected side. The head position is maintained, so their head is turned up 45 degrees. This position is maintained for 3 minutes. The purpose is to allow the debris to move to the apex of the semicircular duct.
- The person is then quickly moved so they are lying on the unaffected side with their head in the same position (now facing downward 45 degrees). This position is also held for 3 minutes. The purpose of this position is to allow the debris to move toward the exit of the semicircular duct.
- Finally, the person is slowly brought back to an upright seated position. The debris should then fall into the utricle of the canal and the symptoms of vertigo should decrease or end completely.





**University of Michigan  
Health System**



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