# Benign Paroxysmal Positional Vertigo (BPPV)

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## Fact Sheet

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## What is BPPV?

Benign Paroxysmal Positional Vertigo (BPPV) is characterized by episodic vertigo provoked by changes in head position in relationship to gravity. Patients with BPPV commonly seek medical treatment due to recurrent vertigo or dizziness usually caused by lying down or rolling over in the supine position. Symptoms may also occur by looking up, bending over, or having the head hanging during a dental or hair salon visit. BPPV is the most common vestibular disorder, accounting for one-third of vestibular diagnoses, and has an estimated lifetime cumulative prevalence of 10%.[1]

BPPV is caused by otoconia that detach from the utricular macula and enter one or more of the semicircular canals. The particles alter the fluid dynamics of the canals, making them sensitive to gravity and creating attacks of vertigo with changes in head position relative to gravity. Once in the canal, the debris can remain free-floating (canalithiasis variant) or attach to the cupula (cupulolithiasis variant). BPPV may occur following head trauma, vestibular neuronitis, Meniere's disease, migraine, or ischemia in the anterior vestibular artery distribution, but 50% to 70% of cases are idiopathic.[2]

While BPPV is a benign diagnosis, it can cause significant impairments in a patient's quality of life and interrupt participation in work and daily activities.[3] BPPV can also contribute to an increased risk for falls in older patients,[4] which increases the likelihood of secondary complications such as fractures and head trauma.

## How is BPPV Diagnosed?

While otoconia can enter any canal, canalithiasis of the posterior canal (PC-BPPV) is most frequently affected due to its anatomical alignment.[5] This variant is diagnosed by observing the characteristic torsional up-beating nystagmus toward the downward (affected) ear when in the Dix-Hallpike position. The nystagmus and vertigo appear after a latency of 1-40 seconds with duration less than 1 minute. The patient may report nausea or imbalance persisting after the vertigo resolves. The cupulolithiasis variant of PC-BPPV has the same nystagmus and symptoms, but persists >1 minute.

Horizontal canal BPPV (HC-BPPV) is the second-most common variant of BPPV with occurrence estimated between 5-30% of cases.[6] The supine Roll Test is used to diagnose HC-BPPV with horizontal nystagmus provoked. In the horizontal canal, nystagmus will be present on both the right and left Roll Tests and will either be geotropic on both sides (beating towards the earth) or apogeotropic on both sides (beating away from the earth).[6]

Anterior canal (AC) BPPV is uncommon, occurring in 1-3% of cases, and elicits down-beating torsional nystagmus.[7] Although rare, it is essential to differentiate from other potential causes of dizziness. Down beating torsional nystagmus in the Dix-Hallpike test may indicate a variation of posterior canal BPPV that is caused by the otoconia being localized in a different section of the posterior canal than typical or by anatomical variants of the semicircular canal.[8] Pure down beating positional nystagmus is related to brainstem or cerebellar lesions so much be ruled out.[7]

The Barany Society has published a consensus document with specific diagnostic criteria for each variant of BPPV.[5] Multiple canal involvement including bilateral BPPV is also possible and requires a systematic approach to examination. Diagnosis and interpretation of some ambiguous BPPV features exist and additional variants are being proposed to explain these uncommon findings.[9]

Lastly, research shows that use of infrared goggles during vestibular examination is essential to accurately identify abnormal eye movement so proper treatment can be administered. [10, 11]

## How Is BPPV Treated?

Treatment of BPPV is directed at moving the otoconia out of the canal and back to the utricle where it is thought the particles are reabsorbed.[12] Successful treatment of BPPV depends on an accurate diagnosis based on specific patterns of nystagmus. For the canalithiasis variant of PC-BPPV, the canalith repositioning procedure (CRP) developed by Epley is an appropriate intervention.[13] The correct technique for this maneuver is described and shown on multiple websites.[14,15] A recent systematic review of the effectiveness of posterior canal BPPV treatment reported success rates for CRP up to 94%.[16] Multiple alternative treatments are available for PC-BPPV and the other canal variants. Some of the more commonly used techniques are found in the CPG published by AAOHNS but others may require additional education by clinicians to learn technique and appropriate use.[7]

If a patient is not responding to repositioning maneuvers after 5 visits or if the positional nystagmus pattern is atypical for BPPV, such as pure down beating nystagmus, then a cause other than BPPV should be considered and additional testing such as brain imaging might be warranted.[7]

## Physical Therapy for Patients with BPPV

Physical therapists with advanced training in vestibular rehabilitation have expertise in diagnosing BPPV, selecting the appropriate maneuver for each patient, and performing the intervention. Patients with BPPV are educated about their diagnosis, provided intervention, and educated how to perform additional self-treatment if appropriate. Secondary problems related to BPPV, such as persistent dizziness or postural instability, can be expertly treated by vestibular physical therapists as part of a comprehensive care plan. In addition, a recurrence of BPPV occurs in ~15% of patients.[17] A relationship with a PT provider can facilitate rapid treatment and quickly improve quality of life for those patients.

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