

BENIGN PAROXYSMAL POSITIONAL VERTIGO

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In Benign Paroxysmal Positional Vertigo (BPPV) dizziness is generally thought to be due to debris which has collected within a part of the inner ear. This debris can be thought of as "ear rocks", although the formal name is "otoconia". Ear rocks are small crystals of calcium carbonate derived from a structure in the ear called the "utricle" (figure1). While the saccule also contains otoconia, they are not able to migrate into the canal system. The utricle may have been damaged by head injury, infection, or other disorder of the inner ear, or may have degenerated because of advanced age.).

BPPV is a common cause of dizziness. About 20% of all dizziness is due to BPPV. While BPPV can occur in children (Uneri and Turkdogan, 2003), the older you are, the more likely it is that your dizziness is due to BPPV. About 50% of all dizziness in older people is due to BPPV. In a recent study, 9% of a group of urban dwelling elders were found to have undiagnosed BPPV (Oghalai et al., 2000).

The symptoms of BPPV include dizziness or vertigo, lightheadedness, imbalance, and nausea. Activities which bring on symptoms will vary among persons, but symptoms are almost always precipitated by a change of position of the head with respect to gravity. Getting out of bed and rolling over in bed are common "problem" motions. Because people with BPPV often feel dizzy and unsteady when they tip their heads back to look up, sometimes BPPV is called "top shelf vertigo." Women with BPPV may find that the use of shampoo bowls in beauty parlors brings on symptoms. A Yoga posture called the "down dog", or Pilates is sometimes the trigger. An intermittent pattern is common. BPPV may be present for a few weeks, then stop, and then come back again.

WHAT CAUSES BPPV?

The most common cause of BPPV in people under age 50 is [head injury](#) . There is also an association with migraine (Ishiyama et al, 2000). In older people, the most common cause is degeneration of the vestibular system of the inner ear. BPPV becomes much more common with advancing age (Froeling et al, 1991). In half of all cases, BPPV is called "idiopathic," which means it occurs for no known reason. Viruses affecting the ear such as those causing vestibular neuritis, minor strokes such as those involving anterior inferior cerebellar artery (AICA) syndrome", and Meniere's disease are significant but unusual causes. Occasionally BPPV follows surgery, where the cause is felt to be a combination of a prolonged period of supine positioning, or ear trauma when the surgery is to the inner ear (Atacan et al 2001). BPPV is also common in persons who have been treated with ototoxic medications such as gentamicin (Black et al, 2004).

HOW IS THE DIAGNOSIS OF BPPV MADE?

A physician can make the diagnosis based on your history, findings on physical examination, and the results of vestibular and auditory tests. Often, the diagnosis can be made with history and physical examination alone. The figure to the right illustrates the [Dix-Hallpike test](#). In this test, a person is brought from sitting to a supine position, with the head turned 45 degrees to one side and extended about 20 degrees backward. A positive Dix-Hallpike test consists of a burst of nystagmus (jumping of the eyes). The eyes jump upward as well as twist so that the top part of the eye jumps toward the down side. The test can be made more sensitive by having the patient wear [Frenzel goggles](#) or a video goggle. Most doctors that specialize in seeing dizzy patients have these in their office.

With respect to history, the key observation is that dizziness is triggered by lying down, or on rolling over in bed. Most other conditions that have positional dizziness get worse on standing rather than lying down (e.g. [orthostatic hypotension](#)). There are some rare conditions that have symptoms that resemble BPPV.

HOW IS BPPV TREATED?

- [Wait it out](#)
- [Office Treatment](#)
- [Home Treatment](#)
- [Surgical Treatment](#)

BPPV has often been described as "self-limiting" because symptoms often subside or disappear within 2 months of onset (Imai et al, 2005). BPPV is not intrinsically life-threatening. One can certainly opt to just wait it out.

No active treatment (wait/see):

If you decide to wait it out, certain modifications in your daily activities may be necessary to cope with your dizziness. Use two or more pillows at night. Avoid sleeping on the "bad" side. In the morning, get up slowly and sit on the edge of the bed for a minute. Avoid bending down to pick up things, and extending the head, such as to get something out of a cabinet. Be careful when at the dentist's office, the beauty parlor when lying back having ones hair washed, when participating in sports activities and when you are lying flat on your back.

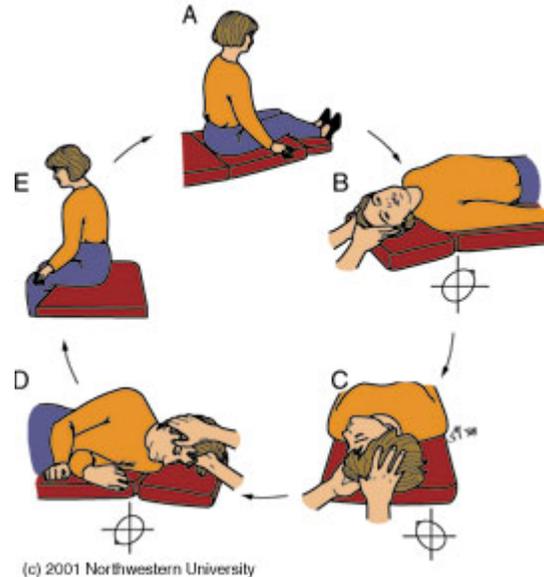
Symptoms tend to wax and wane. Motion sickness medications are sometimes helpful in controlling the nausea associated with BPPV but are otherwise rarely beneficial.

As BPPV can last for much longer than 2 months, in our opinion, it is better to treat it actively and be done with it rather than taking the wait/see approach.

OFFICE TREATMENT OF BPPV: The Epley Maneuver

The treatments of BPPV are usually performed in the doctor's office. The treatments are very effective, with roughly an 80% cure rate, according to a study by Herdman and others (1993).

The maneuver, named after its inventor, is intended to move debris or "ear rocks" out of the sensitive part of the ear (posterior canal) to a less sensitive location. Each maneuver takes about 15 minutes to complete. The **Epley maneuver** is also called the particle repositioning or canalith repositioning procedure. It was invented by [Dr. John Epley](#), and is illustrated to the right. It involves sequential movement of the head into four positions, staying in each position for roughly 30 seconds. The recurrence rate for BPPV after these maneuvers is about 30 percent at one year, and in some instances a second treatment may be necessary.



After these maneuvers, you should be prepared to follow the instructions below, which are aimed at reducing the chance that debris might fall back into the sensitive back part of the ear.

INSTRUCTIONS FOR PATIENTS AFTER OFFICE TREATMENTS (Epley maneuvers)

1. *Wait for 10 minutes after the maneuver is performed before going home.* This is to avoid "quick spins", or brief bursts of vertigo as debris repositions itself immediately after the maneuver..

2. *Do not lay flat for the first 24 hours.* This means sleep with your head halfway between being flat and upright (a 45 degree angle). This is most easily done by using a recliner chair (see figure) or by using pillows arranged on a couch. During the day, try to keep your head vertical. You must not go to the hairdresser or dentist. No exercise which requires head movement. When men shave ^{© Northwestern University} under their chins, they should bend their bodies forward in order to keep their head vertical. If eyedrops are required, try to put them in without tilting the head back. Shampoo only under the shower. Some authors suggest that no special sleeping positions are necessary (Cohen, 2004; Massoud and Ireland, 1996).



We, as do others, think that there is some value to the special positions. (Cakir, 2006)

3. For at least 5 days and nights, *avoid provoking head positions* that might bring BPPV on again.

- Use two pillows when you sleep.
- Avoid sleeping on the "bad" side. L R
- Don't turn your head far up or far down.

Be careful to avoid head-extended position, in which you are lying on your back, especially with your head turned towards the affected side. This means be cautious at the beauty parlor, dentist's office, and while undergoing minor surgery. Try to stay as upright as possible. Exercises for low-back pain should be stopped for a week. No "sit-ups" should be done for at least one week and no "crawl" swimming. (Breast stroke is OK.) Also avoid far head-forward positions such as might occur in certain exercises (i.e. touching the toes).

4. *At one week after treatment, put yourself in the position that usually makes you dizzy.* Position yourself cautiously and under conditions in which you can't fall or hurt yourself. Let your doctor know how you did.

WHAT IS THE PROOF THAT THE EPLEY/SEMONT MANEUVERS WORK ?

More than 394 patients have been reported in controlled studies. The median response in treated patients was 81%, compared to 37.% in placebo or untreated subjects.

WHAT IF THE MANEUVERS DON'T WORK?

The office maneuvers are effective in about 80% of patients with BPPV. If you are among the other 20 percent, your doctor may wish you to proceed with the home Epley exercises, as described below. If a maneuver works but symptoms recur or the response is only partial (about 40% of the time according to Smouha, 1997), another trial of the maneuver might be advised. When all maneuvers have been tried, the diagnosis is clear, and symptoms are still intolerable, [surgical management \(posterior canal plugging\)](#) may be offered.

BPPV often recurs. About 1/3 of patients have a recurrence in the first year after treatment, and by five years, about half of all patients have a recurrence (Hain et al, 2000; Nunez et al; 2000; Sakaida et al, 2003). If BPPV recurs, in our practice we usually retreat with one of the maneuvers above. While daily use of Brandt-Daroff exercises would seem sensible, we did not find it to prevent recurrence (Helminski et al, 2005).