

Benign paroxysmal positional vertigo following whiplash injury: a myth or a reality?

American Journal of Otolaryngology
September 9, 2010 [epub]

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FROM ABSTRACT

The aim of the study was to evaluate the true incidence, diagnosis, and treatment of benign paroxysmal positional vertigo (BPPV) arising after whiplash injury and to distinguish this type of posttraumatic vertigo from other types of dizziness complained after trauma.

Eighteen whiplash patients who had BPPV were evaluated. In 16 cases [89%], the posterior semicircular canal was involved; the lateral semicircular canal was involved in 2 cases [11%].

BPPV was the cause of vertigo in 34% of total whiplash patients.

The Dizziness Handicap Inventory score improved in all patients treated with canalith repositioning maneuvers.

The diagnosis of posttraumatic BPPV is not different from the idiopathic form, but the treatment may require more maneuvers to achieve satisfactory results.

KEY POINTS FROM AUTHORS:

- 1) Equilibrium is the result of a perfect integration of input from eyesight, cervical spine proprioceptive receptors, and labyrinths.
- 2) "Balance problems affect 5% to 50% of patients of whiplash injury."
- 3) 15% to 20% of whiplash-injured patients develop late whiplash syndrome with chronic complaints including headache, vertigo, instability, nausea, and tinnitus.
- 4) Cervical trauma may increase the discharge of neck muscles' proprioceptors, interfering with normal afferent input into the vestibular system, resulting in cervicogenic vertigo. **[These patients will not have a positive Dix-Hallpike test and may experience vertigo without moving the head].**
- 5) Whiplash trauma causes labyrinthine vertigo in 25% of subjects.
- 6) Whiplash trauma causes auditory disturbances in 17% of subjects.

- 7) "The incidence of dizziness with even mild head injury ranges from 15% to 78%."
- 8) Benign paroxysmal positional vertigo (BPPV) is the most frequent cause of peripheral vertigo, accounting for 24% of all cases.
- 9) Most cases of BPPV are idiopathic; however trauma is a known cause.
- 10) Most BPPV involves the posterior semicircular canal.
- 11) Classic BPPV is "set off" by moving the head, causing dizziness, rotating vertigo with nausea and vomiting.
- 12) The classic clinical vestibular tests used for BPPV are the Dix-Hallpike and McClure-Pagnini tests (nystagmus observed in a supine position while turning the head to the left and right).
- 13) The standard canalith-repositioning maneuver for posterior semicircular canal BPPV is either the Epley maneuver or the Semont maneuver.
- 14) The standard canalith-repositioning maneuver for lateral semicircular canal BPPV is the Gufoni maneuver.
- 15) "Comparing these results with the treatment of idiopathic BPPV, we noted that the posttraumatic variant requires more maneuvers to reach curative repositioning of otoliths."

	Idiopathic BPPV	Post-traumatic Whiplash BPPV
Asymptomatic in 1 maneuver	81%	56%
Asymptomatic in 2 maneuvers	17%	33%
Asymptomatic in 3 maneuvers	2%	11%

- 16) Significant injuries can occur following low-speed motor vehicle collision.
- 17) "Simulated accidents have shown that a 5-mph rear-end car crash can result in a positive acceleration of 8.2 G of the head."
- 18) Typical acute symptoms after whiplash injury includes neck pain, headache, paraesthesia of upper cervical dermatomes, dizziness or imbalance, and tinnitus.
- 19) "Pathophysiologically, there is central nervous system weakness following a whiplash injury."

- 20) Whiplash injury can injure the inner ear through a number of mechanisms, including:
- A)) Transient ischemia by vertebral artery compression
 - B)) Hemorrhage into labyrinth
 - C)) Direct labyrinthine concussion
- 21) Whiplash injury is a direct cause of BPPV, especially when head trauma is involved. Following the trauma, the otoliths are detached and displaced within the labyrinth.
- 22) Classically, BPPV patients experience severe vertigo when rolling in one particular direction in bed. When dizziness occurs at times other than in bed, cervicogenic vertigo must be considered after a whiplash trauma.
- 23) Posttraumatic BPPV accounts for 15% to 20% of all cases.
- 24) The diagnosis of BPPV is by the Dix-Hallpike positional tests.
- 25) BPPV is easily treated with simple canalith repositioning maneuvers (CRM).
- 26) About 80% of patients with posterior canal *idiopathic* BPPV become free of symptoms and signs following a single canalith-repositioning maneuver.
- 27) Whiplash injury that causes a disorder of neck proprioceptors can cause static labyrinthine stimulation and vertigo that manifests without changing head position.
- 28) Dizziness can be the main complaint following a whiplash injury.
- 29) "Posttraumatic BPPV is not different from the idiopathic form, but the treatment may require more canalith repositioning maneuvers to achieve satisfactory results."