



RAPID FUNCTIONAL RECOVERY FOLLOWING MULTIMODAL VESTIBULAR PHYSIOTHERAPY IN A PATIENT WITH CHRONIC POSITIONALLY PROVOKED DIZZINESS WITHOUT OBSERVABLE POSITIONAL NYSTAGMUS: A CASE REPORT

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Abstract

Background: Benign paroxysmal positional vertigo (BPPV) is a common peripheral vestibular disorder characterized by positional vertigo or dizziness with characteristic positional nystagmus. Some patients, however, report reproduction of their characteristic symptoms during positional testing without observable nystagmus, creating diagnostic uncertainty and requiring careful clinical reasoning.

Case Presentation: A 37-year-old male information technology professional presented with a 2-year history of recurrent reeling sensations provoked by head movement and positional change, most pronounced during left-sided head movements and while checking blind spots when driving. Bilateral Dix–Hallpike testing reproduced his characteristic dizziness, more prominently on the left, without observable positional nystagmus; the supine roll test was negative. The presentation was interpreted as chronic positionally provoked vestibular dizziness clinically compatible with a subjective BPPV-like pattern, with BPPV retained as a working rather than confirmed diagnosis.

Intervention

The patient completed a five-day multimodal vestibular physiotherapy program comprising patient education, clinically directed canalith repositioning, Brandt–Daroff habituation exercises, VOR×1 gaze stabilization, progressive balance training, head-movement retraining, walking with head movements, functional movement retraining, and a structured home exercise program.

Outcome: Progressive improvement was observed throughout treatment. By Day 5 the patient reported resolution of dizziness during previously provocative activities, including looking downward, bilateral head turning, and checking blind spots while driving, and resumed driving and occupational activities without the previously experienced reeling sensation. The Dizziness Handicap Inventory (DHI) score improved from 8/100 at baseline to 0/100 on Day 5, and repeat clinical assessment did not reproduce his previously reported symptoms.

Conclusion: This case illustrates rapid short-term functional improvement following multimodal vestibular physiotherapy in a patient with chronic positionally provoked dizziness and symptom reproduction on Dix–Hallpike testing without observable nystagmus. It underscores the value of comprehensive vestibular and functional assessment and cautious diagnostic interpretation when positional symptoms occur in the absence of objective nystagmus. As a single case involving

multiple simultaneous interventions and no control condition, treatment efficacy and the independent contribution of individual components cannot be established.

Keywords: positional dizziness; subjective BPPV; vestibular rehabilitation; vestibular physiotherapy; canalith repositioning; Dizziness Handicap Inventory; chronic dizziness; case report.

Introduction

Benign paroxysmal positional vertigo (BPPV) is among the most common peripheral vestibular disorders, generally arising from displacement of otoconia from the utricle into a semicircular canal. Movement of these particles during head-position change produces abnormal vestibular stimulation, resulting in brief episodes of vertigo, dizziness, or disequilibrium.^{1, 3} Common provoking activities include turning in bed, lying down, sitting up, looking upward, bending forward, and rapidly changing head position, and diagnosis is usually supported by a compatible history together with characteristic findings on positional testing. BPPV is often successfully treated with canalith repositioning maneuvers, yet some patients experience persistent or recurrent symptoms that can affect driving confidence, occupational function, balance, and quality of life.^{4, 7} Vestibular rehabilitation is commonly used as an adjunct to repositioning and may include gaze stabilization, habituation, balance training, progressive head movement, and functional retraining.^{8, 9} A particularly challenging presentation arises when a patient reports reproduction of characteristic positional symptoms during diagnostic maneuvers without observable positional nystagmus. This pattern has been described as subjective BPPV, or BPPV without observable nystagmus, but symptom reproduction in the absence of objective nystagmus does not by itself establish a definitive BPPV diagnosis and warrants cautious interpretation.² This report describes a 37-year-old male information technology professional with a 2-year history of recurrent, positionally provoked reeling sensations that were particularly disruptive during driving and head movement, and who showed rapid improvement following a five-day multimodal vestibular physiotherapy program despite the chronicity of his symptoms. The case is clinically noteworthy because he experienced meaningful functional limitation despite a low baseline DHI score and did not demonstrate observable positional nystagmus on clinical assessment. The purpose of this report is to describe the clinical presentation, diagnostic reasoning, multimodal physiotherapy intervention, and short-term functional outcome of a patient with chronic positionally provoked dizziness without observable positional nystagmus, and to highlight the diagnostic caution such presentations require.

Background

BPPV results from abnormal displacement of otoconia into the semicircular canals; movement of these particles with head-position change produces transient vertigo, dizziness, or disequilibrium. The posterior canal is most frequently involved, although horizontal and anterior canal variants also occur.³ Diagnosis is primarily clinical, supported by a compatible history and characteristic positional findings: the Dix–Hallpike maneuver is used when posterior canal BPPV is suspected, and the supine roll test when horizontal canal involvement is suspected.¹ When the clinical history is compatible with BPPV but the expected nystagmus is not observed, alternative diagnoses should be considered and the patient reassessed. Although positional nystagmus is a key objective diagnostic finding, some patients report typical positional symptoms without observable nystagmus a presentation described as subjective BPPV.² This absence of observable nystagmus introduces diagnostic uncertainty, and such patients should not automatically be classified as having definitive BPPV without consideration of other causes of positional dizziness, including vestibular migraine, persistent postural-perceptual dizziness (PPPD), and vestibular hypofunction.^{13, 14} The clinical presentation of positional dizziness varies considerably: while classical BPPV typically produces brief rotational vertigo, some individuals describe non-spinning dizziness, reeling, or a sense of instability during head movement symptoms that are especially relevant during functional activities

such as bending forward, turning the head, walking while looking around, or checking blind spots while driving.

Canalith repositioning maneuvers are widely used for confirmed BPPV to move displaced otoconia out of the affected canal toward the utricle,⁴ while vestibular rehabilitation more broadly supports gaze stability, habituation, balance, movement tolerance, and functional recovery.⁸ The Dizziness Handicap Inventory is a commonly used patient-reported outcome measure of the physical, functional, and emotional impact of dizziness,¹⁰ but a low baseline score may not fully capture activity-specific functional limitation; patient-specific outcomes such as driving confidence, blind-spot checking, and tolerance of rapid head movement can therefore add clinically meaningful information.

Case Presentation

Patient Information

A 37-year-old male information technology professional presented with a 2-year history of recurrent reeling sensations associated with head movement and positional change. Symptoms were most consistently aggravated by looking downward, turning the head to either side (more pronounced on the left), looking over the shoulder or checking blind spots while driving, and rapid or repeated positional changes. He denied neck pain, hearing loss, tinnitus, aural fullness, headache, diplopia, limb weakness or numbness, speech disturbance, loss of consciousness, recent head or neck trauma, and other focal neurological symptoms. He continued his occupational activities throughout, but his symptoms reduced his confidence with driving and with activities requiring rapid head movement; these functional concerns head movement, driving, and confidence with rapid positional change were his primary complaints.

Clinical Findings

Vestibular History

A detailed vestibular history was obtained covering symptom onset, duration, provoking movements, symptom pattern, functional limitation, driving-related symptoms, occupational impact, and auditory, neurological, and cervical symptoms. The patient characterized his primary symptom as a reeling or disequilibrium sensation rather than prolonged spontaneous rotational vertigo, consistently provoked by head movement and positional change and more pronounced with left-sided head movement.

Cervical Musculoskeletal Assessment

Cervical range of motion was assessed and the patient was screened for possible cervical contributors to dizziness. He reported no neck pain, and no cervical musculoskeletal abnormality sufficient to explain his symptoms was identified.

Neurological Screening

Neurological screening revealed no apparent focal deficit. The patient did not report diplopia, dysarthria, limb weakness, imbalance, or loss of coordination.

Positional Assessment

Bilateral Dix–Hallpike maneuvers and the supine roll test were performed. Both left- and right-sided Dix–Hallpike maneuvers reproduced the patient's characteristic dizziness, with greater provocation reported on the left; no observable positional nystagmus was identified on either side. The supine roll test reproduced neither dizziness nor observable nystagmus. Because characteristic symptoms were reproduced on Dix–Hallpike testing without observable nystagmus, a definitive BPPV diagnosis could not be established on the positional examination alone. The presentation was accordingly interpreted as chronic positionally provoked vestibular dizziness clinically compatible with a subjective BPPV-like pattern, with BPPV retained as the primary working

diagnosis. Functional Assessment. Functional movements relevant to daily life turning the head side to side, looking downward, looking over the shoulder, rapid head movement, walking with head movements, positional transitions, and driving-related tasks including blind-spot checking reproduced the patient's subjective symptoms and were judged clinically relevant given their correspondence to his primary complaints.

Diagnostic Reasoning

Clinical reasoning integrated the history, symptom-provocation pattern, cervical and neurological screening, positional testing, and functional evaluation. The 2-year history of movement- and position-provoked symptoms, together with reproduction of familiar dizziness on bilateral Dix–Hallpike testing (greater on the left) but absence of observable nystagmus, and a negative supine roll test, together supported a clinically relevant positional component without providing sufficient certainty for a definitive BPPV diagnosis.

The presentation was therefore classified as:

Chronic positionally provoked vestibular dizziness clinically compatible with a subjective BPPV-like presentation, with BPPV considered a working diagnosis rather than a confirmed diagnosis. The absence of neck pain and cervical findings made a primary cervical musculoskeletal cause less likely, and the absence of auditory or focal neurological symptoms reduced clinical suspicion of otologic or acute neurological causes during physiotherapy assessment. The following alternative diagnoses, however, could not be definitively excluded: vestibular migraine, persistent postural-perceptual dizziness, unilateral or bilateral vestibular hypofunction, cervicogenic dizziness, visual-vestibular mismatch, and other peripheral or central vestibular disorders. The absence of observable nystagmus may also reflect the limitations of routine clinical observation, as objective eye-movement recording was not performed. The patient was informed of this diagnostic uncertainty and advised to seek further medical or specialist vestibular assessment if symptoms persisted, recurred, or changed in character.

Timeline Time point	Clinical event
~2 years before presentation	Onset of recurrent reeling sensations provoked by head movement
Initial assessment	Vestibular history; cervical examination; neurological screening; positional and functional assessment
Day 1	Patient education; clinically directed vestibular treatment; home exercise program initiated
Day 2	Reassessment; VOR×1 gaze stabilization and balance exercises introduced/progressed
Day 3	Dynamic balance and functional head-movement training
Day 4	Driving-related head-movement retraining; functional vestibular progression
Day 5	Repeat assessment: symptoms no longer reproduced; DHI improved from 8/100 to 0/100
Post-treatment	Home vestibular rehabilitation continued; recurrence monitoring advised

Therapeutic Intervention

The patient completed a five-day multimodal vestibular physiotherapy program comprising:

1. Patient education
2. Clinically directed canalith repositioning

3. Brandt–Daroff habituation exercises
4. VOR×1 gaze stabilization
5. Static and dynamic balance training
6. Progressive head-movement exercises
7. Walking with head movements
8. Functional movement retraining
9. Driving-related head-movement practice
10. Home vestibular rehabilitation

Because characteristic symptoms were reproduced on Dix–Hallpike testing, clinically directed canalith repositioning was included; because observable positional nystagmus was absent, treatment was delivered with cautious diagnostic interpretation throughout.

Treatment Dosage and Progression

Table 1. Baseline and progression of the multimodal vestibular physiotherapy intervention

Intervention	Dose	Frequency	Progression
Brandt–Daroff exercises	5 repetitions/session	3×/day	Progressed as tolerated
VOR×1 gaze stabilization	1 min horizontal + 1 min vertical	3×/day	Increased head-movement speed and/or duration as tolerated
Walking with head movements	~10 minutes	Once daily	Slower to faster walking; smaller to larger head movements as tolerated
Balance training	Duration/repetitions per tolerance	Supervised sessions + home practice	Static to dynamic balance; increasing movement complexity
Functional head-movement training	Task-specific repetitions	Daily	Slow, controlled to faster, more complex functional movements
Driving-related head-movement training	Task-specific practice	Supervised sessions, as tolerated	Simulated head turns to functional scanning and blind-spot checking
Patient education	Education/reinforcement each session	Every session	Reinforced per symptoms, response, and home-program adherence

Dosage of walking, balance training, and functional head-movement exercises was individually progressed according to symptom tolerance and functional response; exact repetitions and durations were not consistently recorded for every session.

Day 1

The initial session included patient education on the vestibular system and the treatment approach, clinically directed canalith repositioning, post-treatment reassessment, and initiation of a home exercise program consisting of Brandt–Daroff exercises (5 repetitions, 3 sessions/day), gentle controlled cervical rotation within a comfortable range with gradual exposure to previously provocative movements, and approximately 10 minutes of daily walking progressed as tolerated, performed in a safe environment.

Day 2

The patient was reassessed for subjective dizziness, symptom reproduction with head movement, functional tolerance, and balance. VOR×1 gaze stabilization was introduced: fixating on a stationary target while moving the head horizontally, then vertically, for approximately 1 minute in each plane, three sessions daily. Standing balance exercises were introduced or progressed according to tolerance.

Day 3

Treatment progressed to walking with horizontal and vertical head turns, looking downward and (as tolerated) upward while walking, tandem walking, single-leg balance as appropriate, functional reaching tasks, and controlled positional transitions. The patient demonstrated improved head-movement tolerance compared with initial assessment.

Day 4

Rehabilitation progressed to activities relevant to daily routine: simulated driving-related head movements, environmental scanning, controlled rapid head rotation, dynamic balance training, stair negotiation, and functional tasks involving head movement, all progressed according to symptom tolerance.

Day 5

Final assessment included subjective symptom review, head-movement tolerance, repeat positional testing, functional and driving-related head-movement assessment, and DHI reassessment. The patient reported complete resolution of dizziness with looking downward, bilateral head turning, and blind-spot checking while driving, and reported resuming driving and occupational activities without the previously experienced reeling sensation. Repeat clinical assessment did not reproduce his previously reported symptoms during the activities assessed.

Follow-Up and Outcomes

Dizziness Handicap Inventory

Table 2. Dizziness Handicap Inventory scores

Assessment point	DHI score	Interpretation
Initial assessment	8/100	Minimal perceived handicap
Day 5 (post-treatment)	0/100	No perceived dizziness-related handicap

The DHI score decreased from 8/100 at initial assessment to 0/100 on Day 5. Although the baseline score indicated only minimal perceived handicap, the reduction to 0/100 was consistent with the patient's reported resolution of dizziness-related functional limitation, corresponding with resolved symptoms on looking downward, bilateral head turning, blind-spot checking while driving, rapid positional change, and routine occupational activity.

Patient-Specific Functional Outcomes

Table 3. Patient-specific functional outcomes before and after intervention

Activity	Baseline	Day 5
Looking downward	Dizziness reported	No reported dizziness
Turning head left	Dizziness reported	No reported dizziness
Turning head right	Dizziness reported	No reported dizziness
Checking blind spots while driving	Reeling sensation reported	No reported symptoms

Rapid head movements	Symptoms reported	Improved tolerance
Driving confidence	Reduced	Reported improvement
Occupational activities	Confidence affected by symptoms	Returned without reported dizziness

After five consecutive days of treatment the patient reported no dizziness with left or right head turning or with looking downward, improved tolerance of rapid head movement, the ability to check blind spots while driving without a reeling sensation, return to occupational activity without reported dizziness, improved confidence in daily activity, and no reproduction of symptoms on repeat positional assessment representing complete resolution of the functional difficulties that had previously interfered with driving and head movement.

Follow-Up Plan

The patient was instructed to continue the home vestibular rehabilitation program for an additional week and to return for reassessment if symptoms recurred or new symptoms developed. He was specifically advised to seek further medical or specialist vestibular evaluation for recurrent or worsening dizziness, new hearing loss or tinnitus, persistent spontaneous vertigo, new neurological symptoms, severe headache, diplopia, limb weakness, or persistent symptoms despite rehabilitation. Available follow-up was limited to this period; the five-day outcome therefore represents short-term improvement and does not establish long-term resolution or freedom from recurrence.

Patient Perspective

The patient described his symptoms as significantly affecting his confidence with driving and with everyday activities requiring rapid head movement, despite a low formal DHI score at baseline. He reported that the structured, progressive nature of the program beginning with education and gentle exercise and advancing to driving-specific head-movement practice helped him gradually re-engage with previously avoided movements. By the end of the five-day program he reported being able to check blind spots, turn his head, and drive without the reeling sensation that had affected him for two years, and expressed that this functional recovery, more than the numerical DHI change, was what mattered most to him in daily life.

Discussion

This case describes a 37-year-old male information technology professional with a two-year history of positionally provoked dizziness affecting head-movement-dependent activities, particularly driving and blind-spot checking. Bilateral Dix–Hallpike testing reproduced his characteristic dizziness, more prominently on the left, without observable positional nystagmus, while the supine roll test was negative a pattern more consistent with a Dix–Hallpike-elicited positional response than with horizontal-canal involvement.

In the absence of observable nystagmus, a definitive BPPV diagnosis could not be established, and the presentation was instead considered clinically compatible with a subjective BPPV-like pattern, with BPPV retained as the primary working diagnosis. This is consistent with prior descriptions of subjective BPPV, in which symptom reproduction occurs without objective nystagmus.² Alternative causes of positional dizziness vestibular migraine, persistent postural-perceptual dizziness, vestibular hypofunction, cervicogenic dizziness, and other peripheral or central vestibular disorders remained relevant differential considerations and were not definitively excluded.^{13, 14}

Following the five-day multimodal intervention, the patient reported resolution of dizziness during functional head movement and regained the ability to check blind spots while driving without his previous reeling sensation; his DHI score improved from 8/100 to 0/100. This improvement should be interpreted cautiously, since the baseline DHI score was already low and floor effects on standardized questionnaires are a recognized limitation when residual dizziness manifests primarily as activity-specific functional impairment rather than global handicap.¹⁰ The patient-specific

functional outcomes reported here driving confidence, blind-spot checking, and tolerance of rapid head movement may therefore capture clinically meaningful change that a standardized instrument alone would understate.

The observed improvement may reflect the combined effects of positional treatment, vestibular habituation and gaze-stabilization exercises, and progressive functional retraining, consistent with clinical practice guidelines supporting vestibular rehabilitation for peripheral vestibular dysfunction.⁸ However, because multiple interventions were delivered concurrently, the independent contribution of any single component cannot be determined, and spontaneous fluctuation or repeated exposure to provocative movement cannot be excluded as contributing factors.^{6, 7} This case therefore highlights the value of combining standardized outcome measures with patient-specific functional outcomes, and of avoiding overdiagnosis of BPPV when positional symptoms occur without objective nystagmus.

Limitations

This is a single-patient case report; findings cannot be generalized to all patients with BPPV or positionally provoked dizziness.

Although characteristic dizziness was reproduced on bilateral Dix–Hallpike testing (more prominently on the left), no observable positional nystagmus was identified, limiting certainty regarding a definitive BPPV diagnosis; comprehensive vestibular laboratory testing (e.g., videonystagmography) was not performed.

The multimodal treatment program combined clinically directed repositioning, habituation exercises, gaze stabilization, balance training, and functional retraining, so the independent contribution of each intervention cannot be determined.

No control or comparison condition was used; improvement may have resulted from treatment, natural symptom fluctuation, spontaneous recovery, repeated exposure to provocative movement, or a combination of these factors.

The follow-up period was limited to five days of treatment, demonstrating short-term improvement only; long-term symptom resolution or freedom from recurrence was not established.

Adherence to the home exercise program was based on patient self-report and was not independently verified.

Although the DHI score improved from 8/100 to 0/100, the baseline score indicated only minimal perceived handicap; this change should be interpreted alongside the patient's functional recovery rather than as the sole indicator of treatment success.

Clinical Implications and Future Research

This case underscores the importance of comprehensive vestibular and functional assessment in patients with chronic positionally provoked dizziness, even when characteristic symptoms occur without observable positional nystagmus. Patient-specific activities such as head movement and blind-spot checking while driving may reveal functional limitations not fully captured by standardized questionnaires alone.

Further research should examine larger patient cohorts, objective vestibular assessment (e.g., videonystagmography), long-term recurrence, driving-related function, and the comparative effectiveness of individual vestibular rehabilitation components. Because multiple interventions were delivered concurrently in this case, the independent effect of each cannot be determined; these findings should therefore be regarded as hypothesis-generating, providing a basis for future prospective, controlled research.

Conclusion

This case describes rapid short-term functional improvement following a five-day multimodal vestibular physiotherapy intervention in a 37-year-old man with a 2-year history of chronic positionally provoked reeling sensations. His characteristic dizziness was reproduced on bilateral

Dix–Hallpike testing, more prominently on the left, without observable positional nystagmus, and the supine roll test was negative. His DHI score improved from 8/100 to 0/100 by Day 5, with reported resolution of dizziness during previously provocative head movements, driving-related activities, and occupational tasks. The case reinforces the importance of comprehensive cervical, neurological, vestibular, and functional assessment in patients with chronic positional dizziness, and highlights that symptom reproduction during positional testing without observable nystagmus should be interpreted cautiously rather than assumed to represent definitive BPPV. Clinically directed vestibular treatment combined with progressive functional rehabilitation was associated with rapid functional improvement in this patient; however, findings from a single case cannot establish treatment efficacy or isolate the contribution of individual interventions. This case is best regarded as a clinically valuable, hypothesis-generating observation supporting future prospective research using objective vestibular testing, standardized intervention protocols, patient-specific functional outcomes, and longer-term follow-up.

Declarations

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying clinical information. The patient was informed that identifying information would not be published.

Conflict of Interest

The authors declare that they have no conflicts of interest related to this case report.

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