

Video Article



Turk Arch Otorhinolaryngol 2026; 64(3): 196-199

DOI: 10.4274/tao.2026.2026-3-24

Reversible Horizontal Semicircular Canalith Jam Mimicking Acute Vestibular Syndrome: Diagnosis and Treatment with Head-Shaking and Gufoni Maneuvers

Ajay Kumar Vats¹, Sudhir Kothari², Pradeep Vundavilli³¹Shantiraj Hospital, Department of Neurology, Rajasthan, India²Poona Hospital and Research Centre, Department of Neurology, Maharashtra, India³Asian Superspeciality ENT Hospital, Department of Otorhinolaryngology, Visakhapatnam, India

Abstract

A 72-year-old man presented with a 3-day history of positional rotational vertigo that progressed to continuous vertigo with one episode of vomiting, mimicking acute vestibular syndrome (AVS). Bedside examination revealed spontaneous right-beating horizontal nystagmus and findings consistent with a peripheral pattern on the head impulse, nystagmus, test of skew (HINTS) examination: a positive head impulse test (HIT), unidirectional nystagmus, and no skew deviation. Head shaking with the head flexed forward by 30° reversed the nystagmus to left-beating, and the HIT became positive on rightward impulses. The head yaw test subsequently elicited apogeotropic horizontal positional nystagmus, which converted to a geotropic pattern after repeated head yaw testing and head shaking. Following the Gufoni maneuver, nystagmus and vertigo resolved within one hour. This case demonstrates reversible right horizontal semicircular canal (HSC) canalith jam, a rare benign paroxysmal positional vertigo (BPPV) variant caused by otoconial obstruction of endolymph flow, producing persistent nystagmus and fluctuating sequential labyrinthine hypofunction. Head-shaking maneuver induced a previously unreported bidirectional switch between sustained excitatory and inhibitory cupular deflections within the same canal. Simple bedside maneuvers enabled rapid diagnosis and cure without imaging or drugs. Clinicians should consider HSC canalith jam in AVS with peripheral HINTS when history suggests BPPV.

Keywords: Canalith jam, benign paroxysmal positional vertigo, semicircular canals, nystagmus, Gufoni maneuver

ORCID IDs of the authors:

A.K.V. 0000-0001-6853-2845

S.K. 0009-0007-6647-6713

P.V. 0009-0002-5152-9513

Cite this article as: Vats AK, Kothari S, Vundavilli P. Reversible horizontal semicircular canalith jam mimicking acute vestibular syndrome: diagnosis and treatment with head-shaking and Gufoni maneuvers. Turk Arch Otorhinolaryngol. 2026; 64(3): 196-199

Corresponding Author:

Ajay Kumar Vats, MD;
vatsneuro@gmail.com

Received Date: 04.04.2026

Accepted Date: 23.06.2026

Epub: 30.09.2026

Publication Date: 30.09.2026

Introduction

Benign paroxysmal positional vertigo (BPPV) is the most common vestibular disorder, with horizontal semicircular canal (HSC) involvement in 46 percent of cases (1). A rare variant is canalith jam (CJ), in which displaced otoconial debris becomes impacted within the canal lumen, obstructing endolymph flow and producing fixed cupular deflection. This results in persistent direction-fixed spontaneous nystagmus that can mimic acute vestibular syndrome (AVS) of either peripheral or central origin, often leading to unnecessary imaging or hospital admission (2).

The head impulse, nystagmus, test of skew (HINTS) battery [head impulse test (HIT), nystagmus, test of skew] is highly sensitive for distinguishing central from peripheral AVS (3). However, in HSC-CJ, findings may falsely suggest a fixed peripheral vestibulopathy despite a purely mechanical reversible etiology. Head-shaking maneuver (HSM) can disperse the jam and convert the pattern into canalolithiasis which then responds to

repositioning maneuvers such as the Gufoni maneuver (4). Recognition of this reversible condition is essential for accurate bedside diagnosis. We report a case of right HSC-CJ diagnosed and treated using dynamic positional testing and maneuvers.

Case Presentation

A 72-year-old man presented in February 2026 with a 3-day history of rotational vertigo that began on rising from bed. Initially positional, it occurred during supine to sitting transitions and during lateral recumbency. Over the preceding day, vertigo became continuous and was associated with one episode of vomiting. Examination showed blood pressure of 130/80 mm Hg without postural drop, normal limb power, and no appendicular or gait ataxia. Oculovestibular examination, as demonstrated in this video case report, revealed spontaneous direction-fixed right-beating horizontal nystagmus. HIT was positive on head thrust to left and test of skew was negative. All three HINTS components suggested peripheral AVS in a patient with a history consistent with BPPV, raising suspicion of CJ.

HSM with 30-degree cervical anteflexion reversed spontaneous nystagmus to left-beating. Repeat HIT then showed a catch-up saccade on rightward head impulses, indicating right-sided labyrinth hypofunction and aligning all HINTS components with right peripheral vestibulopathy. Supine head yaw test (HYT) initially produced right-beating lying-down nystagmus. Yaw to either side elicited persistent apogeotropic horizontal positional nystagmus lasting more than one minute, weaker on right head yaw, suggesting debris in the short anterior ampullary arm of the right HSC. Repeated yawing followed by repeated HSM were carried out. Subsequent HYT showed left-beating lying-down nystagmus with geotropic positional nystagmus stronger on right head yaw, indicating transformation to the long posterior non-ampullary arm HSC canalolithiasis. The Gufoni maneuver was then performed. One hour later, spontaneous and positional nystagmus had been resolved and the patient was asymptomatic. The patient was telephonically followed up for 4 weeks and he remained symptom-free. Written informed consent was obtained.

Discussion

CJ is a rare mechanical form of BPPV in which otoconial debris becomes impacted within a semicircular canal, most often the HSC, producing sustained cupular deflection due to obstruction of endolymph flow (2). The deflection may be ampullopetal, producing excitation of the HSC, or ampullofugal, which is inhibitory, depending on the direction of the trapped endolymphatic force. This results in persistent direction-fixed spontaneous nystagmus and

may simulate AVS (5). The most distinctive feature of this case is the sequential transformation from a fixed excitatory ampullopetal deflection of the right HSC cupula to a fixed inhibitory ampullofugal deflection following a single head-shaking maneuver. Initially, right-beating spontaneous nystagmus with a positive HIT to the left indicated persistent excitatory ampullopetal deflection due to CJ. After the head-shaking maneuver, reversal to left-beating nystagmus and emergence of a positive right HIT indicated conversion to an inhibitory cupular deflection (6). Such a bidirectional switch between sustained excitatory and inhibitory cupular deflections within the same canal during a single episode has not been previously reported. It provides direct clinical evidence of the mechanical basis of CJ. This suggests a dynamic reconfiguration of the obstruction rather than simple resolution. It demonstrates that the same labyrinth can transiently simulate both hyperfunction and hypofunction depending on the direction of cupular bias. HSM likely generated high-velocity endolymphatic currents that fragmented or displaced the impacted debris, temporarily reversing the net force on the cupula before complete release (7). This intermediate state explains the observed reversal of spontaneous nystagmus and changes in HIT findings. Further positional testing clarified the evolution. Initial apogeotropic positional nystagmus indicated debris in the short anterior ampullary arm (8). Repeated HYT resulted in conversion to geotropic nystagmus, reflecting migration into the long posterior non-ampullary arm (9). This progression from jammed obstruction to mobile debris highlights the dynamic nature of HSC-CJ (Figure 1). Resolution after the Gufoni maneuver (Figure 2) confirms the mechanical etiology. The rapid disappearance of symptoms and signs within one hour supports successful repositioning of debris into the utricle.

This case illustrates an important diagnostic pitfall. A peripheral HINTS pattern in a patient with BPPV-like history may lead to misdiagnosis as vestibular neuritis. However, positional onset, direction-fixed nystagmus, and rapid reversibility with mechanical maneuvers favor CJ. The presence of alternating fixed excitatory and inhibitory states further distinguishes this condition from true neurogenic acute unilateral peripheral vestibular loss. Previous reports have described CJ presenting with spontaneous nystagmus and apparent canal hypofunction that resolves after physical therapy and/or repositioning (10). The presented case extends this understanding by demonstrating reversible switching between opposite fixed cupular deflections within a single episode. From a clinical perspective, dynamic bedside testing is essential. HSM can both diagnose and modify the pathological state, converting a misleading fixed pattern into recognizable canalolithiasis. This approach can avoid unnecessary imaging and treatment.

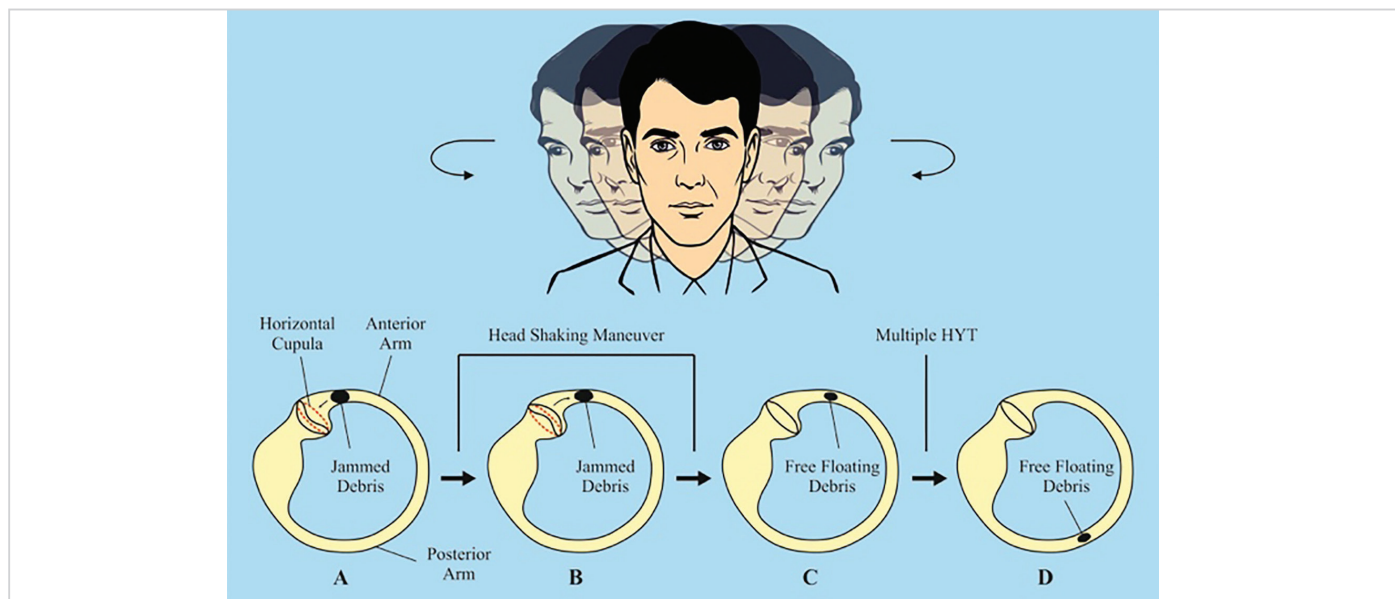


Figure 1. Evolution of right horizontal semicircular canal canalith jam with persistent ampullopetal cupular deflection (A) to persistent ampulofugal deflection (B), followed by canalolithiasis in the short anterior arm (C) and migration of debris to the posterior arm (D), geotropic conversion of the disorder with staged head shaking maneuvers and multiple head yaw tests (HYTs)

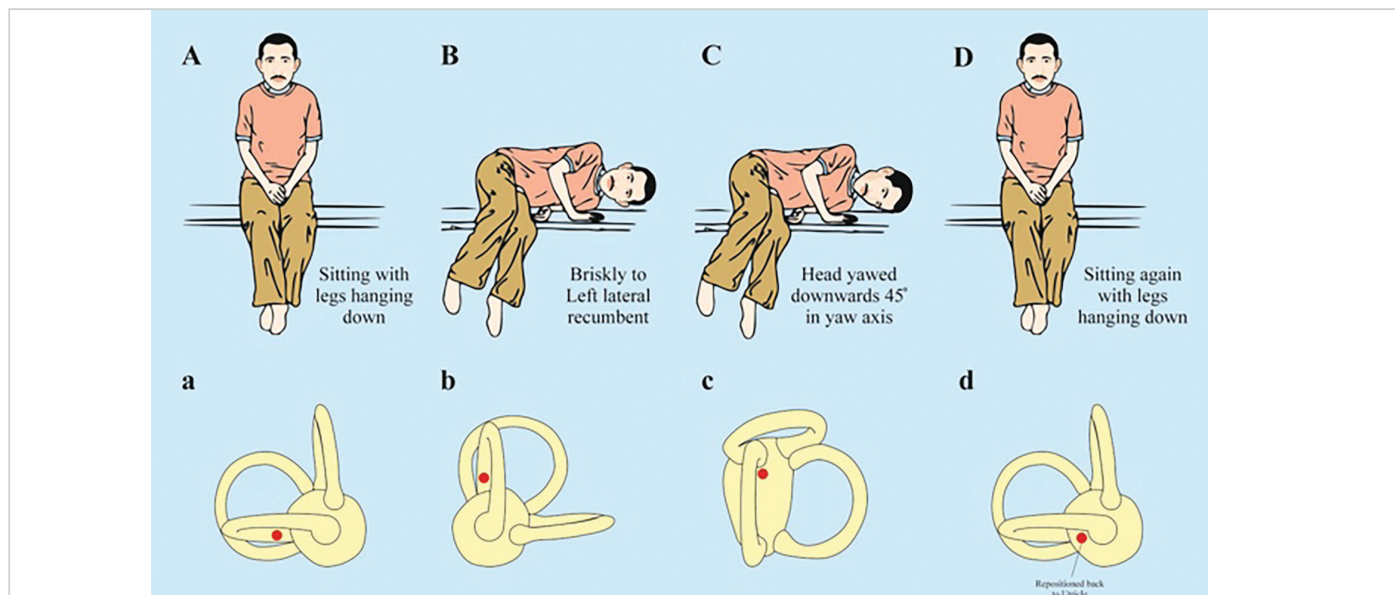


Figure 2. Gufoni maneuver: from short sitting (A), the patient is rapidly moved to the lateral recumbent position on the non-involved side for 1 minute (B). The head is then rotated 45° downward for 2 minutes (C) and returned to upright (D). Lower panel (a-d) shows otoconial debris moving from the long posterior non-ampullary arm of the right horizontal semicircular canal into the utricle

Study Limitations

This report describes a single case of reversible HSC-CJ. As with any single case report, the findings may not be generalizable to all patients with similar presentations. The diagnosis and treatment were based on clinical bedside examination and maneuvers; no imaging or laboratory tests were performed to exclude other causes. Long-term follow-up beyond four weeks was not conducted. Video recording

and telephone follow-up provided supportive data, but objective vestibular testing such as video HIT or caloric testing was not available.

Conclusion

In conclusion, this case demonstrates an unusual presentation of HSC-CJ characterized by sequential fixed excitatory and inhibitory cupular deflections induced by HSM. Recognition

of such patterns expands the spectrum of BPPV variants and emphasizes the importance of vestibular biomechanics in clinical practice.

Ethics

Informed Consent: Written informed consent was obtained.

Acknowledgments

The authors acknowledge Mr. Renith Kurian for video recording of diagnostic and therapeutic maneuvers and accurately documenting the nystagmus during the entire diagnostic and treatment period. The authors also extend thanks to Mr. Ashraf Hussain for creating Figure 1 using CorelDraw graphics suite 2019.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.K.V., S.K., P.V., Concept: A.K.V., S.K., P.V., Design: A.K.V., S.K., P.V., Data Collection and/or Processing: A.K.V., S.K., P.V., Analysis or Interpretation: A.K.V., S.K., P.V., Literature Search: A.K.V., S.K., P.V., Writing: A.K.V.

Conflict of Interest: The authors declare that they have no conflict of interest.

Financial Disclosure: The authors declare that this study has received no financial support.



Video link: https://youtu.be/xw4-61_lp1s

Main Points

- A 72-year-old man presented with positional vertigo that rapidly progressed to continuous spontaneous vertigo with vomiting, mimicking acute vestibular syndrome.
- Bedside examination revealed spontaneous right-beating horizontal nystagmus with a peripheral head impulse, nystagmus, test of skew pattern; head-shaking maneuver (HSM) reversed the nystagmus direction and switched the side of positive head impulse test.
- Repeated HSM and head yaw test converted the initial apogeotropic positional nystagmus to geotropic nystagmus, indicating transition from right horizontal semicircular canal (HSC)-canalith jam (CJ) to canalolithiasis.
- The Gufoni maneuver resulted in complete resolution of nystagmus and vertigo within one hour, confirming the mechanical nature of the reversible CJ.
- This case demonstrates bidirectional switching between sustained excitatory and inhibitory cupular deflections in the same horizontal canal induced by HSM, an unreported finding that highlights the importance of dynamic bedside testing in suspected HSC-benign paroxysmal positional vertigo variants.

References

1. Bhandari R, Bhandari A, Hsieh YH, Edlow J, Omron R. Prevalence of horizontal canal variant in 3,975 patients with benign paroxysmal positional vertigo: a cross-sectional study. *Neurol Clin Pract.* 2023; 13: e200191. [Crossref]
2. Castellucci A, Malara P, Brandolini C, Del Vecchio V, Giordano D, Ghidini A, et al. Isolated horizontal canal hypofunction differentiating a canalith jam from an acute peripheral vestibular loss. *Am J Otolaryngol.* 2019; 40: 319-22. [Crossref]
3. Kattah JC, Talkad AV, Wang DZ, Hsieh YH, Newman-Toker DE. HINTS to diagnose stroke in the acute vestibular syndrome: three-step bedside oculomotor examination more sensitive than early MRI diffusion-weighted imaging. *Stroke.* 2009; 40: 3504-10. [Crossref]
4. Vats AK, Mohamad A, Bijllani A, Rohiwal R, Vats S, Kothari S. Horizontal semicircular canalith jam mimicking acute vestibular syndrome: physiotherapy-guided diagnosis and treatment in three cases. *Physiother Theory Pract.* 2026; 42: 342-50. [Crossref]
5. Beynon GJ, Jani P, Baguley DM. A clinical evaluation of head impulse testing. *Clin Otolaryngol Allied Sci.* 1998; 23: 117-22. [Crossref]
6. Bhattacharyya N, Gubbels SP, Schwartz SR, Edlow JA, El-Kashlan H, Fife T, et al. Clinical practice guideline: benign paroxysmal positional vertigo (update). *Otolaryngol Head Neck Surg.* 2017; 156(3_suppl): S1-47. [Crossref]
7. Mandalà M, Pepponi E, Santoro GP, Cambi J, Casani A, Faralli M, et al. Double-blind randomized trial on the efficacy of the Gufoni maneuver for treatment of lateral canal BPPV. *Laryngoscope.* 2013; 123: 1782-6. [Crossref]
8. Vats AK. Reversible right horizontal semicircular canalith jam [online]. Figshare; Accessed June 21, 2026. [Crossref]
9. Ciniglio Appiani G, Catania G, Gagliardi M, Cuiuli G. Repositioning maneuver for the treatment of the apogeotropic variant of horizontal canal benign paroxysmal positional vertigo. *Otol Neurotol.* 2005; 26: 257-60. [Crossref]
10. Castellucci A, Malara P, Martellucci S, Delmonte S, Ghidini A. Fluctuating posterior canal function in benign paroxysmal positional vertigo depending on how and where otoconia are disposed. *Otol Neurotol.* 2021; 42: e193-8. [Crossref]