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EFFECT OF ZUMA MANEUVER IN OLDER ADULT WITH BENIGN PROXIMAL POSITIONAL VERTIGO [BPPV]: A CASE REPORT

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ABSTRACT

Introduction: Benign paroxysmal positional vertigo (BPPV) is a common vestibular disorder characterized by brief episodes of vertigo caused by changes in head position. The apogeotropic variant of lateral canal BPPV (LC-BPPV) is less common and presents unique challenges in treatment. Various maneuvers have been proposed for managing this condition, with the Zuma maneuver being one of the options. This case report explores the efficacy of a modified Zuma maneuver in treating a patient with the apogeotropic variant of LC-BPPV. **Case Presentation:** A 62-year-old male presented with vertigo symptoms and was diagnosed with apogeotropic LC-BPPV using the McClure-Pagnini test. The patient exhibited positional nystagmus, confirming the apogeotropic nature of the condition. The treatment involved the application of a modified Zuma maneuver, which included specific adjustments to the original technique to enhance its effectiveness for this variant of BPPV. **Results:** The patient's symptoms were evaluated using the Vertigo Handicap Questionnaire (VHQ), which showed a significant improvement following treatment. The VHQ score decreased from 52 (pre-treatment) to 20 (post-treatment), indicating a substantial reduction in vertigo-related disability. The modified Zuma maneuver effectively resolved the patient's symptoms after a single application. **Conclusion:** The modified Zuma maneuver appears to be an effective treatment option for the apogeotropic variant of LC-BPPV. Despite the small sample size, this case report suggests that the maneuver could simplify the treatment of both geotropic and apogeotropic LC-BPPV. Further studies are needed to confirm its efficacy in a broader patient population. **Keywords:** Zuma maneuver, lateral canal BPPV, apogeotropic variant, vestibular rehabilitation, vertigo, McClure-Pagnini test.

INTRODUCTION

The most prevalent vestibular ailment, benign paroxysmal positional vertigo (BPPV), is caused by detached otoliths that move to one of the semicircular canals, canal lithiasis or cupulolithiasis, one of the cupulas¹. The vestibular system in the inner ear is mechanically dysfunctional in benign paroxysmal positional vertigo (BPPV). Displacement of otoconia from utricle to semicircular canals is held responsible for the development of BPPV¹. BPPV develops mostly in the posterior (90% of cases) and horizontal (5-30% of cases) semicircular canals. However, horizontal canal BPPV (HC-BPPV) may be more prevalent than previously thought². The cause of BPPV is unknown (idiopathic) in all variants of this syndrome. BPPV is highly prevalent in middle-aged women, and hormonal factors may therefore play a role in the development of BPPV². Free-floating particles in the posterior arm of the lateral semicircular canal are thought to be the cause of the geotropic type of LC-BPPV. In the supine roll test, it is distinguished by horizontal nystagmus beating to the side of the head turn. Conversely, nevertheless, the apogeotropic type of LC-BPPV is ascribed to particles that are either connected to the cupula confronting the utricle or free floating in the anterior arm of the lateral semicircular canal³⁻⁵.

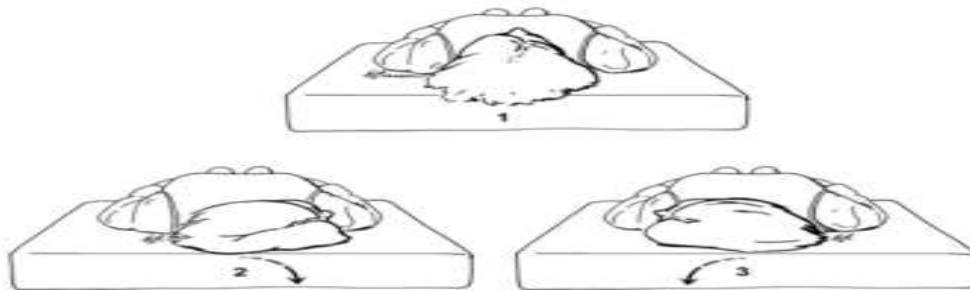
Different types of reposition maneuvers have been proposed for the management of geotropic and apogeotropic LC-BPPV: Gufoni maneuver, Zuma maneuver, Forced Prolonged Position (Vannucchi Technique) and Barbecue Rotation (Lempert maneuver, Vannucchi-Asprella maneuver)⁴⁻⁹. For practical reasons, since there are several types of reposition, maneuvers described for LC-BPPV, it was felt that the Zuma maneuver, with a brief modification (Zuma modified maneuver) could be an alternative treatment for geotropic LC-BPPV.

CASE PRESENTATION

A 62-year male was diagnosed with lateral canal BPPV apogeotropic variant using McClure-Pagnini test¹³⁻¹⁴. The McClure-Pagnini test was performed by turning the head 90° to each side in the supine position to check whether it is geotropic/apogeotropic. Also, positional nystagmus was observed in the patient. McClure-Pagnini Maneuver- From the supine position, Turn the patient's head to one side (either side). Does the nystagmus beat TOWARD the direction of the head turn (referred to as geotropic b/c from this position it is beating toward the ground), or in the direction OPPOSITE the head turn (called apogeotropic).

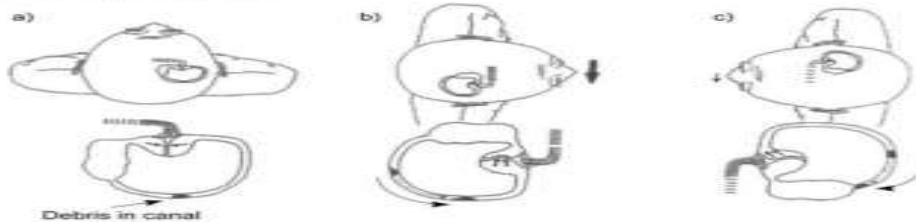
Example A: If there is left-beat nystagmus on left head turn, then there should be right-beat nystagmus after right head turn (this is called the geotropic variant).

Diagnostic maneuver: Supine Positional Test or McClure-Pagnini maneuver¹²⁻¹³

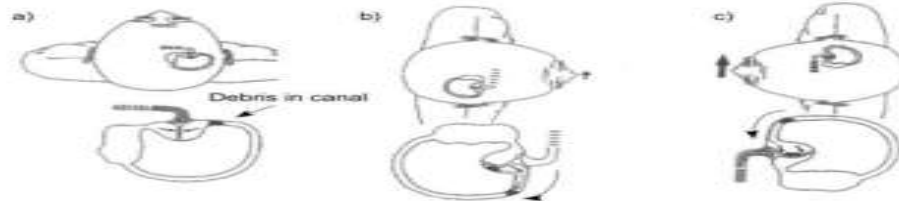


Particles Movement with Supine Positional Testing:

A Geotropic HC-BPPV



B Apogeotropic HC-BPPV



OUTCOME MEASURES-

To analyse the how much the vertigo is affected to patient we used Vertigo Handicap Questionnaire^{17,18} to see the pre and post measures of the patient. There were 26 questions in the questionnaire and is self-assisted type of questionnaire.

Vertigo Handicap Questionnaire

PRE-SCORE	POST SCORE
52	20

TREATMENT PROTOCOL-

The Zuma Maneuver treatment was given to see effectiveness of treatment in the patient. The modification in relation to the original maneuver¹⁴ is, First the patient is asked to quickly lie down on the affected side (step I) and is held in this position for 3 min. Then, the patient's head is rotated 90° toward the ceiling (step II) and held in this position for another 3 min. After 3 min, the patient moves the body into dorsal decubitus and the head is turned 90° toward the unaffected side (step III) and held in this position for another 3 min. Finally, the patient's head is tilted slightly forward (step IV), followed by a slow return of the patient to the sitting position (step V). The forward head tilt before sitting up in step IV was proposed to avoid enabling the particles to move back toward the posterior arm of the canal.

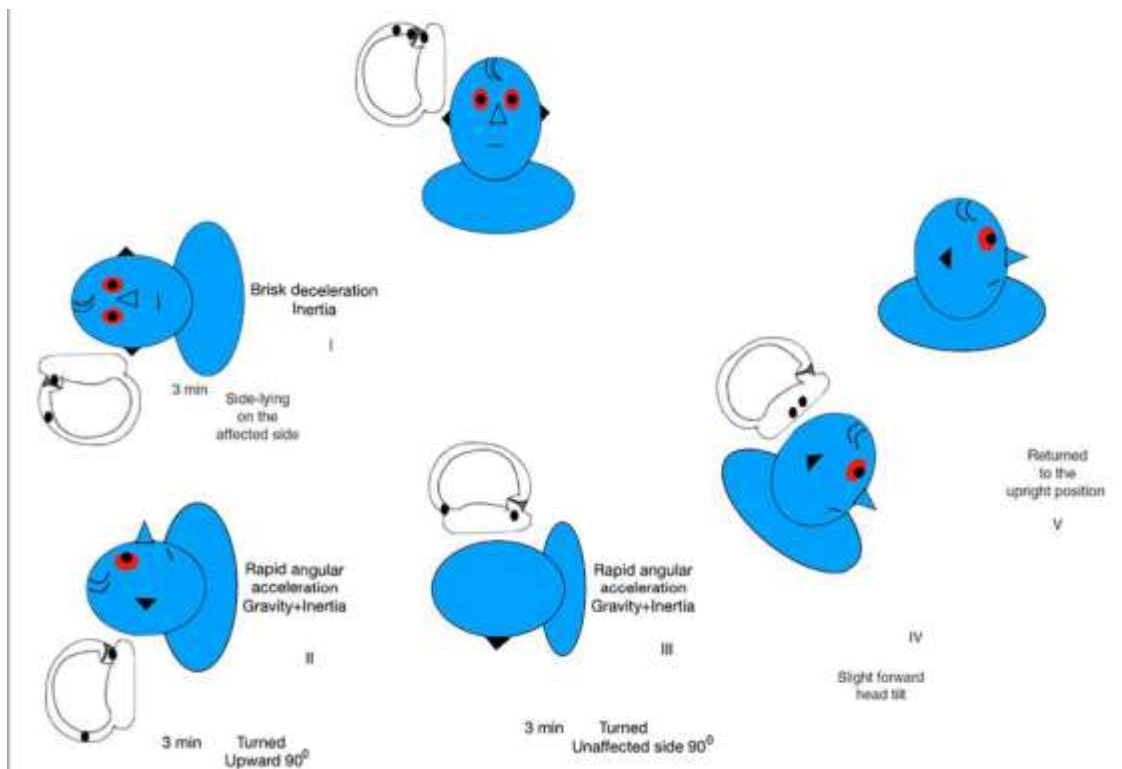


Figure- Modified Zuma maneuver for right apogeotropic LC-BPPV. Data modified from Ramos et al¹⁵ and Zuma e Maia¹⁶.

DISCUSSION

There are several types of maneuvers described to treat LC-BPPV, and some of them have to be performed toward the unaffected side of the patient (i.e., Gufoni maneuver) and others toward the affected side (i.e., Zuma maneuver). A single maneuver with a brief modification, for both geotropic and apogeotropic LC-BPPV, could simplify the treatment of these cases.

The current case study is related to treatment protocol for LC-BPPV apogeotropic variant. In this study we have used McClure-Pagnini Maneuver to check whether the patient is geotropic or apogeotropic variant of BPPV. In previous literature given by Ramos et al, they treated 7 people with Zuma Maneuver for lateral canal BPPV of geotropic variant. This study demonstrated Zuma Maneuver technique for apogeotropic variant which was found to be very useful in treating the patient. Single session of this maneuver found to be effective in treating lateral canal apogeotropic BPPV also positional nystagmus was found to be reduced using this technique. The VHQ score was found to be reduced after treatment as compared to pre score. This technique was used priorly in various studies but the in this study variation was given and was found to be effective.

Zuma maneuver in apogeotropic LC-BPPV depends on the rapid angular acceleration gravity plus inertia of movements of the particles moving inside the ear that helps to detach the otoliths from the cupula. This improves the performance of the patient.

CONCLUSION

Despite the small sample of patient, the Zuma modified maneuver was effective for apogeotropic LC-BPPV after a single application. Further studies, however, are needed to evaluate the efficacy of this maneuver. The use of the Zuma maneuver for both apogeotropic and geotropic LC-BPPV may simplify the treatment of these patients.

CONSENT

Written informed consent was obtained from the patient for publication of this case report.

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