

# Post concussion syndrome & BPPV Presenting with Migraine/Headaches in an Urgent Headache Clinic: Analysis of 90 cases,

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## INTRODUCTION

**Introduction:** Epley's maneuver is an established method in managing Benign Paroxysmal Positional Vertigo (BPPV) with 80% success rate in most published studies. However, the association of BPPV with disabling headaches as concurrent associated symptom has not been studied in detail. We present our retrospective analysis of 90 consecutive patients of BPPV with concurrent headaches (>50%) and the success of Epley's maneuver in managing the vertigo as well as headaches with significant success.

## MATERIAL AND METHODS

**Patient population:** 90 consecutive patients diagnosed with BPPV were included in this retrospective study. The diagnostic criteria were based upon symptoms of dizziness on change of position and positional nystagmus evoked by the Dix Hallpike test. There were 48 females and 42 males. The mean age at presentation was 44 years (range 18-93 years). Etiology of BPPV was attributed to Meniere's disease in 9 (10%) patients, post concussion syndrome (PCS) in 27 (30%) patients and cerebrovascular event in 4 patients. No specific etiology could be associated with BPPV in the remaining 50 (55%) patients. At the time of presentation, 47 (52%) patients had complaint of concurrent disabling episodic headaches with vertigo. Upon further clinical assessment the headaches were discerned as common migraine in 44 patients, tension headaches in 4 patients and cluster headaches in 4 patients

## METHODS (Contd.)

. Of the 27 patients with post concussion syndrome, 12 (44%) developed migraine after the concussion injury.

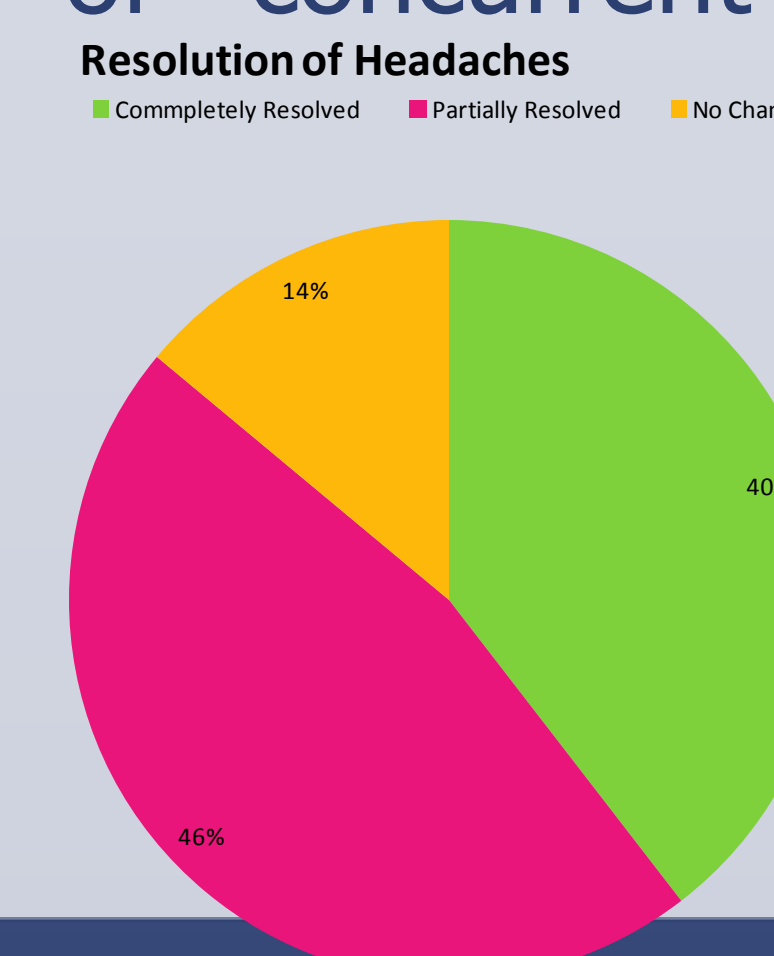
**Treatment:** Epley's maneuver was performed in all patients to treat the BPPV. The first maneuver was performed on the day of presentation and subsequently at 3-4 weeks interval. 72 patients (80%) had a single maneuver while 15 (16.6%) had two, 2 (2.22%) had three and 1 patient had 4 maneuvers respectively. The patients were regularly followed up in the clinic and careful record of their vertigo as well as the headache was maintained.

Characteristics	Number
Age	18-93 Years
F: M	48:42
Post Concussion Syndrome	27
Meniere's Disease	9
Cerebrovascular Event	4
Idiopathic	50
Concurrent Headaches	
Migraine	44
Tension headaches	4
Cluster headaches	4

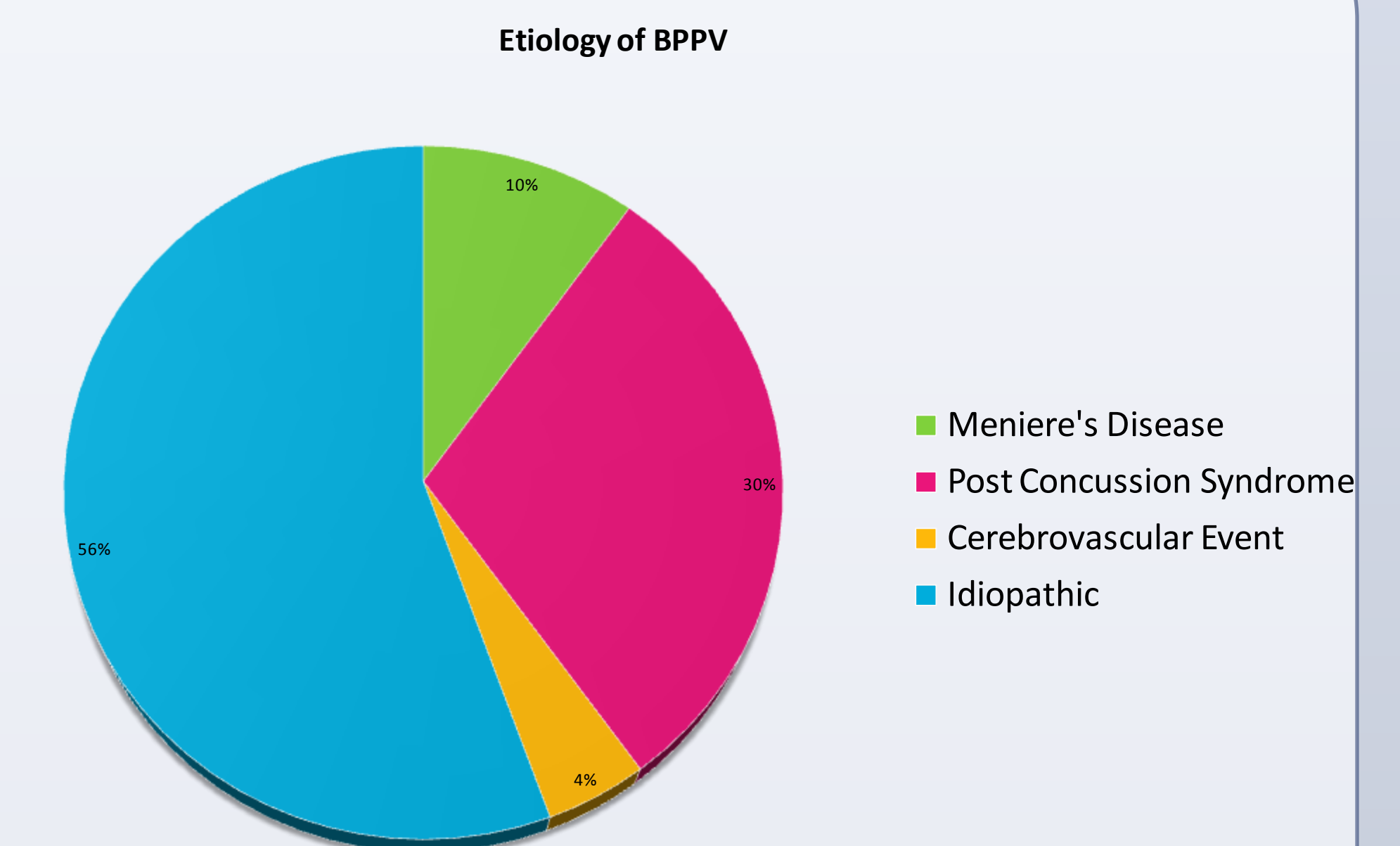
## RESULTS

**BPPV:** The follow-up period ranged from 1 to 38 months with mean follow up of 4.7 months. 9 (10%) patients were lost to follow-up and were excluded from the analysis. Of the 80 assessable patients, 46 (57.5%) had complete resolution, 30 (37.5%) experienced partial resolution and 4(5%) had no benefit. Thus the success rate for Epley's maneuver was recorded as 95% in completely or partially resolving BPPV.

**Headache:** 43 patients with initial presentation of headache were followed up. 17 patients (39.5%) had complete resolution of headache with no further need for medication; 20 (46.5%) patients had significant reduction (>50%) in the intensity and frequency of migraine episodes. Thus Epley's maneuver was successful in 37 (86%) patients for the management of disabling headaches concurrent with BPPV. A multifactor analysis of variance (ANOVA) was performed to assess the factors influencing the success of Epley's maneuver in treating concurrent headache. Younger patient age (<50 years) and etiology of post concussion syndrome were the only significant factors for better success rate with  $p$  values of 0.03 and 0.018 respectively. Gender, duration of symptoms, number of Epley's maneuver and type of headache did not significantly affect the success rate for resolution of concurrent headaches in BPPV.



## Etiology of Headache



## CONCLUSIONS

It has been always debatable that vertigo in post concussion headache is secondary to trauma and independent of BPPV. Our study shows that mechanical trauma to the vestibular apparatus and dislodging of utricles is more logical explanation of vertigo. A simple Epley's maneuver's effectiveness in managing concurrent disabling headaches with post concussion syndrome supports this hypothesis. The application of Epley's maneuver was successful in resolving headaches in 86% of patients with the best results in those with younger age and Post Concussion Syndrome etiology.

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