

# Comparison between Semonts Maneuvers and Beta Histidine in the Treatment of Benign Paroxysmal Positional Vertigo

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## Abstract

**Introduction:** Benign paroxysmal positional vertigo (BPPV) is the most common type of vertigo that presents in an ENT clinic. Various repositioning maneuvers and treatment therapies exist for its management.

**Objective:** The objective of this study was to compare the efficacy of Semont's maneuver with a vestibular suppressant, Beta Histidine in the management of BPPV.

**Patients and Methods:** This was a Randomized Clinical Trial, which was carried out in ENT Department CMH Quetta and ENT Department PNS Shifa from 1<sup>st</sup> March 2013 to 1<sup>st</sup> Sept 2013. Consenting 70 patients with BPPV were included in the study. Based on treatment opted, random allotment of patients in two groups were done i.e., Group A with ( $n = 35$ ) or group B with Beta Histidine ( $n = 35$ ). Outcomes were measured by disappearance of vertigo at follow-up examination.

**Results:** In this study, of 35 cases managed by Semont's Maneuver, 31 (88%) cases showed relief of symptoms after 15 days. Out of 35 cases managed by Beta Histidine, 20 (57%) cases recovered after 15 days.

**Conclusion:** Semont's maneuver was more effective than vestibular suppressants like Beta Histidine in the management of patients of BPPV.

**Key words:** Benign paroxysmal positional vertigo, Beta Histidine, Dizziness, Repositioning maneuver

## INTRODUCTION

Benign paroxysmal positional vertigo (BPPV) is the most common type of vertigo with a lifetime prevalence of 2.4%.<sup>1</sup> It is characterized by transient episodes of vertigo associated with a predominantly horizontal rotational nystagmus precipitated by change in head position.<sup>2</sup> It commonly affects females greater than males.<sup>3</sup> Its incidence increases with age and reaches peak in sixth and seventh decade.<sup>4</sup> It is considered the most common cause of vertigo in elderly.<sup>1,4,5</sup> Benign paroxysmal positional vertigo may

occur as an idiopathic form when it is termed as primary<sup>2</sup> while the common causes of secondary benign paroxysmal positional vertigo are head trauma,<sup>5</sup> viral neurolabyrinthitis, Meniere's disease and Cogan's syndrome.<sup>6</sup>

The two main hypotheses, which explain the development of BPPV are the cupulolithiasis theory and canalithiasis theory. Cupulolithiasis theory is based on the attachment of otolithic debris to the cupula in the crista ampullaris while the canalolithiasis theory is based on the presence of free-floating debris in the lumen of the semicircular canals (SCC). Simply put, the presence of foreign particles in the SCC is the cause of vertigo.<sup>1,7,8</sup>

Over the years, the treatment of BPPV has seen a dramatic shift from anti vertiginous drugs to various maneuvers as our understanding of the disease has progressed. The Common instructions to patients include the avoidance of positions that induce nystagmus. Drugs like Beta Histidine

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and Cinnarizine reduce the vestibular vertigo.<sup>6</sup> Various maneuvers such as Semont and Epleys are the noninvasive techniques practiced for correction of pathology. Both these techniques aim to dislodge the inorganic fragments located on the cupula of the posterior canal or floating in the canal.<sup>10-12</sup> Mastoid vibrators have also been used in attempts to dislodge the particles from inner ear with variable success.<sup>13</sup>

Dix Hallpike test is virtually diagnostic of BPPV but can induce vertigo.<sup>13</sup> The objective of this study was to compare the efficacy of Semont's maneuver and vestibular suppressant, Beta Histidine in the management of BPPV. A total of 70 patients with BPPV was included and were divided in 2 groups of 35 each. Group A was treated with Semont's maneuver while Group B was treated Beta Histidine. The results of this study were decided on the basis of reduction/absence of vertigo on repeating Dix-Hallpike test on the 15th day of the start of treatment.

## PATIENTS AND METHODS

This was a Randomized Clinical Trial carried out in ENT Department CMH Quetta and ENT Department PNS Shifa from March to Sept 2013. Non-probability consecutive sampling technique was used. All patients irrespective of their age and sex with positive Dix-Hallpike test and normal pure tone hearing thresholds were considered having BPPV. The Patients with associated medical illnesses including diabetes mellitus, anemia, cardiovascular disorders such as ischemic heart disease, hypertension, carotid artery stenosis and postural hypotension or history of recent head and neck injury, history of tinnitus, aural fullness and cervical spondylosis were excluded from the study.

### Data Collection Procedure

- Permission was sought from hospital Ethical Committee.
- One hundred patients were selected after detailed history, examination and Dix-Hallpike test diagnosis of BPPV on 1<sup>st</sup> visit.
- Informed written consent was taken from all the patients.
- Hospital registration number, name, gender, age, address and phone number (optional) were noted for future communication.
- Patients were randomly divided into two groups of 35, each using random number table.
- Baseline VAS score was recorded.
- Group A was treated with maneuver by the trainee researcher.

- Group B was treated with Beta Histidine (16 mg) 1 tablet thrice daily.
- The patients were called for re-examination on 14<sup>th</sup> day by the trainee researcher.
- Presence or absence of subjective symptom of vertigo was assessed clinically.
- All the data was recorded on a specially designed Performa attached as annexure A.

### Data Analysis

- Data analysis was done using SPSS version 16
- The variables to be analyzed included quantitative data like age, which were analyzed as mean and standard deviation
- Qualitative data like sex, VAS scale of vertigo at baseline and 15th day and efficacy of a technique was presented as frequency and percentage
- Chi-square test was used to compare the efficacy in both groups
- $P < 0.05$  was considered significant
- Results were explained with the help of charts and tables.

## RESULTS

In this randomized control trial, a total of 75 patients of BPPV were included, but five were lost to follow-up. Data of seventy patients has been presented. Group A was treated with Semont's maneuver, and Group B was treated with a vestibular suppressant (Beta Histidine). The mean age in each group are given in Table 1.

There were 16 (46%) males and 19 (54%) in Semont maneuvers group and 18 (51%) males and 17 (49%) females in vestibular suppressant group. In my study all the participant was suffering from sudden, episodic vertigo and most categorized their vertigo of moderate intensity that is 66% in Semont's maneuver group and 71% in BetaHistidine group. After 15 days of treatment, both groups showed significant improvement but the rate of recovery was higher in Semont's maneuver group in which 89% of patients became disease free. In BetaHistidine group, only 57% patients became disease free. In Semont's maneuver group, only 3% patients remained in severe vertigo group while in Beta Histidine group 11% patients remained with severe vertigo. There is no significant difference in vertigo

**Table 1: Distribution of age in both groups**

Treatment group	N	Minimum	Maximum	Mean	Standard deviation
Semont's maneuver	35	38	68	53.2	8.787
Betahistine (vestibular suppressant)	35	39	65	53.4	7.765

at baseline ( $P > 0.05$ ). The status of vertigo at baseline was almost same in both groups. Details are shown in Table 2.

According to the results, there was a significant difference in treatment of both these groups after 15 days of treatment. In patients treated with Semont's maneuver 8% patients became disease free. This was significantly higher ( $P < 0.05$ ) as compared to patients who were treated with Beta Histidine in which only 57% of patients became disease free after 15 days. Similarly the proportion of patients with severe vertigo was considerably higher in Group B than Group A. Moderate vertigo was suffered by 20% of patients in Beta Histidine group as compared to only 3% in Semont's maneuver group.

Group wise distribution shows that in Semont's maneuver group 31 (88%) patients were completely cured, but in Beta Histidine group 20 patients (57%) were cured after 15 days of treatment. There was a significant association between treatment groups and cure rates after 15 days of treatment. In Semont's maneuver group the complete cure rate was significantly higher (88% vs. 57%,  $P < 0.05$ ) as compared to Beta Histidine group as given in Table 3.

Comparison of cure rates between males and females in Semont's maneuver group as well as betahistidine group showed no significant ( $P > 0.05$ ) association of cure rate and gender, as shown in Table 4.

**Table 2: Comparison of vertigo in both groups at baseline and on 15<sup>th</sup> day**

Vertigo in both groups	Treatment group (%)		Total	P value
	Semont maneuver	Beta Histidine (vestibular suppressant)		
Vertigo at baseline				
Mild vertigo	2 (6)	3 (9)	5	0.667
Moderate vertigo	23 (66)	25 (71)	48	
Severe vertigo	10 (28)	7 (20)	17	
Total	35 (100)	35 (100)	70	
Vertigo after 15 days				
No vertigo	31 (89)	20 (57)	51	0.033
Mild vertigo	1 (2.5)	4 (11)	5	
Moderate vertigo	2 (6)	7 (21)	9	
Severe vertigo	1 (2.5)	4 (11)	5	
Total	35 (100)	35 (100)	70	

**Table 3: Comparison of cure rate after 15 days between both treatment groups**

Cured after 15 days	Treatment group (%)		Total	P value
	Semont's maneuver	Betahistidine (vestibular suppressant)		
Cured	31 (89)	20 (57)	51 (73)	0.006
Not cured	4 (11)	15 (43)	19 (27)	
Total	35 (100)	35 (100)	70 (100)	

## DISCUSSION

True vertigo is defined as the feeling of rotation of oneself with respect to the environment or vice versa. It must be distinguished from the feeling of lightheadedness, giddiness or weakness in limbs that people present with commonly in a vertigo clinic. BPPV described in 1921 is one of the most common causes of true vertigo. Although it is primarily an idiopathic disease but secondary causes of BPPV include head trauma, Meniere's disease, vestibular neuritis and Cogan disease among others.<sup>14</sup> BPPV is caused by the abnormal dislocation of otoconia, originating from the macula of the utricle, to the SCC, which is posterior semicircular canal in 86-90% of the cases.<sup>15</sup> These shedded off calcium carbonate crystals induce movement in the SCC triggering off impulses, which are in conflict with other senses.<sup>16</sup> Semont liberatory maneuver, named after the doctor who suggested it, is a simple three-step maneuver that is designed to remove the precipitating particles from their unusual position in the SCC. Different modifications of this maneuver designed to increase the efficacy exist which include repeating the maneuver several times, using mastoid vibrators to mobilize the otoconia or placing restriction on posture and head movements following the maneuver.<sup>17</sup>

Vertigo follows a specific social and demographic pattern. It commonly affects people in the sixth and seventh decade of life while the secondary causes for BPPV are believed to be the cause behind the earlier age of presentation in most cases. In studies also show that an older patient requires more repeated maneuvers for resolution of their symptoms. According to most studies females are more likely to suffer from BPPV but some studies do cite equal incidence in males and females as well.<sup>17,18</sup>

Lifetime prevalence of BPPV is 2.4% while the annual incidence of 0.6%.<sup>1</sup> In specialized clinics, it has a prevalence of 20-30%. Symptoms of BPPV are so sudden acute and unexpected that the patient is often severely distressed and

**Table 4: Comparison of cure rate between both groups**

Cure Rate in Both Groups	Male	Female	Total	P value
Semonts maneuver cure rate at 15 days				
Cured	15 (94%)	16 (84%)	31 (89%)	0.31
Not cured	1 (6%)	3 (16%)	4 (11%)	
Total	16 (100%)	19 (100%)	35 (100%)	
Beta Histidine cure rate at 15 days				
Cured	10 (55.5%)	10 (59%)	20 (57%)	0.845
Not cured	8 (45.5%)	7 (41%)	15 (43%)	
Total	18 (100%)	17 (100%)	35 (100%)	

refuses to work or get out of bed.<sup>19</sup> It severely impacts a person's quality of life and grades poorly in quality of life questionnaires. It takes an average of 8 visits to various specialty clinics before being diagnosed.<sup>20</sup>

A single two min procedure in the form of Semont's liberatory maneuver or Epleys repositioning maneuver is effective in 60-80% of the cases.<sup>17</sup> In clinical practice, a combination of drugs is used for managing an acutely vertiginous patient.<sup>21</sup> A study done by Revert registry showed that Beta Histidine was the most frequently prescribed medication for management of vertigo.<sup>22,23</sup> Chronic drug administration has no role in the management of BPPV. Vestibular suppressants are prescribed for several days mostly.

Since BPPV can resolve on its own in most cases, watchful waiting or vestibulosuppressant medication is advised. However, it entails weeks or months of discomfort with the ever present danger of a mishap. Vestibular habituation exercise can also be useful in chronic or resistant cases of BPPV, where other maneuvers fail but are in essence a more prolonged version of repositioning maneuvers. Surgery is usually offered as a last choice as it has significant morbidity.<sup>24</sup>

Semont's maneuver requires a little time to be spent with the patient and office space for a couch that is hard to come by, yet it is cost effective, physiologically sound and is actually a liberating experience for the patient. Its beauty lies in its simplicity, lack of complications and ease of replication if required.

The results of our study suggest Semont's maneuver to be the highly effective single treatment approach toward BPPV as 88% of our patients were found to be asymptomatic at the end of second week. These results comply with similar studies conducted in different settings where the rate of recovery varied from 80-94%.<sup>25,26</sup>

A study done by Zhuang, *et al.* had a success rate of 94% after treatment with Semont's maneuver.<sup>25</sup> Similarly another study carried out in china showed that patients managed by Semont's maneuver were more likely to have a complete resolution of their symptoms. No adverse effects of treatment were noted in the study.<sup>27</sup>

Though present prescribing practices favor Beta Histidine however, it does not address the underlying pathology causing BPPV and even though it provides temporary relief complete resolution is elusive.<sup>23</sup> As always, intake of such medication for prolonged periods is not without its side effects including rash and epigastric discomfort.<sup>28</sup> Guneri and Kustutan in his study observed Beta Histidine

to be effective in enhancing recovery from BPPV when combined with different repositioning maneuvers. Its efficacy in that trial was noted to be 84%.<sup>27</sup> However, single administration of BetaHistidine resolves symptoms in only 50% of the patients.<sup>8</sup> 5% patients were noted to have adverse effects with the medication.<sup>8</sup> In my study, BetaHistidine was found to be efficacious in only 57% of the patients, which is significantly less than Semont's maneuver but comparable to the results of other studies

## CONCLUSION

Semont's maneuver is a non-invasive and very effective procedure for the management of BPPV. It is an office procedure with immediately satisfying results for both patients and doctor. It can be repeated if desirable results are not obtained after the first session. After 15 days of treatment both groups showed significant improvement but it was higher in Semont's maneuver group in which 88% of the patients became disease free as compared to BetaHistidine group in which only 57% patients were disease free. Taking into account the results of my study and the above-mentioned benefits, Semont's maneuver should be recommended as a treatment option for all patients of BPPV.

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