

# DIZZCOVER

HORIZONTAL CANAL BPPV

VOL 1, 2018

## CONTENTS

1. About the newsletter
2. Guest editorial
3. Issue in focus – Lateral canal BPPV
4. Case review – a case of horizontal canal BPPV
5. How I do it – manoeuvres for horizontal canal BPPV
6. Journal scan
7. Historical note – Jean Pierre Flourens (1794-1867)

## About the Newsletter

This newsletter is an outreach to the community of people interested in the scientific analysis and treatment of vertigo and balance disorders. It aims to highlight the experiences of clinicians, audiologists, vestibular rehabilitation specialists and provide a platform for education and sharing. We solicit feedback and comments from readers. We wish to invite case reports, journal reviews and how I do it, and it will be published with due acknowledgement.

*On behalf of Cyclops Medtech and Vestibular and Balance Research Organisation, we wish you Merry Christmas, Happy Holidays and a very Happy New Year!*

Kindly send your comments and submissions to [dizzcover@cyclpsmedtech.com](mailto:dizzcover@cyclpsmedtech.com). You may also whatsapp the same to +919448480152.

## Guest Editorial



To discover and to teach are two distinctly remote qualities seldom seen coinciding in academia. The problem of vertigo has always been enigmatic quest for an ENT surgeon, who connects the cross roads of several specialities as a torchbearer. Cyclops MedTech, through their persistent drive and committed zeal have brought the vertigo diagnosis device (BalanceEye VNG + VOG) into the realm of accessibility by a rare blend of technology and clinical acumen to galvanize the science of vertigo analysis and setting a new global paradigm.

The need for detailed documentation and analysis of nystagmus with quantification of pre-existing abnormalities in the diagnosis of vertigo cannot be more underscored. This has brought the science of vertigo and balance disorders to a new level of objectivity and accessibility which was much needed for this hour. This Newsletter of Vestibular and Balance Research Organisation, I wish will further strengthen the outreach and training of specialists to empower vestibular specialists globally across various domains of medicine.

It is said "We are constrained not by necessary discipline of rigor but by the limits to our imagination and intellectual daring". I wish the Cyclops team under able leadership of Dr. Srinivas D R, Dr. Ravi Nayar and Niranjana more power to impact lives of our patients.

**Dr Deepak Haldipur.**  
Past President AOI of India.



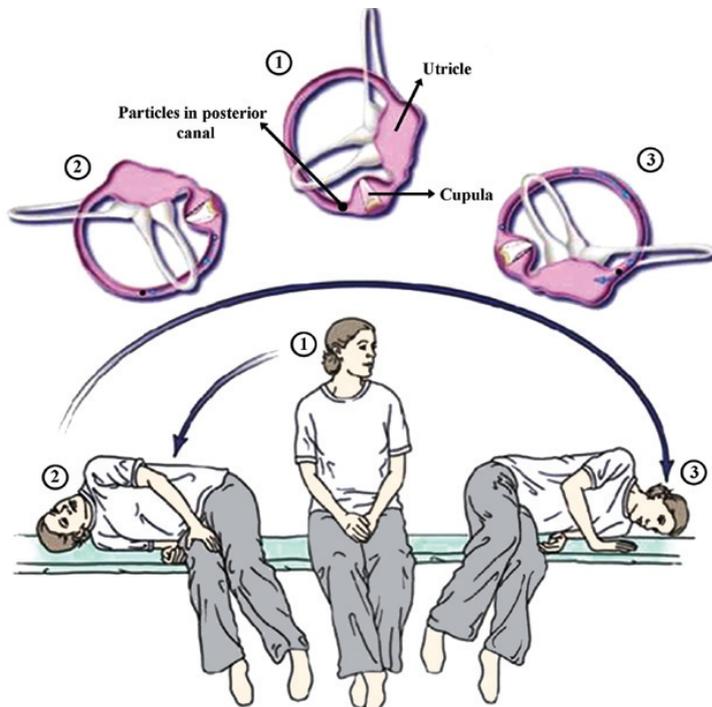
## Issue in Focus: Lateral Canal BPPV

Benign paroxysmal positional vertigo (BPPV) most often affects the posterior semi-circular canal (in 94% of cases in some studies). Horizontal or lateral semi-circular canal (LSC) BPPV first described by McClure (J Otolaryngology 1985;14 (1):30-35), is the next most common. It is characterized by nystagmus provoked by supine bilateral head turns. The “McClure Pagnini” test is most frequently employed for confirming lateral canal BPPV. This positional manoeuvre is carried out as follows:

- 1) First the patient lies down in the supine position from the sitting position.
- 2) Then the patient turns to right lateral.
- 3) Again, the patient comes back to supine.
- 4) Then turns to left lateral.
- 5) Again comes back to supine and then sits up.

In each of these positions, a minimum of one minute needs to be spent in order to ensure that no false negative results occur. During and after the manoeuvres, the eyes are observed for nystagmus. In horizontal canal BPPV, two distinct nystagmus signatures are noted irrespective of whether right or left LSC is involved. In the most frequent variety, on rolling to right lateral, the eyes beat to the right in the horizontal plane. On turning to the left, the eyes beat to

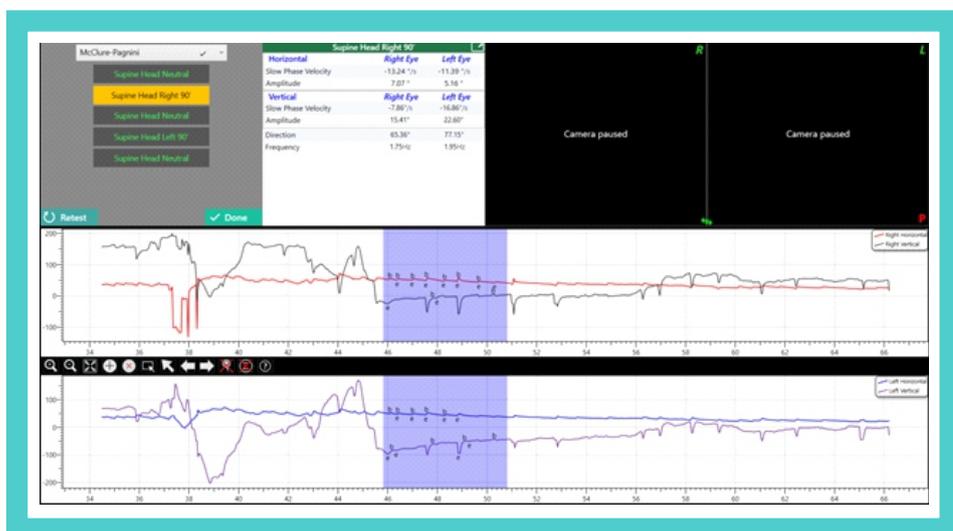
the left in the horizontal plane. That would need a very long description: “right beating on right lateral and left beating on left lateral position”, instead the single term geotropic nystagmus is used to describe this. In both positions the nystagmus beats toward the ear facing the ground (geo). The cause of this form of BPPV is believed to be otoconial debris that floats free in the long arm of the LSC stimulating the utricle when the head is supine. The second variety is when the eyes beat to the left on turning to the right and beating to right on turning to the left. This too is described using one term, “apo geotropic”. In apo geotropic nystagmus the direction of nystagmus is away from the downward ear. This is due to the same debris adhering to the cupula or trapped in the short arm of the LSC.



## Case Review 1

The 65 year old female patient presented with imbalance while walking and dizziness for the past three months. Significantly, the patient did not complain of positional vertigo. ENT examination and GPE was unremarkable. On neuro otological evaluation - McClure Pagnini test revealed a geotropic nystagmus. As turning the head to both sides revealed similar robustness of nystagmus on visual observation, the

VNG nystagmus slow phase velocity was calculated to establish laterality. Left side showed higher slow phase velocity. (Fig shown below). Left side nystagmus changed direction after initial geotropic to apo geotropic late. A diagnosis of lateral semi-circular canal BPPV was made on the basis of the above findings.



### Management:

After counselling and consent, a Gufoni manoeuvre was done to reposition the otoliths in the left lateral semi-circular canal. The patient felt better immediately after the manoeuvre. Repeated testing on the following day did not reveal any nystagmus. The patient is now on a follow up and is symptom free for over 6 months.

### Take home messages:

Positional testing should be done in every elderly patient complaining of dizziness, even if the patient does not specifically complain about positional vertigo. VNG documentation helps in better analysis of side involved by allowing 'numerical comparison of slow phase velocity' on either side as horizontal canal BPPV causes nystagmus on turning to both sides. Reversal of direction of nystagmus is known in strong peripheral nystagmus- VNG



documentation will capture the initial geotropic nystagmus thus preventing confusion as to whether the primary nystagmus was geotropic or apo geotropic.

## How I Do It: Manoeuvre for Horizontal SCC BPPV

### In patients with geotropic nystagmus

#### 1) Lempert 360-degree roll manoeuvres towards unaffected ear

##### Initial position:

Patient is made to lie down in a supine position. The head is flexed gently 30 degrees and laterally rotated to the affected ear.

##### Manoeuvre method:

360 degree turn with the head rotated in 90-degree rotations towards the unaffected ear, waiting 60 seconds at each station.

#### 2) Gufoni manoeuvre

##### Initial position:

Patient is made to sit first, then lie down to the affected side.

##### Manoeuvre method:

The head is rotated further 45 degree downward, and this position is maintained for 2-3 minutes In patients with apo geotropic nystagmus.

### In patients with Apogeotropic nystagmus.

#### 3) Lempert 360-degree roll maneuver towards affected ear

##### Initial position:

Patient is made to lie down in a supine position. The head is flexed gently 30 degrees and laterally rotated to the affected ear.

##### Manoeuvre method:

360 degree turn with the head rotated in 90 degree rotations towards the affected ear, waiting 60 seconds at each station.

#### 4) Modified Gufoni manoeuvre

##### Initial position:

Patient is made to sit first, then lie down to the affected side.

##### Manoeuvre method:

The head is rotated 45 degree upward, this position is maintained for 2-3 minutes

#### 5) Vannucchi Asprella manoeuvre

##### Initial position:

The Patient is made to sit at first.

##### Manoeuvre method:

Rapid movement to supine position, turning the head to the unaffected side and returning to sitting, where the head is then returned to the midline. This manoeuvre is repeated 5-6 times in rapid succession.



## Journal Scan

### 1) Efficacy and safety of semi-circular canal occlusion for intractable horizontal semi-circular benign paroxysmal positional vertigo.

Zhu Q, Liu C, Lin C et al ; Ann OtolRhinolLaryngol 2015 Apr;124(4):257-60.

A retrospective study on the efficacy of semi-circular canal occlusion for intractable HSC-BPPV with at least 2 years of follow-up. 3 female patients (average age 60 years), with a diagnosis of HSC-BPPV which was refractory to head-shake and barbecue roll manoeuvres underwent semi-circular canal occlusion treatment. The supine roll test was performed to diagnose HSC-BPPV and evaluate the treatment efficacy. All patients had complete resolution of their positional vertigo after semi-circular canal occlusion with a negative supine roll test. All patients reported transient postoperative disequilibrium, nausea and vomiting, which resolved within 2 weeks. In addition, 1 patient had transient tinnitus, which resolved after 4 months. There were no other significant long-term complications. The authors conclude that semi-circular canal occlusion appears to be a safe and well-tolerated treatment modality for intractable HSC-BPPV. However, further studies with large sample sizes are needed to confirm our conclusion.

#### Editorial comments:

*There is increasing tendency to explore definitive surgical manoeuvres, but long term follow up is needed given the tendency for surgery to itself induce vibratory dislodgment of the otoconia and conversion of one form of BPPV to another canal disturbance. The relative rarity of this form of BPPV makes comparative studies difficult. So the last word on this topic may never be said, but the availability of the surgical option should be noted.*

### 2) Systematic Review: Efficacy of Gufoni manoeuvre for treatment of lateral canal benign paroxysmal positional vertigo with geotropic nystagmus.

van den Broek EM, van der Zaag-Loonen HJ, Bruintjes TD. Otolaryngol Head Neck Surg. 2014 Jun;150(6):933-8.

A comprehensive search, including PubMed, Embase, Web of Science, and Cochrane as data sources, resulted in 44 original papers for randomized trials that compared the Gufoni manoeuvre with other manoeuvres (date of search: April 23, 2013). Three studies (389 patients) remained after screening of title, abstract, and full text. After method assessment, 2 of these 3 studies were considered to have a low risk of bias and a high level of validity. The first 2 studies compared the Gufoni manoeuvre with a sham manoeuvre (and the barbecue roll in one study). The third study compared the Gufoni manoeuvre with a treatment with vestibular suppressants and with the barbecue roll (plus forced prolonged positioning). All 3 studies reported short term results. Midterm results (1 month) were reported in 2 studies. Given the variety in the comparative treatments and follow-up duration, all 3 studies showed that the Gufoni manoeuvre was more effective than the sham manoeuvre or treatment with vestibular suppressants. All agreed that the manoeuvre was easy to perform, which made it suitable for older, immobile, and obese patients. However, there were insufficient data to establish the relative efficacy of the Gufoni manoeuvre compared with other manoeuvres.

#### Editorial comments:

*This meta-analysis establishes the relative benefit of one of the manoeuvres for lateral semi-circular BPPV. The paucity of prospective studies tests the validity of meta-analysis, hence this is pointer to all researchers in this field to commence well planned studies of this nature, before guidelines can be drawn up.*

## Historical – The importance of the semi circular canals established



### **The importance of the semi-circular canals established**

A French physiologist, the founder of experimental brain science and a pioneer in anaesthesia. Through the study of ablations on animals, he was the first to prove that the mind was located in the brain, not the heart. At fifteen, a precocious genius, he began studying medicine at Montpellier. In 1815, Flourens pioneered the experimental method of carrying out localized lesions of the brain in living rabbits and pigeons and carefully observing their effects on motricity, sensibility and behaviour, to establish whether different parts of the brain had different functions. He

concluded that the cerebral hemispheres are responsible for higher cognitive functions, that the cerebellum regulates and integrates movements, and that the medulla controls vital functions, such as circulation, respiration and general bodily stability. In 1835 he noted that the semi-circular canals are a part of the bodies recognition of its orientation in space . This he established by destroying the horizontal semi-circular canal of pigeons and demonstrating that it altered their pattern of flight. In a further series of elegant experiments he demonstrated that they are connected with eye movements and hence form an integral part of the balance mechanism. In March 1847 Flourens drew the attention of the Academy of Sciences to the anaesthetic effect of chloroform on animals.

## Radiology Quiz Of The Month

**Dr Manoj Agarwal**

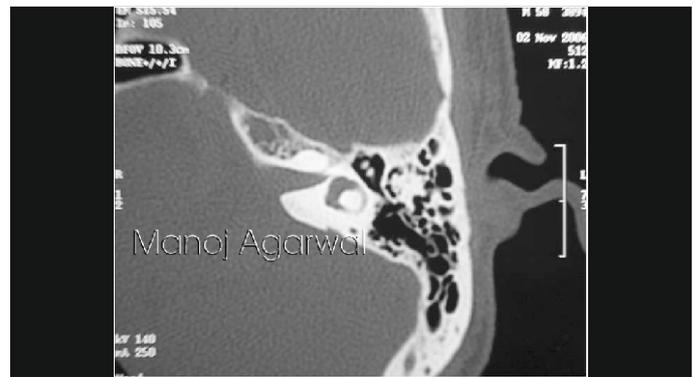
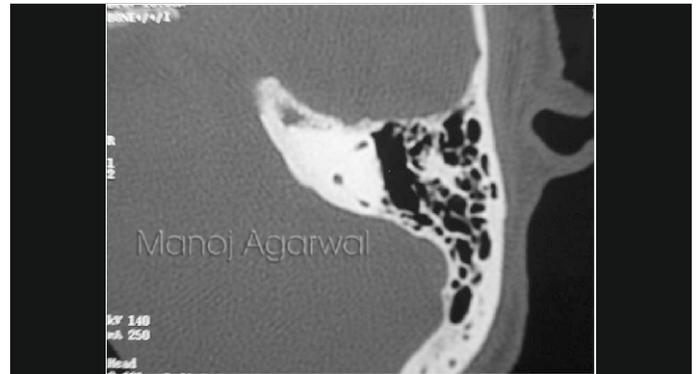
**Neurotologist & Lateral Skull Base Surgeon, Kolkata, India.**

Email: [manojent@gmail.com](mailto:manojent@gmail.com)

A 58 year old male patient presented with a sudden onset dizziness of 3 weeks duration associated with nausea and vomiting. Initially the dizziness was mild but became more severe with the passage of time. There was a sudden worsening of the patient's hearing in the right ear. Detailed history when elicited revealed that the patient had a long term history of chronic foul smelling scant discharge from the right ear for more than a decade which was till date being treated by the patient voluntarily using oral antimicrobials and topical antimicrobial-steroid combination ear drops. The discharge would be on and off, with periods of quiescence in between. Being a resident of a village, bathing in the local pond was a regular feature for the patient. Furthermore the patient's history revealed that there were very short episodes of vertigo, mainly instability while walking, the duration of which was not very forthcoming. The patient also complained of a certain degree of hearing impairment in the right ear, again for a significant period of time but the degree of which was not severe enough for it to cause concern for him and hence he tended to overlook it. The present episode started when about 3 weeks ago, when following about of an URTI, the discharge started again from the right ear with some pain. Within a day or two of the discharge, there was onset of vertigo, this time rotatory, which initially was mild but then increased tremendously in the last 7 days, totally incapacitating

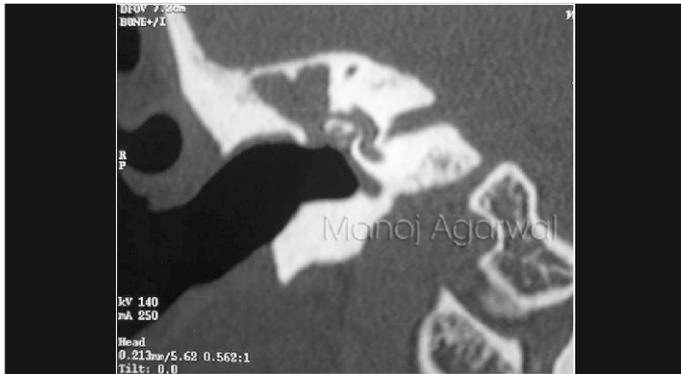
the patient. The vertigo was associated with vomiting, with labyrinthine sedatives being the only saving grace for the patient. There was also a sudden worsening of the already compromised hearing level in the right ear. Comorbid conditions in the patient included NIDDM and Dyslipidemia. A clinical examination of the patient revealed a slightly atrophic but intact left TM and an attic retraction with erosion and cholesteatoma, along with a posterior marginal perforation in the right ear. (OTOSCOPY PICTURE) There was a spontaneous left beating nystagmus which increased on digital tragal pressure and seigelisation. Pure Tone Audiometry revealed a mild to moderate sloping perceptible hearing loss in the left ear and a severe to profound mixed hearing loss in the right ear. AHRCT of the Temporal Bone was requisitioned and the images (both axial and coronal and both sides) are as below.







## Radiology Quiz Of The Month



- What is the diagnosis in this patient?
- What is the site of the pathology?
- What is the side of the pathology?
- What is the management protocol for this patient?

Email your answers to [dizzcover@cyclopsmedtech.com](mailto:dizzcover@cyclopsmedtech.com). The answers and the winners will be announced on the next issue of the Dizzcover newsletter.

Newsletter Editorial team

**Dr Ravi Nayar**

**Dr Srinivas**

Editorial Assistant

**Ms Sanjana**

Forthcoming issues on: **vestibular migraine, virtual reality based vestibular rehabilitation (VVRT)**



**Artist**

**Anita Pious,**

Year: 1996, Mixed media on canvas

The present series is a tribute for the courage and fortitude of the Women suffering both mentally and physically in India.

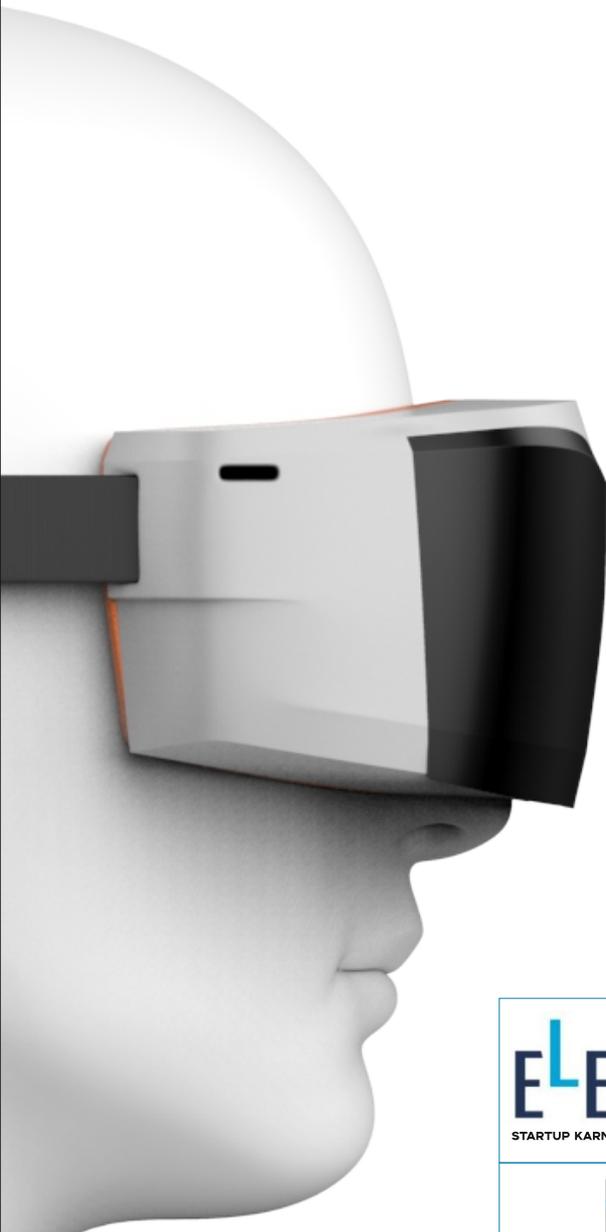
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