

Short communication

# Bilateral benign paroxysmal positional vertigo: an unusual complication of orthognathic surgery

Jeong Hong Kim<sup>a,1</sup>, Hak-Jin Kim<sup>b,2</sup>, Ju Wan Kang<sup>c,\*</sup>

<sup>a</sup> Department of Otorhinolaryngology, Jeju National University Hospital, 15 Aran 13-gil, Jeju 690-767, Republic of Korea

<sup>b</sup> Department of Oral and Maxillofacial Surgery, Yongin Severance Hospital, Yonsei University College of Dentistry, 225 Geumhak-no, Cheoin-gu, Yongin-si, Gyeonggi-do 449-930, Republic of Korea

<sup>c</sup> Department of Otorhinolaryngology, Yongin Severance Hospital, Yonsei University College of Medicine, 225 Geumhak-no, Cheoin-gu, Yongin-si, Gyeonggi-do 449-930, Republic of Korea

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## Abstract

Benign paroxysmal positional vertigo (BPPV) is a common cause of vertigo of labyrinthine origin and usually idiopathic. However, 15–20% of all cases occur after trauma to the head, and it has rarely been reported after maxillofacial surgery, so to the best of our knowledge this is the first report of its bilateral occurrence after orthognathic surgery. It resolves slowly, but symptoms are incapacitating. It can be diagnosed from the history and physical examination, including the Dix–Hallpike test. Maxillofacial surgeons should be aware of it in patients who complain of dizziness after orthognathic surgery, and should know how to manage it properly.

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## Introduction

Benign paroxysmal positional vertigo (BPPV) is the most common cause of vertigo of vestibular origin, 50–70% of episodes are idiopathic, and its exact aetiology is unknown. It has been reported that head trauma account for 15–20% of cases,<sup>1</sup> but we know of only a few cases after maxillofacial or dental procedures.<sup>2–4</sup> It is usually unilateral, though 6–25% are bilateral,<sup>5,6</sup> and it is more likely to be bilateral after trauma to the head.<sup>6</sup> We present the first case to the best of our knowledge in which it developed bilaterally after orthognathic surgery, and was resolved by bilateral Epley manoeuvres.

## Case report

A 22-year-old woman was referred to an otolaryngologist with vertigo of 7 days' duration. Ten days earlier, she had had simultaneous bilateral Le Fort I and intraoral vertical ramus osteotomies, and malar reduction for prognathism of the mandible, apertognathia, and a prominent malar. She had no vertigo at rest, but it worsened when she changed her position or moved her head.

Her symptoms and degrees of nystagmus were similar on both sides. The Dix–Hallpike test provoked bilateral vertigo and geotropic rotational nystagmus at the same time as upbeat nystagmus. She had no abnormal findings on further neurological examination. We treated her with Epley's manoeuvre on the right side on the first day.

The next day she felt better, but still complained of vertigo. The Dix–Hallpike test showed nystagmus only on the left, so we used Epley's manoeuvre on that side. On the following day, she felt much better and slightly dizzy, but had no true vertigo. There was no nystagmus on either side on the

\* Corresponding author. Tel.: +82 31 331 8736; fax: +82 31 331 5551.

E-mail addresses: [jeonghongkimmd@gmail.com](mailto:jeonghongkimmd@gmail.com) (J.H. Kim), [omskim@yuhs.ac](mailto:omskim@yuhs.ac) (H.-J. Kim), [kjw002@yuhs.ac](mailto:kjw002@yuhs.ac), [juwankangmd@gmail.com](mailto:juwankangmd@gmail.com) (J.W. Kang).

<sup>1</sup> Tel.: +82 64 717 1534; fax: +82 64 717 1029.

<sup>2</sup> Tel.: +82 31 331 8760; fax: +82 31 331 5551.

Dix–Hallpike test. After a month she was well and had had no recurrence of the BPPV.

## Discussion

BPPV is caused by calcium carbonate crystals (called otoconia) that move from the utricle to the semicircular canal.<sup>1</sup> These dislodged crystals are sensitive to gravity, which is why change in position or movement of the head induces vertigo.<sup>1,7</sup> Many patients present with dizziness after orthognathic surgery for reasons including the general anaesthetic.<sup>2</sup>

BPPV is normally self-limiting, and disappears within a few weeks without specific treatment,<sup>8</sup> so may often be overlooked. However, a previous study reported that 1/50 patients (2%) was diagnosed with BPPV after orthognathic surgery.<sup>2</sup> Sammartino et al. reported that 3/98 patients who had had closed elevation of the sinus floor with a mallet and osteotomes developed BPPV.<sup>9</sup> The maxilla is close to the inner ear and the force from the osteotome could be transmitted to the vestibular system and may dislodge otoconia.<sup>7</sup>

It is important that orthognathic surgeons consider the possibility of BPPV, because the spinning sensation of BPPV is incapacitating. It is easily diagnosed with the Dix–Hallpike test, and easily treated with Epley's manoeuvre.<sup>2,4,7,10</sup> The Dix–Hallpike test confirms upbeat nystagmus with atorsional component on the side of the lesion when the patient is rapidly moved from a sitting position to a lying position with the head hanging 45° below the horizontal plane and the affected ear downwards.

Our patient had bilateral BPPV, and a staged manoeuvre is usually recommended in such cases. If Epley's manoeuvre is done on both sides at the same time, it may exacerbate the side treated first while the manoeuvre is done on the other side. The manoeuvre should be done first on the side on which the patient has the more severe symptoms. Then, when the symptoms improve and the nystagmus has gone, it should be used on the other side. The results of treatment and the recurrence rate do not differ between bilateral and unilateral BPPV.<sup>5</sup>

In conclusion, orthognathic surgeons should consider the possibility of postoperative BPPV and counsel patients properly about early diagnosis and treatment.

## Ethical statement

This work was approved by Institutional Review Board of Jeju National University Hospital.

## Conflict of interest

None.

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