

## Case Report

# Dizziness due to intravestibular protrusion of prosthesis after stapedectomy

Suheil Artul<sup>1,2\*</sup>, Antoine Yamini<sup>1</sup>, Faozi Artoul<sup>3</sup>

<sup>1</sup>Department of Radiology, EMMS Hospital, Nazareth, Israel

<sup>2</sup>Faculty of Medicine, Bar Ilan University, Safed, Israel

<sup>3</sup>Nuclear Medicine, Meir Hospital, Kfar Saba, Israel

**Abstract.** We present a case of 37 year-old female with severe dizziness for the past six months whose past medical history revealed stapedectomy due to otosclerosis two years prior to visiting our hospital. Coronal high resolution computed tomography reconstruction showed the protrusion of a metallic device "prosthesis", which had been used to replace the stape bone, to the vestibule of inner ear. The patient was re-operated for revision and replacing the prosthesis with good clinical outcome.

**Keywords:** Dizziness, intravestibular protrusion, prosthesis, stapedectomy

### Introduction

Stapedectomy with prosthesis placement is the surgical treatment of choice for patients with otosclerosis [1]. This procedure, however, has some complications including tympanic membrane perforation, sensorineural hearing loss, perilymphatic fistula and post-operative vertigo.

Otosclerosis is a progressive disease that affects bone surrounding the inner ear. Lesions involving the footplate of the stapes result in increased impedance to the passage of sound through the ossicular chain, producing conductive hearing loss. This may be corrected through surgical replacement of the stapes with prosthesis may be used to correct. High resolution computed tomography of temporal bones plays a crucial role in detecting complications of such a procedure.

We present a case of 37 years-old female with severe dizziness for the past six months, his past medical history revealed stapedectomy due to otosclerosis two years prior presentation to our hospital.

### Case Report

A 37 year-old female was referred to our hospital for investigation of her disabling dizziness for the past six months. His past medical history revealed stapedectomy due to otosclerosis two years prior to presentation; otherwise she is a healthy woman.

On presentation she described rotatory movements of things around her and exhibited wide, unstable gait. Otologic examination was unremarkable for abnormalities, Laboratory blood tests were in normal range. The patient

underwent high resolution computed tomography (HRCT) of temporal bones as a part of dizziness investigation. Axial HRCT (Fig. 1) showed post surgical replacement of the stape bone with metallic device "prosthesis" in the middle ear. Coronal HRCT reconstruction (Fig. 2) better showed the protrusion of this prosthesis to the vestibule of inner ear. The patient was re-operated for revision and replacing the prosthesis with good clinical outcome.

### Discussion

The surgical treatment of choice for patients with otosclerosis is stapedectomy with prosthesis placement [1]. However, complications of this procedure include tympanic membrane perforation, sensorineural hearing loss, perilymphatic fistula and post-operative vertigo. Otosclerosis is a progressive disease that affects bone surrounding the inner ear. In this disease, lesions involving the footplate of the stapes result in increased impedance to the passage of sound through the ossicular chain, producing conductive hearing loss. Surgical replacement of the stapes with prosthesis may be applied to correct such hearing loss.

Vertigo is a major immediate complication which generally resolves spontaneously after a couple of weeks and delayed and prolonged vertigo is very rare and needs further investigation.

Protrusion of the prosthesis to the vestibule of inner ear can cause prolonged vertigo and is a rare complication which occurs in about 0.2-3% of patients who underwent stapedectomy [2]. Postoperative otologic evaluation of these

\* Corresponding author: Suheil Artul, MD ([suheil\\_artul@hotmail.com](mailto:suheil_artul@hotmail.com)).

patients who have undergone ossicular reconstruction is often difficult [3].

The use of ossicular reconstruction for middle ear



**Figure 1** Axial HRCT shows post surgical replacement of the stape bone with a metallic device, "prosthesis" in the middle ear (arrow).



**Figure 2** Coronal HRCT reconstruction better shows the protrusion of prosthesis to the vestibule of inner ear (arrow).

continues to expand with advances in microsurgical techniques for the diseased ossicles [4] such as otosclerosis and the use of radio dense, metallic prostheses has made high resolution CT of the temporal bone the best method to evaluate post-operative vertigo, dizziness and other complications [5]. CT scan imaging can frequently help to determine the cause of the inner ear complication of stapedectomy.

In conclusion, prolonged vertigo and dizziness post-stapedectomy is a rare serious complication which generally is due to protrusion of the metallic device into the vestibule and must be taken into consideration in emergency room. HRCT with coronal reconstruction is the modality of choice for diagnosing this entity.

#### Conflict of Interest

The authors declare no conflicts of interest.

#### References

1. Pickuth D, Brandt S, Berghaus A, Spielmann RP, Heywang-Kobrunner SH. Vertigo after stapes surgery: the role of high resolution CT. *Brit J Radiol* 73:1021-1023, 2000.
2. Ayache D, Lejeune D, Williams MT. Imaging of postoperative sensorineural complications of stapes surgery. *Adv Otorhinolaryngol* 65:308-313, 2007.
3. Stone JA, Mukherji SK, Jewett BS, Carrasco VN, Castillo CT. Evaluation of prosthetic ossicular reconstruction procedures: what the otologist needs to know. *Radio-graphics* 20:593-605, 2000.
4. Hirvonen TP, Aalto H. Immediate postoperative nystagmus and vestibular symptoms after stapes surgery *Acta Otolaryngol* 133:842-845, 2013.
5. Bajin MD, Mocan BO, Saraç S, Sennaroğlu L. Early computed tomography findings of the inner ear after stapes surgery and its clinical correlations. *Otol Neurotol* 34:639-643, 2013.