

Case Report*Open Access, Volume 2***Minimally invasive transcanal endoscopic assisted endolymphatic decompression for patient with refractory Ménière's disease****Wai Tsz Chang^{1,2*}; Hazel Wong¹; Michael CF Tong^{1,2}**¹Department of Otorhinolaryngology, Head and Neck Surgery, The Chinese University of Hong Kong, Hong Kong.²Institute of Human Communicative research, The Chinese University of Hong Kong, Hong Kong.***Corresponding Authors: Wai Tsz Chang**

Department of Otorhinolaryngology, Head and Neck Surgery, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, NT, Hong Kong.

Email: waitsz@ent.cuhk.edu.hk

Received: Oct 08, 2021

Accepted: Nov 23, 2021

Published: Nov 30, 2021

Archived: www.jcimcr.org

Copyright: © Chang WT (2021).

DOI: www.doi.org/10.52768/2766-7820/1441

Keywords: Meniere's disease; lateral skull base; transcanal endoscopic assisted technique; transcanal combined endoscopic microscopic approach.**Introduction**

Ménière's disease's most typical clinical feature are recurrent episodes of vertigo which may last for a few hours, and associated with some cochlear symptoms, such as hearing loss, tinnitus and sense of aural fullness [3]. Diagnostic criteria of Ménière's disease were refined in 2015, and stated the definite Ménière's disease is characterized with 2 or more spontaneous episodes of vertigo, with each lasting 20 minutes to 12 hours, fluctuating low frequency to mid-frequency sensorineural hearing loss in the affected ear, fluctuating aural symptoms with at least two episodes, such as tinnitus and fullness [5].

Dysfunction of endolymphatic sac is thought to be the pathophysiology of Ménière's disease, as the endolymphatic sac is to maintain the endolymphatic homeostasis in inner ear, and stabilize the hydrostatic pressure [2]. Patients who have Ménière's disease are often suffering from psychological problem such as anxiety, depression. Panic attacks and hyperventilation may also be present [3].

There are various treatment options for Ménière's disease as stated in many different literatures, including conservative non-surgical treatment and surgical treatment [7]. Surgical option is often considered only when the vertigo persists and refractory to the conservative therapy [1]. Nonsurgical treatment options

Citation: Chang WT, Wong H, Tong MCF. Minimally invasive transcanal endoscopic assisted endolymphatic decompression for patient with refractory Ménière's disease. *J Clin Images Med Case Rep.* 2021; 2(6): 1441.

include adopting low salt diet, diuretics, betahistine, antivirals, myringotomy and grommet Insertion (M&G), Meniette device, transtympanic steroids and transtympanic gentamycin [7]. Surgical options include exploratory tympanotomy with gentamycin application, endolymphatic sac decompression, endolymphatic duct blockage, labyrinthectomy, vestibular neurectomy, tenotomy of the tensor tympani and stapedius tendons, cochlear implantation, etc. [9].

A lot of surgeons in the world recommend the endolymphatic sac decompression surgery as it is considered as relatively conservative surgery option, due to its low rates of hearing loss associated, and the relatively high average success rate of vertigo control- 80% [2]. Traditional endolymphatic sac decompression surgery requires big incision, mastoid bone will be removed to expose the endolymphatic sac [2].

The use of endoscope has been explored in many ear surgeries, with the advantages of wider visualization of hidden area and minimally invasiveness [4,6,10]. Compared to traditional post-auricular incision procedure, transcanal endoscopic technique could avoid big surgical scar, ear numbness, other scar-related problem such as hypertrophy, and ear deformation. In this case report, we demonstrate a case of refractory Ménière's disease and how it was managed via transcanal endoscopic assisted technique, with discussion of the feasibility of transcanal approach to endolymphatic decompression.

Case presentation

53 year-old man presented with more than 10 years of rotatory vertigo, left tinnitus and block ear and associated headache, hearing loss in 2017. His vertigo would last 30 minutes to 3 hours. Since 2016 August, the severity and frequency of vertigo attack increased. Contrast magnetic resonance image (MRI), computed tomography (CT) scan and blood test showed normal result. Physical exam revealed there was no enlarged mass in neck, bilateral tympanic membrane and external auditory canal were clear. Within 1-year time, the patient had been adopting low salt diet, and had tried various medications, including diuretics, 12 mg TDS betahistine and Lasix. The patient was then offered high dose betahistine with 144 mg daily. He was also offered left Myringotomy and Grommet Insertion (M&G), together with Dexamethasone injection in 2017. Symptoms improved afterwards, but there were still intermittent vertigo attacks. In 2018, intratympanic steroid was offered to the patient for four more sessions, active vertigo attack still existed. The patient was offered with further 20 mg Gentamycin injection through M&G to left ear. However, the vertigo attack persisted.

The patient eventually was offered left endoscopic endolymphatic sac decompression surgery after eight months.

Post-operatively, the patient retained normal facial nerve function. He was discharged from hospital day 1 post operation. Post-operative Computed Tomography (CT) scan showing the transcanal endoscopic assisted approach with minimal bone destruction and reaching the endolymphatic sac. Endoscopic myringoplasty was done to repair left residual perforation of tympanic membrane brought by surgery. In two years' time, no vertigo attack and only occasional tinnitus were reported since postoperation.

Discussion

This case demonstrates the surgical management of refractory Ménière's disease using endoscopic assisted technique in endolymphatic sac decompression surgery. This case clearly demonstrated the typical management flow of refractory Ménière's disease. The patient tried various non-surgical options before surgical option, such as low salt diet, diuretics, betahistine, M&G, transtympanic steroids and transtympanic gentamycin. As the patient was refractory to all the non-surgical treatments.

Traditional endolymphatic sac decompression requires open surgery which requires big post-auricular incision. It would raise a concern of large external wound, and therefore poor cosmetic outcome for a relatively young patient. While the transcanal endoscopic technique requires only small incision and therefore can avoid big surgical scar, providing better cosmetic outcome, also expediting the postoperative recovery. This technique could provide greater surgical field visualizing the hidden area. With the advantage of providing wider surgical field and better postoperative recovery and cosmetic outcome, transcanal endoscopic technique now has been widely used especially in middle ear surgeries [4].

Conclusion

The case has demonstrated that transcanal endoscopic-assisted technique could bring considerable outcome in endolymphatic decompression surgery. We believe that with more experience, transcanal endoscopic-assisted technique may be part of the standard procedure in endolymphatic decompression surgery

References

1. Filho, N. Á. C., Aquino, J. E. P., Torres, T. G. Decompression of the Endolymphatic Sac: Vertigo and Hearing Analysis. *Int. Arch. Otorhinolaryngol.* 2019; 13: 426-430.
2. García, M. de L. F., Segura, C. de la L., Lesser, J. C. C., & Pianese, C. P. Endolymphatic Sac Surgery for Ménière's Disease – Current Opinion and Literature Review. *International Archives of Otorhinolaryngology.* 2017; 21: 179– 183.
3. Harcourt J, Barraclough K, Bronstein A. (2014). Meniere's disease. *BMJ: British Medical Journal*, 349. Retrieved July 19, 2021.
4. Kozin ED, Lee DJ. Transcanal Endoscopic Ear Surgery. *The Hearing Journal.* Volume. 2015; 68: 8,9,12.
5. Lopez-Escamez JA, Carey J, Chung WH, Goebel JA, Magnusson M, Mandalà M, et al. Diagnostic criteria for Ménière's disease. *J Vestib Res* 2015; 25: 1-7.
6. Magnan, J., Chays, A., Lepetre, C., Pencroffi, E., Locatelli, P. Surgical perspectives of endoscopy of the cerebellopontine angle. *Am. J. Otol.* 1994; 15: 366-370.
7. Magnan J, Özgirgin ON, Trabalzini F, Lacour M, Escamez AL, Magnusson M, Güneri, E. A., Guyot, J. P., Nuti, D., Mandalà, M. 2018.
8. European Position Statement on Diagnosis, and Treatment of Meniere's Disease. *J Int Adv Otol.* 14: 317-321.
9. Patel, H. H., Isildak, H. Meniere's disease an overview. *Operative Techniques in Otolaryngology-Head and Neck Surgery.* 2016; 27: 184-187.

-
10. Presutti L, Alicandri-Ciufelli M, Cigarini E, Marchioni D. Cochlear schwannoma removed through the external auditory canal by a transcanal exclusive endoscopic technique. *The Laryngoscope*. 2013; 123: 2862-2867.