

## Labyrinthectomy: An Alternative

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### ABSTRACT

Labyrinthectomy is an effective surgical procedure for the management of poorly compensated unilateral peripheral vestibular dysfunction in the presence of a nonserviceable hearing ear. Relief from vertigo is achieved at the expense of the residual hearing in the ear to be operated. Hence, the procedure is reserved for patients with nonserviceable hearing. The basic principle of labyrinthectomy is to symmetrically open all the semicircular canals and vestibules; the landmarks should be preserved until the end of labyrinthectomy. After exposing all the ampullae and vestibules, the five individual groups of neurosensory epithelia are excised under direct visualization.

### INTRODUCTION

Labyrinthectomy is an extremely effective treatment for disabling episodic vertigo in patients with unilateral Ménière's disease and with other causes of intractable vertigo that have failed conservative management or hearing-sparing surgery, and in patients who have non-serviceable hearing in the affected ear. There are two surgical approaches to achieve labyrinthectomy: the transcanal and the transmastoid approaches. In the transmastoid labyrinthectomy, the semicircular canals and vestibule are opened and exonerated of neuroepithelium under direct visualization. In the transcanal labyrinthectomy, the vestibule is opened through a tympanotomy by removing the stapes and drilling the bone between the round and oval windows. The neuroepithelium is removed with a hook and suction. Both approaches have a high success rate in relieving patients from severe vertigo attacks [1].

Labyrinthectomy is effective in unstable unilateral peripheral vestibular disorders because it achieves an acute deafferentation in the pathologic ear, presuming that the patient can compensate centrally. The success rate is of 90.5% or better, and long-term outcomes are comparable to those of vestibular neurectomy.

The use of transmastoid labyrinthectomy has been traditionally reserved for patients with poor hearing, whose vestibular symptoms are due to refractory Ménière's disease, ipsilateral delayed endolymphatic hydrops, and labyrinthitis. Typically, these patients are not only severely debilitated by their vertigo:

their degree of hearing loss has progressed to such an extent that their hearing is considered non-serviceable [2]. The precise definition of non-serviceable hearing loss has varied among practitioners, but typically encompasses either hearing classes C and D, as defined by the American Academy of Otolaryngology-Head and Neck Surgery Committee on Hearing and Equilibrium (AAO-HNS CHE) in 1995, or, less frequently, hearing stage 4, as defined specifically for Ménière's disease in separate guidelines by the AAO-HNS CHE. Rarely, patients will have vestibular symptoms of such severity that, although they may still have usable hearing, they request to proceed with the labyrinthectomy, deliberately choosing postoperative anacusis, for the best chance of vertigo control. Conversely, patients who have serviceable hearing may complain of hearing distortion or hyperacusis, which can be so significantly debilitating that they may undergo labyrinthectomy to electively destroy all hearing function [3]. This underlies a central facet of Ménière's disease: its subjective manifestations can be so incapacitating that those who suffer from it experience significant deterioration not only in their physical wellbeing, but in their mental and social well-beings as well.

An area of apprehension is in the small but definite probability that a patient with a unilateral disease will develop a contralateral disease after the labyrinthectomy has already been performed. The threat of latent contralateral disease has discouraged some practitioners from implementing fully ablative procedures in the treatment of Ménière's disease. Estimates of bilateral affection from Ménière's range from 2% to 78%; however, the accepted prevalence is more likely in the range of

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15% to 40%. There is similar variability in the literature regarding the timing of contralateral presentation in latent bilateral diseases [4]. Some authors argue that the probability of bilateral manifestation increases with time, whereas others have observed that the risk of bilateral involvement decreases with time, and is much less likely to occur if it does not manifest within the first 5 years of symptoms. For those patients who do develop the bilateral disease, hearing in the contralateral ear typically remains better than in the presenting ear, with hearing reversal occurring in approximately 10% of cases.

Ablative procedures such as labyrinthectomy usually abolish vertigo, but their success in improving the quality of life depends on an adequate central vestibular compensation. Impaired compensation after surgery can result in persistent postural instability, which is exacerbated by walking or moving. Reports of incidence of disequilibrium after labyrinthectomy have ranged from 20 to 78%; meanwhile, after vestibular neurectomy, the incidence of occasional unsteadiness has been shown to be between 14 and 20% [5, 6].

## CONCLUSION

Labyrinthectomy is highly effective in controlling vertigo, but results in complete loss of hearing in the operative ear. The most

widely used treatments for disabling Ménière's disease are vestibular neurectomy and intratympanic gentamicin injection.

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