

Imaging Case of the Month Lateral Semicircular Canal Dehiscence

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Dehiscence of the superior and, more recently, posterior semicircular canals has been recognized as a structural cause of vertigo and hearing loss (1–3). Manifestations can include conductive hearing loss, sensorineural hearing loss, sound- and pressure-induced dizziness, and vertigo and eye movement (4). The patho-

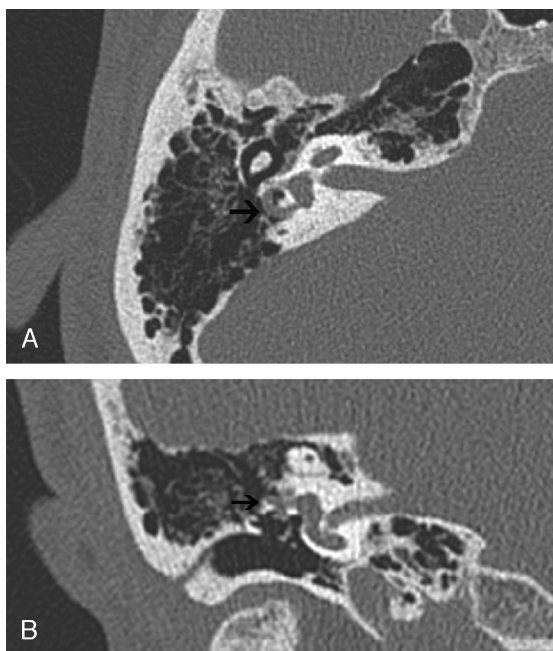


FIG. 1. Axial (A) and coronal (B) CT scan of the right temporal bone reveals dehiscence of the bone over a large part of the lateral semicircular canal.

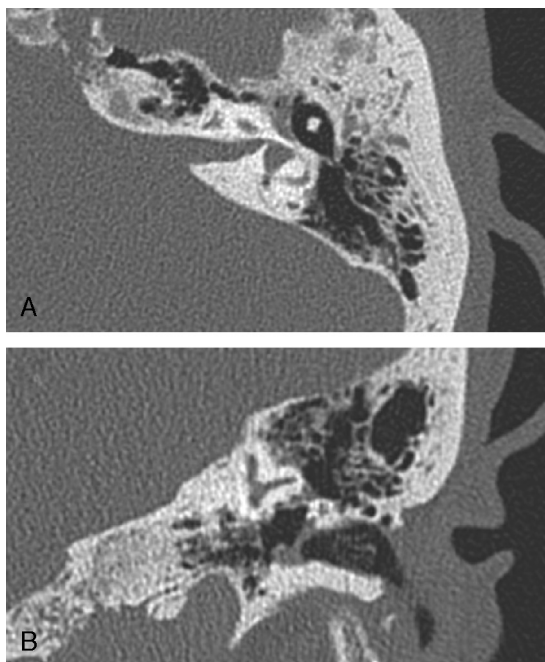


FIG. 2. Axial (A) and coronal (B) CT scan of the contralateral ear reveal normal anatomy.

genesis of these symptoms has been attributed to the presence of a third window, which provides a different path for the dissipation of acoustic energy (4). A subset of patients, however, are asymptomatic, and these patients' conditions are diagnosed on imaging or postmortem analyses of temporal bones. Dehiscence of the lateral semicircular canal, on the other hand, has only been described in association with cholesteatoma or fenestration procedures (5).

The cause of this bony dehiscence has been attributed to a number of different factors. Pressure from surrounding structures, such as the jugular bulb, superior petrosal sinus, or brain, superimposed on a congenitally thin bone can result in erosion of the bone. Infectious pathogeneses, such as syphilis, can affect bone breakdown

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and regeneration, resulting in areas of dehiscence. Most patients with superior canal dehiscence, however, have marked thinning of bone on the contralateral side, supporting a congenital pathogenesis. Subsequent trauma or the presence of arachnoid granulation can then result in dehiscence on one side.

Below are CT scan images of a patient who was evaluated for cochlear implantation. The patient had received radiation therapy at the age of 20 years for a lymphoma of the palate. He had progressive sensorineural hearing loss for several years but no vestibular symptoms. The dehiscence of the right lateral semicircular canal (Figs. 1, A and B) was found incidentally and confirmed at surgery. The absence of any other bony abnormalities in the ipsilateral or contralateral

ear (Figs. 2, A and B) makes it unlikely that this abnormality was caused by the radiation.

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