A 29-year-old Filipina of Chinese descent presented with progressive bilateral conductive hearing loss of several years’ duration. While working overseas, she consulted with an otolaryngologist and underwent computerized tomographic (CT) imaging of the temporal bone as part of her evaluation. She was informed that no abnormalities were identified in the imaging exam, and she was offered exploratory middle ear surgery with possible stapes surgery. She then sought a second opinion, with the intention of obtaining a more definitive diagnosis prior to any invasive medical intervention. A review of the CT imaging study, with particular emphasis on looking for radiologic evidence of otosclerosis, revealed the presence of a focal region of bone demineralization in the region of the fissula ante fenestram. (Figure 1) This finding is consistent with a diagnosis of fenestral otosclerosis.
Otosclerosis is one of the main differential diagnoses for a patient presenting with bilateral conductive hearing loss and no other visible evidence of otologic disease. Although it is more common in the Caucasian population, it must remain as one of the considerations in the Asiatic population, including Filipinos. High-resolution CT is the imaging technique of choice in the evaluation of conductive hearing loss. When evaluating a scan for evidence of otosclerosis, it must be remembered that the most common location of involvement is the bone just anterior to the oval window, in a small cleft known as the fissula ante fenestram. It is this relationship that gives rise to the term fenestral otosclerosis. The fissula is a thin fold of connective tissue extending through the endochondral layer, located in the region between the oval window and the cochleariform process, where the tensor tympani tendon turns laterally toward the malleus. (Figure 2) Since the average length of the stapes footplate along its short axis is around 1.5 mm, it is highly recommended that submillimeter image slice thickness be routinely ordered for the CT imaging study, in order to maximize the opportunity to identify the oftentimes small and subtle areas of focal demineralization. At a slice thickness of 0.5 mm, such a lesion might only be identified by an astute clinician in 2-3 sequential axial imaging slices.

REFERENCES