History
Teenager with hearing loss and small external auditory canal.

Diagnosis
External Auditory Canal Osteochondroma

Discussion
Chronic exposure of the ear canal to cold water incites an inflammatory reaction leading to osteogenic activity. Cytokines and growth factors (e.g., interleukin 1 and 6, tumor necrosis factors and interferon) modulate the activity and function of osteoblasts and osteoclasts. An imbalance between the local effect of osteogenic growth factors and bone resorptive cytokines during repeated episodes of otitis externa acquired during exposure to cold water may lead to the formation of auditory exostoses. Irrigation of the ear canal with cold (below about 19 degrees) water has been shown to cause prolonged local redness, hyperemia and inflammation which may stimulate the periosteum. Exostosis of the external auditory canal is mostly seen in males and is common in surfers and swimmers; exostoses have been found in anthropological studies of cultures where cold water diving was known to exist. Gradual narrowing of the external auditory canal exostosis will result in conductive hearing loss. They are most often observed in individuals with a history of cold-water exposure (such as swimmers or surfers). The bone deposition responsible for exostosis is thought to be secondary to a chronic periostitis due to exposure to cold temperatures. The bone mounds usually occur bilaterally and are generally asymptomatic. Symptoms such as conductive hearing loss and otitis externa can arise if the canal becomes occluded. Histologically, dense stratified arrangement of new bone that remodels over time into normal lamellar bone is seen. Exostoses can be managed surgically if canal obstruction and symptoms arise.

Findings
CT-Axial and coronal images show a pedunculated exostosis from the anterior roof of the right external auditory canal nearly occluding true canal. Also note the debris and fluid trapped between the exostosis and the tympanic membrane.

Reference
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