



CLINICAL CONSULTATION

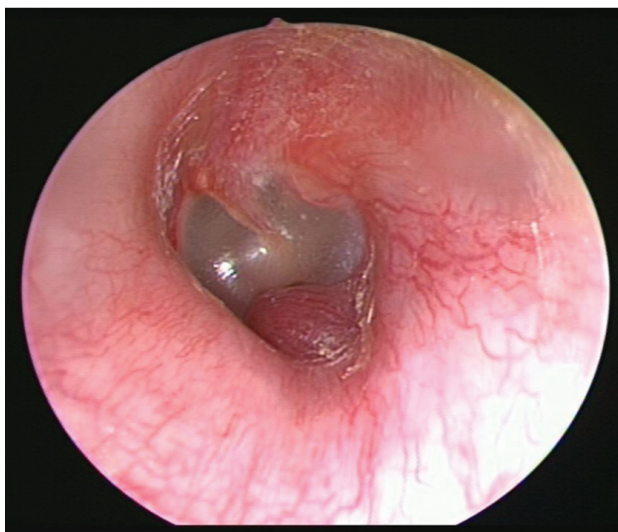
Symptoms: Ear Canal Mass, Pain, Significant Bleeding

By Hamid R. Djalilian, MD

A 55-year-old woman presents with bleeding in the ear after using a cotton swab. She said she was recently having some gradual, progressive pain in the ear. After a few hours the bleeding eventually stopped, but she has had continued pain and pressure on that side. Her past medical history is otherwise not significant, and she denies any surgeries in the past. She states that her hearing is unaffected. Examination of the ear reveals a small red/purple mass on the floor of the ear canal near the tympanic membrane. Her audiogram is normal, and her otoscopy is shown on the right.

What is your diagnosis? See p. 12.

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Otoscopy image of the patient's ear canal

Diagnosis: Glomus Jugulare Tumor

By Hamid R. Djalilian, MD

Continued from p. 10

Ear canal masses in the bony ear canal are very uncommon. Most commonly, ear canal masses originate in the cartilaginous portion of the external auditory canal as a result of the presence of multiple cell types in the cartilaginous canal skin. The most common type of benign lesion of the external auditory canal is a ceruminoma, a benign tumor of the ceruminous glands. Bony canal lesions are most commonly extensions of cartilaginous canal masses that have gradually involved skin of the bony canal.

The most common cancerous lesion of the external auditory canal is squamous cell carcinoma; adenoid cystic carcinoma is less common. Squamous cell carcinoma of the canal generally starts laterally and gradually invades the medial canal skin. Primary squamous cell carcinoma is most commonly due to chronic irritation of the ear canal from chronic otitis externa or burn, or from sun damage-related squamous cell carcinoma of the external ear (auricle) invading medially. Adenoid cystic carcinoma originates in the cartilaginous canal and gradually invades the deeper soft tissue, as well as, potentially, the medial canal skin.

Several characteristics of this patient's signs and symptoms are concerning. First, she has pain, which worries us in the presence of a mass, as the pain indicates that there may be involvement of the neural structures of the deeper tissues—in this case, the periosteum. Second, the bony canal involvement of this mass indicates that there is something more than just a skin lesion. Third, the patient had a significant amount of bleeding, which lasted a few hours; this is highly unusual in a patient who is not on any type of anticoagulants such as aspirin, warfarin (Coumadin), clopidogrel (Plavix), or similar drugs.

Evaluation of patients presenting with a bony canal skin lesion involves obtaining imaging to further understand the extent of the lesion being seen. In some cases, it is advisable to hold off on a biopsy on a medial canal lesion that is vascular in nature until proper imaging studies have been performed. This patient initially had undergone an MRI of the temporal bone without contrast enhancement (Figure 1). The radiologist's report on the MRI indicated no masses seen in the temporal bone. However, evaluation of any already identified temporal bone mass requires obtaining MR imaging with gadolinium enhancement for the skin because without contrast agent, the mass may not appear any different from soft tissues of the temporal bone.

We generally first obtain a CT scan of the temporal bone to evaluate the

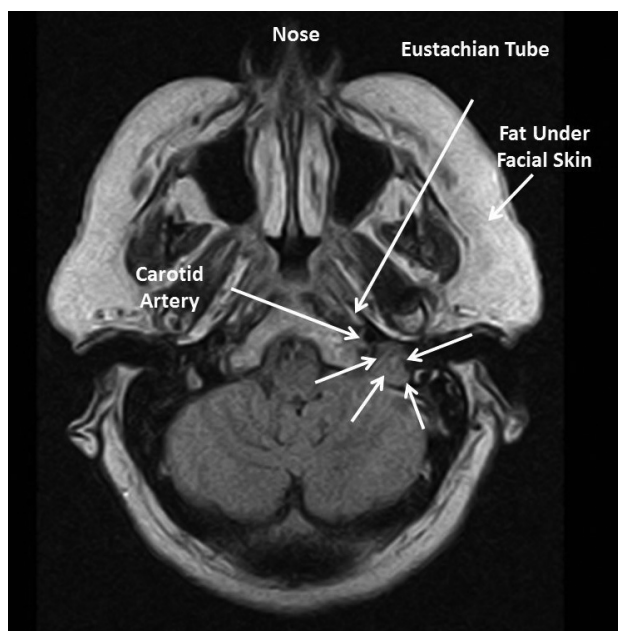


Figure 1. Non-contrast axial FLAIR MRI of the temporal bone did not reveal a mass in the temporal bone.

extent of the mass and bony canal involvement. The CT scan also helps with planning a surgical procedure and outlines the nearby anatomy, such as the facial nerve that is within 3 mm of the ear canal in the medial segment near the tympanic membrane. Although an MRI produces images with great soft tissue detail, it relies on the differential content of hydrogen atoms in various tissue and is thus unable to image bony details because of the low water content of bone. Contrast enhancement enables visualization of vascular masses, which

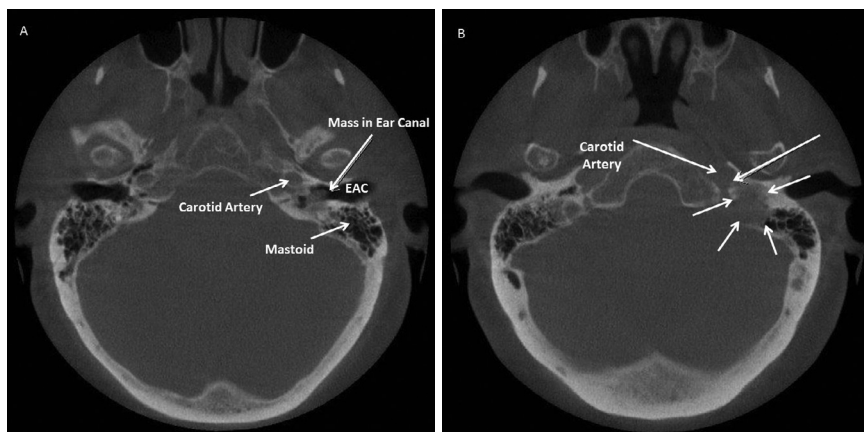


Figure 2. Axial CT of the temporal bone demonstrating (A) mass into the ear canal and (B) destruction around the jugular bulb (short arrows) and extension of the mass to the carotid artery (long arrow).

iPad Only!

FIVE BONUS VIDEOS: SEE THE SYMPTOMS

Read this month's Clinical Consultation case, then watch the accompanying videos from Hamid R. Djalilian, MD, to review the patient's imaging for yourself.

The first video is an otoscopy showing the mass in the medial canal on the floor.

The second video shows an axial CT of our patient's temporal bones.

In the third video, see the axial T-1 enhanced MRI of our patient's temporal bone.

The fourth video shows the coronal T-1 enhanced MRI of our patient's temporal bone.

In the fifth video, view the axial FLAIR MRI of our patient's temporal bone.

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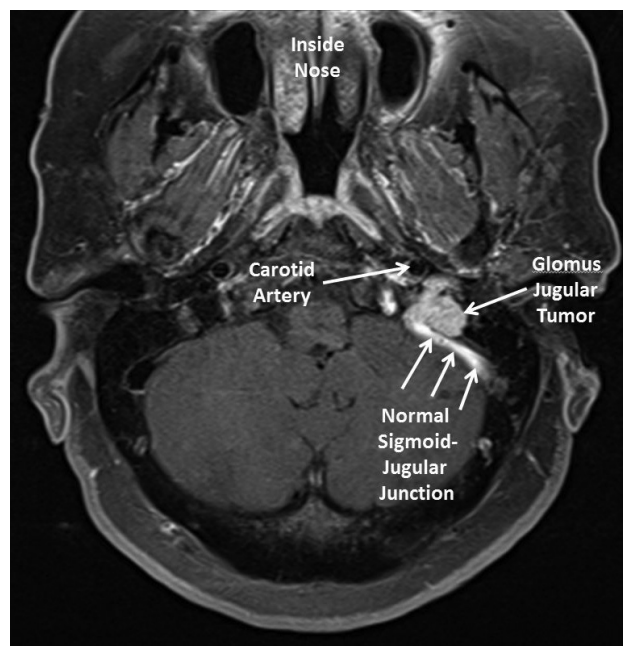



Figure 3. Axial T1 post-gadolinium (post-contrast) MRI showing an enhancing (white) mass of the jugular foramen that is distinct from the sigmoid-jugular junction (where the sigmoid sinus drains into the jugular bulb).

can be differentiated from normal tissues. A noncontrast MRI of the temporal bone is great for evaluation for the presence of an acoustic neuroma. CT scan of the temporal bone is most commonly performed without contrast agents, as a CT scan with and without requires obtaining imaging twice and radiating the patient twice for the scan. We generally obtain a

noncontrast CT of the temporal bone in conjunction with an MRI with and without gadolinium.

The CT scan of this patient shows destruction around the jugular foramen, involvement of the floor of the ear canal, and a protruding mass into the ear canal. This finding is highly suspicious for a glomus jugulare tumor, which is the most common infiltrative tumor involving the jugular foramen. The tumor appears to be extending superiorly and laterally; it has partially destroyed the floor of the medial canal and extends into the ear canal. The mass has also eroded the bony canal of the carotid artery. The middle ear is not involved, which is why the tympanic membrane has a normal appearance.

Treatment of the glomus jugulare tumor involves surgical resection or stereotactic radiation therapy. In the past, surgical resection was the mainstay of therapy; most non-elderly patients with small tumors would undergo surgical resection. With increasing data on stereotactic radiosurgery efficacy in treating these tumors, this treatment modality is the more favorable option for patients without significant intracranial involvement and with normal lower cranial nerve function (swallowing and voice function).¹ Tumors involving the carotid artery generally cannot be completely resected because of their adherence to the carotid artery. In the past, occasionally the carotid artery would be resected in some cases for total tumor removal. Currently, the excellent results of stereotactic radiation have obviated the need for radical surgery. 

REFERENCE:

1. German MA, Zardouz S, Sina MK, Ziai K, Djalilian HR. Stereotactic radiosurgery for vestibular schwannomas: a survey of current practice patterns of neurotologists. *Otol Neurotol* 2011;32(5):834-837.