An Oropharyngeal Accessory Tragus in a Young Patient with Conductive Hearing Loss

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Key clinical message:

In this report, we describe the first reported case of an oropharyngeal accessory tragus in a 20-year-old female presenting with moderate to severe left-sided conductive hearing loss. This case shares rare developmental anomalies to consider when diagnosing oropharyngeal masses that highlight the intricate embryological development of the head and neck region.

Introduction:

Head and neck development involves morphogenesis with contributions from the ectoderm, mesoderm, and endoderm layers, as well as neural crest cells. During the fourth to sixth weeks of gestation, mesenchymal proliferations known as hillocks of His arise from the first and second pharyngeal arches. Under the influence of various molecular signals, these hillocks undergo differentiation to give rise to structures of the external ear, including the tragus, which arises from the first of the six hillocks.[1]

Early in embryonic development, the preauricular sulcus emerges as a remnant of the first branchial arch which initially appears as a skin groove around the developing ear. As development continues, the preauricular sulcus extends from its origin near the developing ear towards the ventral aspect of the neck. Along its path, it passes through the first pharyngeal cleft, eventually giving rise to structures that eventually form part of the oropharynx. Abnormalities in this migration process can occur, leading to the presence of ectopic tissue, such as an accessory tragus, within the oropharynx.[2,3]

In this report, we discuss the case of an accessory tragus incidentally identified in the oropharynx of a 20-year-old female presenting with left-sided conductive hearing loss.

Case History/Examination:

A 20-year-old female was referred to the otology clinic for evaluation of left-sided conductive hearing loss. The patient reported experiencing 10 years of left-sided hearing loss with no history of prior surgeries, infections, trauma, or migraines. A pure tone audiogram showed moderate to severe conductive loss in the left ear. On physical examination, she had an unremarkable periauricular area, pinna, and external auditory canal exam, with normal cranial nerve function. Weber test localizing to the left with 512 Hz tuning fork, and bone greater than air conduction at the left ear supporting the diagnosis of a conductive hearing loss. Otomicroscopy revealed healthy, intact tympanic membranes, with normal mobility and an aerated middle ear. The patient had no additional complaints, and the remainder of the head and neck examination was unremarkable.

Methods:

A non-contrast temporal bone computed tomography (CT) was obtained as part of her workup for conductive hearing loss, which revealed an inconspicuous lenticular process of the incus and head of the stapes, suggesting a possible malformation. Incidentally, a well-defined, lipomatous lesion was identified at the junction of the left nasopharynx and oropharynx, just posterior to the soft palate (Figure 1). Notably, the patient attributed no symptoms to the mass on further probing, denying any issues suggesting velopalatal insufficiency or nasopharyngeal obstruction.

Based on the clinical examination and imaging, our differential diagnoses for the mass included a benign lesion such as lipoma, abnormal lymphoid tissue from Waldeyer's ring, and lower on the list, a lymphovascular lesion, antrochoanal polyp, juvenile angiofibroma or a malignancy. After discussing of risks, benefits, and alternatives with the patient, she elected to pursue a middle ear exploration with intraoperative nasopharyngeal endoscopy and biopsy. Standard sinonasal rigid endoscopy was performed in the operating theatre which demonstrated a well-circumscribed, smooth mass with fine hairs in the oropharynx (Figure 2A). The mass was noted to be pedicled at the left lateral wall at the junction between the oro- and naso-pharynx at the level of the soft palate. After identifying the lesion and determining that this was unlikely to be malignant or vascular in nature, an extended tip Bovie was used to truncate the pedicle. Due to its size, a transoral approach was required to remove the mass. Pathological analysis revealed a polypoid, tan-white, smooth, and hair-bearing mass measuring 2.7 x 1.8 x 1.5 cm (Figure 2B).

Histopathological evaluation demonstrated skin appendages and fibro-adipose stroma, accompanied by mild chronic inflammation and scattered mast cells. Additionally, the stalk contained minor salivary gland tissue and cartilage (Figure 2C, 2D). These unexpected findings were determined to be consistent with an accessory tragus, a rare developmental abnormality originating from the first pharyngeal arch. The subsequent middle ear exploration revealed a foreshortened incus long process and absent stapes capitulum consistent with

congenital ossicular discontinuity. The stapes was found to be mobile and an ossicular chain reconstruction was performed to connect the tympanic membrane and malleus to the stapes, bypassing the incus. The patient was seen in the clinic two weeks post-operatively and was healing well with no new symptoms. A follow-up audiogram revealed an improvement from a pre-operative moderate to severe hearing loss to a two-month post-operative mild hearing loss in the left ear.

Discussion:

An asymmetrical mass in the oropharynx of a young patient typically raises the possibility of malignancy and benign neoplasms, lymphovascular lesions, and inflammatory or infection etiologies.[4] The age of our patient, imaging features and presentation suggested a benign etiology, but the discovery of an accessory tragus was still an unexpected rare finding. The histopathological characteristics of hair follicles, numerous fat lobules, and cartilage were features that helped determine that the excised lesion was an accessory tragus.[5] Previous studies on the origins of congenital ear malformations reveal a complex interplay between environmental and genetic factors.[6]The rare developmental anomaly of an accessory tragus in the oropharynx highlights the intricacies of embryological development in the head and neck region.

The first pharyngeal arch plays a crucial role in development, giving rise to the maxilla, mandible, malleus, and incus, and the muscles of mastication.[1,7] Anomalies in the development of this arch can result in a spectrum of presentations, from minor deformities to significant congenital syndromes such as Treacher Collins and Pierre Robin syndromes.[8,9] While an accessory tragus is commonly an isolated deformity, it is also found in association with congenital syndromes such as Goldenhar syndrome.[9]

In addition to the rare finding of an oropharyngeal accessory tragus, the patient's hearing conductive loss was attributed to a congenital ossicular discontinuity where middle ear exploration revealed anomalies in the incus and stapes capitulum. A general correlation between the severity of auricle and middle ear malformations with resultant conductive hearing loss has been noted and highlighted by conditions such as congenital aural artesia.[6] Specific to this case, it is curious that the incus and tragus are both derivatives of the same first pharyngeal arch and thus, both are likely manifestations of a singular malformation.

As far as we are aware, there is only one other reported case of a nasopharyngeal accessory tragus, which presented in a 9-year-old with expected nasal breathing issues.[3]

Conclusion and Results:

In conclusion, accessory tragi are rare findings and typically present near the external ear. In this report, we discuss the case of a 20-year-old female presenting with left-sided conductive hearing loss and an incidental finding of an accessory tragus within the oropharynx on CT imaging, which has been rarely reported and broadens the differential diagnosis for masses noted in this space.

Keywords: ear, external; hearing loss; otolaryngology; congenital abnormalities; oropharynx

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Key clinical message:

In this article, we describe the first reported case of an oropharyngeal accessory tragus in 20-year-old female presenting with moderate to severe left-sided conductive hearing loss. This case highlights the importance

of considering developmental anomalies in differential diagnoses of oropharyngeal masses.

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Figure Legends:

Figure 1. Axial CT slice of the temporal bone demonstrating a well-defined lesion at the junction of the left nasopharynx and oropharynx just posterior to the left soft palate (yellow arrow).

Figure 2 . Gross appearance and histopathology of resected mass.**(A)** Mass obstructing nasopharynx on nasal endoscopy.**(B)** The gross appearance of resected mass from the oropharynx measuring 2.6 cm on the long axis. **(C)** Polypoid fragment lined by skin with adnexal structures, overlying a core of fibro-adipose stroma, and central cartilage (H&E at 0.5x). **(D)** Thin corrugated epidermis, hair follicles, and sebaceous glands (H&E at 10x).