CO2 Laser Ablation of a Tympanic Membrane Hemangioma

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Introduction

We describe a case of a hemangioma limited to the lateral surface of the tympanic membrane (TM) and present an effective technique of management.

Methods and Materials

This case report presents the management of a 40-year-old female patient with a history of recurrent otitis media, who presented to a tertiary referral center with concerns regarding an abnormal appearance of the right tympanic membrane (TM). Otomicroscopy revealed a vascular-appearing lesion located at the central portion of the lateral TM, consistent with a hemangioma. A computed tomography (CT) scan confirmed the presence of a soft tissue mass arising from the lateral surface of the right TM, with no involvement of the middle ear.

Intervention
The primary interventions performed in this case included CO2-laser ablation of the vascular lesion on the right TM, followed by a cartilage push-through tympanoplasty to repair the resulting perforation.

Main Outcome Measure
The main outcome measures assessed in this study were the final pathology of the lesion, the postoperative healing process of the TM, and the postoperative audiometric outcomes. These measures were used to determine the effectiveness of the surgical interventions in terms of hearing improvement and overall outcomes.

Case

In the operating room, an excisional biopsy was conducted for the TM lesion. Utilizing a CO2 continuous wave laser, the TM lesion was subjected to laser ablation, inducing contraction. Subsequently, the lesion was meticulously detached from the tympanic membrane as a whole specimen and sent for pathology examination. Following laser ablation, a small perforation was observed, which was promptly repaired using a cartilage push-through tympanoplasty technique. The final pathology analysis confirmed the presence of a hemangioma on the TM.
At the 1-month post-operative follow-up, otomicroscopy revealed no residual evidence of the hemangioma, and a well-healed perforation was observed. Additionally, an audiogram conducted at that time exhibited complete preservation of hearing function.

Discussion

An Isolated hemangioma confined to the tympanic membrane is an exceedingly uncommon occurrence, with limited documented cases in the medical literature. [1] Our presented case serves as a notable example, showcasing the safe and effective utilization of CO2 laser ablation as a therapeutic modality. Importantly, this approach does not compromise the subsequent healing of the tympanic membrane, auditory function, or resistance to recurrence. These findings highlight the potential of CO2 laser ablation as a valuable technique for managing tympanic membrane hemangioma.

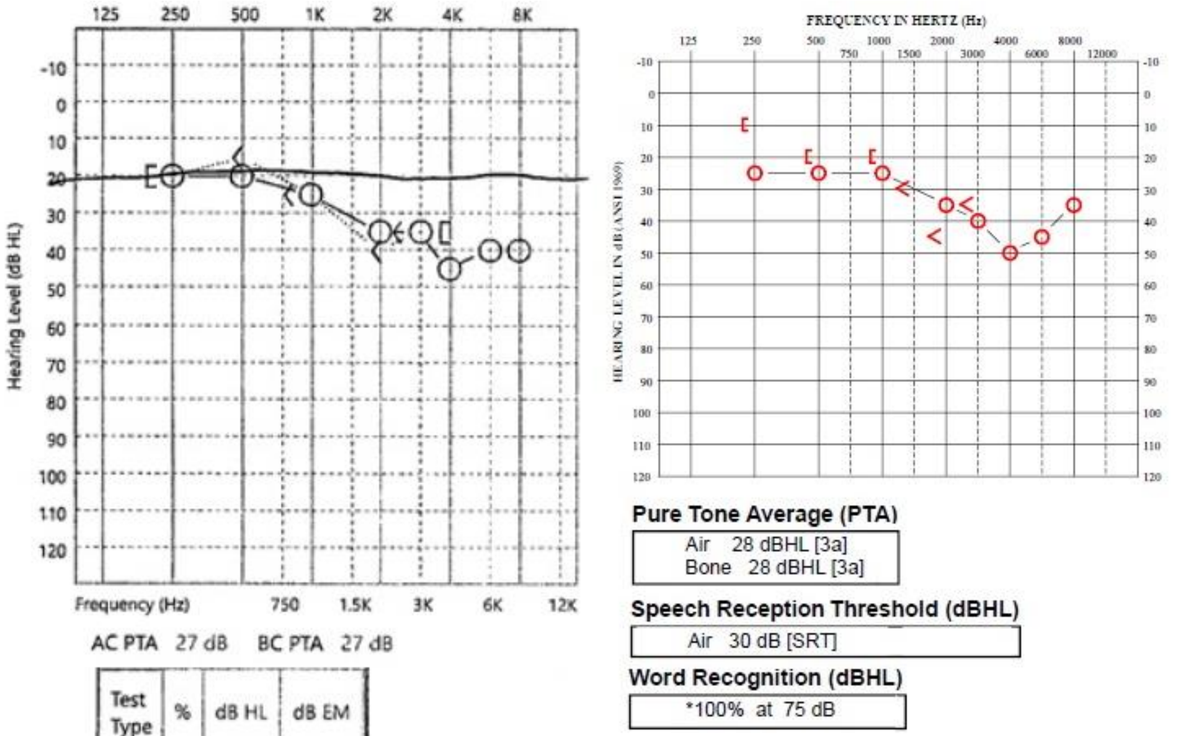
Conclusion

CO2-laser ablation represents a safe and effective technique for the management of TM hemangioma. It not only allows for targeted lesion control, but also permits appropriate healing of a cartilage tympanoplasty while preserving normal hearing.

Video of Procedure Demonstrating Technique

Scan the QR code to watch a narrated video demonstrating the technique

Table Pre and Post operative audiometry data



AC PTA 27 dB BC PTA 27 dB

Test Type	%	dB HL	dB EM
SRT		35	
WRS	96	65	45

Left – Audiogram demonstrating PTA prior to surgical excision of the hemangioma.
Right – Audiogram demonstrating PTA following surgical procedure demonstrating stability in hearing

Figures

Left – Otomicroscopy visualizing the tympanic membrane hemangioma.
Right – Temporal Bone CT demonstrating the hemangioma confined to the lateral surface of the tympanic membrane.

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