

Sudden-onset of hearing loss after a slap

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Case History

A 57-year old woman presented with acute bleeding from the left ear associated with reduced hearing and tinnitus. She also complained of redness and discomfort of her left eye; but there was no visual loss. A day before, she was slapped on the left side of her face. Previously, she did not have any hearing or visual problem.



Figure 1.
The patient's left tympanic membrane.



Figure 4a.
The patient's left eye showing redness.

Question

1. What are the abnormalities in the left ear (Figure 1) and the left eye (Figure 2)?
2. What additional ear examinations are required?
3. What is the outcome of this type of ear injury?

Answer

1. Left ear otoscopy revealed a perforated tympanic membrane postero-inferiorly with ragged edges. There was minimal blood clot noted with no active bleeding (Figure 1). Examination of left eye showed chemosis and conjunctival hemorrhage (Figure 2). Tympanic membrane perforations resulting from direct trauma tend to have ragged edges, while a hard slap usually results in a triangular or linear tear of the tympanic membrane.¹ The most common site of perforation is posterior.²

Traumatic tympanic membrane perforation due to domestic violence is on the rise.¹⁻⁴ As most assailants are right handed, the left ear

is more frequently affected.^{2,3} Majority of the victims suffer from sudden hearing loss, tinnitus, aural fullness, temporal bone and maxillofacial fractures.^{1,4} As high as eight percent of the victims of domestic violence sustain temporal bone fractures.⁵

2. A complete bilateral ear examination and hearing assessment should be performed and documented. In this case, the right auricle, external ear canal and tympanic membrane appeared normal. Tuning fork test showed mild left conductive hearing loss, as evidenced by positive Rinne's test on both sides and Weber test lateralised to the left ear. This simple test can be done in a primary setting to exclude any sensorineural hearing loss, which requires early referral.

An audiometry test is essential in traumatic ear injury. In tympanic membrane

perforation, a conductive hearing loss is common but the severity varies and is often not more than 30 dB.^{3,4} Damage to the ossicular attachment at the posterior-inferior part of the tympanic membrane may result in conductive hearing loss, which affects the range 7-20 dB with mean of 13.2 dB.^{1,3,4} If sensorineural hearing loss is diagnosed in the affected ear, an inner ear involvement must be considered.

3. A temporary ipsilateral conductive hearing loss is expected. The patient should be referred to an otorhinolaryngologist for assessment and treatment. A pure tone audiogram is important to confirm the hearing status. In traumatic tympanic membrane perforation, there is a high spontaneous healing rate (80%) with conservative management.^{2,4} However, if the inner ear is involved, the hearing loss is more likely to be permanent.⁵

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