Pseudoperceptive Deafness in **Tubo-Tympanitis**, Sequelae of Otitis Media and Otosclerosis

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The bone conduction audiogram is considered a measure of the perceptive threshold of the ear. This is one of the basic assumption in otological diagnostics.

In many cases, however, the bone conduction does not give correct information about the inner ear threshold.

A change of the middle ear apparatus or the external ear—experimentally induced or as a result of pathology—may influence the bone conduction to a rather great extent:

1. Tubo-tympanitis with hydrotyimpanum (serous otitis)

Audiograms are shown with bone conduction losses produced by the middle ear pathology in cases of tubo-tympanitis.

2. Sequelae of otitis media

Also in case of otitis sequelae a bone conduction loss is not seldom caused partially by mechanical changes in the middle ear apparatus. Three types can be distinguished:

Low tone middle ear bone conduction loss. The most frequent type which has to be explained as a result of a stiffness increase.

Middle ear bone conduction losses for all frequencies. Less frequent, but much more important.

Examples of middle ear bone conduction losses of 20–30 db in these conditions are shown.

- c) Trough shaped middle ear bone conduction loss. It is difficult to understand the deep trough in the bone conduction audiogram in the middle frequency range, which sometimes occurs as a result of middle ear pathology.

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3. Otosclerosis.

A shallow notch in the bone conduction curve in the first stages of otosclerosis is well known as the Carhart notch. It partially disappears after a successful fenestration operation. According to some authors this is not the case with stapes surgery. Others, however, have found a mean gain of 5 db for the middle frequencies after successful stapedectomy.

There is also a difference of opinion whether the bone conduction loss in later stages consists out of the Carhart notch and presbycusis or is a result of a direct cochlear damage by the otosclerotic process.

An analysis of the audiometric data from patients with otosclerosis, who have been operated on in the Leyden clinic in recent years (250 ears) shows:

The notch shaped curve and the sloping bone conduction curve are the most frequent. The maximum loss in the notch curve as measured with continuous audiometry does not lie at 2000 Hz (Carhart) but definitely lower.

In about 25% of the cases the bone conduction loss cannot be explained as a result of the notch and the presbycusis.

In successful stapedectomy the bone conduction audiogram shows no change (< 5 db) in about 35 %. In 50 % there is a gain ranging from 5–15 db. In 15% the bone conduction gain is greater. It may be more than 30 db. Three examples are demonstrated.

In conclusion it has to be stressed that we have to reckon with great individual differences with regard to bone conduction.