

Accepted Manuscript



On the connection between the tympanic membrane and the malleus

Daniel De Greef, Jana Goyens, Isabel Pintelon, John-Paul Bogers, Vincent Van Rompaey, Evert Hamans, Paul Van de Heyning, Joris J.J. Dirckx

PII: S0378-5955(15)30079-4

DOI: [10.1016/j.heares.2015.12.002](https://doi.org/10.1016/j.heares.2015.12.002)

Reference: HEARES 7065

To appear in: *Hearing Research*

Received Date: 30 July 2015

Revised Date: 2 December 2015

Accepted Date: 3 December 2015

Please cite this article as: De Greef, D., Goyens, J., Pintelon, I., Bogers, J.-P., Van Rompaey, V., Hamans, E., Van de Heyning, P., Dirckx, J.J.J., On the connection between the tympanic membrane and the malleus, *Hearing Research* (2016), doi: 10.1016/j.heares.2015.12.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

On the connection between the tympanic membrane and the malleus

Daniel De Greef*¹, Jana Goyens^{1,2}, Isabel Pintelon³, John-Paul Bogers³, Vincent Van Rompaey⁴, Evert Hamans⁴, Paul Van de Heyning⁴, Joris J. J. Dirckx¹

5 ¹ Laboratory of Biomedical Physics, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium

² Laboratory of Functional Morphology, University of Antwerp, Universiteitsplein 1, 2610 Antwerp, Belgium

³ Laboratory of Cell Biology and Histology, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium

⁴ Department of Otorhinolaryngology - Head and Neck Surgery, Wilrijkstraat 10, Antwerp University Hospital, 2650 Edegem, Belgium

10 Abstract

Background: *The tympano-malleolar connection (TMC) is the soft-tissue connection between the tympanic membrane (TM) and the manubrium of the malleus. Some studies suggest that its mechanical properties may have a substantial influence on the mechanics and transfer function of the middle ear. However, relatively little is known about the dimensions of the TMC and its variability among individuals.*

15 **Method:** *Thirteen samples were collected from human temporal bones, consisting of only the malleus and the TM. They were imaged using μ CT without contrast enhancing agent. From the μ CT images, the TMC dimensions were measured in both anterior-posterior direction (TMC width) and medial-lateral direction (TMC thickness). Three selected samples were examined using histological microscopy.*

20 **Results:** *Both TMC width and thickness featured a large variability among individuals. The minimal TMC width along the manubrium for different individuals covered a range between 83 and 840 μ m. The minimal thickness ranged from 48 to 249 μ m and the maximal thickness from 236 to 691 μ m. Histological sections showed that the TMC consists of a narrow core of dense regular connective tissue, surrounded by loose connective tissue. In some samples, either of these two components was absent in the TMC at some manubrium locations. The configuration of these components varied among the samples as well.*

25

Download English Version:

<https://daneshyari.com/en/article/6286893>

Download Persian Version:

<https://daneshyari.com/article/6286893>

[Daneshyari.com](https://daneshyari.com)