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## Abstract

***Background:*** *The tympano-mallear 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.*

***Method:*** *Thirteen samples were collected from human temporal bones, consisting of only the malleus and the TM. They were imaged using µCT without contrast enhancing agent. From the µCT 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.*

***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 µm. The minimal thickness ranged from 48 to 249 µm and the maximal thickness from 236 to 691 µm. 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.*