

The dynamic characteristic of in-vivo human ossicles

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Abstract

The study was to analyze the dynamic characteristics of ossicles under the stimulus frequencies, 125 Hz, 250 Hz, 500 Hz, 750 Hz, 1 kHz, 2 kHz, 3 kHz, 4 kHz, 5 kHz, 6 kHz, 7 kHz and 8 kHz, by finite element method. The finite element model of the ossicles chain of patients could be built by 3D image model of the ossicles based on the high resolution computed tomography. The displacement at the footplate would hardly occur when the ossicles was excited by the sound stimuli at frequency above 2 kHz. The presented result shows that the ossicles only could transmit the stimuli under 2000 Hz by the vibration of ossicles.

Keyword : Ossicles; Finite element method; Vibration analysis; High resolution computed tomography formatting