Ossification of the petrotympanic fissure: morphological analysis and clinical implications

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The petrotympanic fissure, a narrow slit in the temporal bone allows the temporomandibular joint (TMJ) and the middle ear to communicate. The fissure is crossed by both the chorda tympani and a TMJ ligament between the posterior region of the joint disc and the malleolar ossicle. The parasympathetic fibers of the chorda tympani spread into the major salivary glands and are responsible for the taste sensibility on the anterior two thirds of the tongue. After chronological identification of 30 human skulls, petrotympanic fissures were macroscopically and stereomicroscopically analyzed for the presence and disposition of ossification areas. The stereomicroscopically-digitalized images were analyzed using computer program Image Tool® 3.0. The total extension of the fissures and ossification areas was measured. Statistical data revealed that the macroscopic analysis did not constitute an appropriated method for this evaluation and that the ossification of the fissures increased with aging, suggesting its influence on the causes of three distinct conditions: otalgia in cases of temporomandibular joint dysfunction; dysgeosia and hyposalivation.