

Publication

The distribution of mineral density in the cervical vertebral endplates

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 1195321**Author(s)** Müller-Gerbl, Magdalena; Weisser, Stefan; Linsenmeier, Ulrich**Author(s) at UniBasel** [Müller-Gerbl, Magdalena](#) ;**Year** 2008**Title** The distribution of mineral density in the cervical vertebral endplates**Journal** European spine journal**Volume** 17**Number** 3**Pages / Article-Number** 432-8**Keywords** mineral density, cervical spine-endplate, CT-osteabsorptiometry (CT-OAM)

Subsidence of various constructs into the vertebral body is a well-known complication in anterior fusion. Information on bone structure is needed, as a basis for improving these procedures. There are, however, no data available on the distribution of mineral density within vertebral endplates. In this study the regional distribution of mineralization within the cervical endplates with respect to endplate orientation (inferior and superior endplate) and level distribution (C3-C7) was examined by means of computed tomographic osteoabsorptiometry (CT-OAM). The distribution of mineralization in 80 cervical endplates of 8 spinal columns (4 male, 4 female, age range 38-62 years) in vertebrae C3-C7 was investigated by CT osteoabsorptiometry (CT-OAM). The subchondral mineralization distribution revealed considerable topographic differences within each endplate, whereby the areas of greatest density were found in the peripheral marginal zones with maxima in the posterolateral surface, whereas mineralization density was much lower in the central areas. The superior endplates showed an additional posteromedial maximum, whereas the inferior endplates showed an additional anterior mineralization maximum. Comparison of the distribution patterns of inferior and superior endplates at different levels from C3 to C7 reveals a uniform increase of mineralization in the anterior portions from cranial to caudal. The mineralization distribution showed characteristic reproducible patterns. The maximal values occurred in the posterolateral parts, and can thus be considered a morphological substrate of high long-term loading. This can serve as a basis for improved prosthesis design and the anchorage point for various fusion techniques.

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