Research article

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CRITERIA OF ESTIMATION ERRORS OF THE ANTHROPOMETRIC IDENTIFICATION OF THE MANDIBLE

ABSTRACT. Background. The current stage of individual's identification includes definition of their dental status. At the same time the implementation of methodology for assessing the level of atrophy of the alveolar part of the mandible with the ability to register specific numerical indicators for dynamic monitoring of destruction of bone tissue is still an open question. **Objective.** To create the way of testing the effectiveness of methods of dental identification using constant anthropometric indexes and methods of assessing the level of atrophy of the alveolar part of the mandible based on proportional anthropometric indices. **Methods.** The primary stage of the methods of identification and assessment of the level of atrophy of the alveolar part of the mandible is a digital analysis of digital orthopantomograms of 138 patients who had baseline and repeated X-ray images with a time interval of one to five years. In the work author's algorithm of calculation was used. Reduction of the level of errors is ensured using the root-mean-square and arithmetic average interim results, which approach the final results to their actual value. **Results.** Levels of absolute and relative errors decreased with approaching to the calculation of final complex constant and proportional anthropometric indices. This is due to the use in a system the calculation of the root-mean-square values and the proposed principle of the mathematical matrix relations that involves finding of the arithmetic average of the columns and lines of the matrix. **Conclusion.** Principles of calculation of anthropometric indices of the lower jaw that was proposed by the author provided a solution to the problem of person's identification with changed dental status, as well as a numerical measure of atrophy of the lower jaw as distant results of the dental treatment.
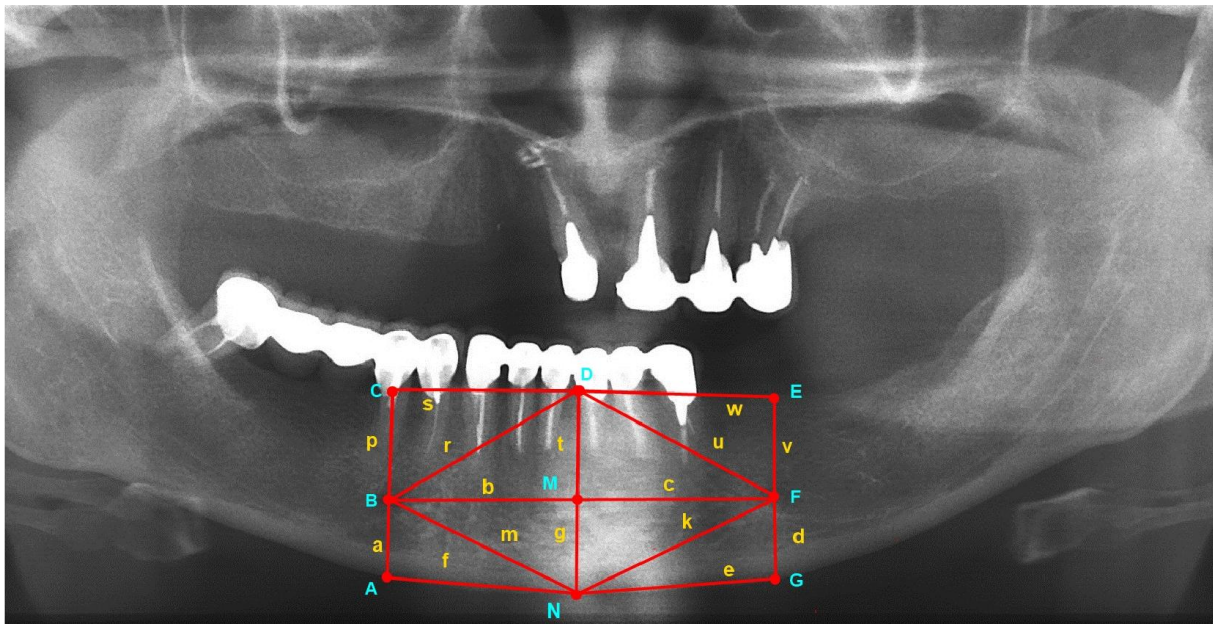
Fig. 1. Digital analysis of orthopantomograms for person identification according to the dental status and the assessment of the level of atrophy of the alveolar part of the mandible using anthropometric indexes.

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