Morphometric study of the mylohyoid bridging in dry mandibles

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With 3 figures and 6 tables

Abstract: The mylohyoid bridging is a hyperostotic variation representing formation of bony bridges over the mylohyoid groove. The goals of this study were to establish the frequency of mylohyoid bridging in contemporary and medieval series from Bulgaria and to examine the changes in the prevalence through time, to assess and compare the different types of mylohyoid bridging, to establish the patterns of distribution with respect to laterality, sex and age and to accomplish a morphometric analysis. Materials and methods: The study was performed on a total of 448 intact dry mandibles of adult individuals from both sexes, grouped into contemporary male, medieval male and medieval female series from Bulgaria. The individuals in the series were distributed into two age cohorts: between 20–40 years old and above 40 years. Macroscopic, metric and statistical analyses were performed. Results and Conclusions: The frequency of the mylohyoid bridging was 10.99% (21 out of 191 mandibles) for the contemporary male series, 9.45% (12 out of 127) for the male series and 7.69% (10 out of 130) for the medieval female series. The comparison between both male series indicated slightly increasing of the mylohyoid bridging with time. No significant bilateral and sex differences in the frequency and pattern of distribution of the mylohyoid bridging were established. The most common type of bridging was the distal one. The dependence of the mylohyoid bridging on the aging is controversial since in the female series its frequency was significantly higher in the individuals over 40 years, while in both male series it did not differ considerably between the age groups. The metric analysis did not show significant differences between the male series. However, the sexual differences were noteworthy with respect to the whole length of the mylohyoid groove and the distance between the bridge and the distal point of the mylohyoid groove. Furthermore, the considerable differences between the metric characteristics of lingual and distal type showed that this approach is useful and could be applied for precise differentiation of the mylohyoid bridging types. During the investigation, we also observed several cases of an accessory groove in the region of the mylohyoid groove. This additional groove most probably reflects variations in the branching patterns of the inferior alveolar nerve and/or mylohyoid nerve and could be of importance in oral surgery and dental practice.

Keywords: mylohyoid bridging; lingular mylohyoid bridge; distal mylohyoid bridge; mylohyoid groove; dry mandible

Introduction

The mylohyoid (MH) bridging is a hyperostotic variation representing the formation of bony bridges over the mylohyoid groove (MHG) (Hanihara & Ishida 2001). It is well known that the MHG is located anteroinferior to the mandibular foramen (MF) and contains the mylohyoid nerve and vessels. Normally, a connective tissue canal is formed over the MHG through overlying the groove with a membrane prolongation of the sphenomandibular ligament (Ossenberg 1974; Scheuer & Black 2000). In some cases, however, the entire connective tissue canal or different part of it may become partly or completely transformed into bone, forming an elongated bony canal or separate bridges (Scheuer & Black 2000). It is supposed that such osseous formation results from the ossification of the membrane prolongation of the sphenomandibular ligament, which derives from the Meckel’s cartilage (Ossenberg 1974). Thus, it could exist as a canal or separate MH bridges of a lingular or distal type. The lingular type results from the ossification of the sphenomandibular ligament and is a posterior extension of the lingula. On the other hand, the distal type is supposed to reflect a partial ossification of the membrane overlying the MHG (Ossenberg 1974), or to be related with an anterosuperior