Incidence of Mental Foramina in Human Mandibles

Abstract
This study aimed to verify the presence of accessory mental foramina in human mandibles. It used 128 adult human mandibles that belong to the Department of Human Anatomy from the Biological Sciences center, Federal University of Pernambuco. The aspects of race, age, and sex were not considered. The mandibles were examined and observed by the presence of accessory mental foramina and its position in relation to the mental foramen, which was classified according to eight areas: posterior superior, posterior, posterior-inferior, superior, inferior, anterior superior, anterior and anterior-inferior. After visual inspection of the mandibles, the presence of accessory mental foramina was observed in 6 cases (4.6%): 4 on the right side and 2 on the left. In relation to its position, it was observed that 2 (33%) were located in the posterior superior area, 2 (33%) in the posterior-inferior area, 1 (16%) superior, and 1 (16%) inferior. The study revealed that this anatomical variation can be found, and therefore dental surgeons performing a surgical approach in this region, must carefully verify the presence of an accessory mental foramina in the preoperative radiographs to avoid injuries that may cause pain or paresthesia.

Keywords: Mental forame; Acessory mental forame; Mandible; Mental nerve

Introduction
The mandible is the largest and strongest bone of the face, it has a curved and horizontal body that is convex forward, and two long branches that jut up starting from the rear of the body ends. The lower edge of the body is called the base and the upper edge forms the blister part with sixteen wells to implement the teeth [1]. The mental foramen is located in the body of the mandible at an equal distance from top to bottom edge in the region of the lower edge of the mandible, where there are nerve endings and blood vessels [2]. Usually it presents as a single opening, allowing the passage of the mental nerve, which is a terminal branch of the inferior alveolar nerve, providing sensory innervation to the lower lip, buccal vestibule and gum tissue to the mesial region of the first molar [3]. The accessory mental foramin is an anatomical variation that may occur in the mandible due to a chin nerve branch shaft before its passage through the foramen; and it may be located in the periapical region of the first molar and the subsequent areas or below the mental foramen [4]. The mental foramen is used as a reference in anesthetic techniques, such as blocking the incise nerve and the mental nerve itself [5]. Also, during surgical procedures in the jaw, accidental complications may occur in the mandibular region interfominal resulting in sensorineurral disturbance on the chin and lower lip [6]. Therefore, it has a significant importance to the dentist; and knowledge of morphological variations that may occur in this region should be noted. As an example, the location of the root tips in relation to mental foramina, which must also be determined before root canal treatment of pre-molars and molars. However, the presence of these small accessory holes often are ignored or given little attention in many anatomy books [7]. Thus this study aimed to identify the incidence of accessory mental foramina in human jaws in order, to contribute to the morphological study of this anatomical region.

Materials and Methods
This is an observational, cross-sectional, and quantitative study of held in dry mandibles coming maintained by the from the Biosciences Center of the Department of Anatomy, of the assets of the Federal University of Pernambuco. Human mandibles (N=128) were studied without consideration for considered aspects of race, age and gender. Mandibles were examined for the presence of accessory chin foramina. The formaina were studied in regard to, its location and its position in relation to the mental foramen, that can be classified according to eight areas: posterior superior, posterior, posterior-inferior, superior, inferior, anterior superior, anterior and anteroinferior [8].

Results
Foramina of jaws 6 (4.6%), and 4 (Add X% as before) jaws were found on the right side and 2 on the left side with bilateral involvement (Figure 1). In regard to position, we found that 2 (33%) was located in the posterior superior area, 2 (33%) in the posteroiferior area, 1 (16%) superior, and 1 (16%) inferior.

Discussion
The position of the mental foramen and the accessory foramina mental is has influenced some surgical plans in specialties such as endodontics, surgery and implantology. Sensory disturbances, such as numbness associate with the foramen and the accessory foramina, require increased safety not to injure the chin nerve as
a result of surgical invasions, and leading to the risk of sensory complications [9]. Our study is similar to the one performed by Singh & Srivastav [5], but they had a higher incidence of accessory mental foramina (13%) in 100 mandibles, 8 on the left and 5 right, as also observed deviations of position, shape and size of the mental foramen and the associated chin foramina, suggesting that these variations can be related to eating habits of different regions, which are influenced during the growth and development of the jaws. In our findings we did not considered issues of race, gender or age, but the analysis of Sawer et al. [10], observed a higher incidence in males, and this was associated with african-americans. Thus, the dentist should be able to identify these anatomical variations by imaging the mandibular canal and mental foramen in order to recognize variations in patients undergoing these procedures for anesthetic and surgical block, or any other type of intervention, with in order to prevent these complications and insure a favorable prognosis. Difficulty and clinical prognosis is favorable [11].

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**Conclusion**

The knowledge of the possible presence of accessory foramina is necessary in order to avoid damage to sensory surgical procedures in the jaw. Thus this study aimed to identify the incidence of accessory foramina mentalis in human jaws, seeking to contribute to the morphological study of bone.