

Accessory mental foramen: case report

FREDERICO SAMPAIO NEVES*, LUCIANA SOARES DE ANDRADE FREITAS OLIVEIRA**, MARIANNA GUANAES GOMES TORRES**,
MADY CRUSOÊ-SOUZA***, CHRISTIANO OLIVEIRA****, PAULO SÉRGIO FLORES CAMPOS*****,
IEDA CRUSOÊ-REBELLO*****

*DDS, Department of Oral Diagnosis, State University of Campinas, Piracicaba Dental School – Piracicaba/SP, Brazil.

**DDS, MSc, Department of Oral Radiology, Federal University of Bahia, School of Dentistry – Salvador/BA, Brazil.

***DDS, MSc, Department of Morphology, Institute of Health Sciences, Federal University of Bahia – Salvador/BA, Brazil.

****DDS, MSc, Department of Stomatology, University of São Paulo, Bauru School of Dentistry – Bauru/SP, Brazil.

*****DDS, MSc, PhD, Department of Oral Radiology, Federal University of Bahia, School of Dentistry – Salvador/BA, Brazil.

ABSTRACT

Anatomical variations associated with the mental foramen are relatively uncommon. Among these variations, the presence of one or more accessory mental foramen has been reported in rare cases. The acknowledgment of their location with respect to the main mental foramen is of fundamental importance for previous evaluations for surgical and endodontic procedures. In this article, a case of accessory mental foramen was presented with computed tomography images, and the main complications related to this anatomical variation are discussed.

DESCRIPTORS

Spiral computed tomography. Cross-sectional anatomy. Mandible.

INTRODUCTION

The mental foramen (MF) is located on the lateral aspect of the mandible, usually inferiorly to the interproximal region of the first and second premolars, bilaterally. The mental nerve and veins exit the bone through this foramen, which is oriented posterior-superiorly in adults¹¹.

The mental nerve is a somatic afferent (sensorial) nerve and corresponds to the terminal branch of the

mandibular nerve, which is the third division of the trigeminal nerve. In the premolar region, the inferior alveolar nerve usually splits in two branches, the mental nerve and the incisive nerve. The incisive nerve runs intraosseously along with veins and innervates anterior mandibular teeth (incisors, canines, and premolars)³. The mental nerve emerges at the MF and divides into four branches: angular (innervation of the angle of the mouth region), medial and lateral inferior labial (skin of the lower lip, oral mucosa, and gingiva as far posterior as the second premolar), and mental branch (skin of the mental region)⁶.

Radiographically the MF presents as a single circular or elliptical radiolucent area in the premolar region, bilaterally⁵. The absence of MF⁴ and the presence of multiple MF⁹ are rarely reported. The presence of more than one MF, referred to as accessory mental foramina (AMF), has been registered by means of dissections, surgical findings, conventional radiographs, spiral computed tomography (CT), and cone beam CT.

CT has been established as a valuable imaging modality capable of providing in-depth information about maxillofacial structures, allowing detailed evaluation of their topography and anatomical variations, such as AMF.

In the literature, numerous studies about the positions and anatomical variations of AMF in different races are reported. Most of the published reports are studies on dry skulls while some others have studied the panoramic radiographs of clinical cases.

The aim of this article was to report a case of AMF through multi-slice CT images and to discuss relevant aspects in the literature related to this anatomical variation.

Corresponding address:

Frederico Sampaio Neves

Departamento de Diagnóstico Oral

Avenida Limeira, 901 Areião

CEP: 13414-018 – Piracicaba/SP, Brazil

Phone: (19) 8810-8831

E-mail: fredsampaio@yahoo.com.br

observed in the intraosseous bifurcation (Figure 1A), such ramification occurs posteriorly from the MF and produces two intraosseous courses of the mental nerve and vessels, originating the MF and the AMF. It is important to differentiate the AMF from a nutritious foramen. The AMF is defined as a bony foramen originated from the mandibular canal, as observed in this case. Nutritious foramina, on the other hand, are not originated from the mandibular canal and their dimensions are significantly smaller¹².

The dimensions of the foramina observed in the present case were 2.3 x 1.6 mm for the superior foramen, and 1.3 x 1.1 mm for the inferior one. Thus, we have considered the superior foramen as the MF and the inferior one as the AMF, since their diameters are similar to those found in other studies^{8,10}. Based on the findings of Hu et al.⁶, the AMF probably carries the ramification that innervates the mental region and the medial half of inferior lip (mental and medial inferior labial branches, respectively). The angular and lateral inferior labial branches, responsible for the innervation of the angle of the mouth and the lateral portion of the inferior lip, respectively, probably emerge from the bone through the main MF.

The presence of accessory foramina and canals in the mandible is frequently undervalued in clinical procedures. It is important to highlight that these anatomical variations may only be pre-surgically detected on imaging exams, and such detection may have a direct influence on therapeutic success.

The imaging exams have become extremely important in detecting such anatomical variations, being helpful for a proper treatment planning. Some cases are reported in the literature in which the presence of AMF

is detected on conventional radiographs¹. However, it has been demonstrated that two-dimension radiographs may underestimate the presence of AMF¹², particularly when their dimensions are inferior to 1 mm.

CT produces reliable high resolution images. Multi-slice CT machines generate images with superior technology, with slice thickness of 0.5 mm, allowing a better visualization of structures. Additionally, 3D reconstructions may help the identification of AMFs and differentiate them from nutritious foramina. The use of 3D reconstruction in this case (Figure 2) confirms and illustrates the presence of an AMF.

CT exams are very helpful to obtain information about the maxillofacial structures, trabecular patterns, alveolar processes, skeletal measurements, and surgical planning of jaw deformities or implant insertion. CT is the most accurate imaging modality for the identification and localization of the mandibular foramen, mandibular canal, and MF⁷. The localization of such structures, as well as their eventual anatomical variations, is of fundamental importance prior to any surgical and anesthetic procedures. Because the mental nerve supplies the skins of the chin and mucous membrane of the lower lip and gingiva, in the surgeries of the anterior region of the mandible, the surgeon should protect this anatomical structure, major when the AMF is present¹³.

The use of this imaging modality have increased in Dentistry, thus, anatomical variations that may have an influence on the diagnosis and treatment planning must be recognized. The acknowledgment of AMF may contribute to adequate anesthetic techniques, to avoid misdiagnosis of bone lesions, and eventual damages to the nerves and vessel during surgical procedures in that region.

RESUMO

Forame mental acessório: relato de caso

Variações anatômicas associadas ao forame mental são relativamente incomuns. Dentre tais variações, a presença de um ou mais forames mentuais acessórios tem sido relatada em raros casos. O conhecimento da sua localização em relação ao forame mental principal é de fundamental importância na avaliação prévia de procedimentos cirúrgicos e endodônticos. Neste artigo, um caso de forame mental acessório foi apresentado através de imagens por tomografia computadorizada, e as principais complicações relacionadas a essa variação anatômica são discutidas.

DESCRIPTORIOS

Tomografia computadorizada espiral. Anatomia transversal. Mandíbula.

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