

# Accessory Mental Foramen: A Case Report

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## ABSTRACT

**Context:** The accessory mental foramen (AMF) is an opening in the mandible that originates from the branching of the mandibular canal. The occurrence of AMF can be found in 1.4% to 10% according to different ethnic groups. Undetected AMF could create complication during surgery.

**Case report:** A cone-beam computed tomography (CBCT) scan of a 41-year-old male patient revealed an AMF on the right side of his mandible.

**Conclusion:** The detection of extra mental foramen before any surgical procedure is crucial to reduce the risk of complications such as paresthesia, haemorrhage and post-operative pain.

## KEYWORDS

Accessory Mental, Foramen, Anatomical Variation.

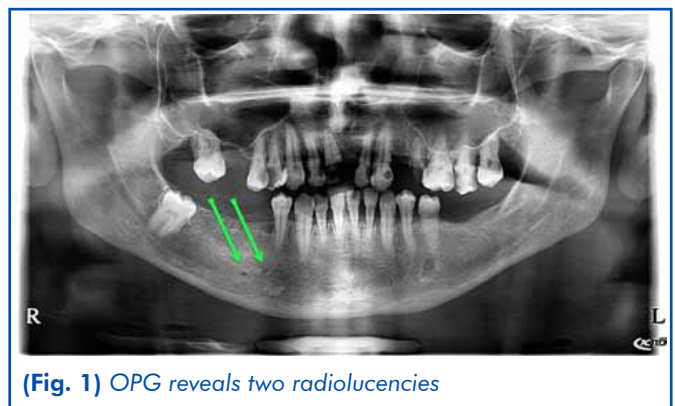
## INTRODUCTION

The mental foramen (MF) can be defined as “the entire funnel-like opening in the lateral surface of the mandible at the terminus of the mental canal”.<sup>1</sup> The mental canal is one of the divisions of the mandibular canal. The mandibular canal divides into the mental canal and incisive canal.<sup>2</sup> Inferior alveolar nerve and vessels pass to exit the mental canal as mental nerve and vessels in which they innervate and supply the lower lip, gingiva and chin. The MF is usually oval in shape, with dimensions of 4.6mm horizontally and 3.4mm vertically.<sup>3</sup> Phillips *et al.* reported that in 62.7% of the population, the MF is located at the apex of the mandibular second premolar.<sup>3</sup> The MF is a significant anatomical structure, especially when providing local anaesthesia.

Generally, the MF appears as a single structure in each side, however, in some cases double or multiple mental foramina can be found on the same side. In such cases, the additional foramen is termed as an accessory mental foramen (AMF). The occurrence of AMF is rare, ranging from 1.4 to 10%.<sup>4</sup> Generally, orthopantomograms (OPG) is used to locate the MF. However, it is not the case for AMF since its size is generally smaller than 1.0mm, which makes the two-dimensional identification difficult.<sup>5</sup> Therefore, AMF can be identified by computed tomography (CT) and cone-beam computed tomography (CBCT).<sup>4</sup> Identification of anatomical variation through imaging test before conducting implant surgery is crucial to prevent damage to the neurovascular bundles.

## CASE REPORT

A male patient aged 41 years old visited Barada Medical Centre, Abu Dhabi with the complaint of several missing teeth which caused difficulty in mastication and speech. Intraoral examination revealed missing of 1, 3, 9, 12, 13, 17, 18, 19, 29, 30 and 31. Orthopantomograms (OPG) was done, and two round shaped radiolucencies were found on the right side of the mandible (**fig. 1**) which need to be further examined with cone-beam computed tomography (CBCT).



(Fig. 1) OPG reveals two radiolucencies

A CBCT revealed the presence of double mental foramen in which one is distal to the lower right first premolar root and the other 5.0mm distal from the first radiolucency (**fig. 5**). The mesial and distal round radiolucencies have diameters of 2.1mm and 2.0mm, respectively (**fig. 6**).

It is difficult to distinguish the MF and the AMF because they both are almost similar in size. However, since the most common location of MF is at the apex of mandibular second premolar, therefore the medial radiolucency is presumed to be the MF. This assumption can be strongly supported by the fact that the mesial MF gives off the incisive branch. Upon investigation, the distal radiolucency is confirmed as the AMF.

## DISCUSSION

The formation of MF remained incomplete until the 12<sup>th</sup> gestational week, at which the mental nerve divides into multiple fascicles.<sup>6</sup> It is believed that the division of the mental nerve before the completion of the MF causes the formation of the AMF.<sup>6</sup> It is crucial to distinguish the AMF and the nutrient foramen. The AMF originates from the mandibular canal, as demonstrated in the present case.<sup>7</sup> On the other hand, the nutrient foramen does not arise from the mandibular canal, and it is relatively small in size.<sup>7</sup>

The occurrence of AMF differs according to ethnic groups. It is observed that double mental foramen occurs 9.7% in Melanesians; 5.7% in Black American; 3.6% in Arabs; 3.3% in Greeks; 3.0% in Hungarians; 2.6% in French; 1.5% in Russia; and 1.4% in White Americans.<sup>4</sup> In this present case study, the patient is an Arab, the population in which the occurrence of AMF is 3.6%.

According to Sawyer, when the overall population is considered, the AMF is found to be more common in males compared to females.<sup>8</sup> This finding is consistent with the present study since the patient is a male.

The diameters of the right MF and the AMF in the present case are 2.1mm and 2.0mm, respectively. An AMF normally has a size of less than 1.0mm, however in this case the AMF is relatively large with 2.0mm, creating a greater risk of surgical complications. The distance between the MF and the AMF is found to be between 2.9mm to 11.9mm, with a mean of 5mm.<sup>7</sup> This finding is consistent with the present study since the distance between the MF, and the AMF is 5.0mm. In this study, we will use the term inter foramina part of inferior alveolar nerve (IF-AN) to depicts the nerve between the MF and the AMF (**fig. 4**). Since, IF-IAN is located between these two foramina, the length of IF-IAN is believed to be 5.0mm.

The AMF gives out accessory mental nerve but the presence of accessory mental vessels is still needed further investigations and studies (**fig. 5**).

The presence of anatomical variation in the mandible is often neglected. However, the detection of extra mental foramen before any surgical procedure is crucial to reduce the risk of complications such as paresthesia which is defined as "altered sensation exhibited as numbness, burning or tingling of patient skin"; haemorrhage and post-operative pain.<sup>9</sup>



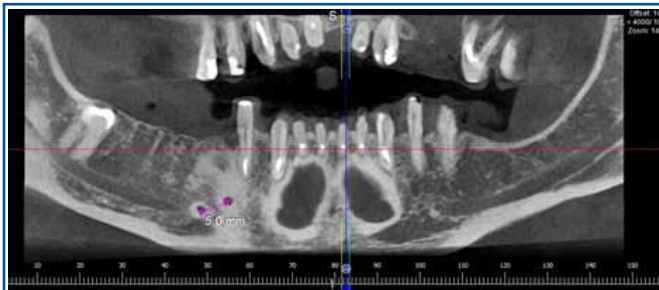
(Fig. 2) CBCT shows two foramina on the right-side and one foramen on the left-side of the mandible



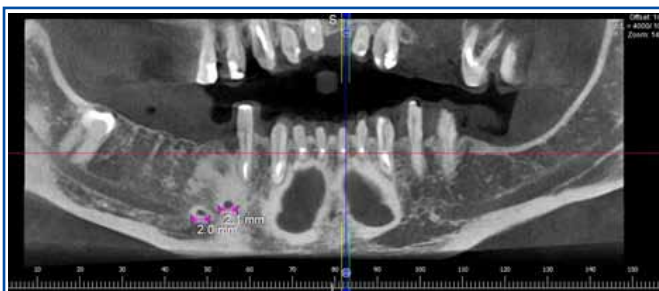
(Fig. 3) CBCT shows double mental foramen on the right side



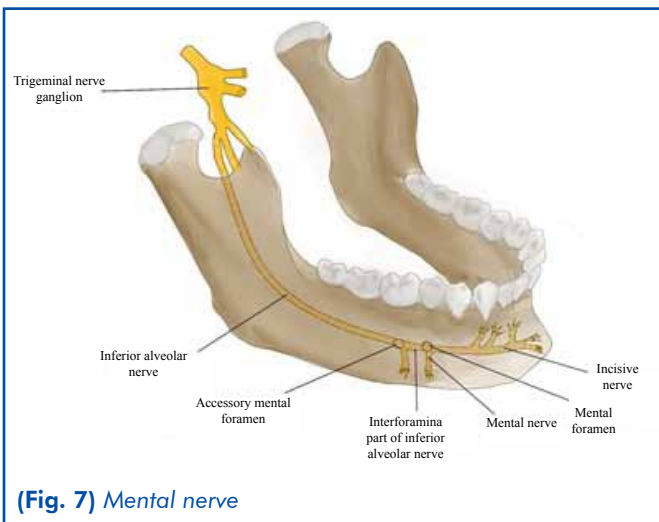
(Fig. 4) CBCT shows mental foramen on the left side of the mandible



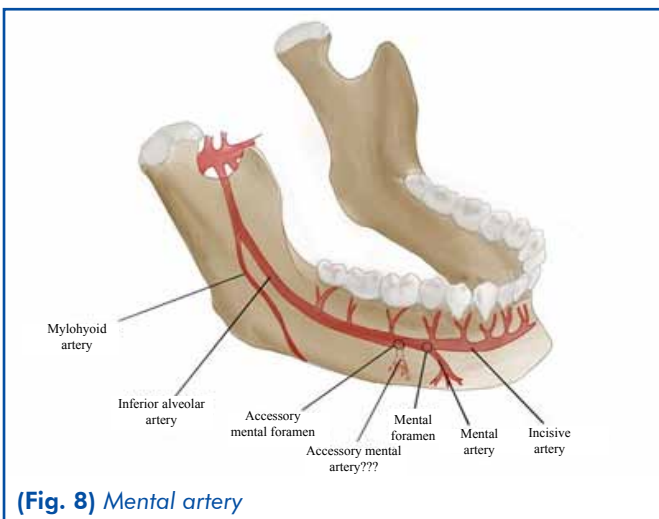
(Fig. 5) CBCT reveals the distance between the two radiolucency is 5.0mm



(Fig. 6) CBCT reveals the diameters of mesial and distal round radiolucencies to be 2.1mm and 2,0mm respectively



(Fig. 7) Mental nerve



(Fig. 8) Mental artery

REFERENCES

1. Ngeow WC, Yuzawati Y. The location of the mental foramen in a selected Malay population. *Journal of Oral Science*. 2003;45(3):171-5. doi:10.2334/josnusd.45.171.
2. Shankland WE 2<sup>nd</sup>. The position of the mental foramen in Asian Indians. *J Oral Implantol*. 1994;20(2):118-23.
3. Phillips JL, Weller RN, Kulild JC. The mental foramen: Part I. Size, orientation, and positional relationship to the mandibular second premolar. *Journal of Endodontics*. 1990;16(5):221-3. doi:10.1016/s0099-2399(06)81674-2.
4. Balcioglu HA, Kocaelli H. Accessory mental foramen. *N Am J Med Sci*. 2009;1:314-5.
5. Katakami K, Mishima A, Shiozaki K, Shimoda S, Hamada Y, Kobayashi K. Characteristics of Accessory Mental Foramina Observed on Limited Cone-beam Computed Tomography Images. *Journal of Endodontics*. 2008;34(12):1441-5. doi:10.1016/j.joen.2008.08.033.
6. Naitoh M, Hiraiwa Y, Aimiya H, Gotoh K, Ariji E. Accessory mental foramen assessment using cone-beam computed tomography. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 2009;107(2):289-94. doi:10.1016/j.tripleo.2008.09.010.
7. Sisman Y, Sahman H, Sekerci A, Tokmak TT, Aksu Y, Mavili E. Detection and characterization of the mandibular accessory buccal foramen using CT. *Dentomaxillofacial Radiology*. 2012;41(7):558-63. doi:10.1259/dmfr/63250313.
8. Sawyer DR, Kiely ML, Pyle MA. The frequency of accessory mental foramina in four ethnic groups. *Archives of Oral Biology*. 1998;43(5):417-20. doi:10.1016/s0003-9969(98)00012-0.
9. Ahmad M. The Anatomical Nature of Dental Paresthesia: A Quick Review. *The Open Dentistry Journal*. 2018;12(1):155-9. doi:10.2174/1874210601812010155.