

# Foramina on the internal aspect of the alveolar part of the mandible

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*Observations were made on 299 dry human mandibles and 21 autopsy heads. Foramina were observed in the inner surface of the alveolar part in 32% of the mandibles investigated. The diameter of the foramina varied between 0.4 mm and 1.6 mm. In most instances foramina were present between the lower medial and lateral incisors but in some cases they were also observed in the midline or between the lower lateral incisors and canines. Histological studies confirmed the presence of a neurovascular bundle in the accessory foramina. This bundle was formed by branches of the mylohyoid nerve, sublingual artery and accompanying veins.*

**Key words:** mandible, accessory foramina, alveolar part

## INTRODUCTION

Accessory mandibular foramina are all unnamed openings in the mandible [19]. The presence of accessory foramina on the internal surface of the mandible has been described in literature [2, 5–8, 11, 14–16, 17–19]. The accessory foramina are variable in their distribution, but they are observed more often on the internal surface of the mandible [5, 6, 9, 19]. They are generally localised in the symphyseal region of the mandibular body [5, 19] and are superior and inferior to the genial tubercle (lingual foramina) [10, 11, 17, 19]. Foramina positioned laterally to the genial tubercle have also been reported [7, 10]. Accessory foramina lying on the internal surface of the alveolar part of the mandible are divided into medial and lateral foramina [4, 18].

These foramina may contain nerve fibres which provide accessory innervation of the anterior mandibular teeth [7, 10, 18, 19]. It is suggested that these may be of significance in relation to the effectiveness of local anaesthesia following routine inferior alveolar nerve block [7, 10]. Accessory foramina can also transmit blood vessels [4, 7, 11, 14, 18], which may

cause complications during dental procedures. The role of the accessory foramina in the metastasis of tumours in this region has also been reported [1, 3, 5, 12, 13]. Accessory foramina on the medial aspect of the symphysis are the subject of many studies. However, there is no detailed study concerning foramina in the alveolar part of the mandible. This was a stimulus to undertake the present investigations.

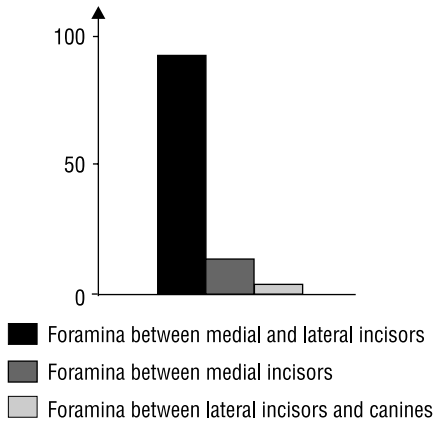
## MATERIAL AND METHODS

The study was performed on 299 dried human mandibles and 21 dissected heads. All specimens were from the collection of the Department of Anatomy, University of Medical Sciences in Poznań.

The topography and diameter of accessory foramina on the internal surface of the alveolar part were studied. The diameters of the foramina were determined with the use of flexible wires ranging in diameter from 0.2 mm to 1.8 mm.

## RESULTS

A total of 199 accessory foramina on the internal surface of the alveolar part of the mandible were

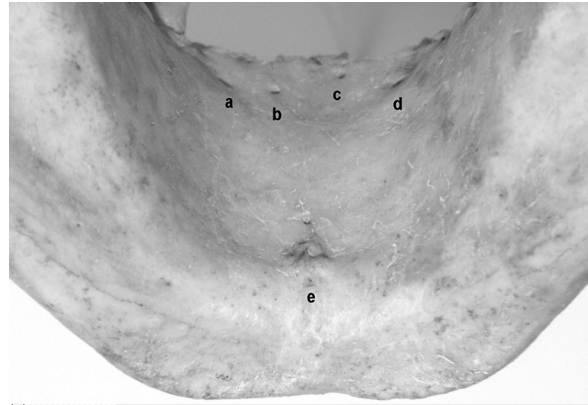


**Figure 1.** Localisation of accessory foramina in the alveolar part of the body of the mandible

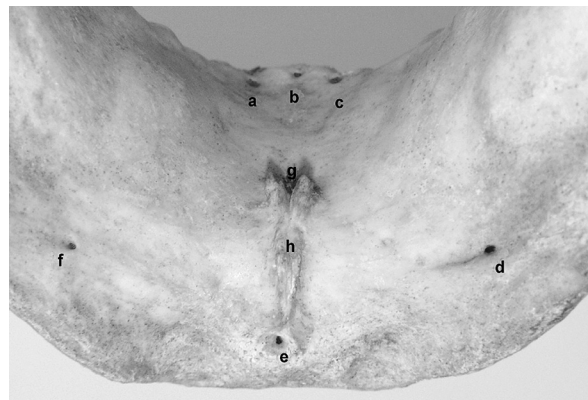
observed. These were localised between the alveolar jugae of the anterior mandibular teeth and were present in 95 out of 299 of the mandibles investigated (32%) (Fig. 1). In one mandible four accessory foramina were observed in this region (Fig. 2). In 93 mandibles (98%) they were localised symmetrically between the lower medial and lateral incisors. In 7 of the mandibles investigated a single foramen was observed in the midline (between the lower medial incisors). In 6 cases this foramen accompanied other foramina in this region (Fig. 3). In three mandibles foramina were observed between the lower lateral incisors and the canines (Fig. 4). In one case they were the only foramina localised in the region under investigation. The diameters of the foramina examined varied between 0.4 mm and 1.6 mm.

## DISCUSSION

Accessory foramina on the mandibular symphysis have been the subject of earlier studies [2, 4, 7, 11, 14, 15, 17–19]. However, the literature investigating accessory foramina lying on the internal surface of the alveolar part is scanty. Studies have reported foramina in the alveolar part between the lower medial and lateral incisors as well as between the lower lateral incisors and the canines [5, 18]. They were present in 76.4% [5]. Accessory foramina observed on the internal surface of the alveolar part were different in size, ranging from 0.5 mm to 1.8 mm in diameter [18]. Our investigations revealed the presence of accessory foramina with diameters ranging from 0.4 mm to 1.6 mm in 32% specimens. They were localised most often between the lower medial and lateral incisors but they also occurred in the midline between the lower medial incisors or between the lower lateral incisors and canines.



**Figure 2.** Accessory foramina in the alveolar part of the body of the mandible (a, b, c, d); e — mental spine.



**Figure 3.** Accessory foramina in the alveolar part of the mandible; a, c — foramina between the medial and lateral lower incisors; b — foramen between the medial incisors; d, e, f, g — other accessory foramina around the mental spine; h — mental spine.



**Figure 4.** Accessory foramina on the internal surface of the mandibular body; a, b — foramina in the alveolar part between the medial and lateral lower incisor; c, e — foramina lying laterally from the mental spine; d, f — foramina lying inferior and superior to the mental spine; g — mental spine.

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