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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

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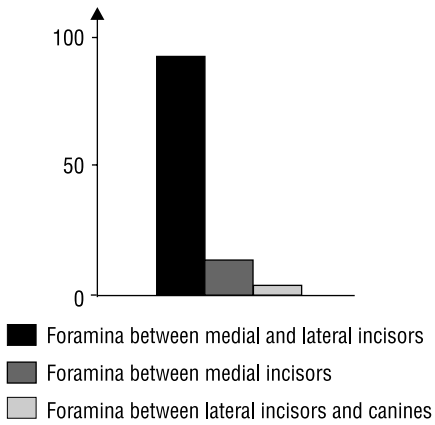

Figure 1. Localisation of accessory foramina in the alveolar part of the body of the mandible

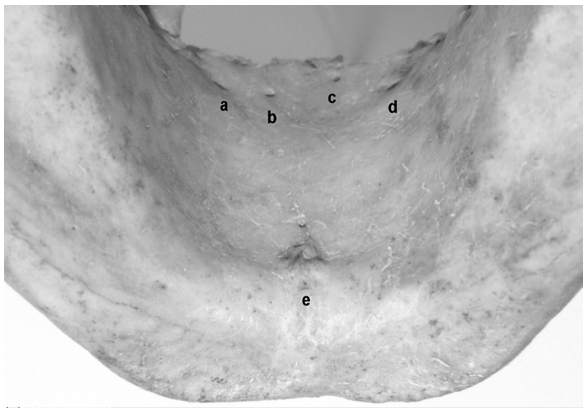

Figure 2. Accessory foramina in the alveolar part of the body of the mandible (a, b, c, d); e — mental spine.

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.

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.

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 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.

REFERENCES

1. Barttelbort SN, Bahn SL, Ariyan S (1987) Rim mandibulectomy for cancer of the oral cavity. Am J Surg, 154: 423–428.
2. Chapnick L (1989) A foramen on the lingual of the mandible. J Canad Dent Assn, 7: 444–445.
3. Doig TN (1998) Possible routes of spread of carcinoma of the maxillary sinus to the oral cavity. Clin Anat, 11: 149–156.
4. Eriguchi K (1954) Vorläufige Mitteilung über die Bedeutung der Löcher an der Lingualfläche des Unterkieferkörpers. Yokohama Med Bull, 5: 442–445.
5. Fanibunda K, Matthews JN (2000) The relationship between accessory foramina and tumour spread on the medial mandibular surface. J Anat, 196: 23–29.
6. Haveman CW, Tebo HG (1976) Posterior accessory foramina of the human mandible. J Prosthet Dent, 36: 462–468.
7. Jeyaseelan N, Sharma JK (1984) Morphological study of unnamed foramina in north Indian human mandibles and its possible role in neurovascular transmission. Int J Oral Surg, 13: 239–242.
8. Kaufman E, Serman NJ, Wang PD (2000) Bilateral mandibular accessory foramina and canals: a case report and review of the literature. Dentomaxillofac Radiol, 29: 170–175.
9. Kingsmill VJ, Boyde A (1998) Variation in the apparent density of human mandibular bone with age and dental status. J Anat, 192: 233–244.
10. Madeira MC, Percinoto C, das Gracas M, Silva M (1978) Clinical significance of supplementary innervation of the lower incisor teeth: A dissection study of the mylohyoid nerve. Oral Surg Oral Med Oral Pathol, 46: 608–614.
11. McDonnelll D, Nouri MR, Todd M (1994) The mandibular lingual foramen: a consistent arterial foramen in the middle of the mandible. J Anat, 184: 369–371.
12. McGregor JA, MacDonald DG (1988) Routes of entry of squamous cell carcinoma into the mandible. Head Neck Surg, 10: 294–301.
13. McGregor JA, MacDonald DG (1989) Patterns of spread of squamous carcinoma within the mandible. Head Neck Surg, 11: 457–461.
14. Nagar M, Bhardwaj R, Prakash R (2001) Accessory lingual foramen in adult Indian mandibles. J Anat Soc Ind, 50: 13–14.
15. Przystańska A, Bruska M (1999) Accessory foramina on the internal surface of the human mandibular body. Folia Morphol, Suppl. 1: 58.
16. Pyle MA, Jasinevicius TR, Lalumandier JA, Kohrs KJ, Sawyer DR (1999) Prevalence and implications of accessory retromolar foramina in clinical dentistry. Gen Dent, 47: 500–505.
17. Shiller WR, Wiswell OB (1954) Lingual foramina of the mandible. Anat Rec, 119: 387–390.
18. Shirai M (1960) Beitrag zur Kenntnis der Bedeutung der Löcher an der Lingualfläche des Unterkieferkörpers. Yokohama Med Bull, 11: 541–549.
19. Sutton RN (1974) The practical significance of mandibular accessory foramina. Austral Dent J, 19: 167–173.