Accessory Lingual Foramen in Adult Indian Mandibles

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Abstract. Most of the textbooks of anatomy & dentistry are silent on various accessory foramina in mandible, though these are extremely important for complete anaesthesia during dental extraction & other procedures. One such foramen is accessory lingual foramen which was observed in 72% of the specimens of present study conducted on cadavers & dry mandibles. Its clinical relevance can not be ignored.

Key words : Lingual foramen, mandible

Introduction:
The mandible has many unnamed foramina on the lingual surface, on or near the genial tubercles. A review, revealed that most anatomy textbooks like Last (1999) and Moore (1999) have not described any consistent foramina. Even dental textbooks like Liebgott (1982), Longham & McRae (1985) and Johnson & Moore (1989) equally failed to mention the presence of any foramen on the lingual surface of the mandible. It was Sweet (1942), who radiographically observed a foramen in 28% mandibles after reviewing five hundred radiographs of the mandibular incisor region, whereas periapical rariographs revealed an incidence of 49%. Later Pouton and Pharoah (1989) quoted the mandible to have a midline pit on the lingual surface. In radiographic dental anatomy textbooks a constant foramen has been mentioned by Kasle (1989) and Manson Hing (1990). Although the presence of a foramen is, till date, controversial but would be highly significant for local anaesthesia administration in dental procedures.

In view of difference in opinion and lack of consistency regarding this foramen, the present study was conducted in dried bones in cadavers.

Material and Methods:
Dried adult Indian mandibles of either sex were examined for the presence of a foramen in the midline on the lingual surface and its relation with the genial tubercles was noted. The foramen was considered as present, if it was single, midline and above the superior genial tubercles.

Cadavers were dissected with the soft tissues of the neck and floor of the mouth attached, using blunt and fine dissection, to determine the presence of the foramen and the continuity of the structures associated with the foramen.

Results:
A constant midline foramen situated above the superior genial tubercle (Fig.1), was found to be present in 72.45% of dried mandibles of both sexes. Dissection in cadavers revealed a foramen in 55.5% cases and on fine dissection a single artery was entering the foramen (Fig. 2). This slender artery was a branch of the left sublingual artery forming an arch here. Each sublingual artery also gave a branch to the alveolar ridge. No accompanying vein was observed. A foramen was noted below the genial tubercles in 5.98% cases & 1.6% mandibles showed a single foramen on the left or right side of the genial tubercles. In 10% cases there was no foramen on the lingual surface of the mandible in the vicinity of the genial tubercles.

Discussion:
The present study suggests that a midline foramen above the genial tubercles may be considered as a constant finding on the lingual surface of the mandibles, being present in over 72% specimens. This is however a lower incidence than reported previously by Sutton (1974) and Shiller and Wiswel (1954), who reported an incidence of 85% and 88.9% respectively. The hiked percentage may be attributed to the fact that these workers considered all accessory foramina on the lingual surface irrespective of their relation with the genial tubercles, whereas we have considered the foramen as positive only if present in midline and superior to the genial tubercles. Radiographically the foramen was reported by Sweet (1942) in 28% cases. This lower incidence could be due to the X-ray beam orientation in the horizontal and vertical plane.

A single branch from the left sublingual artery was seen to enter this midline foramen, thereafter the artery anastomosed with the right sublingual artery, forming an arch here. No accompanying vein or nerve was observed. Sutton (1974) had described the contents to be a neurovascular bundle, which implied an artery, vein and a nerve. The artery is of sufficient size to present a difficulty in controlling haemorrhage intraosseously or in the soft tissue and hence could be an important factor in replacement in dental surgeries. It can also be used as a route for...
administration by infiltration of local anaesthesia in the incisor region.

References:

Fig. 1: Lingual surface of the mandible showing a midline foramen (arrow), above the genial tubercles.

Fig. 2: Dissected floor of the mouth, illustrating a single artery, a branch of the left sublingual artery, entering the foramen (arrow).