



## Lingual foramen around genial tubercle in adult Indian human mandibles

Published online on 23<sup>rd</sup> December 2014@www.eternalpublication.com

**DR. NIMJE DIPTI A<sup>1</sup>**

**DR. YADAV NISHA RB<sup>2</sup>**

<sup>1</sup>Assistant Professor

<sup>2</sup> Assistant Professor

Department of Anatomy,  
 Shri. Bhausaheb Hire Government Medical  
 College, Dhule

### Corresponding Author:



Dr. Dipti A. Nimje  
 Assistant Professor  
 Department of Anatomy  
 Shri. Bhausaheb Hire Govt.  
 Medical College, Dhule  
 (Maharashtra, India)

+919096684542

dr.dipti342@gmail.com

Received: 5<sup>th</sup> Dec 2014; Accepted: 18<sup>th</sup> Dec 2014

**How to cite this article:** Nimje DA, Yadav NRB. Lingual foramen around genial tubercle in adult Indian human mandibles. International Journal of Anatomy Physiology and Biochemistry 2014;1(3):6-8.

### Abstract:

**INTRODUCTION:** The mandible has many unnamed accessory foramina present on the lingual surface, on or near the genial tubercles. The lingual foramen is situated in the midline and above the superior genial tubercles. Many Anatomical textbooks have failed to describe this foramen

**MATERIALS AND METHODS:** 120 dried human adult mandibles of unknown sex were collected from department of Anatomy and examined for the presence of a foramen in the midline of the lingual surface in relation with the genial tubercles

**RESULT:** A constant midline foramen situated above the superior genial tubercles was found to be present in 84 mandibles i.e. 70% of dried mandibles. Foramen situated below the inferior genial tubercles was seen in 5 mandibles i.e. 4.16% and foramen on the side of genial tubercles was seen in 3 mandibles i.e. 2.5%. 7 mandibles have shown more than one type of foramen around the genial tubercle i.e.5.83%

**CONCLUSION:** The high incidence of this mandibular lingual foramen (70%) increase the attention over the lingual surface of the mandible due to its neurovascular contents.

**Keywords:** lingual foramen, mandible, genial tubercle

### Introduction:

Mandible is the largest, strongest and lowest bone in the face. Numerous, unnamed and infrequently described accessory foramina are present on the mandible. They may transmit additional nerves to the teeth from facial, mylohyoid, buccal, transverse cervical cutaneous and other nerves. Occurrence of these nerves is significant in dental anaesthetic blocking techniques. On the inner surface of the mandible above the anterior ends of the mylohyoid lines, the posterior symphyseal aspect bears a small elevation, often divided into upper and lower parts, the mental spines or also called as genial tubercles. The upper part gives attachment to genioglossus, the lower part to geniohyoid. Superior to the mental spines, most mandibles display a lingual or genial

foramen that opens into a canal which traverses the bone to about 50% of the buccomandibular dimension of the mandible. It contains a branch of the lingual artery. Yet its development is uncertain, although it is a useful radiological landmark.<sup>1</sup>

It was suggested that, a single midline foramen just above the genial tubercle is a constant finding on the lingual surface.<sup>2</sup> The data obtained from previous study reveal that accessory foramina occur frequently and in approximately the same locations i.e. posterior surface of mandible. This suggests that these foramina are functionally important in supplying neural and/or vascular components to the mandible.<sup>3</sup>

Many Anatomical and Dental textbooks have failed to describe this foramen<sup>4,5</sup> but some textbook has noted the presence of this foramen as a consistent finding. Different names for this foramen are lingual foramen, central pit, midline pit, unnamed foramen<sup>6</sup> and genial foramen.<sup>1</sup>

An infected intravascular clot or thrombus can dislodge from the inner blood vessel wall and travel as an embolus. Emboli can travel in the veins, draining the oral cavity to areas such as the dural venous sinuses within the cranial cavity. These dural sinuses are channels by which blood is conveyed from the cerebral veins into the veins of the neck, particularly into the internal jugular vein. Because these veins lack valves, however, blood can flow both into and out of the cranial cavity. The blood system of the head and neck can allow the spread of infection from the teeth and associated oral tissues, because pathogens can travel in the veins and drain the infected oral site into other tissues or organs.<sup>7</sup>

The anterior aspect of the mandible, which was generally considered a safe surgical area, must receive more attention in view of the vital structures passing through the lingual foramen. However, knowledge of the anatomical structures passing through the lingual foramen is very essential, clinically, in fractures of the symphysis menti, implants and congenital defects and also to avoid pitfalls in the diagnosis of the fracture of genial tubercles.<sup>8</sup> Therefore study of this foramen is important to deal with various clinical conditions related to the lingual region of the mandible.

### Material and Methods:

Total 120 dried adult human mandibles of undifferentiated sex were studied from Department of Anatomy of Government Medical Colleges in Maharashtra. Mandibles were examined for the presence of a foramen in the midline of the lingual surface and its relation with the genial tubercles was noted. The foramen was considered as present, if it was in midline and around the genial tubercles. The mandibles which show abnormalities were excluded from the study.

### Result:

We had studied 120 dried adult mandibles. A constant midline foramen situated above the

superior genial tubercles was found to be present in 84 mandibles i.e. 70% of the dried mandibles (Photograph 1). Foramen situated below the inferior genial tubercles was seen in 5 mandibles i.e. 4.16% and foramen on the side of genial tubercles was seen in 3 mandibles i.e. 2.5%. 7 mandibles have shown more than one type of foramen around the genial tubercle i.e. 5.83%. Frequency of getting the lingual foramen is quite higher in the present study. Foramen below or on the side of the genial tubercle was not seen in the present study.

### Discussion:

The present study suggests that a midline foramen around the genial tubercles may be considered as a constant finding on the lingual surface of mandible, being present in over 70% mandibles. Foramen situated below the inferior genial tubercles was seen in 5 mandibles i.e. 4.16% and foramen on the side of genial tubercles was seen in 3 mandibles i.e. 2.5%. This incidence is similar with study done by Nagar M, Bhardwaj R and Prakash R<sup>2</sup> (2001) in which foramen was noted above the genial tubercles in over 72% specimens. A foramen was also 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. Radiographically the foramen was reported by McDonnell D, Nouri MR, Todd ME<sup>6</sup> (1994) in 49% cases. This lower incidence could be due to the X-ray beam orientation in horizontal and vertical plane which fails to visualize the foramina in some mandibles.

Murlimanju BV et al<sup>9</sup> studied the accessory lingual foramina. They noted lingual foramen were also present around the genial tubercle in 56 mandibles (83.6%). Among them, 52 mandibles showed a single foramen just above the genial tubercle, 34 mandibles had foramina below the tubercles, 13 mandibles had foramina on the right side of genial tubercle and 17 were having foramina on the left side.<sup>9</sup>

Sutton RN<sup>10</sup> (1974), Goaz PW and White SC<sup>11</sup> (1987) has described the content of this foramen to be a neurovascular bundle, which implied a single branch of left sublingual artery and its accompanying vein and unnamed nerve. Nagar M, Bhardwaj R and Prakash R<sup>2</sup> (2001) conducted dissection in cadavers to study lingual foramen and revealed a foramen in 55.5% cases and on fine dissection noted that a single artery was entering the

foramen. This slender artery was a branch of the left sublingual artery forming an arch here.

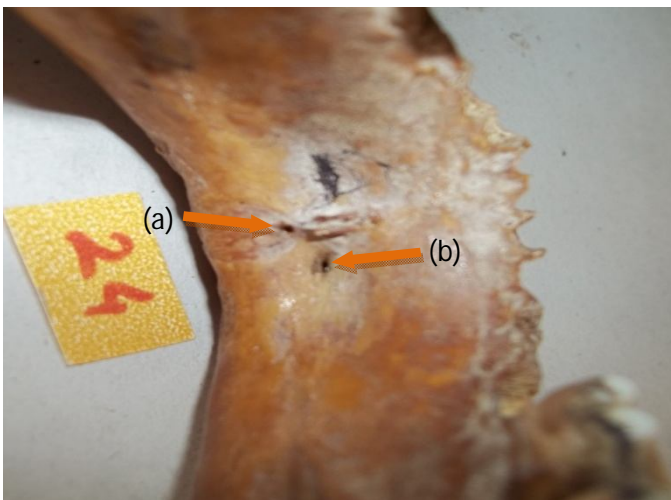
Various studies show that lingual foramen is a constant finding yet many books fails to mention it though it has very important clinical aspect.

### Conclusion:

The high incidence of this mandibular lingual foramen (70-80%) makes it necessary that the clinician, surgeons dealing with mandibular pathologies must be aware of the incidence and importance of this foramen and its contents.



Photograph 1. Arrow pointing toward the lingual foramen above the genial tubercle.



Photograph 2. Arrow pointing toward lingual foramen (a) below and (b) on side of the genial tubercle.

### References:

1. Standring S (editor-in-chief) et al. Gray's Anatomy. The Anatomical Basis of Clinical

Practice. 39<sup>th</sup> edition. Elsevier Churchill Livingstone; 2005:481,482.

2. Nagar M, Bhardwaj R, Prakash R. Accessory lingual foramen in adult Indian mandibles. J Anat Soc India 2001;50:13-14.
3. Haveman CW, Tebo HG. Posterior accessory foramina of the human mandible. J Prosthet Dent 1976;36:462-468.
4. Sinnatamby CS. Last's Anatomy, Regional and applied. 10<sup>th</sup> edition. Churchill Livingstone; 1999.
5. Moor L, Dalley AF. Clinically oriented anatomy, 4<sup>th</sup> edition; 1999.
6. McDonnell D, Nouri MR, Todd ME. The mandibular lingual foramen: A consistent arterial foramen in the middle of the mandible. J Anat 1994;184:363-369.
7. Fehrenbach MJ, Herring SW. Illustrated Anatomy of the Head and Neck. Philadelphia, PA: WB Saunders Company; 1996.
8. Natekar PE, De Souza FM, Natekar P. Variations in position of lingual foramen of the mandible in reconstructive surgery. Indian J Otol 2011;17:12-13.
9. Murlimanju BV, Prakash KG, Samiullah D, Prabhu LV, Pai MM, Vadgaonkar R, et al. Accessory neurovascular foramina on the lingual surface of mandible: Incidence, topography, and clinical implications. Indian J Dent Res 2012;23(3):433.
10. Sutton RN. The practical significance of mandibular accessory foramina. Aust Dent J 1974;19:167-73.
11. Goaz PW, White SC. Oral Radiology; principles and interpretation. 2nd edition, Toronto: C. V. Mosby; 1987:189-190.