

Analysis of Various Shapes of Lingula and Its Prevalence in Dry Adult Human Mandible at a Tertiary Care Centre

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ABSTRACT

Background: The lingula of the mandible is a sharp tongue-shaped bony projection on the medial aspect of ramus. The mandibular foramen is overlapped by the lingula which is the landmark for inferior alveolar local anaesthetic block injection. Hence; the present study was conducted for assessing the variation in shapes of lingula and its prevalence in dry adult human mandible.

Materials & Methods: A total of 100 dry adult human mandibles were enrolled. All the specimens belonged to age range of 30 to 50 years. According to data files, out of 100 specimens, 60 specimens were of males while the remaining 40 specimens were of females. The shape of the lingula, the direction of its tip and special features of its borders. It was not possible to measure the lingula with precision as the exact point forming the base could not be ascertained. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results: Out of 100 specimens, 20 cases were of bilateral while the remaining 80 cases were of bilateral type. Among male specimens, triangular, truncated, nodular and assimilated specimens were seen in 60 percent, 25 percent, 10 percent and 5 percent of the specimens respectively. Among female specimens, triangular, truncated, nodular and assimilated

specimens were seen in 65 percent, 20 percent, 12.5 percent and 2.5 percent of the specimens respectively.

Conclusion: It is purely speculative to wonder if they are going extinct due to the same evolutionary process as nodular and absorbed varieties. These and other skull characteristics referred to as nonmetric variances may be employed as anthropological indicators to evaluate various racial and ethnic groups.


Key words: Lingula, Mandible.

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INTRODUCTION

The lingula of the mandible is a sharp tongue-shaped bony projection on the medial aspect of ramus. The mandibular foramen is overlapped by the lingula which is the landmark for inferior alveolar local anaesthetic block injection.¹ The mandibular foramen and the lingula, because of their relation to the inferior alveolar nerve are of clinical significance for the oro-dental surgeons.² Hence; the present study was conducted for assessing the varying shapes of lingula and its prevalence in dry adult human mandible.²

The lingual of mandible is a tongue shaped bony projection on the medial surface of the ramus close to the posterior margin of the mandibular foramen. Since the inferior alveolar nerve enters the

mandibular foramen to supply the structures of the lower jaw, the relationship of lingula to the inferior alveolar nerve is of clinical significance to dental surgeons. It becomes a necessity to know the morphology of lingula so as to preserve the important structures during surgical interference of mandible around the lingula region.^{3,4}

Lingula acts as an important landmark for common dental surgical procedures such as bilateral sagittal split ramus osteotomy and intra-oral vertical split ramus osteotomy which is done for the correction of dento-facial deformities like prognathism, orthognathia and laterognathia. The bone cuts should be made at the level of the tip of lingula to avoid injury to the inferior alveolar

nerve. Inaccurate localization of lingula may result in intraoperative complications such as haemorrhage, fracture and nerve injury.^{5, 6} Hence; the present study was conducted for assessing the variation in shapes of lingula and its prevalence in dry adult human mandible.

MATERIALS & METHODS

The present study was conducted for assessing the varying shapes of lingula and its prevalence in dry adult human mandible. A total of 100 dry adult human mandibles were enrolled. All the specimens belonged to age range of 30 to 50 years. According to data files, out of 100 specimens, 60 specimens were of males while the remaining 40 specimens were of females. The shape of the lingula, the direction of its tip and special features of its

borders. It was not possible to measure the lingula with precision as the exact point forming the base could not be ascertained. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

Out of 100 specimens, 20 cases were bilateral while the remaining 80 cases were of bilateral type. Among male specimens, triangular, truncated, nodular and assimilated specimens were seen in 60 percent, 25 percent, 10 percent and 5 percent of the specimens respectively. Among female specimens, triangular, truncated, nodular and assimilated specimens were seen in 65 percent, 20 percent, 12.5 percent and 2.5 percent of the specimens respectively.

Table 1: Lingula and its types in males

Shape	Number	Percentage
Triangular	36	60
Truncated	15	25
Nodular	6	10
Assimilated	3	5
Total	60	100

Table 2: Lingula and its types in females

Shape	Number	Percentage
Triangular	26	65
Truncated	8	20
Nodular	5	12.5
Assimilated	1	2.5
Total	40	100

DISCUSSION

Lingula, meaning 'little tongue', has been described in relation to the mandibular foramen as a bony elevation partially covering it.⁶⁻⁹ Hence; the present study was conducted for assessing the varying shapes of lingula and its prevalence in dry adult human mandible. Out of 100 specimens, 20 cases were of bilateral while the remaining 80 cases were of bilateral type. Among male specimens, triangular, truncated, nodular and assimilated specimens were seen in 60 percent, 25 percent, 10 percent and 5 percent of the specimens respectively. Among female specimens, triangular, truncated, nodular and assimilated specimens were seen in 65 percent, 20 percent, 12.5 percent and 2.5 percent of the specimens respectively. In a previous study conducted by Tuli A et al, authors assessed the variation in shape of the lingula in the adult human mandible. The lingulae of both sides of 165 dry adult human mandibles, 131 males and 34 females of Indian origin, were classified by their shape into 4 types: 1, triangular; 2, truncated; 3, nodular; and 4, assimilated. Triangular lingulae were found in 226 (68.5%) sides, truncated in 52 (15.8%), nodular in 36 (10.9%) and assimilated in 16 (4.8%) sides. Triangular lingulae were found bilaterally in 110, truncated in 23, nodular in 17 and assimilated in 7 mandibles. Of the remaining 8 mandibles with different appearances on the 2 sides, 6 had a combination of triangular and truncated and 2 had nodular and assimilated. The

incidence of triangular and assimilated types in the male and female mandibles are almost equal. In the truncated type it was double in the male mandibles while the nodular type was a little less than double in the female mandibles.¹⁰

Samanta, Prajna et al studied shape, height, and precise location of lingula in dry adult human mandibles. The material for their study comprised of sixty (120 sides) dry adult human mandibles of North Indian origin to determine the morphological features and location of lingula. Triangular (61.6%) shape of lingula was most commonly found followed by truncated (46.6%), nodular (31.6%), and assimilated (11.6%) types. Each type of lingula was more often unilateral than bilateral. The mean height of the lingula was 5.5 [+ or -] 2.02 mm. The mean distance of lingula from the anterior and posterior borders of mandibular ramus was 20.0 [+ or -] 2.4 mm and 15.0 [+ or -] 2.7 mm, respectively. The lingula was located at 15.4 [+ or -] 2.7 mm from the mandibular notch and 30.4 [+ or -] 3.5 mm from the distal side of alveolar socket of mandibular second molar tooth. The mean lingula ratio was 0.567 [+ or -] 0.005. The information regarding shape, height, and precise location of lingula in relation to various mandibular ramal landmarks could be of immense help in performing surgical procedures such as bilateral sagittal split ramus osteotomy (BSSRO), intraoral ventral ramus osteotomy (IVRO), and inferior

alveolar nerve block.¹¹ Mahima Sophia M et al observed the different shapes, position and height of the lingula in relation to the mandible. The study was conducted on 50 adult dry human mandibles (100 sides). The different shapes of lingula were observed and position and height of lingula in relation to mandible were measured using vernier callipers. The most frequent shape of the lingula observed in our study was triangular (49%) followed by nodular (23%), truncated (18%) and assimilated (10%) types. The lingula was located at a mean distance of 17.11 ± 2.32 mm and 14.86 ± 2.54 from the anterior and posterior border of ramus of mandible. The mean distance from the lingula to mandibular notch was 18.71 ± 3.18 mm and to the mandibular notch was 30.30 ± 5.11 mm. The mean height of the lingula was 7.45 ± 1.48 mm. The lingula is a very important landmark where mandibular foramen has to be identified in procedures such as inferior alveolar nerve block, bilateral sagittal split ramus osteotomy and intraoral vertical split ramus osteotomy and for excision of nerve in facial neuralgia.¹²

CONCLUSION

It is purely speculative to wonder if they are going extinct due to the same evolutionary process as nodular and absorbed varieties. These and other skull characteristics referred to as nonmetric variances may be employed as anthropological indicators to evaluate various racial and ethnic groups.

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