Vikas.C.Desai et al /J. Pharm. Sci. & Res. Vol. 6(4), 2014, 175-177

ISSN:0975-1459
Journal of Pharmaceutical Sciences and Research
www.jpsr.pharmainfo.in

Morphological Study of Mandible

Vikas.C.Desai[1], Desai S D[2], Hussain Saheb Shaik[3]

[1]*Asst. Prof, Department of Dentistry, BLDE University's, Shri. B. M. Patil Medical College Hospital and Research Centre, Bijapur – 586103, Karnataka State.*
[2]*Principal, Shridevi Institute of Medical Sciences & Research Hospital, Tumkur, Karnataka - 572106*
[3]*Asst professor of anatomy, JJM Medical College, Davangere- 577004.*

Abstract

Back Ground *:* Mandible being largest and strongest bone of skull, having various morphological features may show changes with reference to age, sex and race. It Very important bone to find out sex of body remains in anthropological practice.

Methods: In present study 100 mandibles were collected different medical colleges in Karnataka. We have assessed the shape of coronoid process and Lingula of mandible.

Results: The triangular shape of lingula were 51% out of that male were 39% and female were 12%. The truncated shape of lingula were 13% out of that male were 11% and female were 2%. The nodular shape of lingula were 24% out of that male were 15% and female were 9%. The assimilated shape of lingula were 12% out of that male were 17% and female were 5%. The shape of coronoid process was triangular in 68%, Hook shaped in 24% and round shape in 8% of cases.

Conclusion: The shape of coronoid process and lingula of mandible very helpful in anthropological and forensic practice.

INTRODUCTION

The mandible is the largest, strongest bone in the skull, the skull includes mandible and cranium. Mandible has a curved body that is convex forwards and two broad rami that ascend posteriorly, the rami has coronoid and condylar processes. The lingula is a tongue-shaped bony projection on the medical surface of the mandibular ramus close to the posterior margin of the mandibular foramen [1]. The exact location of the mandibular foramen on radiographs is not always easy to be established due to its radiolucency and the superimposition of contralateral mandibular structures [2]. The mandibular foramen has often considered to be the most reliable reference point for approaching the inferior alveolar nerve in several anaesthesia techniques. It has been speculated that the mandibular lingula and foramen change the ratio of their positions on the ramus of growing children [3]. Mandibular formen having connection to nerve and vascular structures, the present study on the lingula features provides significant information related to oral and maxillofacial surgical procedures, such as the sagittal split ramus osteotomy, vertical ramus osteotomy, inverted L osteotomy, orthognathic surgery, mandibular trauma management, eradication of benign and malignant lesions, preprosthetic surgery, and nerve injury during inferior mandibular nerve block [3]. If oralmaxillofacial surgeons are unable to identify the lingula correctly, intraoperative complications such as hemorrhage, unfavorable fracture nerve injury and may occur [4,5].

The mandible's Coronoid process word derived from Greek korone menace "like a crown" I it is a thin, triangular eminence, which is flattened from side to side and varies in shape and size. The process projects upwards and slightly forwards. It has a top border and it is convex in its shape, while its lower part is concave in shape. Its margins and medial surface give attachments to temporalis muscle. The Coronoid process is of clinical significance to the maxillofacial surgeons for reconstructive purposes. Triangular shaped lingulae have been described as the most prevalent type by various leading authors[6]. Different textbooks illustrate truncated, nodular and assimilated type[7,8,9]. According to Nicholson and Keros studies analysed the morphological characteristics of the mandibular foramena and lingula and they arrived at a conclusion that such structure variability would account for failure to block the inferior alveolar nerve[10,11]. Coronoid process may be of different size. It may be triangular, hook shaped or rounded. Pattern of genial tubercle varies from bone to bone. Its variable pattern may hide the view of lingual foramina while reading oral radiograph.

Coronoid process is a membranous bone showing less resorption. A local bone graft from coronoid process of mandible can be harvested intra orally with minimal morbidity without any cutaneous scarring. The coronoid process is of clinical significance to the maxillofacial surgeon for reconstructive purposes as it is used as grafts in reconstruction of osseous defects in oral and facio-maxillary region like alveolar defects, orbital floor repair, maxillary augmentation, correction of non-union fracture of mandible. No functional limitations were apparent after removing the coronoid process. Anatomical variations in coronoid process can result in extremely narrow vestibular space due to the close proximity of the medial aspect of the coronoid process to the distal molar[12,13].

Morphological variation coronoid process is very useful for the maxillofacial surgeon. The coronoid process seems to be suitable for paranasal augmentation. Its clinical application is also favourable because its size and morphology fits into the paranasal region, with the additional advantages of biocompatibility, availability, and reduced operation time for harvesting. The present study concentrated on shape of lingula and coronoid process of mandible which are very helpful in Dental surgery , anthropological and forensic practice.

Table 1. Variation in the shapes of lingual in 100 mandibles (200 Sides)

	Triangular			Truncated			Nodular			Assimilated		
	Right	**Left**	**Total**	**Right**	**Left**	**Total**	**Right**	**Left**	**Total**	**Right**	**Left**	**Total**
Male	36	42	78(39%)	10	12	22(11%)	17	13	30(15%)	6	8	14(7%)
female	14	10	24(12%)	2	2	4(2%)	7	11	18(9%)	4	6	10(5%)
Total	50	52	102(51%	12	14	26(13%)	24	24	48(24%)	10	14	24(12%)

Table 2. Variations in shape of coronoid process

	Male	Female	Toatl
Triangular	74	62	136(68%)
Hook Shaped	28	20	48(24%)
Rounded	10	06	16(8%)

MATERIALS AND METHODS

In present study 100 mandibles were collected different medical colleges in Karnataka. We have assessed the shape of coronoid process and Lingula of mandible. We have studies all the parameters separately in male and females and total average.

RESULTS

The triangular shape of lingula were 102(51%) out of that male were 78(39%) and female were 24(12%). The truncated shape of lingula were 26(13%) out of that male were 22(11%) and female were 4(2%). The nodular shape of lingula were 48(24%) out of that male were 30(15%) and female were18(9%). The assimilated shape of lingula were 24(12%) out of that male were 14(7%) and female were 10(5%)(Table no 1). The shape of coronoid process was triangular in 136(68%), Hook shaped in 48(24%) and round shape in 16(8%) of cases(Table no 2).

DISCUSSION

In present study Triangular shape lingula and triangular shape of coronoid process were showing more incidence than other type. After triangular shape of lingula Nodular shape was most common type after that Truncated and assimilated are there. In shape of coronoid process triangular are more common after that Hook shaped and next is round shape are present. Issac B reported in a study of 157 mandibles incidence of hook shaped was 27.4%,triangular 49% and rounded type 23.6%, the author found the incidence of the rounded type almost equal in male and female mandibles, triangular type slightly more in the females, while hook type more in the male mandibles[14]. Vipul noted prevalence of rounded shape more in females compared to males while hook shape was similar in both sexes[15]. Tanveer reported triangular process more commonly present in males while females presented with rounded type[16].

The frequency of different morphological types of lingula studied by different authors varied among populations and races [1, 17]. Triangular and truncated shapes of the lingula were found most commonly in previous studies [18]. Tuli et al. [19] observed gender variation of the lingula shapes in their specimens, and in their study, the triangular were shown more incidence. In Jansisyanont et al. [20] study, there was a different gender wise variation observed. Out of 134(67mandibles) lingulae 74 were belonging to females out of that 21.7% lingulae were triangular, truncated were in 23.3%, nodular in 33.3%, and assimilated in 21.7%, of cases. In case of males, the triangular type was observed in 36.5%, truncated in 31.1%, nodular in 27% and assimilated in 5.4% of cases. The findings of our study are very helpful to dental surgeons, anthropology and forensic practice.

REFERENCES

1. R. Devi, N. Arna, K. Y. Manjunath, and B. Balasubramanyam. Incidence of morphological variants of mandibular lingula. Indian Journal of Dental Research. 2003;14(4):210–213.
2. M. S.Monnazzi, L. A. Passeri,M. F. R. Gabrielli, P. D. A. Bolini, W. R. S. de Carvalho, and H. da Costa Machado. Anatomic study of the mandibular foramen, lingula and antilingula indry mandibles, and its statistical relationship between the true lingula and the antilingula. International Journal of Oral and Maxillofacial Surgery, vol. 41, no. 1, pp. 74–78, 2012.
3. C. M. Kanno, J. A. de Oliveira, M. Cannon, and A. A. F. Carvalho. The mandibular lingula's position in children as a reference to inferior alveolar nerve block," Journal of Dentistry for Children. 2005;72(2):56–60.
4. A. Tuli, R. Choudhry, S. Choudhry, S. Raheja, and S. Agarwal. Variation in shape of the lingula in the adult human mandible. Journal of Anatomy. 2000;197(2):313–317.
5. F. Acebal-Bianco, P. L. Vuylsteke, M. Y. Mommaerts, and C. A. De Clercq. Perioperative complications incorrective facial orthopedic surgery: a 5-year retrospective study. Journal of Oral and Maxillofacial Surgery. 2000;58(7):754–760.
6. JAMIESON E. B., Dixon's Manual of Human Osteology, 2nd edition. London: Oxford University Press, 1937:391p.
7. Hollinshead W H. Textbook of Anatomy. 1st edition. Calcutta, India: Harper and Row; 1962;855- 856.
8. Berkovitz BKB, Holland GR, Moxham BJ. Colour atlas and textbook of oral anatomy. 2ndedition. London: Wolfe Medical Publication; 1978:15p.
9. Morgan DH, House LR, Hall WP, Vamuas S J. Diseases of temporomandibular apparatus. 2nd edition. Saint Lois: CV Mosby; 1982:19p.
10. Nicholson M L. A study of the position of the mandibular foramen in the adult human mandible. Anatomical Recor. 1985; 212: 110-12.
11. Keros, J., Kobler, P., Baucic, I. And Cabov, T. Foramen mandibulae as an indicator of successful conduction anaesthesia. Collegium Antropologicum. 2001;25(1):327-331.
12. Pill-Hoon Choung, Seong-Gon Kim. The coronoid process for paranasal augmentation in the correction of midfacial concavity.Oral Surg Oral Med Oral PatholOral Radiol Endod 2001; 91:28-33.
13. Mintz S.M, Ettinger A, SchmakelT,Gleason M. J. Contralateral coronoid process bone grafts for orbital floor reconstruction : an

anatomic and clinical study. Journal of Oral Maxillofacial Surgery. 1998;56 (10) :1140-1145.
14. Isaac, B.; Holla S.J. Variations in the Shape of the CoronoidProcess In the Adult Human Mandible. Journal Anat. Soc India. 2001;50(2):137-139.
15. Vipul P Prajapati.,Ojaswini Malukar,S K Nagar. Variations in the morphological appearance of the coronoid process of human mandible. National Journal of Medical Research. 2011;1(2).
16. Tanveer Ahamed Khan H. S., J.H. Sharieff. Observation on Morphological Features of Human Mandibles In 200 South Indian Subjects. Anatomica Karnataka. 2011;5(1):44-49.
17. P.T.C.Lopes,G.A.M.Pereira, andA.M. P. V. Santos. Morphological analysis of the lingula in drymandibles of individuals in Southern Brazil. Journal of Morphological Sciences. 2010;27(4):136–138.
18. H.-H. Tsai. Panoramic radiographic findings of the mandibular foramen from deciduous to early permanent dentition.Journal of Clinical PediatricDentistry. 2004;28(3)215–219.
19. A. A. Waitzman, J. C. Posnick, D. C. Armstrong, and G. E.Pron. Craniofacial skeletal measurements based on computed tomography: part II. Normal values and growth trends. The Cleft Palate-Craniofacial Journal. 1992;29:118–128.
20. P. Jansisyanont,W. Apinhasmit, and S. Chompoopong. Shape, height, and location of the lingula for sagittal ramus osteotomyin thais. Clinical Anatomy. 2009;22:787–793.