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Original Article

Variations in Shape of Mandibular Coronoid Process in 200 South Indian Subjects

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Abstract

Introduction: Mandible being largest and strongest bone of skull, having various morphological features may show changes with reference to age, sex, and race. With this objectivity in mind, this study was conducted to furnish more information on variations in shape of coronoid process of the mandible.

Materials and Methods: This study was conducted in 200 dry human south Indian mandibles. The data pertaining to above was taken and subjected to statistical analysis.

Results: Overall triangular type of coronoid process (67%) more prevalent than hook shape (30%) and rounded (3%). Triangular type more prevalent in males (72.2%) than females (51.1%), whereas hook shape more prevalent in females (44.9%) than males (25.2%) and rounded more prevalent in females (4.1%) than males (2.6).

Conclusion: Shape of coronoid process may be used for sexing of mandibles. Coronoid process is used to identify the site for injection of local anesthetic or for excision of nerve for facial neuralgia.

Key words: Facial neuralgia, Gender, Hook, Rounded, Triangular

INTRODUCTION

Mandible is an interesting bone since it depicts morphological changes in relation to age.[1] Morphological changes like alteration in shape of certain bony process of mandible like coronoid process. Moreover, these variations forms interesting line of investigation from clinical point of view. An extensive literature is available on the shape of coronoid process.[2] The coronoid process seems to be suitable for paranasal augmentation in the dry skull study. Its clinical application is also favorable because its size and morphology fits into the paranasal region, with the additional advantages of biocompatibility, availability, and reduced operation time for harvesting.[3] Hence, an attempt is made in this study to provide more information on morphology of coronoid process.

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MATERIALS AND METHODS

This study was conducted on 200 dry human mandibles available in the department of Anatomy, Subbiah Institute of Medical Sciences, Shimoga. Out of 200, 180 belong to adults and 20 belong to elderly individuals. Out of 180 adults, 135 were of males and 45 were of females. Moreover, out of 20 elderly, 16 were of males and 4 of females.

In this study, coronoid process of 200 mandibles was observed on both sides for its shape. Different shapes of coronoid process observed are triangular, rounded, and hook shaped (Figures 1-3).

Statistical analysis was performed by descriptive statistics and Chi-square test.

RESULTS

Overall triangular type of coronoid process (67%) more prevalent than hook shape (30%) and rounded (3%). Triangular type more prevalent in males (72.2%) than females (51.1%), whereas hook shape more prevalent in females (44.9%) than males (25.2%) and rounded more

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Figure 1: Triangular shaped

Figure 2: Hook shaped

Figure 3: Rounded shaped

prevalent in females (4.1%) than males (2.6%). The study was statistically significant with a $P < 0.1$ (Table 1).

Table 1: Variations in shapes of coronoid process

Sex	Triangular (%)	Hook shaped (%)	Rounded (%)
Male	109 (72.2)	38 (25.2)	4 (2.6)
Female	25 (51)	22 (44.9)	2 (4.1)
Total	134 (67)	60 (30)	6 (3)

DISCUSSION

Among the various morphological observation, shape of coronoid process depicted sexual dimorphism. Coronoid process was triangular in shape in 67% of male mandibles. This is almost similar to findings of study.[4] The variations in the shapes of the coronoid process in the adult human mandible were studied. According to the study the shape of the coronoid processes of both sides of 157 dry adult human mandibles, 100 males and 57 females of Indian origin, were studied to classify the variations. Three types were evident (1) hook shaped, (2) triangular and rounded. Hook shaped coronoid processes were found in 86 (27.4%) sides, triangular in 154 (49%), and rounded in 74 (23.6%) sides. Hook shaped coronoid processes were found bilaterally in 35, triangular in 64 and rounded in 26 mandibles. Of the remaining 32 mandibles, the appearance was different on both the sides. The incidence of the rounded type was almost equal in male and female mandibles; in the triangular type, it was slightly more in the female mandibles while the hook-shaped type was slightly more in male mandibles.[3] This could be considered as a more convincing male sex feature of mandible besides the other minor established differences.

CONCLUSION

In this study, certain differences could be observed in the morphology of the mandible. Male mandibles showed the triangular coronoid process and female mandibles in contrast less triangular coronoid process. The above findings are of immense forensic value in differentiating the sex of mandibles and in per serve as use full landmark for clinicians.

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