

VARIATION IN THE SHAPE OF CORONOID PROCESS IN DRY MANDIBLE OF MAHARASHTRA POPULATION

Sheela D. Kadam ¹, Priya P Roy ^{*2}, Ambali M.P ³, Doshi M A ⁴.

¹ Post Graduate, Department of Anatomy, KIMSDU, Karad, Maharashtra, India.

^{*2} Associate Professor, Department of Anatomy, KIMSDU, Karad, Maharashtra, India.

³ Professor, Department of Anatomy, KIMSDU, Karad, Maharashtra, India.

⁴ Professor and HOD, Department of Anatomy, KIMSDU, Karad, Maharashtra, India.

ABSTRACT

Background: Knowledge about the morphological shapes of the coronoid process is useful for the maxillofacial surgeon. The Coronoid process can be easily harvested as a donor bone. It is also helpful in determining buccal vestibule during denture fabrication.

Aim of the study: To find out the variation in shape of coronoid process and the intercoronoid distance in dry mandible of Maharashtra region.

Material and Methods: One hundred and fifty seven (male 84 and female 73) dry mandible of Maharashtra region were studied for variations of shape in coronoid process of both sides and the intercoronoid distance.

Results: Triangular shape coronoid process was found in 204 (64.97%), Hook shape in 66 (21.02%) sides. and rounded in 44 (14.01%) sides of mandible. Mean intercoronoid distance among males was found to be 9.2000 and 9.100 in females.

Conclusions: It was found that most common shape of coronoid process found in our study was triangular. Mandible with hook shape coronoid process was almost equal in male and female mandible while triangular shape was slightly more in the male.

KEY WORDS: Coronoid Process, Intercoronoid distance, Dentistry.

Address for Correspondence: Dr Priya P. Roy, Associate Professor, Department of Anatomy, KIMSDU, Karad, Maharashtra, India 415110, Mobile- (91) 9970117336

E-Mail: priyaproy4@gmail.com

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BACKGROUND

Skeleton is the only material that remains after the decaying process. It has been one of the important parts of medico legal and anthropological investigation. Estimation of sex in complete human skeleton is easy but if remains of the bones are there it require more knowledge [1]. This study was undertaken to study the coronoid process in 157 fully ossified, dry undamaged mandibles (male - 84 & female

- 73) for its morphological variation in shape and intercoronoid distance. The coronoid process is a thin flat triangular process from ramus of mandible. It varies in shape and size. The process projects upwards and slightly forwards. Its gives attachments to temporalis and masseter muscle [2]. The coronoid process is favorable donor site that possesses the advantage of biocompatibility, availability and less operative time for harvesting. Autogenous bone

is still the gold standard for the augmentation of oral and maxillofacial defects [3]. Coronoid process serve as an excellent donor graft site for reconstruction of orbital floor deformities and also helps in sex determination.

MATERIALS AND METHODS

This study was undertaken on 157 dry human mandibles. Out of 157 mandibles 84 were of males and 73 were of females. Fully ossified, dry, undamaged mandibles were obtained from Anatomy department of Krishna Institute of Medical Sciences, Karad, Maharashtra, India.

The bones were classified into male and female bone by available parameter under the guidance of two senior faculties. Shapes of the coronoid process on both sides over the mandible (Total-314) were analysed. The different shapes of coronoid process were compared for difference on either side and also, measured the intercoronoid distance.

Collected data were analyzed by chi-square test and unpaired (t) to compare the study parameters of male and female.

OBSERVATIONS AND RESULTS

Depending upon shape the coronoid process were classified as

- 1) Hook 2) Triangular 3) Rounded

The triangular coronoid process was seen in 204 (64.97%) sides that is in 88 mandibles bilaterally while in 11 mandibles which had triangular coronoid process only the right side. The 17 mandibles which had a triangular coronoid process only the left side.

Hook shape was present in 66 (21.02%) sides. In 29 mandibles the hook shaped coronoid process was present bilaterally and in 8 mandibles it was present unilaterally out of which the 3 mandible had a hook shaped coronoid process on right side, 5 mandibles which had a hook shaped Coronoid process on the left side.

The rounded shaped coronoid process was present in 44 (14.01%) sides. In 20 mandibles it was present bilaterally, while in 4 mandibles it was present unilaterally out of which 3 mandibles had a rounded coronoid process on right side and one mandible a hook like coronoid process had on left side.



Fig. 1: Coronoid Shape (Hook, Triangular, Rounded).



Fig. 2: Showing the procedure used to measure Intercoronoid distance.

The incidence of Hook type coronoid process was almost equal in male and female mandibles.

In the rounded type it was more i. e. 29 (65.90%) in the male mandible while triangular shaped type was slightly more 105 (51%) in the male mandible.

Difference in Mean intercoronoid distance among males and females having triangular, hook and rounded shape coronoid process was not statistically significant. Mean intercoronoid distance was 9.3 cm. in male and 9.2 female mandibles.

Table 1: Variation in shape of coronoid process with side.

Type No%	Bilateral	Unilateral	
		Rt	Lt
Triangular n=204 (64.97%)	176	11	17
Hook n=66 (21.02%)	58	3	5
Round n=44 (14.01%)	40	3	1

Chi square value = 0.1397 P = 0.9329.

Table 2: Gender wise distribution of coronoid process.

Shape	Male			Female		
	Bilateral	Unilateral	Total	Bilat.	Uni.	Total
Triangular n=204	94 (55.95%)	11(6.5%)	105	82 (56.16%)	17 (11.64%)	99
Hook n=66	32 (19.04%)	2 (1.1%)	34	26 (17.8%)	6 (4.1%)	32
Round n=44	28 (16.66%)	1 (0.5%)	29	12 (8.2%)	3 (2.05%)	15

$\chi^2 = 2.910, = 0.406$

Table 3: Gender wise inter coronoid distance.

Shape	Sex	Mean	Std deviation
Triangular	Male	9.4214	0.48545
	Female	9.1412	0.5955
Hook	Male	9.3002	0.54832
	Female	9.2553	0.55639
Round	Male	9.2	0.56569
	Female	9.1	-

DISCUSSION

Results and observations of present study was compared with the data other study described by different authors.

William et al. (1995) described coronoid process as flat triangular process. Tan veer A Basmajan et al and Vipul Prajapati also showed most common shape of coronoid process was triangular (67%) and least rounded (3%) in contrary, Schafer described it as beak shape [4,5]. Nirmale et al had studied 84 dry mandible for various parameter including coronoid process and found triangular 109 side followed by hook in 47 side and rounded in 12 [6]. S pradhan et al showed most common shape of coronoid process was triangular (46.73%) then rounded (35.3%) and least hook shape in 17.93% [7].

Hall s. J. Et al showed the most common triangular shape of coronoid process was (49%) and least hook shaped (23.6%) [8]. Dr Smita tapas found Triangular shaped coronoid process was found in 60 (60%) sides, hook shaped process in 22 (22%) and round shaped in 18 (18%) sides [9].

In our study most common shape of coronoid process was triangular in both sexes (62.5%) in male and 67.08% in female). Our study reveals 87.26% mandible showing same shape coronoid process bilaterally and in 12.74% of mandible shape differs on both side. Our results are similar to most of the studies.

The mean of intercoronoid distance was 9.23 cm. in male and female mandibles. According to Dr. Mrs Doshi 's (1989) study showed the distance was 9.41cm [10].

CONCLUSION

Bilaterally similar shape of coronoid process is present in 137 mandible with triangular in 88 mandible. Knowledge of the morphological shapes of the Coronoid process is useful for the maxillofacial surgeon. The Coronoid process can be easily harvested as a donor bone. It also helps in determining buccal vestibule during denture fabrication.

Conflicts of Interests: None

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