

## Different Shapes of Coronoid Process of Adult Human Dried Mandibles- An Observational Study

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### Abstract

Coronoid process is a triangular plate of bone seen in the upper part of ramus of the mandible. It shows variations in the shape due to the differences in the attachment of two important muscles of mastication- masseter and temporalis. The changes in the shape helps in identification of race and to surgeons during operative procedures. The aim of the present study is to observe the changes in the shape and to compare with other studies. 121 sides of the mandibles were studied and the results were represented graphically. A unique quadrilateral shape of the coronoid process was detected for a mandible unilaterally. The most common shape was triangular (43.80%) followed by rounded (38.84%) and hooked (16.52%) in that order. The values correlated with other studies on comparison as p value calculated was significant statistically.

**Keywords:** coronoid, mastication- masseter, mandibles.

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### INTRODUCTION

Mandible is the largest, strongest and lowest bone in the face [1]. The coronoid process (Greek korone “like a crown”) [2] is a triangular flat extension at the upper end of the ramus. Two important muscles of mastication- masseter and temporalis are attached to it. Due to differences in the pull of the muscle fibers, the coronoid process attains various shapes. The mandible is developed from the Meckel’s cartilage and also its surrounding mesenchyme [3]. The coronoid process develops from a secondary cartilage along the ossified Meckel’s cartilage. Though fractures of coronoid process are rarely reported [4], the knowledge regarding various shapes of coronoid process is useful for surgeons in maxillo facial, reconstructive and orbital floor surgeries. The different shapes have a racial significance. Review of literature [5, 6] reveals three shapes i.e., triangular, hook shaped and rounded coronoid process. The present study is done to

determine different shapes of the coronoid process of the mandibles.

### MATERIALS AND METHODS

The study was done on 61 mandibles and 121 sides were examined. The various shapes of coronoid process were illustrated. Broken mandibles were discarded. The results were tabulated and compared with other studies. P value was calculated.

### RESULTS

A total of 61 mandibles were inspected. Photographs were taken for each shape seen unilaterally and bilaterally. The total number of sides observed was 121. Previous studies have described only three shapes i.e., hooked, triangular and rounded. But the present study detected a “quadrilateral shape” of the coronoid process which is seen on only one side of the mandible.

The following pictures exhibit different shapes of coronoid process of the mandibles.



**Fig-1: Unilateral Quadrilateral Shaped Coronoid Process Of The Mandible**



**Fig-2: Mandible Showing Rounded And Triangular Shaped Coronoid Process**



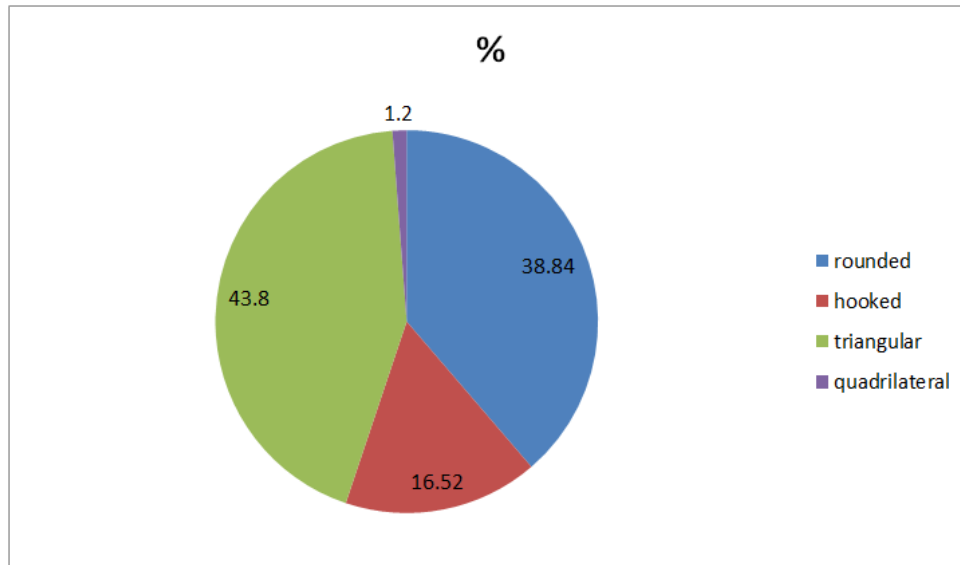
**Fig-3: Mandible Showing Bilateral Triangular Shaped Coronoid Process**



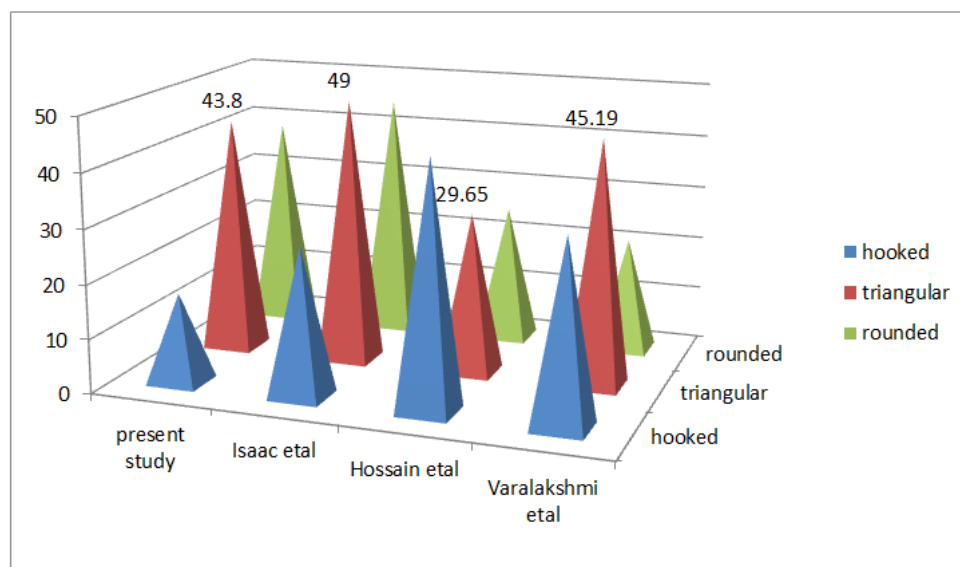
**Fig-4: Mandible With Hooked And Traingular Coronoid Process**

**Table-1: Occurrence of Various Shapes of Coronoid Process in Dried Mandibles (121 Sides)**

Shape	Unilateral		Bilateral	Total (n=121)
	Right	Left		
Rounded	5	4	38	47
Hooked	4	2	14	20
Triangular	3	4	46	53
Quadrilateral	1	-	-	1



**Graph-1: Pie Chart showing the % of occurrence of various shapes of coronoid process**



**Graph-2: comparison with other studies**

P value was calculated from chi square test. p value is 0.000168 and it is statistically significant.

**DISCUSSION**

The ramus of the mandible bears two projections at its upper end. The rounded condyloid process articulates with mandibular fossa of the temporal bone to form temporomandibular joint. The flat process is the triangular coronoid process [7]. This has been described by Romanes [8], Snell [9] and

Basmajian [10]. It has also been explained as beak like process [11]. Previous authors illustrated three shapes for the coronoid process i.e., triangular, hooked and rounded. The present study detected a unique shape of the coronoid process for a mandible which is quadrilateral and seen unilaterally. The other common shapes were also observed and compared with other studies. The most common shape was triangular which correlated with those made by Isaac *et al.*, [12], Hossain

et al., [13] and Varalakshmi et al., [14]. P value was calculated and it is statistically significant.

## CONCLUSION

The coronoid process occurs in three common shapes i.e., triangular, hooked and rounded which correlated with other studies. A unique quadrilateral shape was detected for a mandible on one side.

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