

Morphometric Study of Height of Condylar Process In Dentate And Edentulous Human Mandible In Gujarat Region

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Abstract: Introduction: The mandible, the largest and strongest bone of the face, serves for the reception of the lower teeth. It consists of a curved, horizontal portion, the body, and two perpendicular portions, the rami, which unite with the ends of the body nearly at right angles¹. The articular surface of the mandibular condyle is slightly curved and tilted forward at c.25° to the occlusal plane. Like the articular eminence, its slope is variable. In the coronal plane its shape varies (Osborn & Baranger 1992) from that of a gable (particularly marked in those whose diet is hard), to roughly horizontal in the edentulous. Precise knowledge of the height of condylar process of the mandible in the temporomandibular joint in dentate and edentulous mandible is very important in maxillofacial operations². Methodology: The material for the present study consists of 140 adult Mandible of unknown sex. These were collected from Govt. Medical college-Bhavnagar, P.D.U. Medical College, Rajkot and K. J. Mehta Dental College, Amargadh, Bhavnagar. Materials used are Vernier callipers of 0.02mm accuracy, Digital camera and Pencil. The data were statistically analyzed. The condylar height was measured by the distance from the most cranial point of the condylar process to the most caudal point of the mandibular notch. Result: We found average height of condylar process of right sided dentate mandible is 22.07 mm and the height of condylar process of right sided edentulous mandible is 22.02 mm, which is statistically not significant. We found average height of condylar process of left sided dentate mandible is 22.38 mm and the height of condylar process of left sided edentulous mandible is 22.81 mm, which is also statistically not significant. Height of condylar process on both the side in dentate and edentulous mandibles are not significant statistically Conclusion: The results of this research showed that the presence or absence of the teeth cannot alter height of condylar process and simplify possibility that mandibular edentulism may not be associated with specific shape changes in the condylar process of mandible. [Jignesh V Natl J Integr Res Med, 2019; 10(2):41-43]

Key Words: Condylar process, bone, Mandible, dentate and edentulous

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Introduction: The mandibular condyle varies considerably both in size and shape. When viewed from above, the condyle is roughly ovoid in outline, the anteroposterior dimension of the condyle (c.1 cm) being approximately half the mediolateral dimension¹. The medial aspect of the condyle is wider than the lateral. However, the long axis of the condyle is not at right angles to the ramus, but diverges posteriorly from a strictly coronal plane. Thus, the lateral pole of the condyle lies slightly anterior to the medial, and if the long axes of the two condyles are extended, they meet at an obtuse angle (c.145°) at the anterior border of the foramen magnum¹. The articular head of the condyle joins the ramus through a thin bony projection, the neck of the condyle. A small depression situated on the anterior surface of the neck, below the articular surface, termed the pterygoid fovea, receives part of the attachment of lateral pterygoid¹

The condyle is composed of a core of cancellous bone covered by a thin layer of compact bone. During the period of growth a layer of hyaline cartilage forms a secondary condylar cartilage

and lies immediately beneath the fibrous articulating surface of the condyle. The ramus and its processes provide attachment for the four primary muscles of mastication.

Masseter is attached to the lateral surface, medial pterygoid is attached to the medial surface, temporalis is inserted into the coronoid process and lateral pterygoid is attached to the condyle. The sphenomandibular ligament is attached to the lingula².

Materials and Methods: Present study was conducted after taking permission from the institutional review board.

The material for the present study consists of 140 adult Mandible of unknown sex from Government Medical College, Bhavnagar; PDU Medical College, Rajkot and KJ Mehta Dental College, Amargadh, Bhavnagar.

Materials: 100 dentate 40 edentulous dry mandibles, Vernier callipers of 0.02mm accuracy (Fig. - 1), Digital camera, Pencil

Exclusion criteria:

1. Bones having any fractures or any pathology.
2. Macerated bones.

Method: The condylar height was measured by the distance from the most cranial point of the condylar process to the most caudal point of the mandibular notch.

Fig.1: Measurement of height of condylar process



Results : In this study, out of 140 dry human mandibles, 100 were dentate and 40 were edentulous mandibles from Gujarat region. We found average height of condylar process of right sided dentate mandible is 22.07 mm and the height of condylar process of right sided edentulous mandible is 22.02 mm, which is statistically not significant. We found average height of condylar process of left sided dentate mandible is 22.38 mm and the height of condylar process of left sided edentulous mandible is 22.81 mm, which is also statistically not significant.

Discussion: In present study we have documented differences in the mandibular morphology according to different dental status of humans from Gujarat region. These differences in the shape and size of dentate and edentulous result from a complex and multifactorial process³.

Mechanical, metabolic, nutritional, hormonal, and probably other, as yet unknown, factors are involved in the alveolar atrophy which occurs after extraction of the teeth, and these have various effects over time⁴.

In this paper, we have documented differences in the Condylar process height in dentate and edentulous mandibles in Gujarat region. The height of condylar process was not statistically significant different between dentate and edentulous mandibles. Thus, the height of condylar process was not statistically significant in edentulous than in dentate mandibles. Here we compare the present study with Bruno et al⁵ study having also non significant results when condylar height is concerns with the dentate and edentulous mandibles. In the study of Bruno et al⁵ they studied only female human mandibles for the measurement and that is the reason behind difference in measurement of our study. The height of the condylar process of the dentate and edentulous mandible is very much important for the maxillofacial surgeon as well as the surgeries nearby tempomadibular joint. As far as this study is concern, the height of the condylar process of dentate and edentulous human mandibles, in Gujarat region may be only study available.

Table I: Comparison in measurements of height of condylar process between dentate and edentulous mandibles

Parameter	Right side			Left side		
	Dentate (n = 100) Mean ± SD in mm	Edentulous (n = 40) Mean ± SD in mm	P value	Dentate (n = 100) Mean ± SD in mm	Edentulous (n = 40) Mean ± SD in mm	P value
Condylar process height	22.07 ±3.93	22.02 ±2.05	0.702	22.38 ±4.11	22.81 ±1.92	0.135

P values <0.05 was considered significant, NS= not significant

Table II: Correlation of present study with other study (%)

Sr. No.	Parameter	Present Study		Bruno et al ²	
		Dentate (n = 100)	Edentulous (n = 40)	Dentate F (n = 92)	Edentulous F (n = 18)
1	Condylar process height	22.23	22.3	18.67	18.54

Conclusion: The present study reveals valuable insights on the information concerning the morphology of height of condylar process in Gujarat population. The knowledge of the height of condylar process in the present study provide valuable information to dental surgeons that will facilitate effective anatomical knowledge of Temporomandibular joint thus avoiding complications from local surgical and other invasive procedures.

The results of this research showed that the presence or absence of the teeth cannot alter height of condylar process and simplify possibility that mandibular edentulism may not be associated with specific shape changes in the condylar process of mandible.

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