

MORPHOLOGY OF CONDYLOID PROCESS OF MANDIBLE AND IT'S SURGICAL RELEVANCE

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ABSTRACT

Background: The aim of the study was to determine the morphological shapes of condyloid process of mandible and finding out the prevalence of different forms in dry human mandibles.

Methods: Gross examination of 60 dry human mandible was carried out from the collection of department of Anatomy, Government medical college, bhavnagar, gujarat for the shape of condyloid process from superior, anterior, medial and lateral views.

Results: From the superior view, shape was oval in 57.5%, elongated in 22.5%, rounded in 10%, angled in 9.17% and irregular in 0.83% of the mandibular condyles where as from the anterior view, shapes were convex in 47.5%, flat in 41.67% and angled in 10.83% of the condyles. From the lateral view, shapes observed were flat, rounded and pointed with their percentage being 58.33%, 33.33% and 8.33% respectively where as from the medial view, flat, rounded and pointed shapes were found in 32.5%, 60% and 7.5% of the condyles respectively.

Conclusion: The data obtained from the present study may found helpful in personal identification, condyle surgeries and prosthesis making.

KEY WORDS: Condyloid Process, Mandibular Condyles, Condylar Fracture,

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INTRODUCTION

Condyloid process of mandible varies considerably in shape. When viewed from above, the condyle is roughly ovoid in outline. The medial aspect of the condyle is wider than the lateral and the lateral pole of the condyle lies slightly anterior to the medial [1]. It is covered by a fibrocartilage, articulates with the anterior part of mandibular fossa of temporal bone separated by an articular disc and forms the synovial temporomandibular joint [2].

Temporomandibular joint is having a vital role

in movements like chewing, swallowing and during speech. Temporomandibular joint is subjected to wide range of movements to perform variety of functions which exerts different mechanical forces on mandibular condyle. To adjust with such mechanical forces, shape of the condyloid process can be variable according to functional preferences.

Shape of the condyloid process of mandible is of great importance while performing reconstructive surgeries after tumour resection as both the form and functional utility of the

mandibular condyle needs to be restored. Furthermore, database regarding different morphological shapes is also required in manufacturing the prosthesis and devices for temporomandibular joint replacement surgeries. Shape of mandibular condyle also changes with the age[3]. In forensic dentistry, for personal identification purpose, preserved database of individual's condylar radiograph can have a great value [4].

The probability of the existence of an anatomical variation, may result in neurovascular complications during procedures such as regional anesthesia, implant placement and surgical correction of jaw deformities. Besides, knowledge of variational anatomy provides superiority in radiologic interpretation and prosthetic rehabilitation [5]. Therefore, the study was aimed at obtaining the database of different anatomical shapes of condyloid process of mandible on dry human mandibles by gross examination to determine surgical, manufactural and anatomical reference values.

MATERIALS AND METHODS

A total of 120 mandibular condyles of 60 dry human mandibles irrespective of their gender were selected for the study from the collection of department of Anatomy, Government medical college, Bhavnagar. Condyles were examined for their shapes from 4 different views: superior, anterior, medial and lateral.

Fig. 1: Shows oval, elongated, rounded, angled and irregular shapes of condyloid process of mandible respectively from left to right in a superior view.



Fig. 2: Shows convex, flat and angled shapes of condyloid process of mandible respectively from left to right in an anterior view.



Fig. 3: Shows flat, rounded and pointed shapes of condyloid process of mandible respectively from left to right in a lateral view.



Fig. 4: Shows flat, rounded and pointed shapes of condyloid process of mandible respectively from left to right in a medial view.



RESULTS AND DISCUSSION

Table – 1 shows presentations of various anatomical shapes of condyloid process of mandible and their prevalence.

Table 1: Presentations and prevalence of various anatomical shapes of condyloid process of mandible.

View	Shape of condyles				
	Oval	elongated	Rounded	Angled	Irregular
Superior view	69	27	12	11	1
	57.50%	22.50%	10%	9.17%	0.83%
Anterior view	Convex	Flat	Angled		
	57	50	13		
	47.50%	41.67%	10.83%		
Lateral view	Flat	Rounded	Pointed		
	70	40	10		
	58.33%	33.33%	8.33%		
Medial view	Flat	Rounded	pointed		
	39	72	9		
	32.50%	60%	7.50%		

From the superior view, shape was oval in 57.5%, elongated in 22.5%, rounded in 10%, angled in 9.17% and irregular in 0.83% of the mandibular

condyles where as from the anterior view, shapes were convex in 47.5%, flat in 41.67% and angled in 10.83% of the condyles. From the lateral view, shapes observed were flat, rounded and pointed with their percentage being 58.33%, 33.33% and 8.33% respectively where as from the medial view, flat, rounded and pointed shapes were found in 32.5%, 60% and 7.5% of the condyles respectively.

Larry et al found in his study that the shapes from superior view were oblong, round or oval, pear shaped lateral taper, pear shaped medial taper and planoconvex, commonest being the oblong (73.02%) where as in our study, shapes from superior view were oval, elongated, rounded, angled and irregular with the commonest being the oval shape. Commonest shape from anterior view in his study was flat/slightly convex (71.43%) whereas in our study, convex shape was found in 47.5% of condyles with flat being the next common (41.67%). Most common shape found from lateral view was convex (80.16%) in larry's study where as it was flat (58.33%) in our study[6]. There is no any data regarding shape of condyles from medial view in other studies. In the studies done in india, condyles have been classified mostly as convex, rounded, flat, concave and angled[7, 8]. So in present study, we attempted to figure out the complete picture of mandibular condyles by observing the shape of condyle from different views.

Variations found in the shape of mandibular condyles may be due to various factors like genetics, age, gender, environmental, functional , racial etc. Detailed knowledge of such variations are helpful in planning reconstructive surgeries of mandibular condyle, fracture repair of condyles and in preparation of prosthesis [9, 10, 11].

CONCLUSION

Shape of condyloid process of mandible shows some variations. Number of studies carried out to find such variations are least in india so far. Knowledge of these variations may help to some extent in condylar surgeries, temporomandibular joint replacement, forensic identification etc.

Conflicts of Interests: None

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