

**EVALUATION OF CONDYLAR MORPHOLOGY IN PANORAMIC RADIOGRAPHY-A
CROSS SECTIONAL STUDY**

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Article Received on 04/08/2022

Article Revised on 25/08/2022

Article Accepted on 15/09/2022

ABSTRACT

Temporomandibular joint is one of the complex joints in the entire human body. The mandibular condyle, which forms an important structure in the TMJ poses variety of shapes in different individuals. This diversity can be attributed to various factors like developmental variabilities, trauma, age and other developmental disturbances or diseases. The present study aims to evaluate the variations in condylar morphology on orthopantomogram (OPG) in a group of 250 individuals between age group of 18-55 years.

KEYWORDS: Morphology, Condyle, Orthopantomogram, OPG.**INTRODUCTION**

Panoramic radiograph is a routine imaging technique used by dental surgeons for obtaining information about the teeth, mandible and adjacent regions of jaw.^[1] It also gives a favourable cost benefit relationship and relatively low dose of radiation exposure for the patient.^[1] Appearance of mandibular condyle greatly varies among different age groups and individuals. Human mandibular condyle are basically of 4 types, Type i: Oval, Type ii: Bird beak, Type iii: Diamond, Type iv: Crooked finger. Morphological variation can be observed due to developmental variations, remodelling, various diseases, trauma, endocrine disturbances and radiation therapy.^[1] The study aims at observing and recording morphological variations in shape of condyle on an OPG and evaluate whether the determination of shape could aid in diagnostics.

MATERIALS AND METHODS

The cross sectional study was conducted at St Gregorios Dental College, Chelad that includes radiographic evaluation of 500 mandibular condyles. All retrievable OPG, were obtained and necessary data was extracted regarding age, gender and condylar morphology.^[2] The age of the included individuals range between 18-55 yrs. Digital orthopantomograph (OPG) taken on Dentsply Sirona (exposure parameters being 16mA, 64Kv) free of any projection errors, that showed a complete view of condyle on either side with optimum density and contrast were selected. OPG included various clinical indications such as orthodontics, oral surgery and periodontics.^[3]

Exclusion criteria includes history of trauma in the maxillofacial region, edentulous patients, patient with history of TMJ disorders, presence of bony lesions in maxilla/mandible and radiographic technique errors effecting imaging of mandibular condyle.^[3] Sum of 250 OPGs was visualized for a routine investigation. The OPGs were evaluated to determine the morphology of condyle. Morphology of mandibular condyles was classified according to what was identified by Chaudhary et.al (2015) into 4 shapes.^[3]

Type I: Oval, Type II: Bird beak, Type III: Diamond, Type IV: Crooked Finger.

RESULT

Total of 500 condyles from 250 OPG was examined. The study included with age range btw 18-55 yrs. The shape of the condyle that has been identified a) oval, b) bird beak, c) diamond, d) crooked finger as shown in fig 1, fig 2, fig 3, fig 4.



1: Oval



2: Bird beak



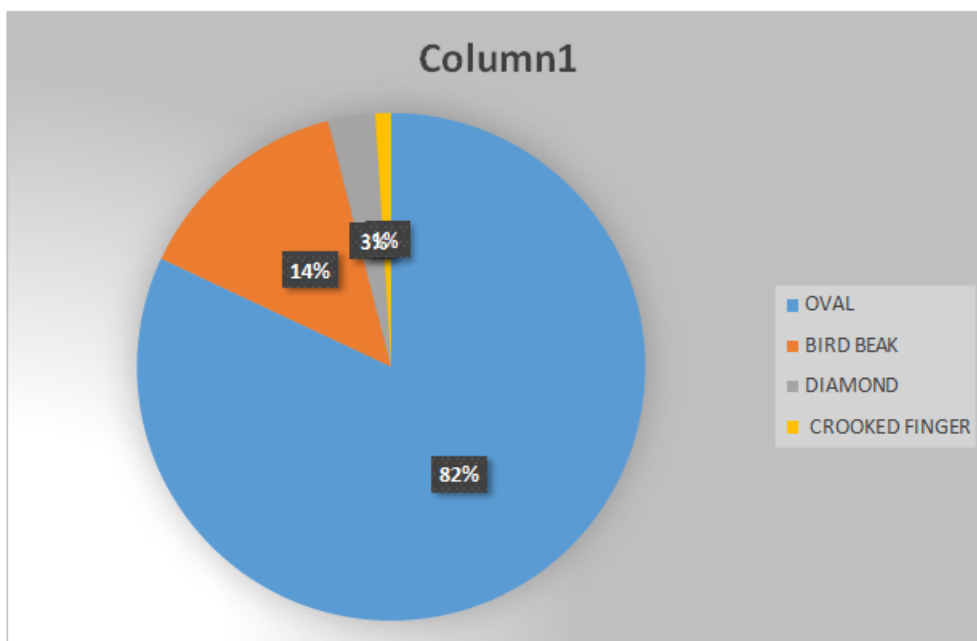
3: Diamond



4: Crooked finger

The most common form of condylar morphology oval (82 %) followed by bird beak (14%), diamond (3%) and crooked finger (1%). The frequency of oval condylar morphology was 51.9% among males and 47% in female participants. In all age groupsthe most dominant common form of condylar morphology was oval followed by bird

beak, diamond and crooked finger. Mostcommon type of combination on both sides of mandible was oval-oval that occurred in 189 out of 250 OPG's (76.6%) followed by bird beak-bird beak (10%) which appeared in 24 radiographs then oval-bird beak (8%)



DISCUSSION

The morphology of mandibular condyle varies greatly

among different age group and individuals. Human mandibular condyle may be categorised into 4 basic

types, type1: oval, type2: bird beak, type 3: diamond and type 4: crooked finger. Morphological changes of condyle occur due to developmental variations, remodelling, various diseases trauma, endocrine diseases and radiation therapy.^[1] Among various imaging modalities used for TMJ imaging, panoramic radiograph still remains the main screening modality for TMJ abnormalities.^[1] Panoramic radiograph include both maxillary and mandibular dental arches along with other surrounding structures such as maxillary antrum, nasal fossae, TMJ, styloid processes and hyoid bone.^[1] It is a routine imaging modality by dental surgeons for obtaining general information about the teeth mandible and adjacent regions of jaw.^[1] In this present study, we evaluated the radiographic shape of condylar head on panoramic radiograph. The 250 pair of condylar heads was evaluated, 82 percent were oval in shape followed by bird beak 14 percent, diamond 3 percent and least being the crooked finger 1 percent. The most commonly occurring combination was oval-oval whereas crooked finger crooked finger 1 percent. Currently various advanced radiographic modalities are available such as CT scan, cone beam volumetric imaging which can give detailed information of condyle.^[2] However dental surgeons usually prefer OPG to screen TMJ. The possible explanation due to which they still prefer OPG include favourable cost benefit relationship, low dose of radiation exposure, ease of prescription and lack of image super imposition.^[2]

CONCLUSION

Limited hazard of radiation, and ease of prescription make OPG a common choice of emergency prescription. Evaluation of condyle on OPG seems to attract clinicians to make fine observations.^[1] Oval is the most familiar shape and oval-oval is the most usual combination. More sample size and evaluation of other parameters may help in giving more information about population and thereby generating interest in dentistry.^[1]

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