

Research Article

UNILATERAL ELONGATED CORONOID PROCESS OF MANDIBLE

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ABSTRACT

The Mandible is the strongest and largest bone of the skull. It shows various morphological features which may show changes with references to age, sex and race. During routine study of bones in the department of Anatomy at K. S. Hegde medical Academy, Mangalore, Karnataka an unusual unilateral elongated left coronoid process of mandible was observed. This type of elongated coronoid process is very rare, which prompted us to report the case. The knowledge about this rare variation is important for dental surgeons while investigating a case with hypomobility of mandible. It is also important for accurate diagnosis of symptoms and radiographs of the mandible. Its embryological cause and clinical significance will be discussed.

Key Words: *Mandible, Coronoid hyperplasia, Elongation*

INTRODUCTION:

Mandible is the strongest and largest bone of the skull. It has a ramus and body. Ramus ends above in two processes, the coronoid and condylar process which are separated by a mandibular notch (Breathnach (1965)). The coronoid process is a flat piece of triangular bone projecting upwards from anterior margin of the ramus. It provides attachment to temporalis muscle and its anterior border is palpable through the zygoma. Its height and position are variable in relation to condylar process at birth, in adults, old age and as such can be used in crude estimation of age (Soames (1995)). The Coronoid process is large and projects above the level of condylar process at birth and gradually with the growth of the neck of the mandible, condyles are at higher level in adulthood.

The elongated coronoid process of the mandible leads to a progressive, painless difficulty in opening the mouth, due to the contact of coronoid process with the temporal surface of the zygomatic bone or medial surface of the zygomatic arch (Fernandez Ferro *et al.*, (2008)). Temporalis hyperactivity, hormonal stimulus and genetic inheritance are some of the theories postulated for elongated coronoid process (Jaskolka *et al.*, (2007)).



Figure- 1

Figure 1: Photograph showing elongated left coronoid process (lateral view)

Research Article

CASES

During the routine study of bones in the department of Anatomy at K.S.Hegde Medical Academy, Mangalore, Karnataka, we observed an unusual unilateral elongated left coronoid process of mandible of a male adult [Figure -1, 2].

The length of the coronoid was 2.7 cm (measured from apex of coronoid process to the line tangent to the deepest part of mandibular notch). Other parts of the mandible did not show any unusual features.



Figure 2: Photograph showing elongated left coronoid process (medial view)

DISCUSSION

The coronoid process is of clinical significance to the maxillofacial surgeon for reconstructive purposes.

Abnormal elongation of the coronoid process, formed of histologically normal bone without any synovial tissue around it, is suggestive of coronoid hyperplasia Fernandez *et al.*, (2008). It is quite infrequent and affects mostly males between the ages of 14 and 16 years, with male and female ratio of 5:1. It leads to restricted mouth opening caused by impingement of the coronoid process on the zygomatic arch Blanchard *et al.*, (1992). The patient with unilateral coronoid hyperplasia can present with limitation of jaw movement, prominence and /or palpable crepitation of zygomatic bone. The etiology and pathogenesis of coronoid hyperplasia are unclear.

Several theories have been postulated, including hyperactivity of the temporal muscle that caused reactive elongation of the coronoid process, dysfunction of the temporo-mandibular joint caused by chronic disc displacement, which would be related with cases of unilateral hyperplasia and is mentioned as one of the causes of Jacob's disease. Other causes may include endocrine stimuli, traumatism and even genetic and family factors Fernandez *et al.*, (2008). In one of the studies ankylosing spondylosis has also been said to cause mandibular elongation (Bechterew disease) Wenghoefer *et al.*, (2008).

The coronoid process is of clinical significance in many mandibular surgeries. It can be easily harvested by an intraoral approach during orthognathic surgery. It's size, shape, biocompatibility, adequate hardness, slow resorption rate, close proximity, early post operative recovery and less donor site morbidity makes it an excellent donor graft site for orbital floor deformities Mintz *et al.*, (1998) and paranasal augmentation Choung and Kim (2001). Its use as a graft was first introduced in 1969 for repair of small discontinuity defects of mandible. It can also be used as a composite graft with temporalis muscle in all aspects of reconstructive cranio-maxillofacial surgeries like trauma, tumors, joint ankylosis and facial paralysis. The only disadvantages of this graft being its biodegradable nature as against alloplastic grafts and small dimensions as compared to donor sites like iliac crest and calvarial bone.

The excess growth of the coronoid process leads to mandibular hypomobility. The condition can be diagnosed by panoramic radiographs and with 3-dimensional reconstructions from computerized

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tomography image data sets. Hyperplasia of the coronoid processes can be treated using an intraoral approach for coronoidectomy.

CONCLUSION

The unilateral elongated coronoid process of mandible is a rare deformity. A comprehensive awareness and understanding of the lesion and its signs and symptoms will help the dental surgeons dealing with the case of hypomobility and pain of mandible. Mandibular hyperplasia are uncommon entities that must be suspected in an adolescent with mandibular hypomobility. CT and MRI scan are the most reliable test for evaluating and demonstrating its morphology.

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