



The burden of Odontogenic Tumours on Mandible

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Editorial

Odontogenic tumours are a group of heterogeneous lesions of varying clinical and histopathological features ranging from benign to malignant. These tumours arise from the various tooth forming cells. Tumours of oral cavity can be seen in both maxilla and mandible. Although the rates with which mandible is involved is much higher than maxilla. There is a striking difference between the occurrence of tumours in both jaws, even though the origin of both maxilla and mandible is same.

According to the new 5th edition of the "World Health Organisation" Classification of Head and Neck tumours 2022, odontogenic tumours are classified into two categories, malignant and benign according to their biological behaviour [1]. Apart from this WHO also added the essential and desirable diagnostic criteria including the location of the tumour. Out of the total 23 lesions, 16 are seen in mandible, while 3 in maxilla and 3 in both the jaws. Although there is no definite answer as to why the odontogenic tumours are mostly seen in mandible but few presuppositions which can give grounds for the predilection of odontogenic tumours towards mandible are deciphered below.

Some parts of mandible are formed by perichondral ossification using Meckel cartilage as template. On the other hand, maxilla does not arise from the direct ossification of Meckel cartilage. Secondary growth centres are present in mandible, which have the capacity to grow, while as no such

centres are seen in maxilla. Mandibular condyle retains its capacity to grow until 20 years of age due to the various proliferative cells having multilineage potential which can get differentiated into different cells under different environment, so this bank of proliferating cells also acts as a contributing factor for development of tumours in the mandible [2].

Nerves can also play an important role in initiation and progression of tumours. There is a complex division of Inferior Alveolar Nerve in the mandible. Any stimulus which could alter the normal functioning of nerves could also be contributing factor for the development of tumours. Various studies done in this field highlighted that Nervous system not only participates in the progression of tumour but it also plays vital role in the precancerous stages which initiates the cancer development for example pancreatic intraepithelial neoplasia [3].

Maxillary bone is a spongy bone while as mandible is a compact bone and is denser than maxillary alveolar bone. It is subjected to higher rates of mechanical stress and has increased rate of healing than maxilla. While as the maxillary and premaxillary bones are only subjected to the occlusal force exerted by the mandibular teeth. The higher muscle force exerted on the lower jaw result in the complex pattern of stress and strain and deformation from shear and torsion. Regions more prone to resorption are the areas with increased mobility during facial movement. Hence Mandible is more susceptible to resorption as compared to maxilla [4]. Resorption results in the absorption of tissue into the circulatory system which occurs with the help of myriads of cells specially osteoclasts which accumulates in the particular location. All these processes are governed

by complex interplay of cellular, hormonal, and molecular mechanism.

Mandible is most commonly affected due to combination of anatomical, embryological and physiological factors. The mandible's unique developmental origin, tooth formation pattern, bone density and vascularization create an environment conducive to tumour development. These factors, coupled with genetic and environmental influences, contribute to mandible's higher incidence of odontogenic tumours.

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