Central Odontogenic Fibroma of the Mandible

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ABSTRACT

The aim of this case report was to analyze clinical and histological features of a central odontogenic fibroma (COF), occurring in the area of right mandibular premolar region where treatment was done with conservative enucleation and aggressive curettage. Central odontogenic fibroma is a mesodermal odontogenic tumor. It is an extremely rare benign neoplasm that is perhaps the most ill-defined and least understood of all tumors of odontogenic origin. The poorly delineated parameters for the diagnosis of the COF are due in part to the rarity of the lesion and its confusion with other central fibrous neoplasms. The importance of diagnosing the lesion and the differential diagnosis cannot be overlooked in the treatment of odontogenic fibroma. The importance of adequate pathological expertise for histological examination is very much essential. Recurrence following conservative aggressive curettage is relatively uncommon.

Keywords: Fibroma, Odontogenic tumor, Central odontogenic fibroma.


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INTRODUCTION

The central odontogenic fibroma (COF) is an extremely rare benign neoplasm. The lesion is considered to be derived from mesenchymal tissue of dental origin, such as periodontal ligament, dental papilla or dental follicle. The COF consists of collag enous fibrous connective tissue containing varying amounts of odontogenic epithelium. Clinically, the lesion grows slowly and leads to cortical expansion. The possibility of being located in the mandible is almost same that in maxilla. It seems that COF appears in a wide age group with predilection for females. In maxilla, the lesion frequently appears in the anterior region, whereas in the mandible lesion tends to be located in the posterior area, involving the premolar and molar areas. The radiological examination of this lesion appears as an area of radiolucency or as an area with a mixed radiodensity. Most of the time lesions have well-defined borders. The significance of the present case was to analyze COF clinicopathologically with its treatment aspect.

CASE REPORT

A young male patient, 15 years old reported to the department of oral and maxillofacial surgery with a chief complaint of painless gingival swelling over right mandibular premolar region. The patient also told that the lesion was grown to the present size over a period of last 2 years. There were no other symptoms associated with that lesion. His medical history was noncontributory. The intraoral examination showed the presence of an enlargement of buccal mandibular premolar region, extending from the first premolar region to first molar region on the right side. The overlying mucosa and gingiva were of normal color and smooth in texture. The right second premolar was missing. The mass was firm, raised and nontender. The fine needle aspiration biopsy was negative. Occlusal view (Fig. 1) and Computed tomography (CT) scan (Fig. 2) revealed radiolucency and area of mixed radiodensity extending from the mandibular right first premolar to first molar, with impacted second premolar. The margins of the lesion appeared to be well-defined. Differential diagnosis of lesions with similar clinical and radiographic features include: central ossifying fibroma, traumatic bone cyst, fibrous dysplasia of the bone, calcifying odontogenic cyst, cementoma and ameloblastoma. Punch biopsy was performed to obtain appropriate piece of tissue. Histopathological features showed odontogenic epithelium within the fibrocellular connective tissue. Epithelium was arranged in small islands and nests which appear to be inactive. Stroma was highly maturated with plump to spindle fibroblast and dense bundle of collagen fibers. Individual epithelial islands were lined by low columnar to cuboidal cells. Based on histological pictures, features were suggestive of central odontogenic fibroma (Fig. 3). A comprehensive explanation was given to the patient, who signed an informed consent for surgical excision. The lesion was then entirely removed by aggressive curettage under local anesthesia (Fig. 4). The impacted second premolar was not removed during surgery. The microscopic evaluation of this material reveals the same features of the previous biopsy.
DISCUSSION

The COF is an extremely rare benign neoplasm that is perhaps the most ill defined and least understood of all tumors of odontogenic origin. The poorly delineated parameters for the diagnosis of COF are due in part to rarity of the lesion and its confusion with other central fibrous neoplasms. In the revision of the literature on this pathology approximately 80 patients were found in English literature. The age of the patient varies from 4 to 80 and is more frequent in third or fourth decade of life. Studies showed that odontogenic fibroma occurred in patients from 11 to 80 years old, with an average patient age of 29 years. Clinically, the lesion grows slowly and leads to cortical expansion. In certain cases, the expansion of the tumor may result in resorption or displacement of involved teeth. The possibility of this tumor being located in the mandible is almost same that in maxilla with predilection for females. Findings of the present case are in accordance with the previous published data.

Radiographically, the appearance of tumor varies; most examples are multilocular, radiolucent lesions that involve relatively large portions of the jaws in their later stages. The majority of the reported cases have been in close proximity to the teeth, most of them have been associated with unerupted or displaced teeth. Similar to this is our case, the lesion is associated with unerupted second premolar teeth.

Histologically, COF is characterized by a tumor mass made up of mature collagen fibers interspersed usually by many plump fibroblasts that are very uniform in their placement and tend to be equidistant from each others. Small nests or island of odontogenic epithelium that appear entirely inactive are present in variable, but usually quite minimal amount. The present case also showed similar histopathological features.

Gardner described two histologically distinct types: the simple type and World Health Organization (WHO) type. The simple type was described as resembling a hyperplastic dental follicle with loose, poorly cellular myxoid connective tissue containing sparse islands of odontogenic epithelium. Size, location and radiographic features clearly exclude such lesions as dental follicles. The WHO type was stated to feature cellular connective tissue with a prominent epithelial component lacking palisading, reverse polarization or stellate reticulum. In addition, calcified material sometimes referred to as dysplastic dentin or cementum like material is
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present. The WHO type differs from simple type by having greater amounts of calcified materials and odontogenic epithelial islands.

The surgical management of this neoplasm was enucleation and aggressive curettage. Although, the tumor in most instances is not encapsulated, the fibrous mass appears to separate easily from the surrounding osseous tissue. Few clinical cases reported in the literature had a recurrence which required more extensive surgical excision. Some authors reported a clinical case which had recurred 9 years after surgery; in another clinical study, the authors found recurrence of two cases out of 15. The tendency toward malignant change is not considered high in the literature.

CONCLUSION
The importance of diagnosing the lesion and differential diagnosis cannot be overlooked, in the treatment of COF. It is essential that oral surgeon, oral pathologist and radiologist integrate all relevant and available information to come up with a correct diagnosis and appropriate disease management. The findings from our case report point the importance of adequate pathological expertise for histological examination. Finally, we conclude that enucleation and aggressive curettage appears to be the treatment of choice for this tumor and long-term follow-up is mandatory, even though, the recurrence rate is minimal.

REFERENCES