

## Central odontogenic fibroma of the simple type

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### ABSTRACT

The central odontogenic fibroma is a rare benign neoplasm, and considered to be derived from the mesenchymal tissue of dental origin. It is a poorly defined tumor of the jawbones which has only been infrequently reported in the literature. We report a histologically proven case of simple-type central odontogenic fibroma, which affected the left canine-premolar region of the maxilla in a 52-year-old woman. (*Korean J Oral Maxillofac Radiol* 2002; 32 : 227-30)

**KEY WORDS** : neoplasms, fibrous tissue; fibroma; odontogenic tumors; jaw

The central odontogenic fibroma (COF), as the name implies, is a benign odontogenic neoplasm that occurs exclusively in the jaws.<sup>1</sup> Based on its anatomic distribution and histologic appearance, this neoplasm is considered to be a tumor of the mesenchymal components of the odontogenic apparatus, that is the dental follicle, the dental papilla, or the periodontal ligament.<sup>2</sup> According to the new World Health Organization (WHO) classification, it is defined as a fibroblastic neoplasm that contains varying amounts of apparently inactive odontogenic epithelium. Some lesions may contain varying amounts of hard tissue that resembles dysplastic cementum or bone.<sup>3</sup>

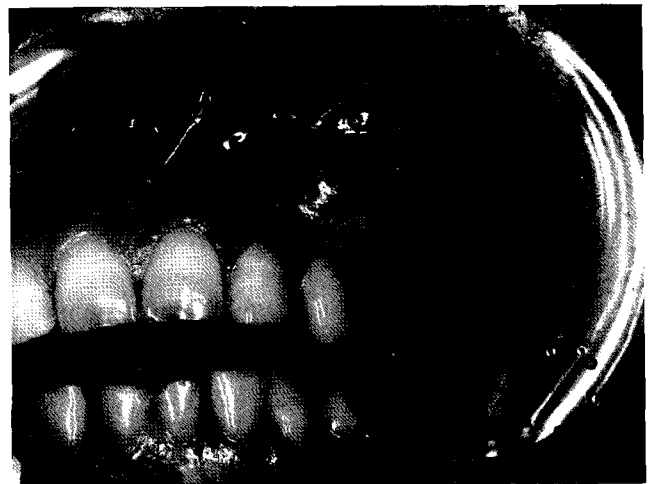
This neoplasm is a rare tumor. Regezi et al.<sup>4</sup> found no cases in their series of 706 odontogenic tumors, and a review of the literature by Dahl et al.<sup>5</sup> found only 11 cases reported. For many years, therefore, there has been controversy as to the concept and definition, because the term COF has been applied to various types of lesions. The ill-defined nature of COF is illustrated by the many alternative terms which include odontogenic fibroma, nonosteogenic fibroma of the jaw, osteogenic fibroma with calcification, and central fibroma of the mandible.<sup>6</sup> In an attempt to clarify the situation, Gardner<sup>1</sup> separated COF into two histologic types, designated as the simple and the WHO variants. Since then most authors have used this classification, but the concept of COF is still a matter of debate.

The purpose of this report is to present a case of COF of the simple type which affected the canine-premolar region of the

left side of the maxilla of a 52-year-old woman, as well as to compare its clinical, radiographic, and histologic features with those cases previously reported.

### Case report

In September 2002, a 52-year-old woman was referred by her general dental practitioner for evaluation and treatment of a painless hard maxillary swelling of one year's duration. The lesion extended from the canine to the second premolar on the left side of the maxilla and produced buccal expansion and displacement of the affected teeth with no signs of inflammation (Fig. 1). There was nothing significant in her medical and dental history.



**Fig. 1.** An intraoral photograph shows a bony hard swelling and intact, normal-appearing mucosa.

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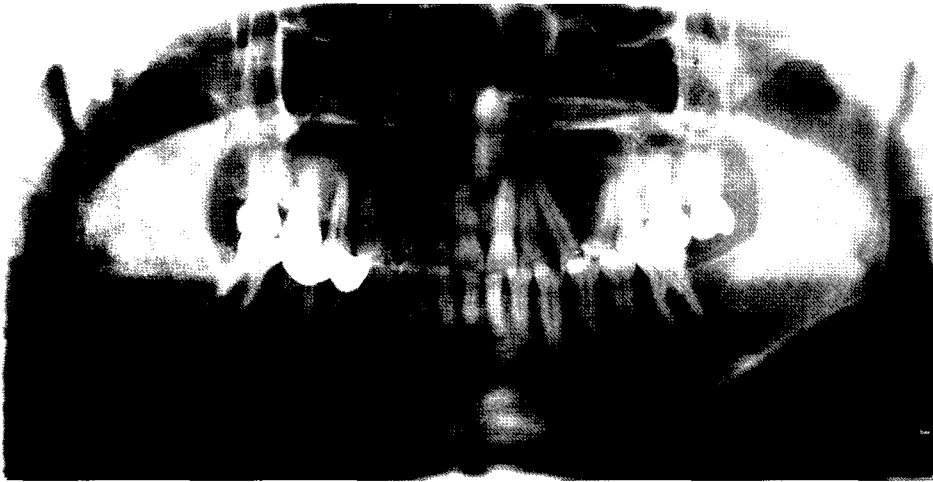
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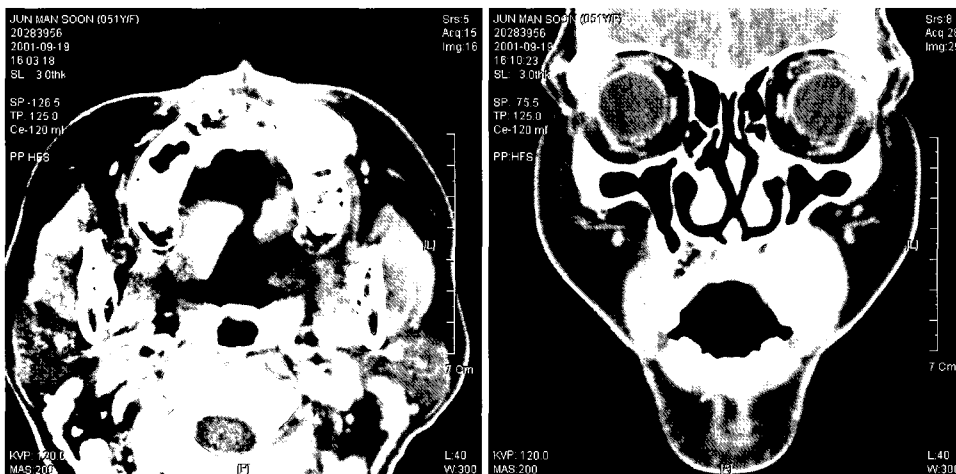
**Fig. 2.** A panoramic radiograph shows a relatively well-defined radiolucent lesion causing root divergence of the affected teeth.



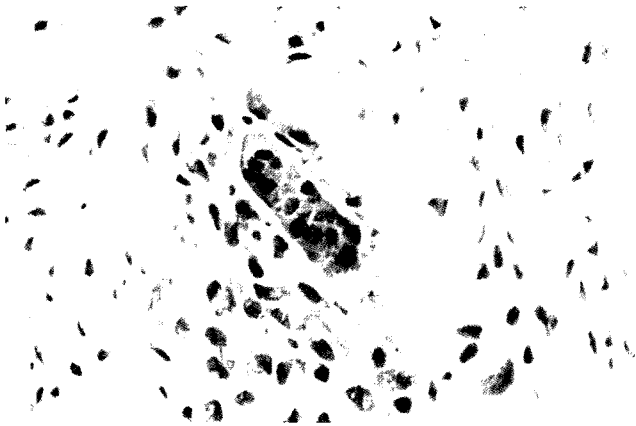
**Fig. 3.** An occlusal radiograph shows marked buccal expansion of a cortical plate and thin septa within the lesion.

Radiographic examination revealed a relatively well-defined multilocular radiolucent lesion extending from the left canine to the second premolar on the same side, and producing displacement of the affected teeth and buccal expansion of a cortical plate (Figs. 2, 3). A CT scan was obtained after intravenous administration of contrast medium. The axial and coronal CT scans showed a homogeneous soft tissue mass that measured approximately  $2.5 \times 2.0$  cm in the left maxilla. Expansion and thinning of the buccal cortical plate were also noted (Fig. 4).

A biopsy was performed under local anesthesia. Histologically, it was composed of a dense fibrous connective tissue, in which rests of odontogenic epithelium were occasionally presented. There were a few calcified cementum-like materials within the lesion (Figs. 5, 6). A diagnosis of COF of the simple type was made. Surgical excision was performed under general anesthesia and the lesion was removed with ease.



**Fig. 4.** Contrast-enhanced axial (a) and coronal (b) CT scans show an homogeneous soft tissue mass. Expansion and thinning of buccal cortical plate is also noted.



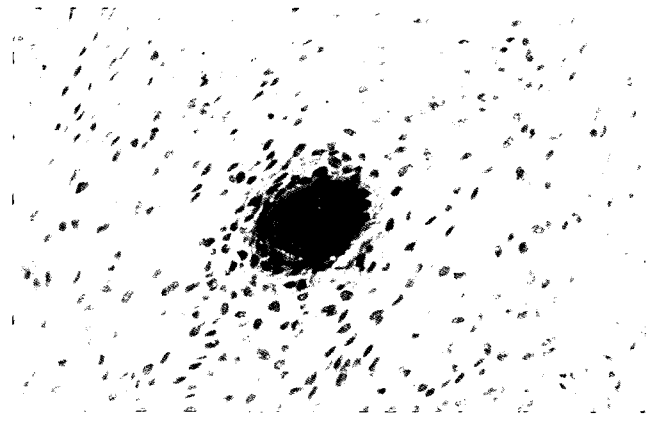
**Fig. 5.** A photomicrograph of the lesion shows a dense fibrous connective tissue stroma containing small number of odontogenic epithelial islands.

### Discussion

The COF is a rare benign odontogenic tumor arising within the jaws.<sup>1</sup> This neoplasm is perhaps the most ill-defined and least understood of the neoplasm of odontogenic origin. This is due, in part, to its rare occurrence.

The COF may appear at any age but is discovered most frequently in the second to fourth decades.<sup>2</sup> Zimmerman and Dahlin<sup>7</sup> found that in 67% of their reported cases the patients were between 10 and 29 years of age, and Bhaskar<sup>8</sup> stated that this tumor usually occurred in patients under 20 years of age. It is twice as common in females as in male patients.<sup>2</sup> The lesion may appear in either the mandible or the maxilla. In the maxilla, there is a tendency for the lesion to involve the anterior region, whereas mandibular lesions tend to be located more posteriorly and to involve the premolar and molar areas.<sup>2</sup> The great majority of reported cases have involved the mandible rather than the maxilla. Clinically, the salient features of this lesion are a gradual progressive enlargement of the affected jaw and facial deformity, usually unaccompanied by pain, unless secondarily infected or impinging on nerves. Often there is a resultant displacement of the adjacent teeth in the affected area. The tumor's presence may be manifested for periods varying from several weeks to several years before the patient seeks treatment.<sup>7</sup> In this case, clinical features of painless hard swelling and displacement of affected teeth were found. Our case is consistent with the reported clinical and morphologic characteristics of COF.

The radiographic features of COF have not been clearly described as yet. The COF has been described both as a well-defined radiolucent area that simulates a unilocular amelobla-



**Fig. 6.** A photomicrograph of the lesion shows a calcified cementum-like material.

stoma or odontogenic cyst<sup>9-11</sup> and as a multilocular radiolucent lesion with well-defined borders.<sup>12-14</sup> In most cases, the borders are well-defined. In some instances, however, the COF may exhibit a mixed radiolucent/radiopaque appearance with poorly defined or diffuse borders.<sup>2</sup> Approximately 12% of COF will exhibit radiopaque flecks within the lesion.<sup>15</sup> The margins may become scalloped, and gracile straight trabeculae have been described in the central portion, like odontogenic myxoma.<sup>14</sup> It may be associated with an erupted, unerupted or displaced tooth.<sup>5,16</sup> Root resorption of associated teeth is common, and lesions located between the teeth often cause root divergence.<sup>15</sup> In the case presented, a radiolucent lesion had caused displacement of adjacent teeth and expansion of a buccal cortical plate with maintenance of a cortical boundary. These appearances are characteristic of the benign nature of the neoplasm. Differentiation from odontogenic myxoma was needed because of somewhat indistinct margin separating it from the normal surrounding bone and thin, straight trabeculae seen in the lesion. It may not be possible to differentiate this tumor from an odontogenic myxoma on radiographic criteria only.

The COF is generally thought to be a fibroblastic neoplasm containing varying amounts of odontogenic epithelium.<sup>8,17</sup> It is supposed to arise from the mesenchymal elements of the tooth germ, that is the dental follicle, the dental papilla or the periodontal ligament, and it is possible that it represents the terminal, mature form of a spectrum of entities ranging from the odontogenic myxoma, the myxofibroma, to the odontogenic fibroma.<sup>1,5,16</sup> The concept of COF has been a matter of debate for a long time. Before Gardner<sup>1</sup> attempt at clarification of this neoplasm, there were some articles in which non-neoplastic, enlarged dental follicles were considered as odontoge-

nic fibromas.<sup>18</sup> Gardner<sup>1</sup> described two histologically distinct types: the simple type and 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 present. The WHO type differs from the simple type by having greater amounts of calcified material and odontogenic epithelial islands. Our case correspond to the histologic appearance of the simple type of COF, which is primarily composed of a delicate fibrous connective tissue stroma containing small numbers of odontogenic epithelial islands and scattered calcifications.

The COF is usually circumscribed and can easily be removed. Treatment should consist of conservative surgical removal.<sup>5,14</sup> Recurrence is very uncommon,<sup>5</sup> one case being reported nine years after enucleation by Heimdal et al.<sup>17</sup> There is no tendency to undergo malignant transformation.<sup>14</sup>

One case of COF, simple type, are reported. The clinical, radiographic, and microscopic features are discussed and illustrated. The COF is an uncommon and somewhat controversial lesion. The variability in radiographic appearance of COF emphasized that despite its rarity COF should be considered in the differential diagnosis of all abnormal radiolucencies of the jaws.

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