

## Benign fibro-osseous lesions of the maxillas: Analysis of 11 cases

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### Abstract

**Introduction:** A study is made of the principal characteristics of the oral lesions biopsied in our Service of Oral Surgery and histologically diagnosed as corresponding to fibro-osseous lesions of the maxillas. **Patients and methods:** A retrospective review was made of all the biopsies made in a Service of Oral Surgery between 1996 and 2003. The reason for consultation was analyzed, along with patient age, sex, clinical and radiological characteristics, tentative diagnosis, histological diagnosis and treatment provided. **Results:** A total of 1238 biopsies were performed during the study period. Of these, only 11 corresponded to benign fibro-osseous lesions (7 women and 4 men). The mean patient age was 44 years (range 19-72 years). The most frequent location was the mandible (8 of the cases). In 7 patients the lesions constituted casual radiological findings; 4 presented bulging of the vestibular cortical bone, though only one of them reported pain. The histological diagnoses comprised 7 cemento-ossifying fibromas and 4 fibrous dysplasias. In 9 cases surgical resection was carried out, while in one case an incisional biopsy was performed, and in the remaining case curettage was decided. **Discussion:** These lesions are more frequent in women than in men, and the age at presentation is variable. In terms of lesion location, fibrous dysplasia is more common in the upper maxilla, while cemento-ossifying fibroma is more frequently found in the mandible. The diagnosis of such lesions is established upon contrasting the data obtained from the anamnesis, physical examination, the radiological characteristics, the intraoperative findings and the histological study, since both disorders have similar clinical and histological features – despite the fact that they constitute distinct disease conditions.

**Key words:** *Benign fibro-osseous lesion, cemento-ossifying fibroma, fibrous dysplasia.*

### Introduction

Benign fibro-osseous lesions of the maxillas constitute a varied group of lesions with a common histological characteristic: the substitution of normal bone by tissue composed of collagen and fibroblasts, with variable amounts of a mineralized substance that may be bone, cement or both. These lesions comprise fibrous dysplasia, periapical cemento-osseous dysplasia, focal cemento-osseous dysplasia, florid cemento-osseous dysplasia and cemento-ossifying fibroma (1).

In 1972, Eversole concluded that fibrous dysplasia and cemento-ossifying fibroma are clinically and radiologically distinct disease entities that nevertheless are not always histologically distinguishable (2). In 1972, the World Health Organization (WHO) considered ossifying fibroma to be a tumor of bone origin, and cementifying fibroma a tumor of odontogenic origin (3). However, in 1992, the WHO grouped such lesions under the common denomination of cemento-ossifying fibromas, on the grounds that they represented histological variants of one same type of lesion.

The present study examines the principal characteristics of 11 benign fibro-osseous lesions of the maxillas – specifically, 7 cemento-ossifying fibromas and 4 monostotic fibrous dysplasias subjected to biopsy in our Service of Oral Surgery.

### Patients and Methods

A retrospective review was made of the biopsies yielding a diagnosis of fibro-osseous lesion of the maxillas (according to the WHO classification), and performed in the period between 1996 and 2003 in the Service of Oral Surgery of the University of Barcelona Dental Clinic (Barcelona, Spain). An evaluation was made of patient age and sex, the clinical and radiological characteristics, the histological diagnosis obtained, and the treatment provided. The cases were followed-up on after between 3 months and 6 years. These data were obtained from the clinical history, the radiological evaluations (periapical

X-rays, panoramic X-rays, computed tomography, etc.), the histopathological report, and the photographic records of the cases.

### Results

A total of 1238 biopsies were performed during the study period. Of these, only 11 were reported as corresponding to fibro-osseous lesions, specifically, 7 cases of cemento-ossifying fibroma and 4 cases of fibrous dysplasia.

In all cases the underlying etiology was not known. The mean patient age was 44 years (range 19-72 years). There were 7 women and 4 men. None reported family antecedents or antecedents of trauma. The most frequent location was the mandible (8 cases). In 7 patients the lesions constituted casual radiological findings; 4 presented bulging of the vestibular cortical bone, though only one of them reported pain.

Among the 7 cases of cemento-ossifying fibroma, the

**Table 1.** Characteristics of the cases studied.

No.	Age	Sex	Location	Radiological characteristics	Clinical characteristics	Histology	Treatment
1	35	M	4 <sup>th</sup> quadrant	Circumscribed, radiopaque lesion with radiotransparent halo, causing tooth displacement	Bulging, hard, irregular and painless to palpation	COF	Excisional biopsy
2	22	M	Upper maxilla (incisor-canine)	Lesion with poorly defined margins. The periphery appears more radiopaque than the center of the lesion	Tumor measuring 2 cm in diameter, painless to palpation. Vital tooth (positive response to cold)	COF	Excisional biopsy
3	53	F	4 <sup>th</sup> quadrant	Circumscribed radiopaque lesion	Asymptomatic	COF	Excisional biopsy
4	51	F	3 <sup>rd</sup> and 4 <sup>th</sup> quadrants	Diffuse radiopaque lesion	Asymptomatic	FD	Incisional biopsy
5	72	F	4 <sup>th</sup> quadrant	Diffuse mixed image	Bulging of the 4 <sup>th</sup> quadrant. Mild pain and suppuration	FD	Excisional biopsy
6	52	F	Upper maxilla (incisor-canine)	Unremarkable panoramic X-ray appearance, vestibular radiopaque image	Asymptomatic	FD	Excisional biopsy
7	65	M	1 <sup>st</sup> quadrant	Diffuse radiopaque image encompassing the tuberosity and the apical area of 1.7. Impaction of 1.8	Asymptomatic	FD	Excisional biopsy
8	19	F	4 <sup>th</sup> quadrant	Radiopaque image with root displacement of 3.4 and 3.5	Asymptomatic	COF	Excisional biopsy
9	38	F	3 <sup>rd</sup> quadrant	Delimited periapical radiopaque image, causing rhizolysis	Asymptomatic	COF	Curettage and removal of 3.6
10	39	F	3 <sup>rd</sup> quadrant	Circumscribed radiopaque lesion	Asymptomatic	COF	Excisional biopsy
11	39	M	3 <sup>rd</sup> quadrant	Circumscribed mixed image	Bulging in the region of 3.3	COF	Excisional biopsy

COF: Cemento-ossifying fibroma, FD: Fibrous dysplasia

patient age was seen to be variable, with an average of 35 years: 4 cases corresponded to women and 3 to men, and 6 lesions were located in the mandible. Three presented bulging of the vestibular cortical bone, with a hard, irregular and painless tumor mass. The remaining 4 cases showed no symptoms. Radiologically, most of the lesions showed mixed images, with radiopaque areas and some radiotransparent zones, and were well circumscribed. Two cases showed root displacement, while rhizolysis was noted in only one patient.

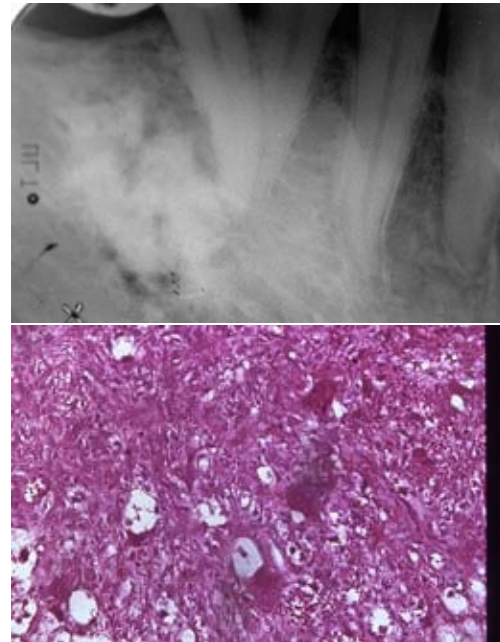
Among the 4 patients with fibrous dysplasia, the mean age was 60 years (2 women and 2 men), and two were located in the upper maxilla and two in the mandible. Only one case presented bulging of the vestibular cortical bone and mild pain. Radiologically, the 4 lesions showed a diffuse radiopaque image.

The histological diagnoses corresponded to 7 cases of cemento-ossifying fibroma and 4 cases of fibrous dysplasia. In 8 of the cases surgical resection was performed, with an incisional biopsy in two cases, and curettage in one case.

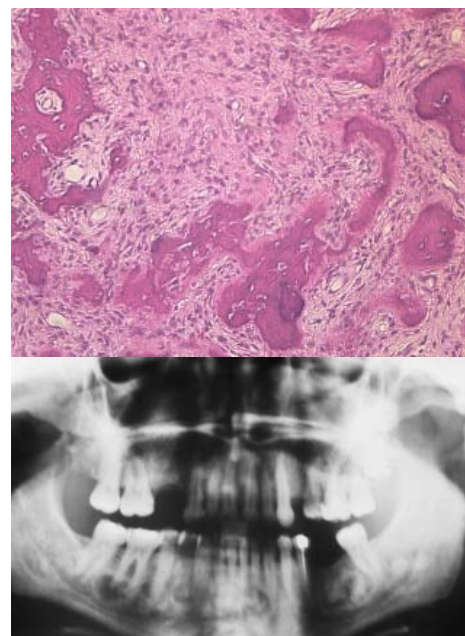
Of the 4 cases of fibrous dysplasia, 3 were fully resected, while one was subjected to incisional biopsy. As regards the 7 cemento-ossifying fibromas, 6 were subjected to complete exeresis, while curettage was performed in only one case. In all cases follow-up was performed after between 3 months and 6 years, with no evidence of relapse (Table 1).

**Discussion**

Cemento-ossifying fibroma is a disorder of unknown etiology (4). These lesions are more frequent in women than in men (2,5,6), and the age at appearance tends to be variable, though with a certain predominance in the third or fourth decades of life (5,7). The mandible is the most commonly affected location (2,6-8). These features coincide with the cases presented in our study. Cemento-ossifying fibroma manifests as a hard, localized and slow-growing tumor mass that displaces the teeth, though without affecting their vitality, and the overlying mucosa remains intact (2,5). Of the 7 cases presented in our study, 4 presented bulging of the vestibular cortical bone, the lesions were found to be hard at palpation, and growth was slow. Two of the lesions caused tooth displacement, and one induced rhizolysis. Radiologically, the lesions appear as mixed, predominantly radiopaque and well circumscribed images (6-8) – in coincidence with our own 7 cases (Figure 1A). Histologically, cemento-ossifying fibroma is composed of a well encapsulated fibrous connective tissue mass with variable amounts of metaplastic bone and mineralized components (9), likewise in coincidence with our own cases (Figure 1B). The treatment of cemento-ossifying fibroma usually consists of surgical resection, depending on the size and location of the lesion. Successful removal can be achieved by curettage (10), local exeresis and en



**Fig. 1.** (A) Periapical X-ray view showing a circumscribed, radiopaque lesion with a radiotransparent halo, displacing the roots though without causing rhizolysis. (B) Histological view showing the fibrous tissue mixed with bony tissue. Hematoxylin-eosin, x5. (Case no. 1).



**Fig. 2.** (A) Histological view of a case of fibrous dysplasia, showing bone replacement by fibrous tissue, with the presence of metaplastic bone within the fibrous tissue component. Hematoxylin-eosin, x5. (B) Panoramic X-ray view showing a diffuse radiopaque image (third quadrant)(Case no. 5).

bloc resection (11). In 6 of our cases complete resection of the lesion was carried out, with curettage in only one patient, and no relapses were recorded at any point during follow-up.

In the same way as cemento-ossifying fibroma, fibrous dysplasia is a disorder of unknown etiology (1). In our cases we likewise failed to identify causal factors. This lesion is also more common in women than in men (12,13), in coincidence with our own series (3 women and a single male). The age at presentation is variable (1,14). Cardona et al. (14) reported a mean age of 49 years, with a range of 30-65 years, which is similar to the situation seen in our cases. In contrast, Ogunsalu et al. (13) reported a mean age of 25.8 years, with a range of 10-47 years. Although fibrous dysplasia may appear in any bone location, it is more common in the upper maxilla (1,14). In the study of Ogunsalu et al. (13), the upper maxilla was the most affected location, with a proportion of 2/3, and the lesions tended to manifest as a painless, slow-growing mass, in coincidence with our own cases. At cellular level, the bone is replaced by fibrous tissue, with the gradual appearance of metaplastic bone within the irregular fibrous tissue component. The bone trabeculae appear disperse, in the form of "Chinese characters" (1,12,15)(Figure 2A).

Radiologically, a mixed image is seen, with areas of increased condensation corresponding to neoformed reticular trabeculae that yield a "ground glass" appearance. In the presence of a mixture of bony and fibrous tissue, the radiological image varies from moderate to diffuse radiopacity, without clear limits (16). In our 4 cases the lesions presented a radiopaque and diffuse radiological image (Figure 2B).

The treatment of these lesions tends to be conservative (17). Three of our lesions were subjected to complete resection, while in one case an incisional biopsy was performed, since the lesion affected the entire mandibular body. After 4 years of follow-up, the radiological image remains of the same size.

It is important to point out that the diagnosis of such lesions is established upon contrasting the data obtained from the anamnesis, physical examination, the radiological characteristics, the intraoperative findings and the histological study, since both disorders have similar clinical and histological features – despite the fact that they constitute distinct disease conditions.

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