

OSSIFYING FIBROMA OF MAXILLOFACIAL REGION

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SUMMARY

A clinical, radiographic, treatment and follow-up study of 55 cases of ossifying fibroma involving the maxillofacial region was performed. The highest incidence of 52% was recorded in the age group of 31-35 years. Majority of the lesions (70.91%) were found in the posterior part of the mandible and extraoral painless swelling was the common presenting feature (90.91%). Radiographic findings varied from complete radiolucency to complete radiopacity. Moreover 82% lesions had well defined margins. The distinctive features of this study are, male preponderance and lack of root resorption of involved teeth in all 55 cases.

INTRODUCTION

It has been well over century since Virchow¹ introduced the term leontiasis ossea to describe leonine facial appearance of a patient with maxillofacial enlargement. Historically ossifying fibroma has been referred to as fibro-osteoma, osteo-fibroma and benign fibro-osseous lesion. In 1872 Menzel² first described the entity known, as ossifying fibroma but it was Montgomery³ whom in 1927 coined the term "ossifying fibroma". He described ossifying fibroma as well-defined lesion that occurred in maxillofacial region and exhibited new bone growth and fibrosis. Subsequent to the introduction of the term "fibrous dysplasia" by Lichtenstein⁴ in 1938 it was suggested

that the lesions of the jaws previously designated as fibrous osteoma or ossifying fibroma should be called fibrous dysplasia. But now the two are considered separate entities. The most significant contribution to better understanding and separation of entities relates to the introduction and strict adherence to radiographic interpretation and differentiation as a component of overall diagnostic process.^{5,6} Ossifying fibroma has been designated as well circumscribed, generally slow growing benign lesion, with expansile, sharply defined margins, often with radiolucent peripheral component.⁷ This is in comparison to fibrous dysplasia, which demonstrates ill-defined or diffuse radiographic margins often with overlapping microscopic features, shared with ossifying fibroma.⁸

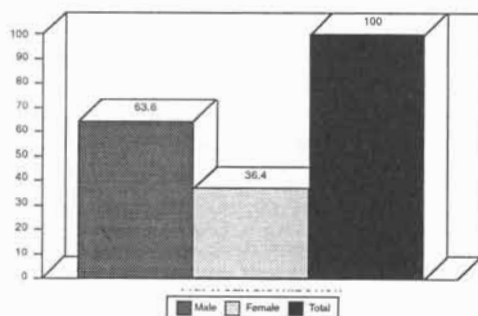
AGE AT THE TIME OF PRESENTATION

Age group	No.	%age
20-25	9	10.90
26-30	11	20.00
31-35	29	52.73
36-40	7	12.73
41-65	2	3.64
Total	55	100

TABLE - 1

The etiology of ossifying fibroma is unknown. Trauma induced stimulation of progenitor cells has been suggested by Weing et al⁹ but to-date this has not been substantiated by other authors. Hammer¹⁰ suggested that ossifying fibroma should be considered as a tumor of periodontal membrane origin arising from multipotent mesenchymal blast cells, present in the periodontal membrane, that have the capacity to produce cementum, alveolar bone and fibrous tissue. This concept is supported by the work of Cho,¹¹ who demonstrated that the periodontal membrane fibroblast is capable of transforming into hard tissue producing cells. The behavior of ossifying fibroma also places this entity into the neoplastic group of diseases with recurrent forms being described, although generally at a low rate.¹² The term "juvenile ossifying fibroma" has been introduced as a less common, more aggressive variant of the

FIG. 1: SEX DISTRIBUTION

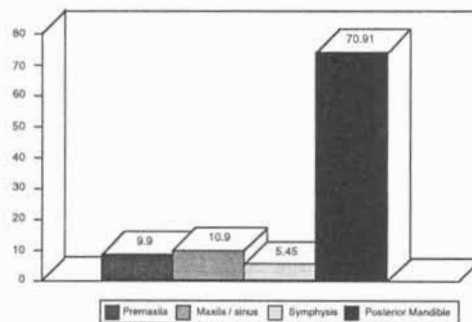


ossifying fibroma, which occur primarily in children and young adults.¹³

Ossifying fibromas are painless, and look like asymmetric expansions.¹⁴ Movement and displacement of normal structures can occur as a result of these expanding lesions, however no connection has been made to root resorption. Ossifying fibroma are sometimes found during clinical examination, but they are most often found on radiographs during routine examination.¹⁵

The most important radiographic feature of this lesion is the well circumscribed, sharply define border. Otherwise, ossifying fibroma will present a variable appearance depending on the degree of maturation and the amount of calcification present. Early lesion appears as unilocular or multilocular

FIG. 2: SEX DISTRIBUTION

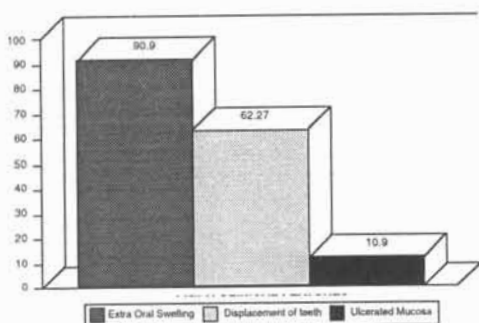


radiolucencies that appear very similar to Odontogenic cysts. This initial radiolucent stage progresses to a mixed radiolucent – radiopaque stage as calcified material is deposited. Mature lesions may consist of a dense radiopaque mass surrounded by well defined radiolucent rim.¹⁶

MATERIAL AND METHODS

55 cases ossifying fibroma operated by the author at Khyber College of Dentistry, Peshawar and private practice dating from 1989 to 1998 were over included in the study. The following variables were assessed.

FIG. 3: CLINICAL FEATURES



Sex distribution,

Age at the time of presentation,

Site distribution,

Clinical features i.e. Extraoral swelling, Teeth displacement, Ulceration of mucosa.

Orthopantomogram (OPG) was the standard radiograph advised. The following criteria were identified and assessed.

Presence or absence of cortical thinning,

Root resorption.

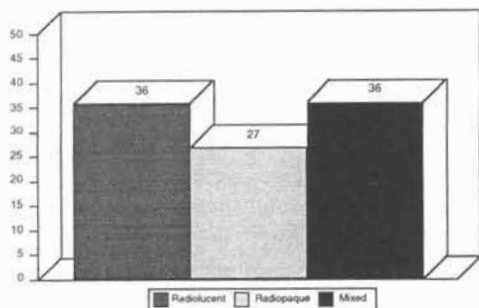
Level of radiopacity

Character of radiographic margins

RESULTS

Among 55 cases of ossifying fibroma 63.6% incidence was recorded in male while 36.4% in female. Male to female ratio being 1.75: 1 (Fig-1). As the lesions were slow

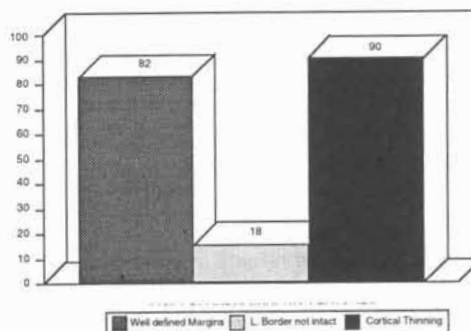
FIG. 4-A: RADIOGRAPHIC FEATURES



growing, it was not possible to assess the age at which they first developed. However, age at the time of presentation varied from 20 to 65 years and the highest incidence of 52.73% was recorded in 31-35 years of age group (Tabl-1).

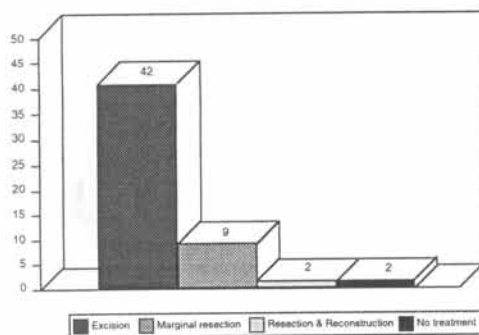
Site distribution was characterized by marked mandibular predominance. 44 cases presented at this site while the remaining were confined to the maxilla. 5 cases (9.09%) were noted in the maxillary anterior region and 3 cases (5.45%) were located in the symphysis and parasymphysis region while 41 cases (70.91) in the mandible were located distal to the canine and were considered as posterior ones (Figure-2).

FIG. 4-B: RADIOGRAPHIC FEATURES



Of the clinical features 90% cases presented with extra oral swelling. Displacement of teeth was present in 62% cases. Only 10% cases has ulcerated mucosa but this was because of traumatic occlusion of opposing teeth on the tumor rather than the tear of mucoperiosteum by the tumor itself (Figure-3). Radiographic presentation on OPG included radiolucent, radiopaque and mixed pattern. This distribution is given in Figure-4A. 51 cases (82%) demonstrated radiographic margins, which were sharply defined while in 4 cases (18%) the radiographic margins on proximal sides, were well defined but the lower border of the mandible was not intact. 80% cases exhibit cortical thinning (Figure-4B).

FIG. 5: TREATMENT MODILITIES



42 cases (59%) were managed with thorough curettage, extraction of involved teeth and primary closure of the wound while 9 cases (16%) were managed by marginal resection due to their vary large size. 4 cases (18%) were offered hemimandibulectomy and immediate reconstruction with rib graft. Out of these 4 cases 2 patients (9%) refused treatment while in 2 cases the treatment planning was carried out (Figure-5).

The follow up period ranged from 1-8 years. 2 cases of recurrence were noted. Both were in the posterior part of the mandible and were again treated conservatively. Out of 42 cases, which were closed primarily, in 7 cases the wound broke down. This was mainly because there was not enough bone around on which the soft tissue flap could rest. In these cases another attempt at closure was not considered wise. In all these cases local dentist was directed to keep residual cavity clean by regular irrigation with saline and a monthly visit to the author to assess the improvement was advised.

DISCUSSION

In an attempt to established criteria to differentiate the similar fibro-osseous lesions, Waldron¹⁷ reviewed 65 cases and supported the view that some fibro-osseous lesions of the jaw are of periodontal

membrane origin as proposed earlier by Hammer.¹⁰ However, Waldron believed that the presence and ratio of osteoid and cementum reflected a spectrum of the same disease.

Today there is general agreement that ossifying and cementifying fibromas are a separate entity from fibrous dysplasia and an effort to simplify the classification of ossifying and cementifying fibroma, reflecting the view of Waldron that both of these lesions fall within the spectrum of the same disease entity. This is supported by the fact that periodontal ligament is able to elaborate both bone and cementum, acting as the alveolar periosteum as well as the attachment of the tooth.¹⁸ It is has been documented by other authors that "Cementifying-ossifying fibromas" of this nature have been found to contain so-called Cementum-like substances in other facial bones away from the tooth-bearing jaws. These areas include, the maxillary antum and the ethmoid, sphenoid, frontal and temporal bones.^{19,20} Eversole and co-workers²¹ proposed that the production of certain cementum-like structures may not be related as much to cementogenesis, but may be unique to membranous bones. Considering this proposal and the fact that there seems to be no differences in the behaviour between these histologic designations, Eversole and associates suggested the nomenclature be simplified by referring to all of the lesions in this group as ossifying fibromas.

The gender distribution of ossifying fibroma varies from one report to other. In majority of the studies nearly 70% prevalence in female has been recorded⁸ but in contrast our study showed 63.6% male prevalence. About 90% cases were reported in third and fourth decades but the peak incidence of 52% was recorded in 31-35 years age group. This finding is consistent with the results of other studies.^{10,17} Anatomical distribution in this study, with 80% of ossifying fibroma originating in the

mandible, corresponds to the general body of literature which reports a 75% prevalence at this site.^{16,21,22}

Radiographically, the ossifying fibroma appeared as well circumscribed with sharply defined margins in mandible but in maxilla the margins were often related to anatomical spaces, which were being encroached upon, deformed, or reduced by the expanding lesion. It was interesting to note that non-of the cases in this study showed root resorption of the involved teeth. However root resorption is more common in the mandible and is seldom seen in the maxilla.²³ This radiological feature of root resorption of varying degree has been reported in literature ranging from 11%(18) to 44% (8). Tooth displacement in these studies were noted as 17% and 33% respectively in comparison to 62% of cases presented here. Extra oral swelling with clinical deformity was present in 90% cases of this study. This relates to the experience of others concerning this deformity, which ranges from 9-91%.^{5,24}

The treatment of ossifying fibroma should always be conservative excision of the well- circumscribed lesion without resection of adjacent structures unless involved by the lesion. This should be accompanied by extraction of the involved teeth and primary closure of the wound if possible or otherwise packing the cavity. Marginal resection should only be carried out where the lesion is very large with perforation/extreme thinning of the cortical plates. Total resection or partial mandibulectomy is only advocated where the lower border of the mandible cannot be defined. In this series all cases except one reported for first consultation and were treated according to the laid down criteria. Twice trimming the tumor (though it was in a mixed stage on radiographic criteria) treated the one exceptional case but the patient used to report after 6-8 months time

for facial swelling/asymmetry. On third visit the lesion was excised in total.

CONCLUSION

1. Ossifying fibroma is comparatively rare benign tumor of maxillofacial region.
2. If seen in radiolucent stage, should always be included in the differential diagnosis of cystic lesions.
3. Being capsulated, it can be easily differentiated from other dysplastic conditions of the bone.
4. Treatment choice depends on stage/ extent of the tumor as well as involvement of the surrounding structures but mere trimming of the tumor definitely does not help in the management.
5. Recurrence is rare.

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