# FIBROSSEOUS MAXILLOFACIAL LESIONS

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## LEARNING OBJECTIVES AND BACKGROUND

We suggest a proposal for approaching the differential diagnosis of maxillofacial fibrosseous lesions.

Demographic data, clinical presentation, imaging findings and pathological results are discussed.

Fibrosseous maxillofacial lesions are mostly asymptomatic incidental findings. Treatment is indicated only for cosmetic reasons or for infectious complications. In cranio-facial location ossifying fibroma and fibrous dysplasia predominate, in maxillary location ossifying fibroma, fibrous dysplasia, peri-apical and florid cementosseous dysplasias are most common findings. In differential diagnosis we must include other fibrosseous lesions, neoplasias and infectious diseases. The correct diagnosis is established by clinical signs and imaging findings. In rare cases, cross correlation with pathology remains unsatisfactory.

Before advent of CBCT, fibrosseous lesions of maxillofacial location were diagnosed incidentally by CT, MRI, or orthopantomogram. Special attention was paid to cases complicated by infection, bone enlargement or when cystic or malignant degeneration was suspected. Wide use of CBCT allowed for an earlier diagnosis of these pathologies and periodic monitoring of lesion extent and diagnosis of complications.

## IMAGING FINDINGS

Diagnostic work-up and differential diagnosis are presented in Tables 1 and 2 and by several useful images.

Periapical (Fig.1 A,B) and florid cementosseous dysplasias (Fig.1 C,D) are of exclusive maxillary location. Differential diagnosis should include fibrous dysplasia (Fig.2 A,B), ossifying fibroma (Fig.2 C,D), Paget disease (Fig.3 A,B), apical osteitis, odontoma, osteomyelitis and cementoblastoma (Fig.3 C). Fibrous dysplasia and ossifying fibroma can be of facial (Fig.4 A,B,C) or maxillary location (Fig.4 D,E). Differential diagnosis should consider osteosarcoma, osteoma (Fig.5 A,B), cementoblastoma, Paget disease (Fig.5 C,D), cementosseous dysplasia and osteomyelitis.

Lesion expansion, density values on CBCT or on CT, marginal demarcation and mass effect are important descriptive lesional features. MRI or pathological assessment are rarely necessary for establishing diagnosis. Other associated pathologies such as Jaffe-Lichtenstein syndrome or McCune Albright syndrome (Fig.6 A,B,C,D), in connection with fibrous dysplasia, are of rare occurrence. In extended fibrous dysplasia, neurovascular conflicts can occur (optic nerve, Fig.6 C, D). A simple bone cyst or secondary infection may be seen in periapical and florid cementosseous dysplasia. Involvement of paranasal sinuses can result in mucocele or facial deformity.

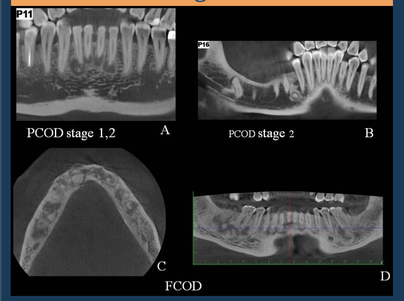
## Table 1

| | LOCATION | EXPANSIVENESS | LESIONAL EDGES | MASS EFFECT | DENSITY CBCT (CT) | MRI | HISTOLOGY | DIFFERENTIAL DIAGNOSIS | ASSOCIATION |
|---|---|---|---|---|---|---|---|---|---|
| OSSIFYING FIBROMA (OF) (cementossifying fibroma) | Mandible 80%. Mandible > maxilla > frontal > ethmoidal. If sinus involvement possible mucocele! | Slow expansion. Blown cortices. Sometimes psamomatoide. | Well defined, thin cortex, encapsulated. Sometimes lucent periphery (fibrous capsule). | Displacement of mandibular canal, of roots (resorption). Lamina dura missing. | Heterogeneous; If granular, similar to FD 50% lytic with blown cortex; ossification ↑ with age. | T1 iso. T2 iso-hyper. T1 +C enhancement. | Bone or cementum within fibrous stroma. Like FD. | FD; PCOD. Osteosarcoma. Osteoma. Cementoblastoma. | Mucocele. Cosmetic deformity. Tension pneumo-cephalus if cranial extension. |
| PERIAPICAL CEMENTOSSEOUS DYSPLASIA (PCOD) | At vital tooth apex. 77% mandibular incisors. Multiple teeth zones. | Minimally or not. No tooth displacement. | Radiolucent with band of sclerotic bone. Lamina dura lost. Widened periodontal space. | Without tooth displacement but ligamentary space lost. | Three stages: 1. Lucent. 2. Center opaque with lucent periphery. 3. Mainly opaque. | Not indicated. | Fibrous tissue with cementum or immature bone. Like OF. Biopsy CI! | Apical osteitis. OF; Odontoma. Cementoblastoma. FCOD. | Sometimes simple bone cyst. Infection. |
| FLORID CEMENTOSSEOUS DYSPLASIA (FCOD) | Above mandibular canal. Entire jaw or 3–4 quadrants. | More than PCOD. Globular dense mass, can cross midline. | Sclerotic. | Variously: Displacement of mandibular canal. Maxillary sinus raised. | Dense, lytic and opaque globular mass, more dense with time. | Not indicated. | Very similar to OF! Biopsy CI! | PCOD. Paget. FD. Osteomyelitis. | Simple bon cyst. If biopsy, possible osteomyelitis. |
| FIBROUS DYSPLASIA (FD) | Monostotic 70-80%. If maxillary: zygoma and sphenoid often involved. Unilateral. | Often facial swelling. General form of involved bone. Neurovascular complications. | Bad defined, blend with surrounding bone. | Pathognomonic: sup. displacement of mandibular canal. Bone larger. Facial deformity. | Ground glass opacity; often mixed, with teeth surrounded. Looks like Paget, OF and osteoma. | T1 hypo; T2 hypo or hetero, +C enhancement in zones of hyper intensity on T2. | Woven bone in connective fibrous stroma. Like OF. | Paget. Osteomyelitis. Osteosarcoma. OF. | If monostotic Jaffe Lichtenstein. If polyostotic Mc Cune Albright. Rare cystic or sarcomatous degenerescence. |

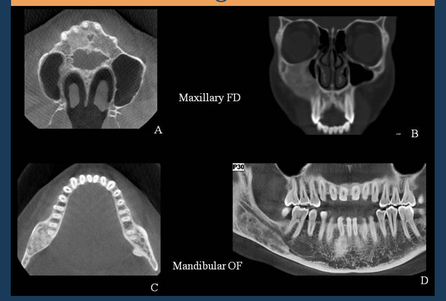
## Table 2

| | PRESENTATION | DEMOGRAPHICS | NATURAL HISTORY AND PROGNOSIS | TREATMENT |
|---|---|---|---|---|
| OSSIFYING FIBROMA (OF) | Asymptomatic, incidental finding. Sometimes asymmetric, facial, swelling. Tooth displacement, pain. | Jaws: 2-4th decades; F 70%. Juvenile 1st decade. Sinonasal: 3-4 th decades; M=F. | Slow growing; occasionally aggressive; usually concentric growth; Juvenile rapid growth. Sinnses involvement more aggressive. Recurrence 12%. | Monotoring! Surgery: enucleation or resection. |
| PERIAPICAL CEMENTOSSEOUS DYSPLASIA (PCOD) | Asymptomatic, incidental finding. Tooth vital. Rarely painful. May expand jaw. | 4-5 th decades. Sometimes younger. F:M =9:1. Blacks, Asians. | 3 maturation stage. More opaque and enlarge with time. May progress to FCOD. Complications: infection or bone cyst. If infection PCOD must be removed (as sequestrum). | None! Monitoring! If tooth extraction or trauma of alveolar ridge, to remove lesion. Same if simple bone cyst developed. Biopsy contraindicated. |
| FLORID CEMENTOSSEOUS DYSPLASIA (FCOD) | Usually asymptomatic incidental finding, unless secondary infection. Occasionally facial swelling, deformity. Teeth vital. Rarely painful. | 4-5 th decades. F>M. Blacks, Asians. | More opacified in 3 maturation stages. Mature lesions relatively avascular and at risk for secondary infection. Simple bone cyst may form. | Monitoring for lesion extent and development of simple bone cyst. Surgery for cyst or infection. Cemental masses to remove if infection. Avoid biopsy or tooth extraction. |
| FIBROUS DYSPLASIA (FD) | Incidental finding or painless facial swelling. If craniofacial: facial enlargement. Jaw involvement: enlarged alveolar process, teeth displacement. Rarely, impingement of nerve foramina or sinusitis-like symptoms. | First decades, rarely older; Monostotic diagnosed between 20-30 years. Polyostotic children! M=F. In McCune Albright F>M. Monostotic in 75% of cases. | Stops growing at end of somatic growth. Enlargement can continue in polyostotic form. Reactivation 18% (pregnancy, oral contraception, surgery); Malignant transformation <1%. Possible development of simple bone or aneurysmal cyst, of central giant cell granuloma. | Monotoring! Surgery for cosmetic or functional reasons. Radiotherapy contraindicated (malignant degeneration). |

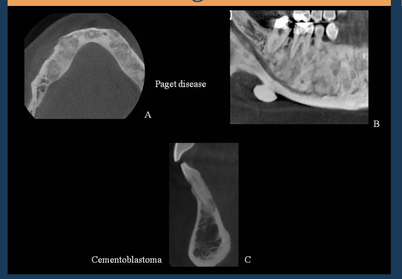
## Fig. 1



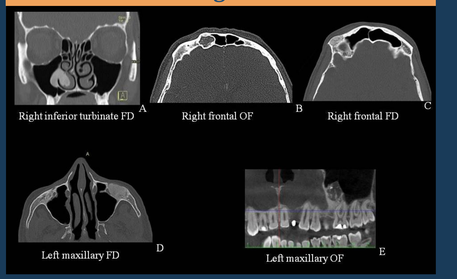

## Fig. 2



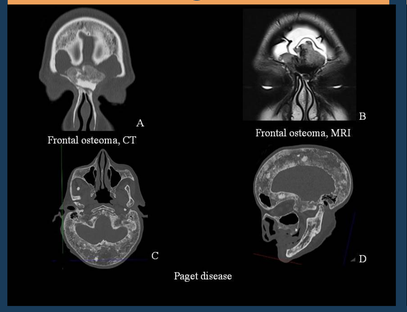

## Fig. 3



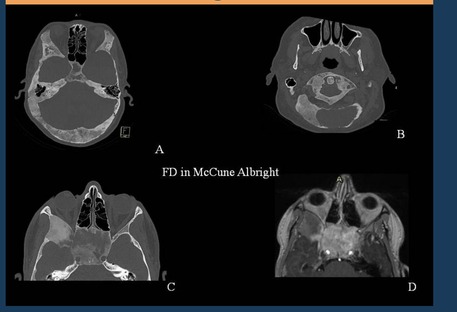

## Fig. 4




## Fig. 5




## Fig. 6




## CONCLUSION

CBCT, clinical presentation, demographic data and natural history are adequate for establishing the etiopathogenic diagnosis of fibrosseous lesions in majority of cases (tables 1,2). Pathological confirmation is rarely required. Surgery is indicated for treatment of infection, cystic or sarcomatous degeneration or for cosmetic reasons.

## RÉFÉRENCES

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