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CASE REPORT

Fibrous Dysplasia of Maxillary Bone: A Case Report

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Abstract: Fibrous dysplasia is a developmental tumor like condition that is characterized by replacement of normal bone by excessive proliferation of cellular fibrous connective tissue intermixed with irregular bony trabeculae. It causes bone pain, deformities & pathologic fracture. It may involve one or several bones and consists of one or more foci of fibro osseous tissue within the matrix of the affected bone. Here a case of fibrous dysplasia of maxillary bone has reported.
Key words: Fibrous dysplasia, Maxilla, Monostotic form, Ground glass appearance.

Introduction

Fibrous dysplasia (FD) is an uncommon developmental bone disease of benign origin. It leads to expansion & replacement of medullary bone by disorganized fibro-osseous tissue [1]. It comprises 2.5% of all osseous & 7% of all benign bone tumors [2]. In general they affect 1 in 4,000 to 10,000 individuals [3]. Male to female ratio is equal [3-5]. Most frequently found in metaphysodiaphyseal region of long bones i.e. in rib (28%), followed by femur (23%), tibia, craniofacial bone (10-25%) [4]. Sarcomatous transformation is rare [2].

History: Fibrous dysplasia was first reported by Von Recklinghausen in 1891 & he coined the term *Osteitis Fibrosa Generalisata*[5,6]. In 1938, Lichtenstein and Jaffe first introduced the term *Fibrous Dysplasia* [3,5].Mc-Cune and Albright et al during the same period explained the triad of polyostotic fibrous dysplasia, precocious puberty, and areas of cutaneous pigmentation (cafe´-au-lait spots) as the Mc- Cune-Albright syndrome[5].

Pathology: As earlier stated Fibrous dysplasia is a developmental tumor like sporadic condition that results from a post zygotic mutation in GNAS1 (Guanine Nucleotide-binding Protein, α- stimulating activity polypeptide 1) gene [4-5]. GNAS1 gene codes for G protein which stimulates cAMP production in affected tissue; which result in (1) Endocrinal disturbances leading to precocious puberty, hyperthyroidism, growth hormone and cortisole over production (2) Increased proliferation of melanocyte leading to café-au-lait spots (3) Aberrant activity during osteoblasts differentiation, which results in normal medullary bone to be replaced by fibrous tissue and appears radiolucent on the radiograph [4].

Case Report

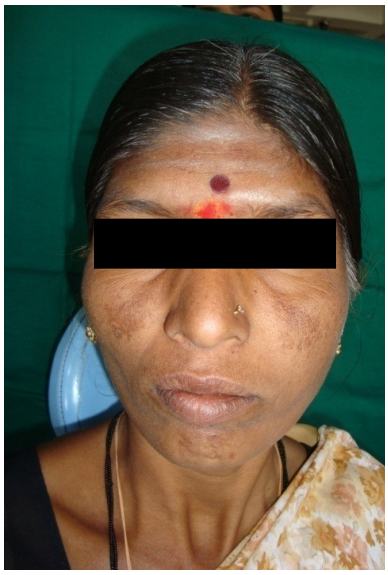

Figure-1: extraoral photograph showing solitary swelling present in the left middle third of the face.

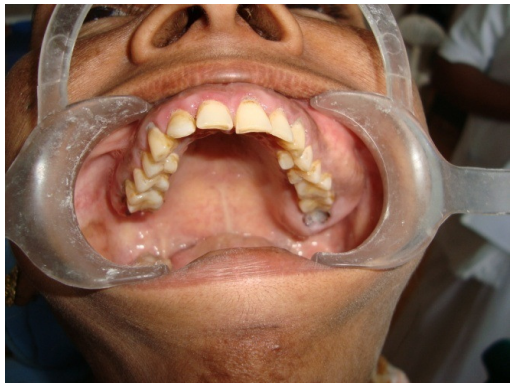

Figure-2: intraoral photograph showing expansion in left maxilla

A 36 years old female patient reported to our dept. with complaint of swelling in the left side of the face since 4 yrs. Initially swelling was small & gradually increased to present size. On extra oral examination diffused swelling of about 3×5 cm was present on left side of the face extending superio-inferiorly 0.5 cm below the cantho tragus line; to line joining corner of mouth to tragus & anteroposteriorly 1.2 cm away from the corner of the mouth to 1 cm in front of left tragus. On palpation the consistency was bony hard, nontender & no local rise of temperature. Intra orally swelling was present extending buccally from first premolar to about 8mm beyond the tuberosity. Generalized gingival inflammation and bleeding on probing was present. Labiopalatally dimension at premolar region was less than 1 cm and increased gradually to tuberosity region about 2.0 cm. Buccal and palatal cortical plates were expanded. Overlying mucosa appeared normal, firm and was nontender. *Investigation:* Blood & Biochemical investigations showed alkaline phosphates 89 IU/l, Serum Calcium 9.9mg% & Serum Phosphorus 3.2 mg % which were with-in normal range. *Radiological Investigations:* Radiological investigation includes CT scan, Maxillary Occlusal view and Orthopantomogram (OPG). CT scan coronal section revealed thick radio-opacity extending from premolar region to the tuberosity region on the left side. A reduction in volume of maxillary sinus on left side. Maxillary Occlusal view and OPG shows gross radio-opacity in the maxillary bone from first premolar region to tuberosity region. Which gives ground glass appearance.

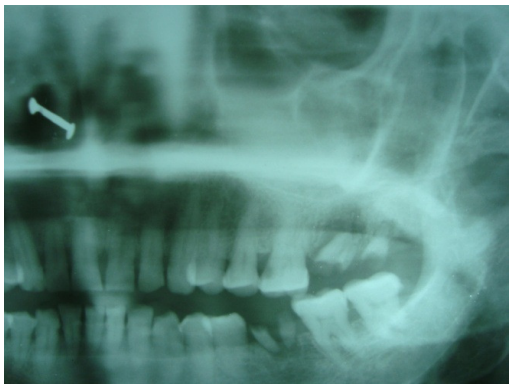

Figure-3: OPG shows diffuse radiopacity in left maxilla

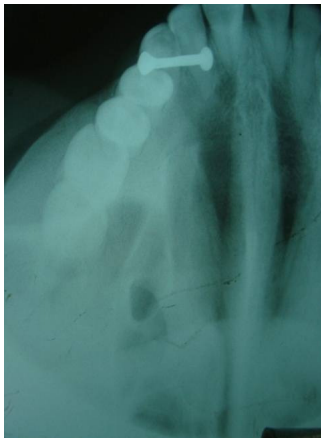

Figure-4: Occlusal view shows diffuse radiopacity with bucco-palatal extension from 1st premolar to maxillary tuberosity

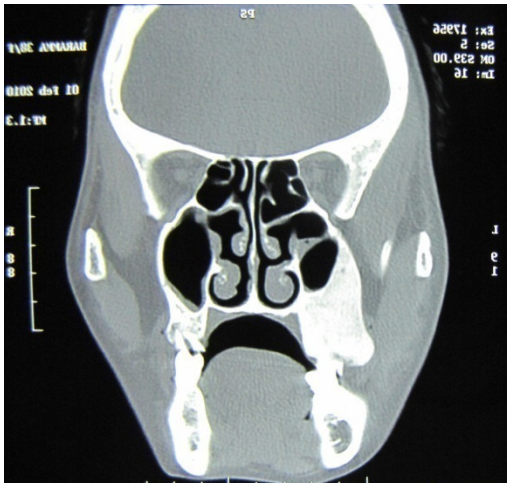

Figure-5: CT scan shows expansion in left maxilla

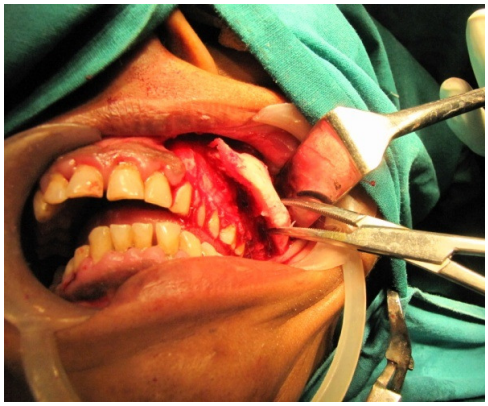

Figure-6: Intra operative photograph showing osteotomised buccal cortical plate.

Surgical procedure: Transnasal intubation was done and a crevicular incision along gingival sulcus was made extending from canine to the tuberosity. A vertical releasing incision was made i.r.t. canine and full thickness mucoperiosteal flap was elevated exposing the buccal cortical plate of the maxillary bone. Using Pneumatic oscillating saw & osteotome a large part of buccal cortical plate was removed from canine to tuberosity region & bone re-countered with large flame shaped tungsten carbide bur. Wound was closed in one layer using interdental sutures. Perio-Pack was given for pressure dressing. Pre & post operatively 3 days Cefotaxim 1 gm BID and Metronidazole 500 mg TID given intravenously. Post-operative period was uneventful.

Histology:

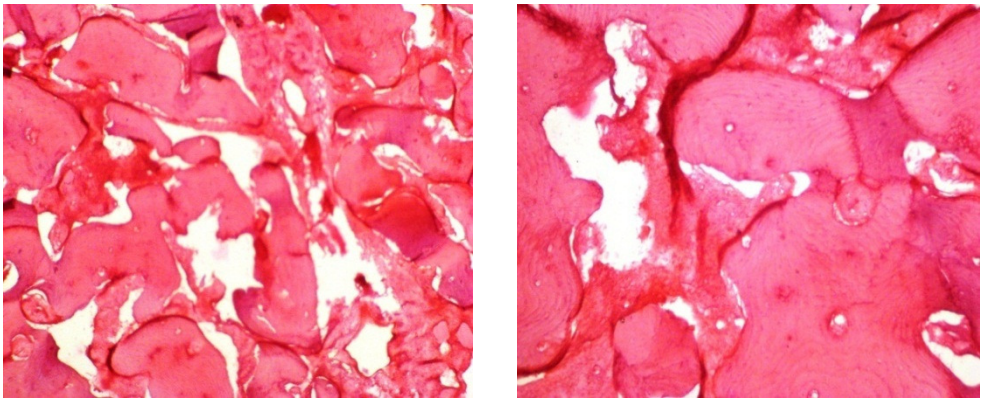

Figure7: Microphograph of the osteotomized bone segments.

The decalcified, H&E stained sections show densely packed irregular shaped trabeculae of lamellar bone, showing lacunae and osteocytes within them. The trabeculae appeared to emerge from scanty fibrous tissue and were of various shape including "C" shapes, spheres and branching structures.

Discussion

Fibrous dysplasia is a bone disorder of unknown origin characterized by slow progressive replacement of medullary bone by abnormal proliferative isomorphic fibrous tissue which appears radiolucent on radiographs with classic ground glass appearance [1]. Fibrous dysplasia has 4 different disease patterns Monostotic (70%), Polyostotic (30%), Craniofacial form and Cherubism(rare) [3,4]. The range of skeletal involvement varies from an asymptomatic monostotic lesion to polyostotic involvement resulting in progressive functional deficit & aesthetic problems. The clinical severity depends on time when the mutation of GNAS-1 occurs.

Polyostotic Form: It is seen if mutation occurs during 6^{th} week of intrauterine life. Multiple bones may get involved. This form commonly involves the skull & facial bones, pelvis, spine & shoulder girdle. Initial symptoms are bone pain and spontaneous fracture of the involved bone. Femur shows shephered's crook deformity [4]. Polyostotic form is again sub-classified into Jaffe's type & Albright syndrome. Both type consists of variable bony involvement with café-au-lait spot. Albright syndrome has additional feature of endocrine disturbances of varying type [4-7]. Polyostotic fibrous dysplasia with soft tissue called mazabraud syndrome [7].

Monostotic Form: If mutation occurs during postnatal life the progeny of that mutated cells are essentially confined to one site resulting in fibrous dysplasia affecting a single bone. About 70% cases are of monostotic form and they involve mainly ribs, femur, tibia & craniofacial bones [1-2, 4]. Any bone may be affected,

but monostotic forms are never reported as becoming polyostotic [4]. The lesion is asymptomatic and usually discovered incidentally. It causes enlargement & distortion of bone.

Craniofacial Form: 50%-100% of patient with polyostotic disease & 10% patient with monostotic disease have craniofacial involvement [1,5]. Maxilla is more commonly involved than mandible [1]. When maxilla is affected it may involve zygomatic & sphenoid bone. Involvement of frontal, sphenoid, naso-ethmoid & maxillary bone may lead to nasal obstruction, sinus obstruction & sinusitis [1]. Hypertelorism, cranial asymmetry, facial deformity, visual impairment, exophthalmos and blindness may occur due to involvement of orbital and parietal bone [4]. Malignant changes with fibrous dysplasia include Osteosarcoma, Fibrosarcoma, Chondrosarcoma, Malignant fibrous histiocytoma & Ewings sarcoma [1]. Association of Amelobastoma[1], Cystic degeneration[2], Angiosarcoma [8], Frontal sinus mucocele[9] have also reported. Treatment is primarily surgery. When the only tooth bearing area is involved conservative treatment is bone shaving. Use of Calcitonin & Pamindronate is also reported for its treatment[10]. Biopsy can be taken to rule out the lesion. Fibrous dysplasia usually get stabilized after puberty [1].

Conclusion

Fibrous dysplasia may manifests as monostotic or polyostotic form. Diagnosis of polyostotic form is easier due to extra-skeletal involvement. Monostotic form is common in the jaw. Fibrous dysplasia is a tumor like developmental disorder with minimal chances of malignancies. Aesthetic correction is done by surgeries.

References

1. Keskin M, Karabekmez FE, Ozkan BT, Tosun Z, Avunduk MC, Savaci N. Simultaneous occurrence of facial fibrous dysplasia and ameloblastoma. *J Craniomaxillofac Surg* 2009;37:102-105
2. Gupta A, Mehta VS, Sarkar C. Large cystic fibrous dysplasia of the temporal bone: case report and review of literature. *J Clin Neurosci* 2003;10(3):364-367
3. Sharma RS, Mahapatra AK, Pawar SJ, et al Symptomatic cranial fibrous dysplasia: Clinico-radiological analysis in a series of 8 operative cases with follow-up results. *J Clin Neurosci* 2002;9(4):381-390
4. Rajendran R, Sivapathasundharam R. Shafer's Textbook of Oral pathology 5th edition, New Delhi, India, Elsevier, a division of Reed Elsevier India Private Limited; 2006; pp 971-979.
5. Ricalde P, Horswell BB. Craniofacial fibrous dysplasia of the Fronto- Orbital Region: A Case series and Literature. *J Oral Maxillofac Surg* 2001;59:157-168.
6. Posnik JC. Fibrous dysplasia of the craniomaxillofacial region: current clinical perspectives. *Br J Oral Maxillofac Surg* 1998;36: 264-273
7. Tezer M, Erturer E, Ozturk C, Aydogan M, Hamzaoglu A. Symptomatic polystototic fibrous dysplasia of thoracic spine. *Joint Bone Spine* 2006;73:742-744.
8. Eguchi K, Ishi S, Sugiura H, Noga K. Angiosarcoma of the chest wall in a patient with fibrous dysplasia. *Eur J Cardiothorac Surg* 2002;22:654-655.
9. Atasoy C, Ustuner E, Erden I, Akyar S. Frontal sinus mucocele A rare complication of craniofacial fibrous dysplasia. *J Clin Imaging* 2001;25:388-391

10. Yasuoka T, Takagi N, Hatakeyama D, Yokoyama K. Fibrous dysplasia in the maxilla: possible mechanism of bone remodeling by calcitonin treatment. *Oral Oncol* 2003;39:301-305

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