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Fibrous Dysplasia Involving Mandible and Maxilla: A Case Report

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Abstract

Fibrous dysplasia (FD) is a benign fibro-osseous lesion in which normal bone is replaced by fibrous connective tissue and irregular trabeculae of immature bone. This report presents a case of an 18-year-old male with an extensive hard bony swelling involving the left mandibular and maxillary regions, resulting in marked facial asymmetry. The swelling extended from the parasymphysis region of the mandible to the neck of the condyle posteriorly and superiorly involved the maxillary zygomatic region. Surgical management was performed using an extraoral approach for the mandible and an intraoral vestibular approach for the maxilla, with bone contouring and saucerization. Post-operative healing was uneventful, and the patient showed significant improvement in facial symmetry. This case highlights the importance of early diagnosis and conservative surgical management in craniofacial FD to achieve favorable esthetic and functional outcomes.

Key words: Benign fibro-osseous lesion, Conservative surgery, Craniofacial fibrous dysplasia, Fibrous dysplasia, Maxillofacial fibrous dysplasia, Saucerization

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Introduction

Fibrous dysplasia (FD) is a benign developmental anomaly characterized by the replacement of normal medullary bone with fibro-osseous tissue.[1,2] It results from a post-zygotic activating mutation in the *GNAS* gene, leading to abnormal osteoblastic differentiation and disorganized bone maturation.[3,4] The condition can present in monostotic or polyostotic forms, with the craniofacial bones being among the most commonly affected sites. Although the lesion is non-neoplastic, it can cause significant esthetic deformity and functional impairment when involving the facial skeleton.[1,5,6]

Craniofacial FD can affect the maxilla, mandible, zygoma, or skull base. The maxilla is more frequently involved than the mandible, and lesions often exhibit a slow, painless enlargement that leads to facial asymmetry. Radiographically, the characteristic "ground-glass" appearance helps in diagnosis. Treatment strategies range from clinical observation in quiescent cases to surgical contouring in those with cosmetic or functional concerns.[1,5-7] The following case demonstrates the successful management of a combined maxillomandibular FD in an adolescent patient.

Case Presentation

An 18-year-old male presented to the Department of Oral and Maxillofacial Surgery at Vyas Dental College and Hospital, Jodhpur, with a complaint of a progressively enlarging swelling on the left side of his face over the past 2 years. The swelling was firm and painless but had caused noticeable facial asymmetry and psychological distress. On extraoral examination, there was a diffuse, hard, non-tender swelling extending from the left parasymphysis region of the mandible to the neck of the condyle posteriorly [Figure 1]. The superior extent of the lesion involved the left maxillary and zygomatic regions, producing an obvious facial protrusion.

Intraoral examination revealed expansion of the buccal cortical plate in both the left posterior mandible and maxilla. The overlying mucosa was intact, teeth in the involved area were vital, and no paresthesia was reported. Computed tomography

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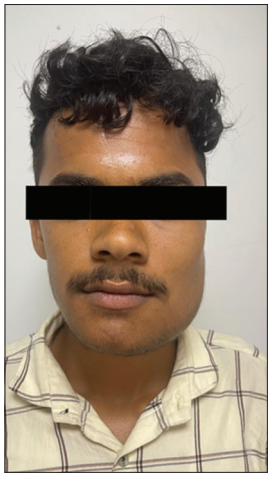

Figure 1: Clinical presentation of mandibular fibrous dysplasia. Pre-operative photograph showing a distinct, expansile tissue growth on the left body of the mandible. The patient exhibits notable facial asymmetry secondary to the lesion

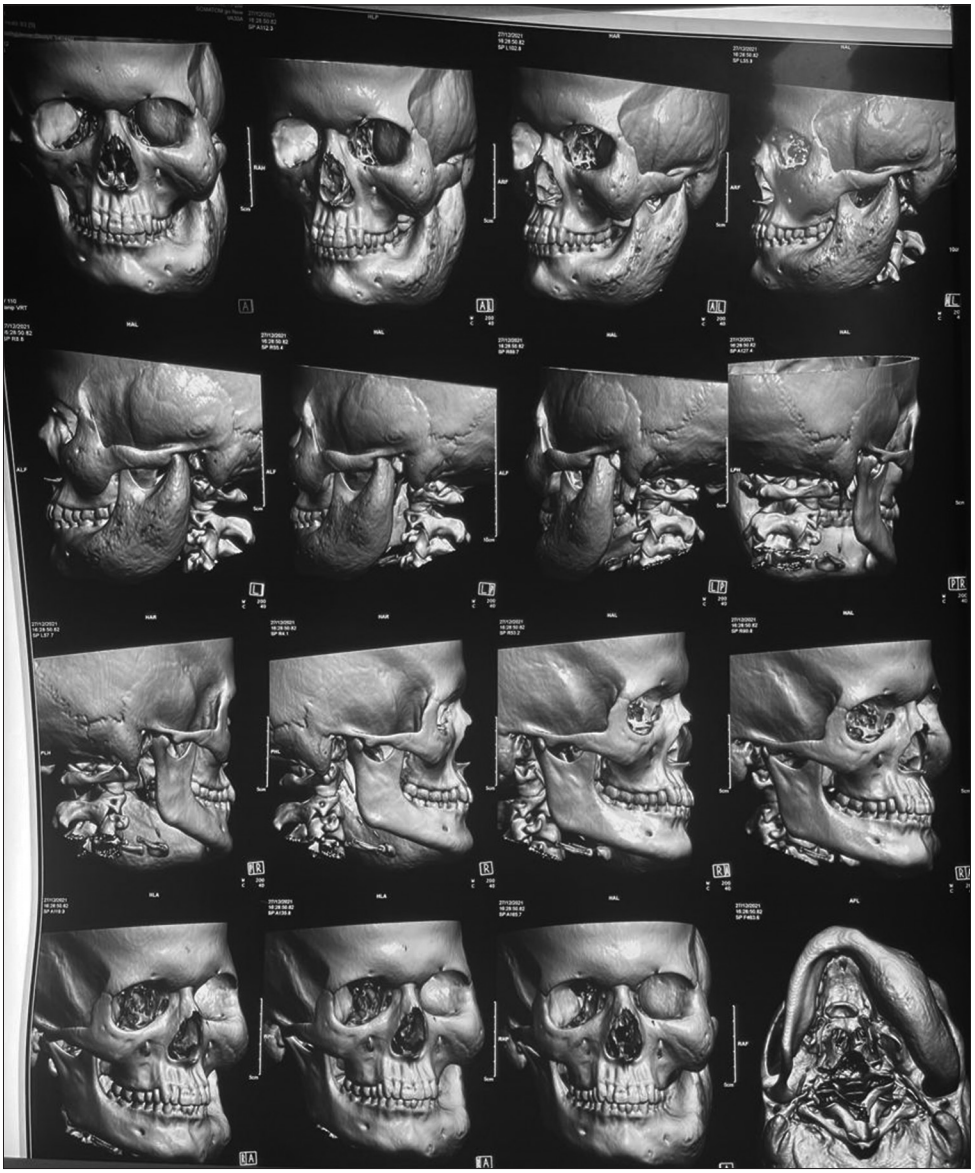

Figure 2: Cone-beam computed tomography

revealed [Figure 2] a homogenous, "ground-glass" appearance with expansion and thinning of the cortical bone involving both the mandible and maxilla. Based on the clinical and radiographic findings, a diagnosis of monostotic craniofacial FD was established.[1,6]

Surgical contouring was planned to correct the deformity and improve facial symmetry. The mandibular lesion was approached extraorally through a submandibular incision [Figure 3], and bony contouring was carried out to restore the natural mandibular outline [Figure 4].[5] The maxillary and zygomatic lesions were accessed intraorally via a vestibular incision, and conservative saucerization of the affected bone was performed.[5,7] Hemostasis was achieved, and layered closure was completed. The post-operative period was uneventful, with satisfactory wound healing. The patient was followed up regularly, and at 6 months, facial symmetry was markedly improved with no signs of recurrence or residual deformity.[5,7]

Discussion

FD represents a mosaic disorder of bone-forming mesenchyme caused by a post-zygotic *GNAS* gene mutation, leading to excess cAMP production and aberrant bone formation.[3,4] The craniofacial type may present as either monostotic, affecting a single bone, or polyostotic, involving multiple bones. Lesions typically enlarge during active skeletal growth and often stabilize after puberty.[1,6] The slow progression and benign nature of the lesion distinguish it from aggressive neoplasms, although rapid growth can occasionally raise suspicion of rare malignant transformation.[8]

Radiographically, FD exhibits a classic "ground-glass" appearance with cortical expansion and thinning, yet without cortical breach. Differential diagnoses include ossifying fibroma, Paget's disease, and low-grade osteosarcoma. Histopathological confirmation and genetic analysis of GNAS mutations may be

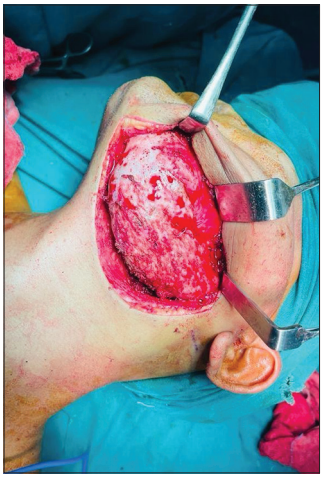

Figure 3: Intraoperative exposure of the mandibular lesion. Pre-operative surgical field showing an extraoral inferior border incision (submandibular approach) providing direct access to the exposed fibrous dysplasia lesion on the left mandible before surgical recontouring and trimming

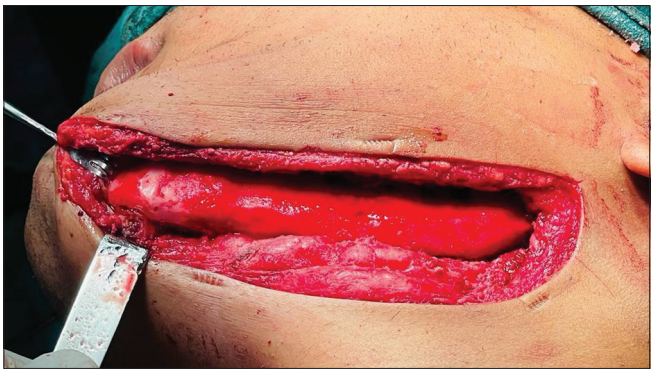

Figure 4: Post-recontouring appearance of the mandible. Intraoperative photograph demonstrating the left mandible following complete surgical trimming and recontouring of the fibrous dysplasia lesion to restore normal anatomical contours and jaw symmetry

Figure 5: Post-operative clinical result. Post-operative photograph of the patient demonstrating successful restoration of facial symmetry and normal lower jaw contour following surgical recontouring

sought in uncertain cases to differentiate FD from other fibro-osseous lesions such as cemento-ossifying fibromas.[3,4,7] Treatment is usually conservative, and surgical intervention is reserved for patients with esthetic deformity, functional impairment, or rapid growth. Bone contouring or shaving procedures are preferred over radical excision to minimize surgical morbidity and preserve facial harmony. Surgical intervention is ideally performed after skeletal maturity to reduce the likelihood of regrowth; however, in cases with significant asymmetry or severe psychosocial impact, earlier conservative intervention is justified.[5-7]

In the present case, the combined intraoral and extraoral approach provided optimal surgical exposure to both maxillary and mandibular components of the lesion. The conservative surgical contouring achieved satisfactory esthetic correction with minimal morbidity. Regular long-term follow-up remains essential to monitor for potential recurrence or secondary changes, although the risk of relapse is low in monostotic craniofacial FD following skeletal maturation.[1,5-8]

Conclusion

FD is a benign, slowly progressive fibro-osseous lesion that can cause significant craniofacial deformity. Early diagnosis and radiological evaluation are crucial for formulating an appropriate treatment plan. Conservative surgical contouring offers excellent esthetic and functional outcomes with minimal recurrence [Figure 5]. The combined intraoral and extraoral approaches allow adequate access for extensive lesions involving both the mandible and maxilla. Long-term follow-up is important to ensure stability and detect any regrowth, ensuring durable and satisfactory results for the patient.

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