

## Odontogenic fibroma of Mandible and Its Management: A Rare Case Report

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### I. Introduction

Odontogenic fibroma is a rare benign tumour of the jaw bone with an indolent growth resulting in cortical expansion and accounts for 6.1% of all central odontogenic tumours<sup>1</sup>. Odontogenic fibroma most commonly affects the mandibular/premolar region of female patients in the 2<sup>nd</sup> to 4<sup>th</sup> decade of life and frequently found as radiolucent lesions that may induce root resorption.

The recent WHO histological typing of odontogenic tumours distinguishes COF into the epithelium – poor type and epithelium rich type. Rare variants of odontogenic fibroma have been described in prior literature including references to 1) with giant cell lesions 2) Amyloid like protein deposition 3) ossifying variant.

Even though odontogenic fibroma has been considered as benign, treatment of the lesion has been always been a challenge. For smaller lesions, simple enucleation may be sufficient. But for larger lesions more advanced reconstructive surgery may require taking account of extension of lesion, age, general condition and affordability.

### II. Case Report

A 21 yr old male patient with non contributory medical, social & cultural records attended department of ENT and Head & Neck surgery, AMC, Dibrugarh with an exophytic growth over left lower premolar region with displaced central and lateral incisors, canine to other side (Figure-1). The patient recalled that the lesion was identified one and half year when he consulted a dentist for toothache. There after lesion was slowly progressed in size. On clinical examination an irregular intraoral exophytic growth of 27mm\*32mm\*30mm over left lower premolar region with distorted dentures was seen. The lesion was firm in consistency, irregular margin, with no bleeding on touch.

The CT-scan of mandible showed a well defined focal expansile sclerotic lesion with internal ground glassing measuring 2.7cm\*3.2cm\*3cm hyperdense lesion in the paramedian location in the left hemimandible adjacent to left lower incisors, canine, & premolars causing malalignment of the teeth. No evidence of cortical destruction noted. (Figure-3,4) The clinico radiological differential diagnoses were ossifying fibroma, calcifying epithelial odontogenic tumour, calcifying cystic odontogenic tumour. Punch biopsy was taken from the exophytic growth and subjected to histopathological examination. Preoperative histopathological diagnosis was odontogenic fibroma.

**Anaesthetic Considerations:** After a pre operative work up patient was given fitness for surgery. Pre anaesthetic medications were given, nasotracheal intubation was done with 7mm Internal diameter armoured endotracheal tube. Anaesthesia was maintained with oxygen and N<sub>2</sub>O(33:66), isoflurane, dexmedetomidine 25mcg and vecuronium. After the completion of surgery extubation was done with injection neostigmine and injection glycopyrrolate. Post operatively patient was stable.

### Procedure

After segmental mandibulectomy, there was a large bone defect starting from ipsilateral ramus upto contralateral body of the mandible. Reconstruction of this bone defect demanded maintenance of proper occlusion, preserving the normal contour of face of the patient & masticatory functions. We have reconstructed the mandible with 2.5mm angular reconstruction plate made up of titanium, the plate was pre bent and contoured using matched model. (Figure-3)

During operation required bending and contouring were done the 3<sup>rd</sup> requisite of a state of art of mandibular reconstruction was the masticatory function can be fulfilled by reconstruction plate. We will plan for a double barrel free fibular vascular flap with dental implant if situation demands. (Figure-5)

### III. Discussion

The odontogenic fibroma is a benign neoplasm of odontogenic ectomesenchymal origin, characterized by relatively mature collagenous fibrous tissue with varying amount of odontogenic epithelium. A slight female

predominance has been seen in a literature review by Daley *et al.*<sup>2</sup> Age at diagnosis varies widely with a peak in the third and fourth decades of life<sup>1</sup>

The World Health Organization (WHO) defined<sup>3</sup> it as “a benign odontogenic neoplasm of fibroblastic origin characterized by relatively mature collagenous fibrous tissue and varying amounts of odontogenic epithelium with potential to occur in either a central or an extraosseous location. The extraosseous counterpart is designated as peripheral odontogenic fibroma”.

some authors had designated clinically and histopathologically lesions similar to peripheral odontogenic fibroma as odontogenic gingival epithelial hamartoma<sup>4</sup> peripheral fibroblastic dentinoma<sup>5</sup> odontogenic epithelial hamartoma.<sup>6</sup>

It does not appear to be a hamartoma because hamartomas are developmental<sup>5</sup> At one time, the terms peripheral ossifying fibroma and peripheral odontogenic fibroma were used quite interchangeably till Gardner<sup>5</sup> published a clarification in terminology. While the former one is a commonly found reactive lesion with well-formed bone, numerous giant cells and only rarely, if present, odontogenic epithelial rests, the latter one, which is quite rare, has extensive odontogenic epithelium with occasionally found dysplastic dentin/cementum like calcifications and only rarely, giant cells are present. The origin of both the lesions is quite different and so is the biologic behavior. The former is a benign tumor of connective tissue origin with a marked tendency to recur, while the latter is of odontogenic mesenchymal origin whose recurrence is not known exactly but is reported to vary from very low to as high as 38.9%.<sup>2,5,7</sup>

Buchner *et al.*<sup>8</sup> presented nine cases of peripheral odontogenic fibroma that illustrate the variety of its histopathologic findings. They also suggested that the term ‘WHO type’ to be used to distinguish it from peripheral ossifying fibroma. The first detailed clinicopathologic study of peripheral odontogenic fibroma was published by Daley *et al.*<sup>2</sup> Clinical data from this study indicate that the lesion is more common than reported previously and also that it has a significant recurrence rate. Central odontogenic fibroma has been defined as a benign odontogenic tumor, representing the intraosseous counterpart of a peripheral odontogenic fibroma. The odontogenic fibroma is a rare tumor<sup>9</sup> Differential diagnosis of radiolucent lesions in the molar-premolar region of mandible which involve impacted tooth may include central odontogenic fibroma, hyperplastic dental follicle, dentigerous cyst, unicystic ameloblastoma, and keratocystic odontogenic tumor. The epithelium-rich type of COF is composed of cellular fibroblastic connective tissue interwoven with less cellular and often vascular areas. Islands or strands of inactive odontogenic epithelium are an integral component that may be sparse but are often conspicuous.<sup>10</sup>

The most recent literature review by Daniels *et al.*<sup>2</sup> in 2004 revealed 70 COF cases including one case of their own. Since then two report cases [4,9] have been published and the addition of the current case brings to 73 the number of cases. Data analysis of these 73 cases showed that the age of patients ranged from 4 to 80 years with a mean of 36 years, a male to female ratio of 1:1 and equal distribution between maxilla and mandible. In the maxilla the most common location was in the anterior region (71%) and in the mandible in the posterior region (75%).

In 2006 Buchner *et al.*<sup>11</sup> studied the odontogenic tumors from northern California and reported 15 cases of COF. According to this study the age of patients ranged from 11 to 50 years with a mean age of 36 years, a male to female ratio of 15:1 and highest frequency of occurrence in the fifth decade of life. There was no significant predilection for the location either in the maxilla or in the mandible. In the maxilla the most common location was in the anterior region (66%) and in the mandible in the posterior region (71%)

Moreover, the patient’s clinical characteristics (age, location of the lesion, radiological findings) in the present case were in agreement with the recent literature review findings. The mode of treatment of COF is enucleation. However, Ramer *et al.*<sup>11</sup> reported a 12.8% (5 out of 39 cases) rate of recurrence.

The most appropriate mode of reconstruction for each patient is determined by the size and position of the defect, the quality of the remaining bone, the size and position of any associated soft tissue defect and the vascularity of the tissues adjacent to the defect. The cosmetic deformity and functional loss that occur after mandibular resection depends on the size and location of the segmental defect. The more anterior the defect, the greater the deformity and loss of function. Not only the size and location of the mandibular defect should be assessed, but also the associated soft tissue deficit.

In 1991, Urken *et al.*<sup>12</sup> described a classification scheme not only taking into consideration the mandibular defect but also the soft tissue defect.

The mandibular defect can be classified as H, C, L:

H – lateral defects of any length including the condyle

L – as above but the condyle not included

C – entire central segment from lower canine to canine

Advancements in soft tissue reconstruction and thus improving the recipient soft tissue bed has allowed the reconsideration of alloplastic materials to reconstruct the mandible. The ideal alloplastic material must be biocompatible and able to withstand the forces sustained by the mandible in mastication. Materials that have

been used include medical polymers, ceramics and a variety of metals. The initial metal alloys used were vitallium and stainless steel in the form of a plate. However, these were susceptible to screw loosening and fracture. The titanium reconstruction plates and the THORP (titanium hollow osseointegrated reconstruction plate) plate are able to withstand masticatory forces and plate fracture is much rarer. Okura et al.<sup>13</sup> in a series of 100 patients reconstructed mandibular defects with bridging plates. The plate survival at five years was 62 per cent. Shiptzer et al.<sup>10</sup> showed good results of mandibular reconstruction with just plates. There was no plate exposure, extrusion or fracture in 83 per cent of their sample one year and 72 per cent at two years. Lindquist et al.<sup>14</sup> concluded that functional and aesthetic results were excellent in their series of 34 patients when reconstruction plates were used. Blackwell et al.<sup>15</sup> in a series of 17 patients abandoned using soft tissue flaps with THORP plates even for lateral defects as the risk of reconstructive failure in their series was as high as 40 per cent.

Kim et al.<sup>16</sup> presented 41 cases reconstructed with AO plates. Twenty-two per cent of patients required plate removal but the incidence varied as to the location of the defect – 52 per cent of anterior, 12 per cent of lateral and 8 per cent of condylar and ramus defects.

Wei et al.<sup>17</sup> looked at 80 patients reconstructed with a reconstruction plate and a soft tissue flap. Thirty-one per cent of surviving patients had required secondary surgery for plate exposure, soft tissue deficiency, intraoral contracture, trismus and lack of gingivolabial sulcus. The patient's quality of life and oral rehabilitation does not appear to be related to the quantity of mandible resected.

#### IV. Conclusion

Odontogenic fibroma is a rare benign jaw tumour which definitely need a good resection of involved segment of bone as in our case. The residual defect can be reconstructed according to the size and site of the defect, as we have done with titanium plate without compromising much with the masticatory functions and cosmesis.



Figure-1: Pre operative



Figure -2: CT scan of Mandible axial section

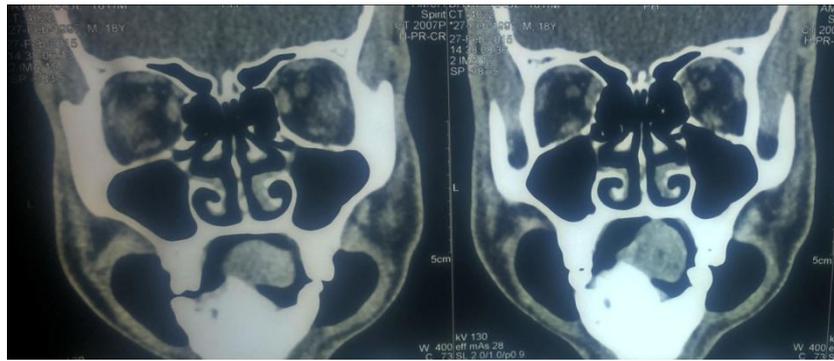


Figure-3 : CT scan of mandible coronal section

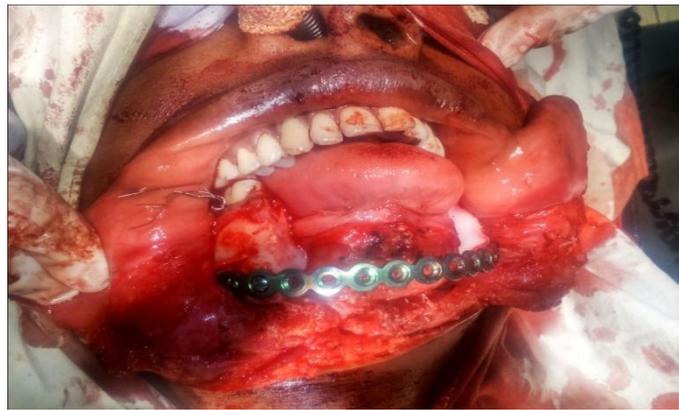


Figure-4



Figure-5

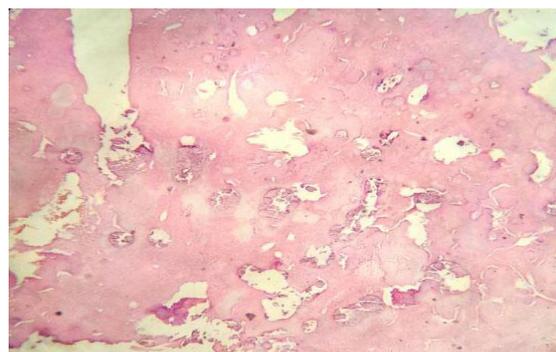


Figure-6

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