

Hamartomatous Tooth like Structure: A Case Report

¹Dr. Krishna Gopal Sharma (P.G Student)
Department of Oral Medicine and Radiology,
K.D. Dental College and Hospital Mathura

²Dr. Vinay Mohan (Professor and Head)
Department of Oral Medicine and Radiology,
K.D. Dental College and Hospital Mathura

³Dr. Anuj Gaur (Reader)
Department of Oral Medicine and Radiology
K.D. Dental College and Hospital Mathura

⁴Dr. Kalpana Poudel (Lecturer)
Department of Oral Medicine and Radiology Nepal Medical
College, Jorpati, Kathmandu, Nepal

⁵Dr. Shreya Srivastava (Senior Lecturer)
Department of Oral and Maxillofacial Surgery
K.D. Dental College and Hospital Mathura

Abstract:- Odontomas are categorized by the World Health Organization (WHO) as odontogenic tumors since they are made up of ectomesenchyme and odontogenic epithelium. They are not true tumors because they are the result of developmental defects. They are local deformities without independent growth. Rarely do they exhibit symptoms and are frequently identified by chance when carrying out a radiographic evaluation. Odontomas can be either complex or compound. Without regard to gender, odontoma is typically diagnosed in young children and adolescents. According to reports, it is the most prevalent odontogenic neoplasm and tumor-like lesion. Patients frequently mention a history of trauma and infection, despite the fact that the cause of the odontoma is still unknown. Odontomas are typically asymptomatic and characterized by a sluggish rate of growth, rarely growing larger than a tooth.

Keywords:- Odontomas, ectomesenchyme, odontogenic epithelium, complex, compound, asymptomatic, sluggish rate.

I. INTRODUCTION

The term odontoma refers to any tumor of odontogenic origin. An odontome is a growth in which both epithelial and mesenchymal cells exhibit complete differentiation with the result that functional ameloblasts and odontoblasts form enamel and dentin³. The word "odontoma" was first used by Paul Broca in 1867. The term "tumours formed by the overgrowth of transitory or complete dental tissues" was used to describe odontomas⁴. Odontomas are not thought of as real neoplasms because they are the result of anomalies in the proliferation of dental tissues (including epithelial and mesenchymal components). Odontomas are also thought of as hamartomatous malformations because they don't show continuous growth or any type of infiltration into the surrounding tissues. They frequently go hand in hand with impacted or retained teeth. The tissue of genesis for odontomas is thought to be the extraneous bud of the dental lamina^{5,6}. These tumours' etiopathogenesis is uncertain. But other potential etiological causes include trauma to the primary teeth, periodontal Malassez remnants, inflammatory processes, odontoblastic hyperactivity, and genetic defects⁷.

Odontomas were divided into two groups by the World Health Organisation (WHO): compound and complex⁸. While compound odontomas mostly develop in the anterior

section of the maxilla, complex odontomas frequently occur in the posterior region of the jaw⁹.

II. CASE REPORT

A 42-year-old female patient reported to outpatient department of K.D. Dental College and Hospital with the chief complaint of pain in lower left back region of mouth since 2 months (Figure: 1 and 2). Pain was moderate and intermittent in nature which subsided on taking medication. There was no history of fever and weight loss. Also, there was no relevant dental, medical and family history reported by the patient. On systemic examination all vital signs were within normal limits. On extraoral examination, no abnormality was detected. On intraoral examination 26 tooth was missing with normal mucosa and 37, 48 were filled with TOP positive with respect to 37. On palpation there was pain over the crest of alveolar ridge.

III. RADIOGRAPHIC INTERPRETATIONS

- Panoramic radiograph revealed multiple radiopaque structures with variation in the radiographic density resembling tooth structures were evident in relation to the periapical region of 37 which supported the diagnosis of benign odontogenic tumor (figure: 3).
- Cone-beam computed tomography revealed a lesion involving the left body of mandible (Figure: 4) along with expansion and thinning of the Bucco-lingual cortical of the mandible and a well-defined, hyperdense mass surrounded by hypodense region seen, attached to the tooth root of 37 (both mesial and distal root). The mass appears to be extending from:
 - ✓ MESIO-DISTAL EXTENT: Mesial of 37 to a point inferior to the roots of 38 near middle third region of 38, distally, causing thinning of buccal and lingual cortical plates. It appears to course inferiorly to 38, such that it is in very close approximation to the mesial surface of crown of 38 with no signs of resorption of 38 (Figure: 5).
 - ✓ MAXIMUM MD DIMENSION: 17.4 mm.
 - ✓ SUPERIO-INFERIOR EXTENT: Apical third region of 37 tooth root superiorly to the inferior border of mandible inferiorly, causing thinning of inferior border. Also, the root of 37 appears to be attached as a conglomerate with the pathology. inferior alveolar nerve canal appears to be pushed and displaced buccally and inferiorly to the pathology (Figure: 6).

- ✓ MAXIMUM SUPERIO-INFERIOR DIMENSION: 11.9mm.
- ✓ BUCCO-LINGUAL EXTENT: Minimal bucco-lingual expansion seen, with thinning of both cortical plates.
- ✓ MAXIMUM BUCCO-LINGUAL DIMENSION: 12.0 mm

According to case history, clinical findings and radiographic interpretations the provisional diagnosis of benign odontogenic tumour was considered.

IV. TREATMENT

Odontomas were removed by surgical enucleation with plating on angle of mandible, and the specimen was sent for histopathological examination. Histopathological finding revealed odontogenic tumour composed of odontogenic epithelium admixed with mineralized matrix, basaloid enameloid material distributed haphazardly, admixed with dentin and enamel. Overall features were consistent with odontoma.



Fig. 1: Extra oral profile pictures of patient with bilateral symmetrical face



Fig. 2: Lateral profile picture of the patient.



Fig. 3: Panoramic radiograph reveals irregularly round to oval multiple radiopacity periapical w.r.t to 37

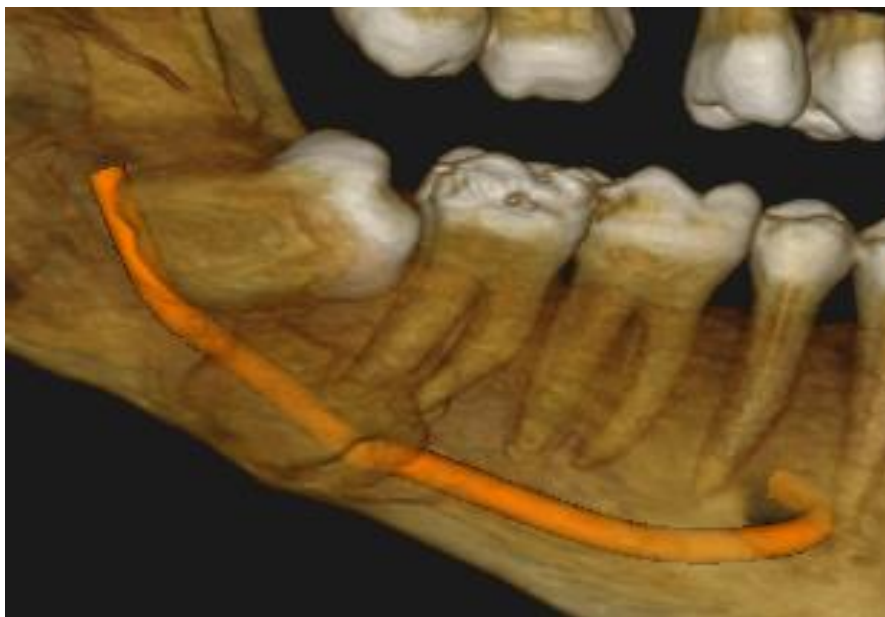


Fig. 4: Well defined, hyperdense mass surrounded by hypodense region seen , attached to the tooth root of 37

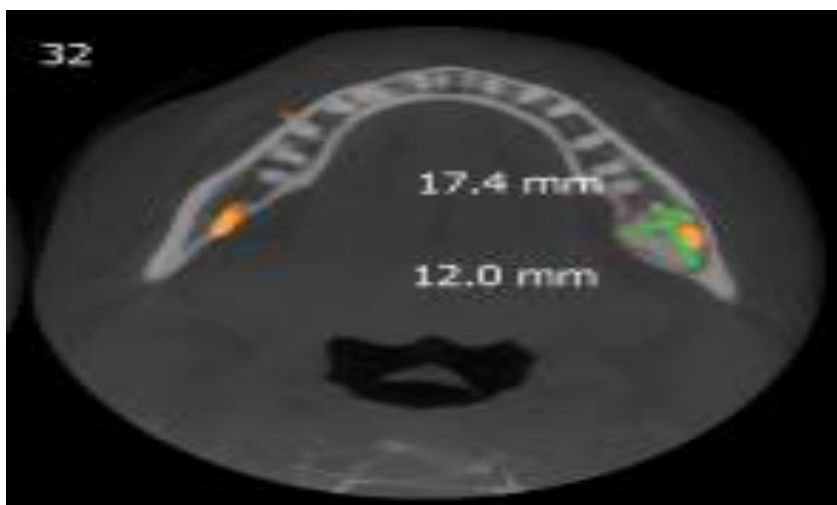


Fig. 5: Axial section demonstrated lesion extending from mesial of 37 to a point inferior to the roots of 38 near middle third region of 38, distally with no signs of resorption of 38.

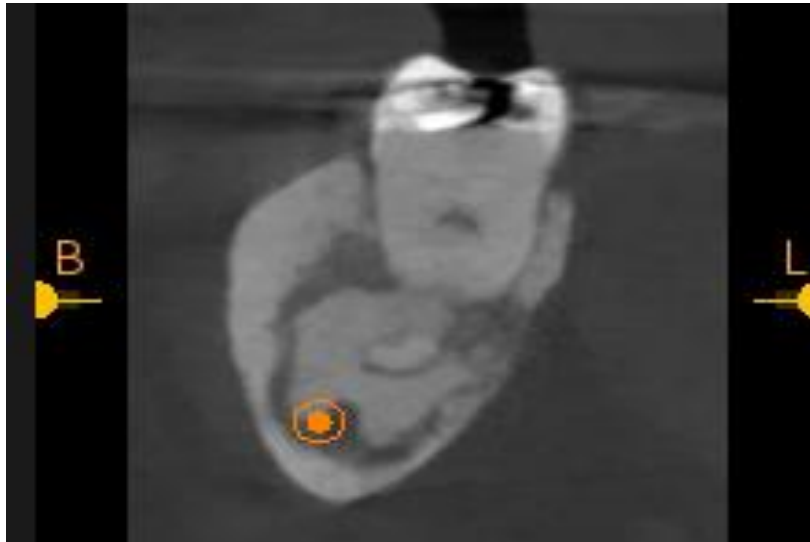


Fig. 6: Apical third region of 37 tooth root superiorly to the inferior border of mandible inferiorly causing thinning of inferior border.

V. DISCUSSION

The odontoma appears to be caused by extra odontogenic epithelial cells that have budded from the dental lamina. These cell groups accumulate to form a substantial mass of tissues, which may be deposited in an odd configuration, but comprised of healthy dentin, pulp, cementum, and enamel. The odontoma also goes through that stage. Compound odontomes, the most prevalent variety, are made up of odontogenic tissues that are arranged normally. The final structure bears significant morphological likeness to teeth. When tooth components are poorly structured and tooth-like structures are not created, complex odontomes result. Compound complicated odontomes are some tumours that combine these two tumour forms¹⁰. The complex form of odontome, which has a preference for the incisor canine region but is gender-neutral, makes up around 62% of the maxilla. The complex odontomes are more prevalent in the mandible, and 68% of patients with complex odontomes are female¹⁰.

In 1946, Thoma and Goldman gave a classification which is as follows.

- Geminated composite odontomes: Two or more, more or less well-developed teeth fused together.
- Compound composite odontomes: Made up of more or less rudimentary teeth.
- Complex composite odontomes: Calcified structure bearing no great resemblance to the normal anatomical arrangement of dental tissues.
- Dilated odontomes: The crown or root part of tooth shows marked enlargement.
- Cystic odontomes: An odontome that is normally encapsulated by fibrous connective tissue in a cyst or in the wall of a cyst.

According to World Health Organization (WHO) classification, odontomes can be divided into three groups.

- Complex odontome: When the calcified dental tissues are simply arranged in an irregular mass bearing no morphologic similarity to rudimentary teeth.

- Compound odontome: Composed of all odontogenic tissues in an orderly pattern, which result in many teeth-like structures, but without morphologic resemblance to normal teeth
- Ameloblastic fibro-odontome: Consists of varying amounts of calcified dental tissue and dental papilla-like tissue, the later component resembling an ameloblastic fibroma.

The ameloblastic fibroodontome is considered as an immature precursor of complex odontoma.

Some writers have also claimed the existence of a novel form called hybrid odontome. There are two further categories for odontomes: intraosseous and extraosseous. The intraosseous odontomes are found inside the bone and can sometimes erupt into the oral cavity. The soft tissue that covers the jaw's tooth-bearing regions develops odontomes called extraosseous or peripheral odontomes, which are prone to exfoliation^{11,12}. In accordance with WHO classification, a lesion is a deformity in which all dental tissues are represented in a more symmetrical pattern than in the complex odontome, resulting in the formation of a lesion. There are several tooth-like features in the lesion. Odontome's precise aetiology is uncertain. However, it has been proposed that such lesions may occur as a result of the shock and infection. Hitchin has proposed that odontomes are inherited, caused by mutagens, or interfere with the genetic regulation of tooth growth, possibly postnatally^{11,12}. Although the cause of the odontomes is uncertain, environmental causes like trauma and infection as well as genetic factors have been suggested¹³. Odontomas may also appear in conjunction with other syndromes, such as Gardner syndrome, basal cell nevus syndrome, familial colonic adenomatosis, Tangier illness, or Hermann syndrome¹⁴. Such association was not seen in the presented case. The treatment consists of surgical removal of the lesion with curettage. Their enucleation is simple as they are capsulated tumors¹⁵. It rarely happens to occur again. However, early detection and treatment allow us to be more cautious during surgery, prevent lesion degeneration, preserve the vitality and position

of neighbouring teeth, and ultimately guarantee a favourable prognosis.

VI. CONCLUSION

Odontoma is one of the most prevalent types of odontogenic tumours, however little is known about its molecular biology. It is frequently ignored in research since it is an odontogenic tumour that is not particularly aggressive. Finding out more about the molecular aetiology of odontoma, a growing tumour that is closely related to the signalling pathways involved in healthy tooth growth, could be extremely useful for future research on healing dental tissues².

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