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Complex Odontoma Of Mandible: A Spectacular Case Report

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Abstract
Odontomas are hamartomas comprised of dental tissues, including enamel, dentin, cementum, and pulp. There are two types of odontomas – compound and complex. Compound odontomas are comprised mainly of well-organized tooth like structures, whereas complex odontomas are comprised mainly of disorganized conglomerates of dental tissues. It is usually asymptomatic and generally associated with unerupted or impacted teeth. Here we report a case of complex odontoma with the fact that early diagnosis of odontomas allows the adoption of a less complex and expensive treatment and ensures better prognosis.
Keywords: *Compound odontoma, Complex odontoma, unerupted tooth.*

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I. Introduction

Odontomas, first coined in 1947 by Paul Broca are considered to be developmental disorder which results from the growth of completely differentiated epithelial and mesenchymal cells that give rise to ameloblasts and odontoblasts. These tumors are basically formed of enamel and dentin but they can also have variables amounts of cement and pulp tissue. However, they are not considered as true neoplastic lesions and thus referred as hamartomas or odontogenic tissue malformations. The etiology of odontome is unknown. Various predisposing factors may include local trauma, genetic mutation, and infection. Odontomas are of two types: compound odontoma and complex odontoma. Complex odontomas are of rare occurrence, with a female predilection. The site of occurrence is generally first–second mandibular molar region.They rarely erupt into the oral cavity as they lack periodontal ligament. Thus, the usual treatment option for complex odontoma is surgical excision.[1,2]

II. Case Report

26-year-old male patient reported to the Dept of Oral Medicine & Radiology with the chief complaint of swelling in the posterior right mandibular region since three months. The swelling was initially small in size and gradually increased to the present size causing facial deformity (Figure 1). He had no history of pain and discomfort. Intra oral clinical examination revealed well circumscribed non tender hard swelling in right posterior region with mild expansion of cortical plates (Figure 2). Overlying skin was normal with normal mouth opening.

On the radiographs, multiple irregular dense radio-opaque mass surrounded by a thin radiolucent rim was seen. Lesion was seen impeding the eruption of permanent third molar (Figure 3).

Provisional diagnosis of fibro-osseous lesion and odontoma was made. Complete surgical excision of the lesion was done along with associated soft tissue and the unerupted tooth. Gross specimen received was one bit of soft tissue and three bits of round, ovoid irregular mass of hard tissue which was kept for decalcification (Figure 4). Histopathological examination revealed dentinal tubules, dentinoid, basophilic cementum surrounding the dentin, enamel spaces with few foci of enamel matrix and pulpal like tissue arranged in a haphazard and disorganised pattern (Figure 5 & 6). Based on the histopathological examination final diagnosis of Complex odontoma was made.

III. Discussion

Complex odontomas are one of the most common types of odontogenic tumors. The reported relative frequency of complex odontomas among odontogenic tumors varies from 5 % to 30 %. The majority of complex odontomas are diagnosed before the age of 30 years, with a peak in the second decade as seen in our

case. The mean age at diagnosis is approximately 20 years, with a range of 2–74 years. Lesions diagnosed later in life likely developed when the patient was young and remained undetected for a long period because of a lack of symptoms[3].

Most authors report either a slight male predilection or no significant gender predilection, with male-to-female ratios ranging from 0.8:1 to 1.6:1. The most common location for complex odontomas is the posterior mandible. The case presented also occurred in the same region. The second most common location is the anterior maxilla. In contrast, the anterior maxilla is the most common site for compound odontomas. The majority of cases are intraosseous, although in rare instances, the tumor may arise entirely within the gingival soft tissue (sometimes referred to as an "erupted odontoma" or "exfoliated odontoma")[4]. The tumor typically is painless and slow growing. The lesion often is discovered during routine radiographic examination. Alternatively, the lesion may be found when radiographs are obtained to determine the cause of failed tooth eruption. The tumor radiographically appears as an amorphous radiopaque mass surrounded by a radiolucent rim. The radiolucent rim helps to distinguish a complex odontoma from other radiopaque jaw lesions, such as condensing osteitis and idiopathic osteosclerosis. Additional lesions that may mimic the radiographic appearance of a complex odontoma include the osteoma, ossifying fibroma, and osseous dysplasia. The density of the opacity in a complex odontoma is comparable to that of teeth. In some cases, the lesion may be associated with the crown of an impacted tooth. Root resorption of adjacent teeth occurs rarely[5]. In rare cases, multiple odontomas may arise in association with Gardner syndrome[6].

Treatment generally consists of conservative surgical enucleation. If the lesion is associated with the crown of an impacted tooth, then the impacted tooth may be either extracted or orthodontically extruded. The prognosis is excellent, and recurrence is rare.

The complex odontoma grossly appears as an ovoid, rounded, or irregular mass of hard tissue. Dental follicular tissue also may be submitted along with the hard tissue.

The complex odontoma microscopically appears as a haphazard conglomerate of dental tissue including dentin, enamel, cementum, and pulp. Upon decalcification, what will remain of the enamel is the basophilic matrix, which exhibits a hexagonal pattern. Dentin appears as either eosinophilic tubules or poorly organized, amorphous dentinoid. A cementum layer often is found overlying dentin. The pulp appears as fibrous connective tissue within a chamber surrounded by dental hard tissue; odontoblasts may be observed lining the periphery of the chamber. These features were observed in our case also. Additional elements may include reduced enamel epithelium (appearing as eosinophilic cuboidal epithelium) and dental follicle (appearing as loosely arranged fibrous connective tissue). Development of a dentigerous cyst in association with an odontoma is possible as well. Approximately 16 % of complex odontomas exhibit focal ghost cells. The ghost cells appear as eosinophilic epithelial cells which have lost their nuclei but retain their nuclear outlines. Melanin pigmentation rarely may be found within these ghost cells. In some cases, an odontoma may arise in association with a calcifying cystic odontogenic tumor[7].

Immunoreactivity for the intermediate filament nestin has been demonstrated within the odontoblasts, dentinal fibers within dentin tubules, and pulpal cells adjacent to odontoblasts of both complex and compound odontomas. The enamel within odontomas expresses various enamel proteins, including enamelysin, amelogenin, and sheathlin. Takata et al. studied the presence of ghost cells in both complex and compound odontomas by using antibodies against human hair proteins, beta-catenin, and lymphoid enhancer factor (Lef-1). These antibodies recognize components of the Wnt signaling pathway. Hard keratins, as detected by human hair protein antibodies, were found within the cytoplasm of ghost cells. Beta-catenin and Lef-1 were expressed within the cytoplasm and nucleus of odontogenic epithelial cells adjacent to the ghost cells of immature odontomas.

Molecular Features includes the expression of various late phenotypic markers of ameloblasts and odontoblasts (including amelogenins, keratins, collagen types III and IV, vimentin, fibronectin, osteonectin, and osteocalcin) in normal teeth, complex odontomas, and other mixed odontogenic tumors[8]. The pattern of expression of these markers was often similar between the normal teeth, complex odontomas, and other odontogenic lesions studied, with amelogenins and osteocalcin detected in areas of well-formed enamel and dentin, respectively. However, in some tumoral areas, there were epithelial zones with cells exhibiting a mixed phenotype, characterized by coexpression of amelogenins, osteocalcin, keratins, and vimentin[9].

IV. Conclusion

Complex odontoma is usually associated with unerupted tooth and can also impede eruption of permanent tooth thus interfering with arch-forms or occlusion which necessitates their timely diagnosis and management. The present case report highlights the clinical, radiographic, and histomorphological findings, and the investigations required to arrive at diagnosis and to reduce further complications.

Bibliography

[1] De Oliveira Bh, Campos V, Marçal S. Compound Odontoma – Diagnosis And Treatment: Three Case Reports. Pediatr Dent. 2001;23:151–7.

[2] Bagewadi Sb, Kukreja R, Suma Gn, Yadav B, Sharma H. Unusually Large Erupted Complex Odontoma: A Rare Case Report. Imaging Sci Dent. 2015;45:49–54.

[3] Neville Bw, Damm Dd, Allen Cm, Chi Ac. Oral And Maxillofacial Pathology. Elsevier Health Sciences; 2015 May 13. 674-675p.

[4] Philipsen, H. P., Reichart, P. A., & Praetorius, F. (1997). Mixed Odontogenic Tumours And Odontomas. Considerations On Interrelationship. Review Of The Literature And Presentation Of 134 New Cases Of Odontomas. Oral Oncology, 33(2), 86–99.

[5] Kaneko M, Fukuda M, Sano T, Ohnishi T, Hosokawa Y. Microradiographic And Microscopic Investigation Of A Rarecase Of Complex Odontoma. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998;86:131-4.

[6] Madani M, Madani F. Gardner's Syndrome Presenting With Dental Complaints. Arch Iranian Med. 2007; 10(4):535-539.

[7] Kodali Rm, Venkat Suresh B, Ramanjaneya Raju P, Vora Sk. An Unusual Complex Odontoma. J Maxillofac Oral Surg. 2010;9:314–7.

[8] Takata, T., Zhao, M., Uchida, T., Kudo, Y., Sato, S., & Nikai, H. (2000). Immunohistochemical Demonstration Of An Enamel Sheath Protein, Sheathlin, In Odontogenic Tumors. Virchows Archiv, 436(4), 324–329.

[9] Papagerakis, P., Peuchmaur, M., Hotton, D., Ferkdadji, L., Delmas, P., Sasaki, S., Tagaki, T., & Berdal, A. (1999). Aberrant Gene Expression In Epithelial Cells Of Mixed Odontogenic Tumors. Journal Of Dental Research, 78(1), 20–30.

Figure 1: Extra oral swelling on right mandibular posterior region

Figure 2: Intra oral swelling

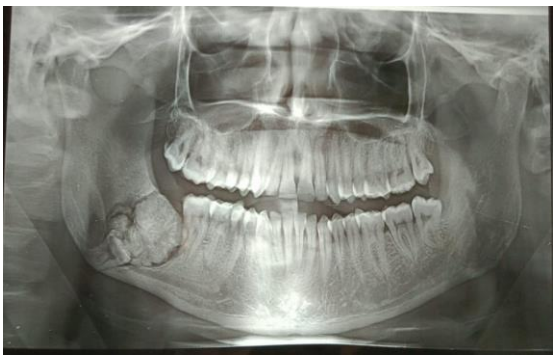

Figure 3: Well defined radiopacity with thin radiolucent rim

Figure 4: Excised lesion

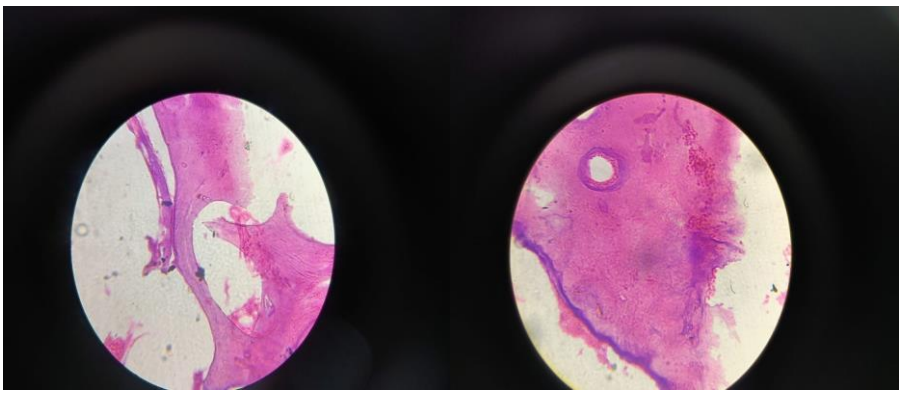

Figure 5: Dentin showing irregular dentinal tubules

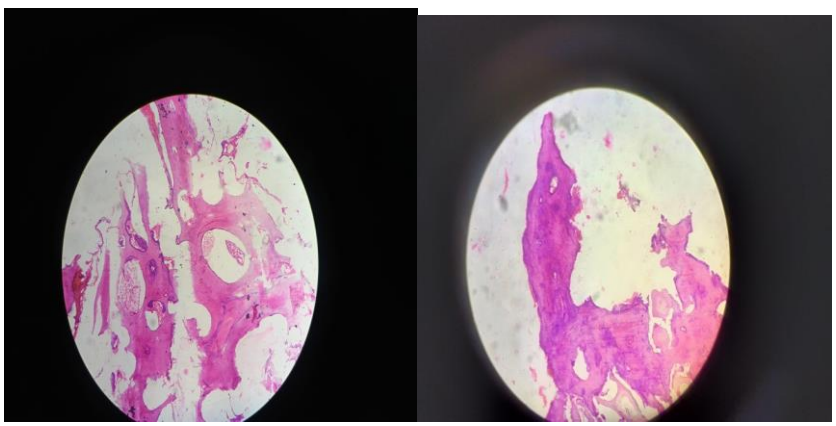

Figure 6: Disorganised arrangement of dentin surrounded by basophilic cementum along with enamel matrix and pulpal tissue