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Surgical Management of Rare Complex Composite Odontoma in A 12-Year Old: A Case Report

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Abstract

Odontomas are formed from aberrant benign growth of epithelial and mesenchymal cells and are one of the most common types of odontogenic tumors. Due to their limited and slow-growing characteristics, they are considered odontogenic hamartomas. They are subdivided into compound and complex odontomas depending on the degree of differentiation of the tooth material and their gross similarities to normal teeth (presence or absence of crown and/or root).Although an odontoma is classified as a hamartoma, its recommended treatment involves conservative surgical removal and histopathological examination of the mass to differentiate it from other lesions. Very few cases of recurrence after removal have been recorded, and the prognosis is excellent.

This article details a case of a giant complex odontoma associated with agenesis of the mandibular second premolar and its consequent surgical removal. It also attempts to givean overview of the diagnostic features and management of a case of complex odontoma and the uniqueness of the present case.

Keywords: Odontoma, Giant complex odontoma, Aplasia, Agenesis

Introduction

Odontoma, as the name suggests refers to any tumour of odontogenic origin in which both epithelial and mesenchymal cells exhibit complete differentiation resulting in functional ameloblasts and odontoblasts forming enamel and dentin. Odontoma is considered to be a hamartomatous malformation rather than a neoplasm. Abnormal morphodifferentiation leads to the enamel, dentin and cementum being laid in abnormal patterns giving rise to a composite odontoma.

Odontomas are the most commonly occurring benign odontogenic tumour accounting for 22% of such lesions.

They develop and mature when permanent teeth are formed and ceaseto grow when the permanent teeth are fully matured.[1]

Composite odontomas are classified based on structural resemblance to anatomic teeth:

- Compound composite odontoma
- Complex composite odontoma

Compound composite odontoma bears considerable anatomic resemblance to natural teeth except for its actual size whereas complex composite odontomas are irregularly calcified dental tissues clearly distinguishable from normal teeth.

Complex odontomas are rare compared to compound odontomas and are more commonly seen in females in the mandibular first-second molar region [1]. Eruption of odontoma into the oral cavity is a rare occurrence due to the absence of periodontal ligament [2] and is usually removed surgically. [3]

Odontomas are mostly obscure in origin. Hitchin has suggested an inherited or genetic interference of tooth development while Levy hypothesized traumatic injury as the cause based on animal studies [4]. Odontomas have been reported to be linked with Gardener's syndrome or Hermann's syndrome [5].

This case report illustrates the surgical management of a complex odontoma in a 12-year-old female patient.

Case Report

A 12-year-old female patient reported to the Department of Pediatric and Preventive Dentistry with the chief complaint of missing teeth in the right posterior mandible. The absence of teeth was noted by the mother, as the rest oral cavity exhibited normal physiologic growth, in contrast to the area of concern. There were no signs of pain swelling or suppuration. Extra-oral examination revealed no facial asymmetry and overlying facialskin was normal with no signs of inflammation (Fig1). Intraoral examination revealed an absence of 45, 46, 47, and obliteration of the buccal vestibule. The mucosa overlying the edentulous alveolar ridge appeared normal (Fig2). The patient had retained 62 with palatally erupted 22 (Fig3). The Orthopantamogram and CBCT images revealed a well-defined buccolingually expansile lesion of size 5cmx4 cm and mixed radio densities, i.r.t right posterior mandible (Fig4 &5). Antero-posteriorly, the lesion extended from the distal aspect of 44 to the mesial aspect of developing 47.The superior extension of the lesion into the alveolar crest was associated with thinning and perforation of the superior cortical plate. Inferiorly, the lesion was found to push 85 and 46 into the lower border of the mandible. A provisional diagnosis of complex odontoma was reached, and a decision was made to surgically excise the mass under general anesthesia along with the impacted 46 and 85 followed by histopathological examination.

Informed consent of the patient's parent and the verbal and written assent of the child were taken for carrying out the procedure under general anesthesia. A full mouth prophylaxis and extraction of retained 62 was done before the surgical procedure under GA. Surgical removal of complex odontoma with impacted 85 and 46 under GA (Fig 9 & 10) was done along with the help and support of the Oral and Maxillofacial department. Platelet-rich plasma (PRP) was inserted in the socket and sutures were placed (Fig11). The hard tissue was sent for histopathological evaluation. The post-operative review was uneventful. In a3-month follow-up, the patient showed no signs of pain or discomfort. Prosthetic rehabilitation using a removable partial denture has been planned once satisfactory healing of the surgical site is achieved (Fig12). The interim partial denture may serve form function and esthetics until the patient can receive a definitive prosthesis.

The histopathological examination was consistent with the clinical and radiographic diagnosis of complex composite odontoma, with normal-appearing dentin arranged in a disorganized manner and surrounding connective tissue being moderately collagenous and vascular. Enamel was also noted in certain areas (Fig 6, 7 & 8).

Discussion

Most of the complex odontomas are asymptomatic lesions similar to the present case but some may be associated with one or more pathological changes [6]

Generally, odontomas do not exceed 3cm in diameter. However, a few large odontomas with diameters exceeding 3cm have been observed. Clinically, odontomas are asymptomatic and are often an incidental finding among teenagers. It has been reported that 75.3% of odontomas are detected at routine dental check-ups like the present case [7]

Odontomas may disrupt the eruption of deciduous teeth and roughly 70% of them are associated with impaction, malpositioning, aplasia, malformation, and devitalization of adjacent teeth. Impaction of primary and permanent teeth (85 and 46) and agenesis of its permanent successor (45) were relevant findings in this case. Pain may be an associated symptom in 4% of the cases while most remained asymptomatic like the case discussed here.

Clinically odontomas are classified into intra-osseous and extra-osseous varieties. Some studies have also described it as central and peripheral depending on whether it occurred within the bone or in the mucosa[8,9]. Intra-osseous odontomas rarely erupt into the oral cavity while extra-osseous ones erupt into the oral cavity and cause pain and infection. Erupted odontoma is the third clinical variety [9,10]. Odontoma in this case is an intra-osseous odontoma.

Radiographically, odontomas are classified based on the stages of calcification.

- Stage I – completely radiolucent odontoma
- Stage ii – partially calcified odontoma
- Stage iii – mature odontoma with calcified dental tissue surrounded by radiolucent zone [13].

The odontoma in this case represents a stage iii variant.

Odontomas are rarely associated with the agenesis of teeth as in the present case. It was previously reported by Jain A.et al and was described as a unique variety [5].

Odontomas in most cases hinder the emergence of permanent teeth resulting in impaction. There is no general agreement in the literature about the management of associated impacted teeth. The possible options include extraction, surgical exposure, surgical repositioning, or wait and watch for natural eruption [12]. The decisive factors in the fate of the impacted tooth areits morphology, location in the jaw, age of the patient, and space available in the dental arch [13]. Considering the position of the impacted tooth and the dense bone covering in the present case, it was decided to remove it along with the lesion.

The differential diagnosis of complex odontoma includes cementoblastoma, osteoid osteoma, and fibro-osseous lesions such as cement-ossifying fibroma [14,15]. All these are differentiated radiographically and are not associated with impacted teeth[13]. Periapical cemento-osseous dysplasia which is solitary with dense radio opacities and radiolucent border is located deep in the alveolar ridge while complex odontoma is situated towards the crest of the ridge. Moreover, cement osseous dysplasia is not associated with unerupted teeth [16].

Conclusion

Large complex odontomas are lesions a clinician barely comes across in his practice. Adequate knowledge of clinical characteristics and radiological findings is

necessary for accurate diagnosis and prompt management of odontomas. The present case is unique because of the size of the odontoma which qualifies to be called a giant complex odontoma and agenesis of premolar teeth.

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Legend Figures

Figure 1:

Figure 2:

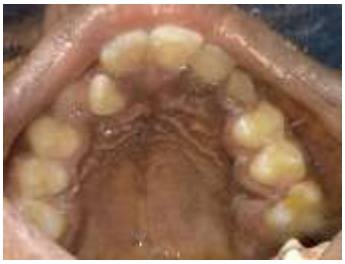
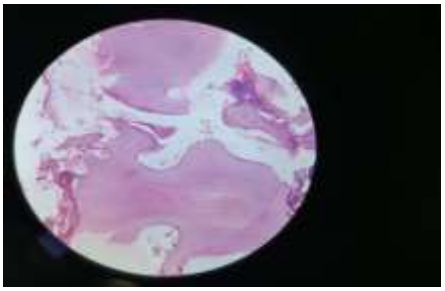


Figure 3:

Figure 4:

Figure 5:



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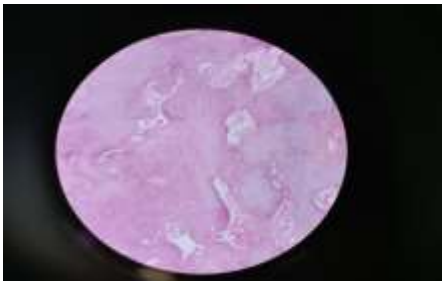

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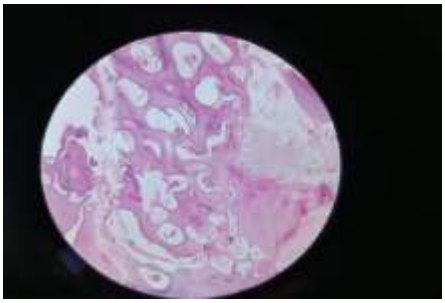
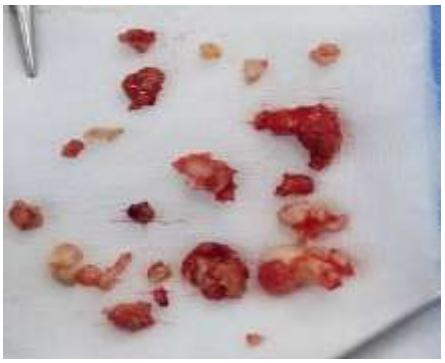


Figure 8:

Figure 9:



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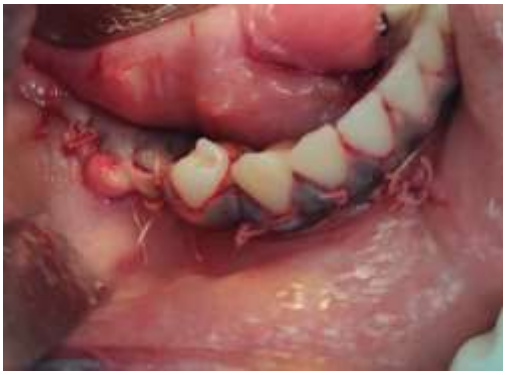

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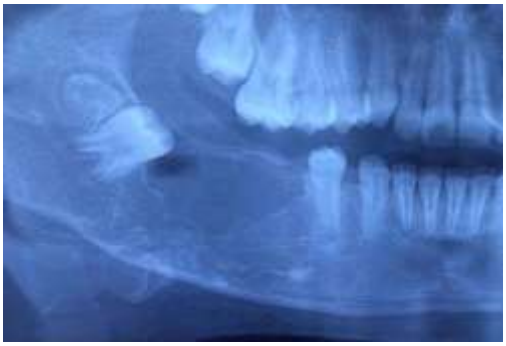

Figure 12: