Case Report

Erupting mandibular second molar concomitant with complex odontome and supernumerary tooth in a 13-year-old boy: A case report

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ABSTRACT

Odontomas are the most frequent hamartomatous developmental abnormality. The condition frequently correlates with one or more unerupted teeth and is often detected through the failure of teeth to erupt at the expected time. Although most cases were discovered that were impacted within the jaw, there are scenarios where odontomas have erupted into the oral cavity. The majority of odontomas are asymptomatic; however, these anomalies can cause delayed eruption, impaction, or even result in the retention of primary teeth. Odontomas are atypical calcified aggregations of dental tissues such as enamel, dentin, pulp, and cementum and originate from odontogenic epithelium thereby, classifying them as mixed odontogenic tumors. Literature suggests that their etiology can be local trauma, infection, or genetic mutations, yet the precise cause remains unknown. This case report presents a complex odontome and a supernumerary tooth associated with a partially erupted second molar in a 13-year-old patient with radiological manifestations and surgical management.

Key words: Complex odontoma, Hamartoma, Odontoma, Supernumerary tooth

Odontomas represent the most frequently encountered odontogenic tumors in the jaw, characterized by developmental defects in hard dental tissues [1,2]. They are classified as benign, tumor-like odontogenic lesions or hamartomas [3,4]. The term was coined by Paul Broca in 1867, the term "Odontome" refers to a "tumor formed by overgrowth or transformation of complete dental tissue." Typically asymptomatic, non-aggressive, and slow-growing, odontomas are benign in nature, primarily composed of enamel and dentin, with variable amounts of cementum and pulp [5]. They constitute approximately 22% of all odontogenic tumors of the jaw. Approximately, 10% of these are compound odontomas. The incidence of compound odontomas ranges from 9% to 37%, while complex odontomas range from 5% to 30%. Odontomas are typically discovered in individuals during their second and third decades of life. Compound odontomas are slightly more prevalent than complex odontomas, which are, in turn, more common than ameloblastic odontomas. In the anterior segment of the jaws, the majority of odontomas (61%) are of the compound composite type, whereas in the posterior segment, the majority (34%) are of the complex composite type. Notably, both types of odontomas occur more frequently on the right side of the jaw than on the left, with compound odontomas at 62% and complex odontomas at 68%. The compound composite odontomas most often occur in the incisor-cuspid region of the upper jaw, while complex odontomas are commonly found in the molar and premolar regions of the mandible [3].

This report describes an atypical case involving a complex odontoma and supernumerary tooth associated with the erupting mandibular second molar.

CASE REPORT

A 13-year-old boy reported to the department of orthodontics, with a chief complaint of proclined front teeth and was referred to the department of oral and maxillofacial surgery after an accidental finding of radio-opaque lesion adjacent to the partially erupted second molar in orthopantomograph (Fig. 1a). According to the patient's parents, there was no evident history of trauma and medications, and the patient had good general health.

Extraoral examination showed no asymmetry. Intraoral examination revealed partially erupting the left lower mandibular second molar with normal colored buccal mucosa. During the clinical examination, no facial asymmetry was detected. Intraoral examination revealed a permanent dentition period and a partially

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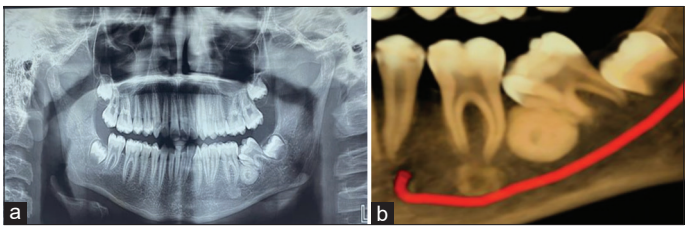

Figure 1: (a) Orthopantomograph reveals radiopaque lesion associated with partially erupted 37 and apical region of 36; (b) shows cone-beam computed tomography panoramic view of the left mandibular posterior region

erupted left mandibular second molar. The adjoining mucosa was normal, and there were no signs of redness, ulceration, pain, or swelling. On radiological inspection, cone-beam computed tomography reveals partially impacted tooth 37 (left mandibular second molar) with two roots (normally sized distal root with mesially dilacerated open apex, and short slender mesial root with closed apex), situated distal to and contacting crown of 36 (Figs. 1b and 2a) which is fused to buccally placed partially impacted conical supernumerary tooth which is of size 14.3 × 4.1 mm (Fig. 2b). Lingually impacted dilated complex odontoma, radiographically which is well-defined round mixed hyperdense mass, with the hypodense periphery and thin corticated borders situated lingually, of size 9.7 × 10.8 × 11.4 mm, contacting distal root of 36 and showing fusions with the mesial root of 37, as well as, the root of the supernumerary tooth (Fig. 3a) and idiopathic osteosclerosis in relation to periapical region of 36 (left mandibular first molar), with well-defined patch-like irregular hyperdense mass, without hypodense periphery or corticated borders, of size 9.7 × 8 × 7.5 mm, situated apically to roots of 36 (Fig. 3b). The patient is currently under observation with no surgical intervention.

Surgery will be considered if the condition recurs during follow-up and surgical removal of complex odontoma and supernumerary tooth was planned under local anesthesia. A mucoperiosteal flap on the buccal surfaces of the mandibular left premolar and molar teeth was reflected. A window was made at the surgical site with bone-cutting burs and dense hard tissue exposed. The dense hard mass and supernumerary tooth were removed causing minimal harm to the erupting tooth. Macroscopic examination revealed a well-defined mass resembling a complex odontome and a supernumerary tooth (Fig. 4). The surgical flap was repositioned and sutured. Histological examination revealed enamel space, pulp, and cementum confirming it a complex odontome. A final diagnosis of complex odontoma was made based on the all above-mentioned findings. The patient was called after 7 days for suture removal. Post-operative follow-up was uneventful.

DISCUSSION

There are two main types of odontomas compound and complex. Compound odontomas exhibit orderly distributions of all dental tissues, resembling tooth-like structures, while complex odontomas feature disorganized distributions of dental tissues [6]. Compound

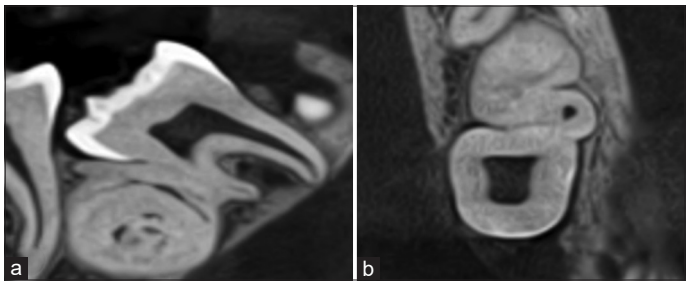

Figure 2: (a) Partially impacted tooth 37; (b) Buccally placed partially impacted supernumerary tooth associated with 37

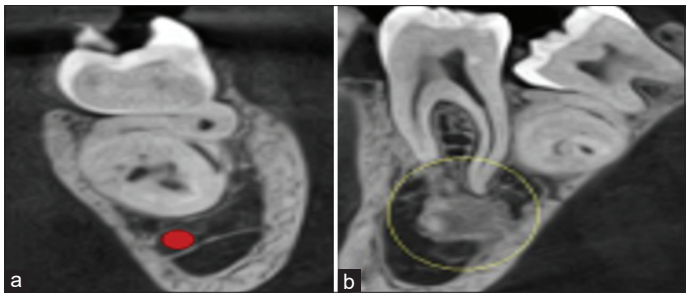

Figure 3: (a) Lingually placed complex odontome associated with 37 and supernumerary tooth; (b) Osteosclerosis in relation to periapical region of 36, with intact lamina dura

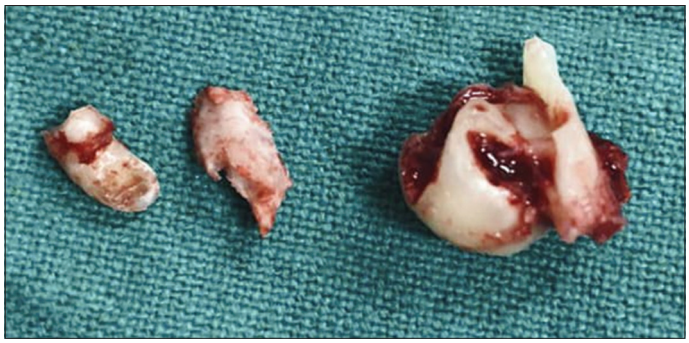

Figure 4: Retrieved complex odontoma and supernumerary tooth

odontomas further categorized into denticular, particulate, and denticuloparticulate varieties, each exhibiting distinct structural features [7]. Junquera *et al*. [8] subdivided odontome clinically into central (intraosseous), peripheral (extraosseous or soft tissue), and erupted types.

Radiographically, odontomas present as well-defined radiopacities surrounded by radiolucent halos in bone, typically bordered by a thin sclerotic line. Developmentally, three stages can be identified: Radiolucency, partial calcification, and tissue calcifications predominantly with an adjacent radiolucent halo [9].

The etiology of odontomas remains unclear, although local trauma, infection, and genetic factors are proposed causes. Characterized by slow, asymptomatic growth, odontomas are often incidentally discovered during routine radiological investigations in the second and third decades of life. Compound odontomas are commonly located in the areas of the upper incisors and canines, while complex odontomas are more prevalent in the posterior mandibular region [10].

A lot of literature supports the notion that odontomes are consistently the most prevalent odontogenic tumors found in the

Table 1: Previous studies of complex and compound ondontome

Authors	Years	Age at which Seen	Sex	Number	Type
Goldberg *et al*.[19]	1981	14 years	F	Solitary	Complex
Torreti and Carrel[20]	1983	12 years	F	Multiple	Compound
López-Areal *et al*.[21]	1992	12 years	F	Solitary	Compound
De Oliveira *et al*.[22]	2001	12 years	F	Multiple	Compound
Puneet *et al*.[23]	2004	14 years	M	Solitary	Complex
Amailuk and Grubor[16]	2008	15 years	M	Solitary	Erupted compound odontoma
Das *et al*.[24]	2008	11 years	F	Solitary	Compound composite odontoma
Shekar *et al*.[25]	2009	15 years	F	Solitary	Erupted compound odontome

oral cavity. These benign growths are typically asymptomatic and have developed sufficiently to produce enamel and dentin. Various sources have suggested that when the organization of odontogenic cells fails to progress to the normal stage of morphodifferentiation, enamel, and dentin tissues are deposited in an abnormal manner. Consequently, odontomes are widely regarded as developmental anomalies rather than true neoplasms [10,11]. The occurrence of odontomes is more common in permanent dentition than in primary teeth. Few case reports were mentioned in young patients in our case report although the incidence is higher in the second and third decades of life. In 70% of cases, odontomas lead to pathological changes in adjacent teeth, such as devitalization, malformation, malposition, aplasia, impaction, and delayed eruption [12].

Compound odontomes are most frequently found in the incisor and canine regions of the upper jaw, whereas, complex odontomes are commonly observed in the first and second molar region of the lower jaw. Interestingly, both types of odontomes tend to occur more often on the right side of the jaw than the left [13,14]. However, our case deviates from this pattern, as it was reported on the left side of the jaw with composite odontomes in the molar region, which is a unique observation. While the majority of odontomas are asymptomatic, as seen in our case, literature reports occasional symptoms such as pain, swelling, infection, and regional lymphadenopathies [10].

Radiologically, odontomes typically exhibit a distinct radiopacity encircled by a radiolucent halo within the bone, often bordered by a thin sclerotic line. Complex odontomas present with a less specific radiopacity, displaying irregular, single, or multiple disorganized masses [15-17]. Histological examination is essential for confirming odontomes since visual or manual procedures alone cannot diagnose them. Treatment typically involves surgical removal of odontoma by removing the connective tissue capsule that encircles it is the best approach to allow the eruption of the permanent tooth [18]. However, studies suggest that asymptomatic odontomes without clinical manifestations can remain in the bone for many years, and surgery can be postponed. Conversely, cases have been reported where dentigerous cysts and calcifying epithelial odontogenic cysts develop in intentionally left asymptomatic odontomes [10]. The histological analysis of our case confirmed the presence of complex odontomes and a supernumerary tooth. Table 1 shows a review of the literature on previous cases [16,19-25].

CONCLUSION

Pediatric patients who have experienced delayed eruption or have clinically missing teeth should undergo comprehensive examination through visual, manual, and radiographic assessments to identify odontomes as a potential cause. Odontomes, benign lesions, can be removed under local anesthesia during a 1-day surgical procedure. Detecting odontomas early enables clinicians to pursue simpler and more cost-effective treatment approaches.

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