



Odontome Odyssey: A Case Series on the Surgical Removal of Complex and Compound Odontomes

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ABSTRACT:

Background: Odontomes are the most common odontogenic tumors of developmental origin and are broadly classified into compound and complex types. While compound odontomes present as tooth-like structures, complex odontomes appear as irregular radiopaque masses. Although benign, they can interfere with tooth eruption, cause displacement, or present as incidental findings. Surgical removal remains the treatment of choice.

Case Presentation: This report presents two cases of odontomes managed surgically. The first case involved a **complex odontome** in the posterior mandible associated with delayed eruption and cortical expansion. The second case described a **compound odontome** in the anterior maxilla causing impaction of a permanent incisor. Both cases were diagnosed through clinical and radiographic examination and confirmed histopathologically.

Management and Outcome: Surgical enucleation was carried out under local anesthesia in both cases. Postoperative healing was uneventful, with preservation of adjacent teeth and satisfactory functional recovery. No recurrence was noted during follow-up.

Conclusion: These two cases highlight the varied clinical and radiographic presentations of compound and complex odontomes. Timely diagnosis and surgical intervention are crucial to prevent eruption disturbances and achieve optimal aesthetic and functional outcomes.

1. Introduction

Odontomes are the most common odontogenic tumors of the jaws, accounting for 22–67% of all odontogenic tumors. They are generally considered developmental anomalies or hamartomas rather than true neoplasms, since they represent an overgrowth of dental tissues including enamel, dentin, cementum, and pulp in an abnormal pattern. The World Health Organization (WHO) broadly classifies odontomes into two types: **compound odontomes** and **complex odontomes**.

A **compound odontome** is composed of multiple, small, tooth-like structures, often arranged in a rudimentary dentition pattern. These are most frequently seen in the **anterior maxilla**, especially in association with unerupted incisors. Clinically, they are often discovered due to delayed eruption of permanent teeth, retention of deciduous teeth, or malalignment. Radiographically, compound odontomes appear as well-defined radiopaque

masses consisting of multiple miniature tooth-like structures surrounded by a radiolucent halo.

In contrast, a **complex odontome** presents as an irregular, disorganized conglomerate of enamel and dentin without morphologic resemblance to normal teeth. These are more commonly located in the **posterior mandible**, often associated with impaction or cortical expansion. On radiographs, they appear as a dense, amorphous radiopaque mass with a thin surrounding radiolucent rim, making them distinguishable from compound odontomes. (1)

Odontomes typically present during the **mixed dentition period**, between the ages of 6 and 15 years, which coincides with the eruption of permanent teeth. During this stage, they frequently manifest clinically as failure of eruption, asymmetry, or are detected incidentally on radiographs taken for orthodontic or restorative purposes. Early identification in the mixed dentition is



essential, since untreated odontomes may disturb the eruption path of succedaneous teeth, cause impaction, malocclusion, or even cystic changes.

Surgical removal remains the gold standard of treatment, with favorable prognosis and rare recurrence. Histopathological confirmation is necessary to differentiate odontomes from other mixed radiopaque–radiolucent lesions such as cementoblastoma, ameloblastic fibro-odontoma, or calcifying odontogenic cyst.

The present case report describes two distinct clinical scenarios of odontomes occurring in the mixed dentition period: one involving a **complex odontome** in the posterior maxilla, and another involving a **compound odontome** in the anterior maxilla. Both cases emphasize the importance of early diagnosis, appropriate surgical management, and regular follow-up to restore normal eruption and occlusion. (2)

2. Case Report 1

Compound Odontome in Anterior Maxilla

A 13-year-old male patient reported to the Department of Pedodontics and Preventive Dentistry, Sree Balaji Dental College and Hospital, with the chief complaint of an unerupted upper right central incisor (11). **Clinical examination** revealed the absence of eruption of tooth 11. (Fig 1) An **intraoral periapical (IOPA) radiograph** of the region was obtained for further evaluation.(fig 2)

On **radiographic examination**, multiple tooth-like radiopaque structures were observed in relation to 11, along with the presence of an impacted permanent maxillary right central incisor. To determine the spatial relationship of these radiopaque structures, an additional radiograph using the **Same Lingual Opposite Buccal (SLOB) technique** was taken, which revealed that the tooth-like structures were located on the **buccal aspect**. (fig3) Based on the clinical and radiographic findings, a provisional diagnosis of a compound odontome was established.



Figure 1



Figure 2



Figure 3

The lesion was surgically excised under **local anesthesia**. An **intrasulcular incision** was placed on the palatal aspect extending from 12 to 22, and on the buccal aspect in relation to 11, followed by careful elevation of a **mucoperiosteal flap**. On flap reflection, multiple odontome-like structures were visualized. A total of **five denticle-like masses** were carefully enucleated using a **periosteal elevator**. The surgical site was debrided, and the flap was repositioned and sutured to achieve primary closure. (fig 4) The impacted permanent maxillary right central incisor (11) was preserved in situ for subsequent management with **orthodontic traction** to facilitate



guided eruption. An **immediate postoperative radiograph** was obtained to confirm complete removal of the odontome masses. (fig 5) The excised specimen was submitted for histopathological examination, which confirmed the diagnosis of a compound odontome.



Figure 4



Figure 5

tomography (CBCT) scan was performed. The CBCT revealed a radiopaque mass extending from the mesio-occlusal region to the disto-proximal aspect of 26, suggestive of an odontogenic lesion. (fig 9)

Based on the clinical and radiographic findings, a provisional diagnosis of a **complex odontome** was established



Figure 6



Figure 7

3. Case Report 2

Complex Odontome in Posterior Maxilla

A An 11-year-old male patient reported to the Department with a chief complaint of **pain and swelling in the upper left posterior region** for the past one month. The pain was described as **spontaneous in onset**, and the swelling had been present for one week, which subsided following medication.

On **intraoral examination**, retained root stumps of a deciduous tooth were observed in relation to 26, and the permanent maxillary left first molar (26) was clinically unerupted. (fig 6) Based on these clinical findings, a provisional diagnosis of **retained deciduous tooth associated with a dentoalveolar abscess** was made.(fig 7)

An **intraoral periapical (IOPA) radiograph** was taken to assess the position of 26, which revealed a well-defined **radiopaque mass** extending from the occlusal surface to the distal aspect of the unerupted 26. (fig 8) To further evaluate the **three-dimensional position and extent** of the lesion, a **cone beam computed**



Figure 8

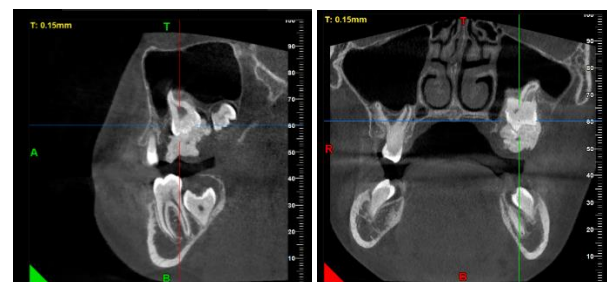


Figure 9



The odontome was surgically removed under **local anesthesia** without premedication. An **incision** was placed along the mesial aspect of the soft tissue distal to the clinically visible odontome mass, and a **mucoperiosteal flap** was elevated extending from the distal surface of 25 to the distal extent of the odontome. Upon flap reflection, the odontome was clearly visualized. Using a **periosteal elevator** and **Cryer's elevator/forceps**, the odontome mass was carefully enucleated. (fig 10) An **immediate postoperative radiograph** was obtained to confirm complete removal of the lesion. (fig 11)

Following excision, the impacted permanent maxillary left first molar (26) was exposed and became clinically visible. The surgical site was thoroughly debrided, and **simple interrupted sutures** were placed to secure the flap. (fig 12) As the odontome mass obstructing the eruption pathway of 26 had been removed, the tooth was left for **spontaneous eruption under a wait-and-watch protocol**.



Figure 10



Figure 11



Figure 12

4. Discussion

Odontomas—typically hamartomatous lesions of odontogenic origin—are classed as either **compound** or **complex**, depending on morphological organization. Compound odontomes form tooth-like denticles, while complex odontomes are conglomerate masses lacking recognizable dental architecture. Both types can interfere with eruption pathways, particularly during the mixed dentition period.

Impact on Tooth Eruption and Treatment Outcomes

Literature shows that **63% of odontomas** cause eruption disturbances when interfering with permanent tooth development. (3)

A prospective interventional study observed successful eruption in **90%** of cases following surgical removal of complex odontomes, three months of passive monitoring, and subsequent orthodontic traction when indicated. (4) Another retrospective analysis reported spontaneous eruption in about **75%** of impacted teeth once odontomas were excised, although success rates were lower for those associated with complex odontomes as compared to supernumerary teeth. (5)

- In **compound odontome case** (anterior maxilla, 11), preservation of the impacted 11 with planned orthodontic traction aligns well with documented protocols—**orthodontic-assisted eruption yields success rates of 85–90%** when root formation is active and space is adequate. (6)
- In **complex odontome case** (posterior maxilla, 26), a more cautious **wait-and-watch approach** is reasonable when the impaction is less angulated and root development is incomplete—reflecting up to



75% spontaneous eruption reported in similar lesions. (6)

Recurrence and Prognosis

Recurrence of odontomes following complete surgical enucleation is exceedingly rare. Conservative removal with meticulous excision of the fibrous capsule virtually eliminates regrowth risk. Literature suggests recurrence rates well under **5–10%**, and many series report **no recurrence** during one-year or longer follow-up. (7)

Timing and Multidisciplinary Approach

Early detection and timely intervention are key. The concept of a **“golden time”** to remove odontomas before root apex closure is critical: prompt removal enhances eruption potential and reduces the need for prolonged orthodontic traction. Indeed, coordinated surgical–orthodontic management has consistently shown superior outcomes relative to delayed or single-modality approaches. (3)

- **For Case 1 (compound odontome, tooth 11):** Early diagnosis and immediate surgical removal allowed preservation of the impacted tooth and subsequent guided eruption—reflecting favorable outcomes and high likelihood of full alignment.
- **For Case 2 (complex odontome, tooth 26):** Removal of the obstructing lesion without immediate traction was appropriate given the stage of development. A wait-and-watch approach is justified, with spontaneous eruption expected in a significant proportion of similar cases

5. Conclusion

Odontomes, although benign, can significantly affect dental development during the mixed dentition period by delaying or preventing the eruption of permanent teeth. Early recognition through clinical examination and appropriate radiographic investigations, including CBCT when indicated, is essential for accurate diagnosis and treatment planning.

The present cases illustrate two distinct presentations: a compound odontome in the anterior maxilla obstructing the eruption of the permanent central incisor, and a complex odontome in the posterior maxilla hindering eruption of the first permanent molar. Both lesions were surgically removed under local anesthesia, with the

impacted teeth preserved for further management. Orthodontic traction was planned in the anterior case, whereas a wait-and-watch approach for spontaneous eruption was adopted in the posterior case.

These reports emphasize that timely surgical intervention not only eliminates the obstruction but also enables the eruption of impacted teeth, maintaining both esthetics and function. Complete excision offers an excellent prognosis, with minimal risk of recurrence. A coordinated, multidisciplinary approach involving pediatric dentists, oral surgeons, and orthodontists is often required to achieve the best outcomes. Odontomes should therefore always be considered in the differential diagnosis of delayed tooth eruption in mixed dentition.

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