

Developmental Anomaly to Esthetic Rehabilitation: Surgical Management of Compound Odontoma Associated with an Impacted successor in an Adult Patient

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Abstract

Introduction: Compound odontoma is a developmental odontogenic hamartoma characterized by the formation of multiple miniature tooth-like structures.^{1,4} These lesions are commonly identified during childhood because they interfere with the eruption of permanent teeth. However, they may occasionally remain undetected until adulthood and present with aesthetic or occlusal concerns. This report describes the diagnosis and management of a compound odontoma associated with an impacted central incisor in an adult female.

Case Presentation: A 28-year-old female presented with the complaint of irregular upper front teeth caused by a mismatched tooth size that had persisted for nearly ten years. Clinical examination revealed retained primary tooth without any associated pain or swelling. Panoramic radiography demonstrated multiple tooth-like radiopaque structures along with an impacted permanent tooth in the anterior maxilla. Surgical removal of the lesion and the impacted supernumerary tooth was carried out successfully under local anaesthesia. Healing was uneventful, and the patient was subsequently referred for orthodontic correction.

Conclusion: Although compound odontomas are usually diagnosed in younger individuals, they may remain asymptomatic until adulthood. Careful clinical examination combined with appropriate radiographic investigation is essential for accurate diagnosis. Surgical removal followed by orthodontic rehabilitation provides predictable functional and esthetic outcomes.

Case report

Odontomas are developmental anomalies originating from odontogenic tissues and are regarded as hamartomas rather than true neoplasms. They are composed of varying proportions of enamel, dentin, cementum, and pulp tissue. Based on their morphological appearance, odontomas are classified as either compound or complex. Compound odontomas consist of multiple small tooth-like structures known as denticles, whereas complex odontomas are composed of an irregular calcified mass that bears no resemblance to normal teeth.^{5,9,3}

The exact cause of odontoma formation remains uncertain. Various factors including disturbances during tooth development, local trauma, infection, hereditary influences, and genetic mutations have been suggested. Most compound odontomas occur in the anterior maxilla and are frequently discovered during the investigation of delayed eruption of permanent incisors.² In adults, these lesions are less commonly encountered because they are usually detected and treated during childhood. When diagnosis is delayed, patients may present with malocclusion, crowding, retained deciduous teeth, or esthetic concerns.⁷ The present report describes an unusual adult presentation of a compound odontoma associated with an impacted permanent tooth that manifested primarily as anterior malocclusion.

Case Report

A 28-year-old female reported with the chief complaint of irregularly aligned upper front teeth resulting from a mismatched tooth size for approximately ten years and unacceptable from an esthetic standpoint and desired correction of the malocclusion to improve her smile.

The patient's medical history was unremarkable with no relevant findings of any systemic illness, previous maxillofacial trauma, or surgical procedures. Extraoral examination did not reveal facial asymmetry, swelling, or tenderness. Mouth opening was normal, and no cervical lymphadenopathy was detected.

Intraoral examination revealed malalignment of the maxillary anterior teeth with the presence of a small anomalous tooth in the premaxillary region contributing to the occlusal discrepancy. The surrounding gingival tissues appeared healthy, and there was no evidence of inflammation or sinus formation.

A panoramic radiograph was obtained to determine the underlying cause of the malocclusion. Radiographic examination revealed several well-defined tooth-like radiopaque structures clustered in the anterior maxilla. An impacted permanent central incisor was also identified superior to these calcified structures suggestive of a compound odontoma associated with an impacted tooth. (figure 1)

Based on the clinical and radiographic findings, a provisional diagnosis of **compound odontoma associated with an impacted permanent central incisor due to retained primary tooth** was established.

Surgical Management

After explaining the treatment plan and obtaining written informed consent, surgical removal of the lesion was performed under local anesthesia.

A crevicular incision was placed in the anterior maxillary region, and a full-thickness mucoperiosteal flap was carefully reflected to expose the underlying bone. Following conservative removal of the cortical bone, multiple denticles characteristic of a compound odontoma became visible. wherein few were attached to the soft tissues around, as opposed to classical odontomas enclosed in bone completely, Each one was carefully separated and removed to avoid unnecessary trauma to the surrounding structures. (Figure 2)

Further exploration exposed the impacted permanent tooth with malformed root making it difficult to orthodontically achieve the desired result, which was removed atraumatically. The surgical site was inspected thoroughly to ensure complete removal of all calcified structures. The cavity was irrigated with sterile saline solution, and the flap was repositioned and secured using interrupted silk sutures.

The excised specimen consisted of several miniature tooth-like structures of varying sizes together with an impacted supernumerary tooth, which was consistent with the clinical diagnosis. (Figure 3)

Postoperative Course

The postoperative period was uneventful. The patient was prescribed analgesics and advised regarding oral hygiene maintenance and dietary precautions. Clinical review after one week demonstrated satisfactory healing without evidence of infection or wound dehiscence. Sutures were removed, and the patient reported complete relief from postoperative discomfort.

Follow-up and Implant Rehabilitation

The patient was reviewed periodically to evaluate uneventful course, with satisfactory soft tissue healing and preservation of the alveolar ridge. No postoperative complications such as infection, wound dehiscence, or sensory disturbances were observed. (Figure 4)

At the **3-month follow-up**, clinical and radiographic evaluation confirmed adequate bone healing at the surgical site. Considering the patient's esthetic demands and the favorable ridge dimensions, implant-supported rehabilitation was planned. A dental implant was placed in the maxillary right central incisor region (tooth #11) under local anesthesia using a conventional two-stage surgical protocol. Primary implant stability was achieved, and the implant was placed in a prosthetically driven position (Figure 5). After **osseointegration**, clinical examination demonstrated healthy peri-implant soft tissues without signs of inflammation or mobility. Intraoral periapical radiography confirmed satisfactory osseointegration with no evidence of peri-implant radiolucency or crestal bone loss (Figure 6) at 7 months from initial presentation of patient. Following confirmation the implant was restored with a definitive implant-supported crown. The final prosthesis provided excellent esthetic integration with the adjacent natural dentition, restored anterior function, and significantly improved the patient's smile and self-confidence (Figure 7).

At the **2-month follow-up** from complete rehabilitation, the patient remained asymptomatic with stable peri-implant tissues, satisfactory oral function, and an excellent esthetic outcome. No biological or mechanical complications were observed during the follow-up period.

Discussion

Compound odontomas represent the most common developmental odontogenic lesions and are generally discovered during routine radiographic examination in children. Their occurrence in adults is relatively uncommon because most lesions become symptomatic through delayed eruption of permanent teeth during the mixed dentition period.

Radiographically, the diagnosis of compound odontoma is usually straightforward because of the presence of multiple miniature tooth-like structures surrounded by a narrow radiolucent halo. Panoramic radiography remains an effective initial diagnostic tool, although cone-beam computed tomography may be useful when detailed three-dimensional assessment is required.

Complete surgical excision remains the definitive treatment.³ Careful removal of all denticles and associated supernumerary teeth minimizes the risk of recurrence and facilitates subsequent orthodontic management when indicated. Long-term prognosis following complete excision is excellent, with recurrence being exceedingly rare.^{8,10}

Conclusion

This case highlights the importance of radiographic evaluation in adults presenting with unexplained anterior malocclusion or abnormal tooth morphology. Early diagnosis could have allowed intervention at

a younger age and potentially reduced the complexity of subsequent orthodontic treatment. The present case demonstrates the importance of comprehensive treatment planning extending beyond surgical removal of the pathology. In adult patients, spontaneous replacement of a missing anterior tooth is not possible after removal of developmental anomalies such as odontomas and mesiodens. Implant-supported rehabilitation provides a predictable and conservative solution for restoring function and esthetics once adequate bone healing has occurred. In the present case, coexistence of a compound odontoma within bone and have caused residual resorption to encase few denticles in soft tissue, with an impacted successor further contributed to the patient's malocclusion.

Delayed implant placement three months after surgery allowed sufficient healing of the surgical site, while a four-month osseointegration period resulted in excellent primary and secondary stability. The successful restoration achieved after eight months highlights the value of an interdisciplinary approach involving oral and maxillofacial surgery, implantology, prosthodontics, and restorative dentistry

Figure Legends



Figure 1. Preoperative panoramic radiograph demonstrating multiple tooth-like radiopaque structures consistent with a compound odontoma associated with an impacted mesiodens.



Figure 2. Intraoperative photographs showing surgical exposure and removal of the odontoma and impacted mesiodens.



Figure 3. Excised specimen showing multiple denticles and the impacted mesiodens following surgical removal.



Figure 4. Clinical photograph showing uneventful healing at end of one month after surgery.



Figure 5. Clinical photograph showing implant placement in the maxillary right central incisor region three months after surgical removal of the lesion.



Figure 6. Intraoral periapical radiograph obtained four months after implant placement demonstrating successful osseointegration and stable peri-implant bone levels.



Figure 7. Clinical photographs showing definitive implant-supported crown placement and satisfactory esthetic outcome.

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