

Surgical Excision of Compound Odontome and Subsequent Orthodontic Extrusion of Impacted Central Incisor: A Case Report

Prosanta Kumar Mondal¹, Somen Roychowdhury¹, Kallol Saha², Mandira Ghosh³, Nabarun Chakraborty³, Debanti Giri^{4*}

¹Department of Pedodontics, Dr. R Ahmed Dental College and Hospital, Kolkata, West Bengal, India.

²Department of Endodontics, Dr. R Ahmed Dental College and Hospital, Kolkata, West Bengal, India.

³Department of Prosthodontics, Dr. R Ahmed Dental College and Hospital, Kolkata, West Bengal, India.

⁴Department of Dentistry, OMDR, Nil Ratan Sircar Medical College and Hospital, Kolkata, West Bengal, India.

Abstract

Odontome, the most prevalent odontogenic tumors, are typically asymptomatic and found during routine radiography tests. Frequently, it could obstruct teeth coming through. The example of a 10-year-old girl with a compound odontome that prevented the eruption of the left maxillary permanent central incisor is the focus of this paper. The radiograph revealed radio-opaque calcified masses, which were surgically removed to aid in the eruption of the tooth.

Keywords: Excision, Impacted incisor, Odontome.

INTRODUCTION

Odontomas are hamartomas of aborted tooth formation which accounts for 22% of the odontogenic tumors. According to the 2017 World Health Organization classification, odontomas are classified into two categories: compound and complex odontomas based on varied tumor mass compositions.^[1] The majority of odontomes are asymptomatic and seldom cause swelling, pain, suppuration, bony expansion, and displacement of teeth.^[2,3] The eruption of permanent teeth is hampered by compound odontomas, which are relatively smaller in size and frequently develop in the front maxillary region. They are typically found between the permanent tooth and alveolar crest. The approach to management of an odontoma with an impacted tooth entails, elimination of the lesion, subsequently, a pathway is made for the impacted permanent tooth to emerge.^[4-6] According to some studies, the best course of therapy involved surgically removing the odontoma and then applying orthodontic traction to help the impacted tooth erupt.^[6-8]

The case of an unerupted left maxillary permanent central incisor caused by a compound odontome in a young patient is discussed in this article, along with the clinical presentation, radiographic findings, and procedure for surgical excision of the odontome.

CASE REPORT

A 12-year-old girl reported to the department of pedodontia with a chief complaint of missing tooth in her upper front jaw. Intraoral examination disclosed missing left maxillary central incisor [Figure 1]. The medical and dental histories were insignificant.

On closer examination, it was discovered that the labial side of the unerupted tooth was swollen. In the same area, a solid nodule with a diameter of around 2 cm was felt. The eruption of the left maxillary permanent central incisor was being obstructed by radiopaque structures, as indicated by intraoral periapical and panoramic radiographs (Figures 2 and 3). Clinical and radiological data led to the tentative diagnosis of odontome in this patient. The strategy for treatment involved surgically removing the odontome and bonding a lingual button to the unerupted tooth to apply orthodontic traction as needed.

Address for correspondence: Dr. Debanti Giri,
Department of Dentistry, OMDR, Nil Ratan Sircar Medical College and
Hospital, Kolkata, West Bengal, India.
Email: dr.debantigiri@gmail.com

Received: Mar. 23, 2023; **Accepted:** Apr. 03, 2023; **Published:** Jun. 02, 2023

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Mondal PK, Roychowdhury S, Saha K, Ghosh M, Chakraborty N, Giri D. Surgical Excision of Compound Odontome and Subsequent Orthodontic Extrusion of Impacted Central Incisor: A Case Report. J Res Adv Dent 2023;14(4):1-4.

Access this article online

Website:
www.jrad.co.in

DOI:
<https://doi.org/10.53064/jrad.2022.14.4.363>

Before surgery initial orthodontic alignment of the rest of the teeth was done using MBT brackets. The patient underwent surgical excision of the odontoma, under local anesthesia. From the labial surface of the right maxillary permanent lateral



Figure 1: Intraoral view of the patient showing unerupted left maxillary permanent central incisor with a slight bulge



Figure 2: Intraoral periapical radiograph showing multilocular radiopacity enveloping the unerupted incisor



Figure 3: Pre-operative panoramic radiograph showing multilocular radiopacity

incisor to the left maxillary permanent canine, a full-thickness mucoperiosteal flap was reflected. The calcified masses were disclosed after the layer of bone covering them was removed. The removal of the four calcified structures was done sparing the tooth underneath (Figure 4). After performing the curettage, povidone iodine solution and normal saline (0.9%) were used to irrigate the region. After hemostasis, a lingual button with a gold chain was attached to the labial surface of the impacted tooth on the left maxillary permanent central incisor (Figure 5). The flap was repositioned and then closed. A compound odontome was generally suggested by the clinicopathological association. Two month follow-up showed emergence of the tooth in the oral cavity with the help of orthodontic extrusion (Figure 6). Within 6 months, the tooth came into occlusion (Figure 7).

DISCUSSION

Dentists frequently deal with the issue of tooth impaction in clinical settings, which is described as an instance where a tooth fails to erupt into a normal functional position by the expected times.^[9] Numerous local etiologic variables have been identified for tooth impaction. These include dentigerous cysts, odontomes, odontogenic tumors, ankylosis, and



Figure 4: Excised calcified masses

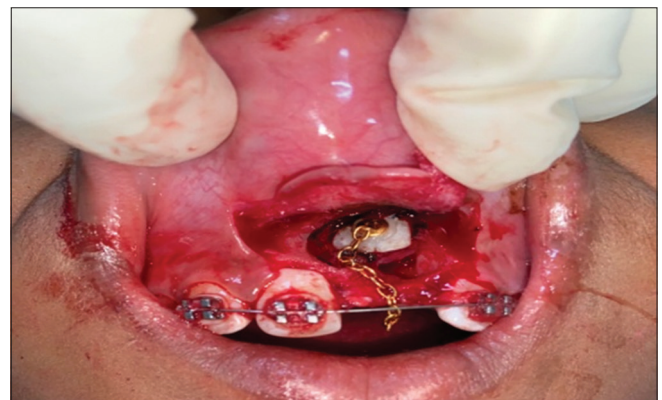


Figure 5: Intraoperative picture showing lingual button attached to the impacted tooth



Figure 6: Two months post-operative follow-up



Figure 7: Six months post-operative follow-up

trauma.^[10,11] Odontoma is one of the most frequent etiological factors among these. By definition, an odontogenic tumor is one that is described as a “odontome.” In a general sense, it refers to a growth where the epithelial and mesenchymal components both demonstrate full differentiation, leading to the functioning ameloblasts and odontoblasts that produce enamel and dentin, respectively. Due to the odontogenic cells’ organization failing to attain the expected state of morphodifferentiation, these enamel and dentin were often laid down in an aberrant pattern.^[12] The word “odontome” was originally used by Paul Broca in 1867. According to the WHO classification,^[13] odontomes can be categorized into three groups:

1. Complex odontome: When the calcified dental tissues are simply arranged in an irregular mass bearing no morphologic similarity to rudimentary teeth
2. Compound odontome: Composed of all odontogenic tissues in an orderly pattern that results in many tooth-like structures, but without morphologic resemblance to healthy teeth
3. Ameloblastic fibro-odontome: Consists of varying amounts of calcified dental tissue and dental papilla-like tissue, the later component resembling an ameloblastic fibroma. One option is the ameloblastic fibro-odontome as an immature precursor of complex odontome.

Most of the odontomes develop from extraneous odontogenic epithelial cells. These buds have the potential to split into multiple particles, each of which could grow to produce a variety of irregular, tightly spaced teeth or tooth-like structures. When the buds form without this unusual split and are composed of haphazard clumps of dental tissues, they have the potential to grow into complex odontomes. However, it can be challenging to distinguish between the two types because the change from one type to another is sometimes accompanied by various degrees of histodifferentiation, morphodifferentiation, or both.^[14]

The treatment for odontoma includes removal of the lesion irrespective of the dentition. If odontomes are removed beforehand without harming the tooth underneath, it may be possible for the impacted teeth to naturally erupt or to do so after receiving orthodontic traction.^[2,9,10] While removing odontomas, underlying affected teeth may occasionally also be removed.^[15]

CONCLUSION

All pediatric patients who exhibit clinical signs of delayed permanent tooth eruption or temporary tooth displacement, with or without a history of prior dental trauma, should undergo radiographic testing. Early detection of dental problems enables the use of a simpler and less expensive treatment plan and ensures that permanent teeth that could otherwise become impacted will erupt normally.

REFERENCES

1. El-Naggar AK, Chan JK, Grandis JR, Takata T, Slootweg P. WHO Classification of Head and Neck Tumours. 4th ed. Lyon: IARC; 2017.
2. Kaugars GE, Miller ME, Abbey LM. Odontomas. Oral Surg Oral Med Oral Pathol 1989;67:172-6.
3. Stajcic ZZ. Odontoma associated with a primary tooth. J Pedodont 1998;12:415-20.
4. Serra-Serra G, Berini-Aytés L, Gay-Escoda C. Erupted odontomas: A report of three cases and review of the literature. Med Oral Patol Oral Cir Bucal 2009;14:E299-303.
5. Kämmerer PW, Schneider D, Schiegnitz E, Schneider S, Walter C, Frerich B, *et al.* Clinical parameter of odontoma with special emphasis on treatment of impacted teeth-a retrospective multicentre study and literature review. Clin Oral Invest 2016;20:1827-35.
6. Khan N, Shrivastava N, Shrivastava TV, Samadi FM. An unusual case of compound odontome associated with maxillary impacted central incisor. Natl J Maxillofac Surg 2014;5:192-4.
7. De Oliveira BH, Campos V, Marçal S. Compound odontoma--diagnosis and treatment: Three case reports. Pediatr Dent 2001;23:151-7.
8. Das UM, Viswanath D, Azher U. A compound composite odontoma associated with unerupted permanent incisor: A case report. Int J Clin Pediatr Dent 2009;2:50-5.
9. Motokawa W, Braham RL, Morris ME, Tanaka M. Surgical exposure and orthodontic alignment of an unerupted primary maxillary second molar impacted by an odontoma and a dentigerous cyst: A case report. Quintessence Int 1990;21:159-62.
10. Cozza P, Gatto R, Marino A, Mucedero M. Case report: Two nasal floor compound odontomas associated with impacted maxillary incisor. Eur J Paediatr Dent 2003;4:99-102.
11. Lukinmaa PL, Heitanen J, Laitinen JM, Malmström M. Mandibular dentinoma. J Oral Maxillofac Surg 1987;45:60-4.
12. Shafer WG, Hine MK, Levy BM, editors. A Text Book of Oral Pathology. 4th ed. Philadelphia, PA: WB Saunders; 1993. p. 308-12.

13. Kramer IR, Pindborg JJ, Shear M. WHO International Histological Classification of Tumours. Berlin: Springer; 1992. p. 16-21.
14. Kokich VG, Mathews DP. Surgical and orthodontic management of impacted teeth. Dent Clin North Am 1993;37:181-204.
15. Torreti EF, Carrel R. Compound odontoma in a twelve-year-old girl. ASDC J Dent Child 1983;50:376-8.