

# A Review of Eight Cases of Odontoma in Children in a Northern Nigeria Hospital

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**Citation:** Malami AB, Okolo CC, Oguchi CO, Aborisade AO, Jibril M, Adeyemo YI. A review of eight cases of odontoma in children in a Northern Nigeria hospital. *J Paediatr Dent Res Pract* 2024; 5(1): :24-29. <https://dx.doi.org/10.4314/jpdrp.v5i1.4>

## ABSTRACT

**Background:** Odontoma is a tumour-like mass resulting from the disarray in the differentiation of dental tissues.

**Objective:** To describe the pattern of presentation of odontomas at a paediatric dentistry clinic in northern Nigeria over 24 months and discuss the comprehensive management of two cases.

**Methods:** A prospective cohort study was conducted, recruiting paediatric patients suspected of having an odontoma over 24 months. Clinical records were reviewed, and data on demographics, clinical presentation, medical history, diagnostic investigations, and follow-up were collected. Two cases of odontoma were comprehensively managed and presented.

**Results:** Eight cases of odontoma were reported, with no gender predilection. The lesions were observed in the first and second decades of life; they affected the anterior maxillae. Compound odontomas were more prevalent than complex variants. The most common effect was the impaction of primary or permanent teeth. Two cases, involving an 11-year-old male and an 11-year-old female, were managed through surgical enucleation and orthodontic treatment.

**Conclusion:** Although rare, odontoma is a common cause of unerupted or displaced teeth in children. Regular comprehensive oral examinations, including radiographic screening, are crucial for early diagnosis and management of these lesions.

**Keywords:** Odontoma, paediatric dentistry, dental anomalies, impacted teeth, Northern Nigeria.

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*Received: 2-April, 2024*

*Revision: 31 May, 2024*

*Accepted: 7 June, 2024*

## INTRODUCTION

Odontoma is a tumour-like mass that occurs due to disarray in the differentiation of dental tissues.<sup>1</sup> They have been referred to as hamartomas because they contain varying degrees of dental elements.<sup>1</sup> The exact aetiology of an odontoma is not fully understood. However, inflammatory processes, infections, trauma to the primary teeth and some hereditary disorders have been implicated.<sup>2</sup>

The recent World Health Organization (WHO) classification of odontogenic tumours recognises odontoma as "a hamartomatous odontogenic lesion with compound and complex types"; they are further categorised as a type of benign mixed epithelial and mesenchymal tumour.<sup>1</sup> The condition is commonly diagnosed in the second to third decades of life, with a fairly balanced gender predilection.<sup>3</sup>

Though odontomas can be found in any site of the jaws, compound odontomas are typically seen in the maxillary anterior regions. In contrast, complex odontomas are common in posterior mandibular teeth-bearing areas.<sup>4</sup> Odontomas are typically asymptomatic and rarely present with pain, bony expansion or suppuration but can prevent tooth eruption.<sup>2</sup> While some odontomas may erupt into the oral cavity (peripheral odontoma), they are usually intraosseous (central odontoma).<sup>5</sup>

Diagnosis of odontoma can be based on one or more visual examinations, radiographic findings and histological features.<sup>6</sup> Surgical excision is the treatment of choice for peripheral odontoma, while enucleation and curettage are the treatment options for central (intraosseous) odontomas.<sup>6</sup> The teeth in the region of the odontoma may be affected by its presence. In such cases, surgical intervention becomes necessary.<sup>7</sup> Recurrence is uncommon, especially in isolated (non-syndromic) cases.<sup>7</sup>

There is currently no data for the distribution of odontoma among children in Nigeria, although it is regarded as rare and as the most common odontogenic tumour in children.<sup>8-10</sup> This study aims to describe the pattern of presentation of the condition at a paediatric dentistry clinic in northern Nigeria over 24 months and discuss the comprehensive management of two cases seen at the Paediatric dentistry clinic of Aminu Kano Teaching Hospital.

## METHODOLOGY

This study employed a prospective cohort design. Patients suspected of having an odontoma were recruited over 24 months. Demographic information, including age, sex, and duration of any associated

swelling or asymmetry, was recorded for all participants. A detailed clinical evaluation was performed, documenting the precise location of the odontoma within the jaws and identifying the specific tooth or teeth affected using the International Dental Federation (FDI) two-digit notation system. The nature of the odontoma's effect on the dentition was categorised as causing impaction, ectopic eruption, or displacement of the involved tooth/teeth. Patients and caregivers were also questioned regarding any history of trauma to the affected region.

All available radiographic imaging modalities were reviewed to aid in diagnosing and localising the odontomas. Additionally, histological reports from biopsy specimens were analysed to confirm the definitive diagnosis of an odontoma and characterise the specific histological subtype.

Details of the surgical procedure performed for odontoma removal were documented, including the specific approach and extent of surgery. Postoperatively, patients were followed clinically and radiographically at six months to assess treatment outcomes, resolution of clinical symptoms, and any adverse events or complications.

## ETHICAL CONSIDERATIONS:

The Research Ethics Board of the Aminu Kano Teaching Hospital, reference number AKTH/MAC/SUB/12A/P-3/VI/3769, approved this study.

## RESULTS

### Case 1

A. A. is an 11-year-old male who presented with a 4-year history of unerupted upper front teeth. There was no prior history of trauma, pain or suppuration, developmental anomalies or positive family history. On intraoral examination, there was a swelling in the alveolar mucosa between teeth 11 and 22. The overlying mucosa was intact but slightly erythematous. The swelling measures about 2cm in its widest diameter with a bony hard consistency, non-tender and no differential warmth. Hard tissue examination revealed a missing tooth 21. An impression of an impacted upper left central incisor secondary to maxillary swelling (? cause) was made. The orthopantomogram showed multiple concentric radiopaque masses surrounded by an area of radiolucency, consistent with a compound odontoma. The outline of a tooth with more than half of its root well-formed was seen as superior to it. The patient was then planned for surgical enucleation of a compound odontoma.



Figure 1: Clinical photograph of A.A. on presentation



Figure 2: Pre-operative orthopantomogram of A.A.



Figure 3: Surgical exposure and enucleation for A.A.



Figure 4: Enucleated denticles from A.A.

**Case 2**

H.A., an 11-year-old female, presented with a retained tooth 51. There was a history of trauma to the same tooth 8 years previously; however, no treatment was sought then. On examination, the

retained tooth was associated with a crown fracture involving enamel and dentine. In addition, there was a missing tooth 11, labially displaced 63 and palatally displaced 53.

The orthopantomogram showed multiple calcific masses with a radiolucent periphery between the resorbed root of tooth 51 and the crown of unerupted tooth 11. The features were consistent with a compound odontoma.

Following a full-thickness mucoperiosteal flap surgery under local anaesthesia, surgical enucleation and extraction of tooth 51 were performed. The masses (small tooth-like structures) were sent for histological examination. Six months after the surgical enucleation, there was no sign of eruption of the impacted tooth hence patient was commenced on orthodontic treatment. The goal of the treatment was to apply orthodontic traction to the impacted tooth until it erupts into occlusion.



Figure 5: Clinical photograph of H.A. on presentation



Figure 6 A: Orthopantomogram of H.A. showing impacted teeth 11 and 23

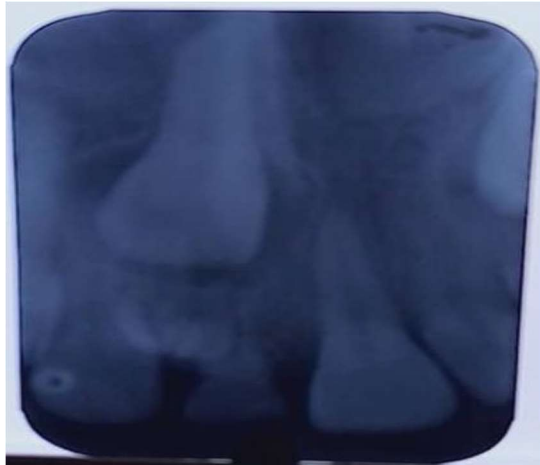


Figure 6 B: periapical radiograph of H.A. showing impacted teeth 11 and 23



Figure 7: Surgical enucleation and exposure of impacted tooth 11



Figure 8: Clinical photograph of H.A. undergoing orthodontic traction of impacted tooth 11 6-months post-op.



Figure 9: 6 months post-op Orthopantomogram of H.A.

The summary of findings is as follows:

S/N	ID No.	Gender	Age	Affected tooth	Jaw	Displacement	Trauma	Histological diagnosis	Treatment	Follow-up
1	A.A.	M	11	21	Maxilla	Unerupted	No	Compound odontoma	Surgical enucleation	Orthodontic treatment commenced, space regaining and possible spontaneous eruption of tooth 21
2	H.A.	F	11	11	Maxilla	Unerupted	Yes	Compound odontoma	Surgical enucleation	Sub-clinical tooth movement of tooth 11; commenced on orthodontic traction
3	A.T.	M	9	11	Maxilla	Unerupted	No	Compound odontoma	Surgical enucleation	Spontaneous eruption of tooth 11
4	I.L.S.	M	6	61	Maxilla	Unerupted	No	Compound odontoma	Surgical enucleation	Spontaneous eruption of tooth 21
5	A.S.	M	9	21	Maxilla	Unerupted	Yes	Compound odontoma	Surgical enucleation	Spontaneous eruption of tooth 21
6	F.A.Y.	F	13	22	Maxilla	Ectopic	Yes	Complex odontoma	Surgical enucleation	Spontaneous eruption and removable appliance therapy on tooth 22
7	H.G.	F	12	21	Maxilla	Unerupted	No	Compound odontoma	Surgical enucleation	Soft tissue impaction: surgical crown exposure of tooth 21
8	U.T.	F	15	21	Maxilla	Ectopic	No	Compound odontoma	Surgical enucleation	Tooth 21 planned for orthodontic traction

### DISCUSSION

In this study, only eight cases of odontoma were reported out of the 6,561 children who visited the

clinic for dental treatment during the study period, giving a prevalence of 0.12%. This low prevalence supports the assumption that odontomas are rare

oral lesions, which agrees with other Nigerian studies.<sup>8-12</sup> This contrasts the findings in Europe, North Jordan, Japan and Israel, where odontoma is reported as the most frequently seen OT in children.<sup>13-16</sup> The risk of underreporting of odontomas exists because the lesions are often asymptomatic, and in developing countries like Nigeria with poor dental service utilisation, they are less likely to prompt a clinical visit unless accompanied by pain or other complications.<sup>17</sup> Additionally, the diagnosis of odontomas may have been missed without routine radiographic screening, as these lesions can remain undetected without appropriate imaging investigations.

In the current study, the lesions were observed in the first and second decades of life, coinciding with periods of dental eruption of primary and permanent teeth, respectively. Although some authors have reported finding them in the second and third decades, they are usually incidental findings when investigating the cause of an unerupted tooth.<sup>8-12</sup> Early detection and treatment are associated with the best prognosis, including the spontaneous eruption of the succedaneous teeth with little or no need for orthodontic correction.<sup>18</sup> There is an unresolved debate regarding the sex predilection for these lesions. While different authors have reported either male or female predilection,<sup>19, 20</sup> this study aligns with the findings of Ajayi *et al.*, and Nelson *et al.*, who observed no gender predilection.<sup>10, 21</sup>

The findings from this study agree with previous Nigerian reports that compound odontomas occur more frequently than complex variants. Most of these lesions occur in the anterior maxillae.<sup>8-12</sup> Posterior teeth generally erupt several years later than their anterior counterparts, and disturbances in their eruption may only be observed later in life, which may account for the absence of findings in the posterior jaws. Odontoma was associated with both primary and permanent teeth impaction in this study, supporting previous researchers' findings that odontoma could occur in primary dentition in addition to permanent dentition, albeit less frequently.<sup>18</sup> Odontomas impede spontaneous tooth eruption and displace teeth from their normal eruptive paths.<sup>18</sup> Therefore, odontomas should be suspected in delayed or failed tooth eruption and tooth displacement. It is not a coincidence that most of the compound odontoma cases in this study are found at an age relatively earlier than the complex odontoma case. This finding was supported by many researchers like Amado *et al.* and Hisatomi *et al.*<sup>22, 23</sup>

The primary treatment modality for all cases in this study was surgical enucleation of the odontoma, which is in keeping with the standard recommended treatment.<sup>10</sup> Although follow-up outcomes varied from spontaneous eruption to requiring additional interventions like orthodontic treatment, no recurrence or complications were recorded within the period of follow-up, which also supports the observation of previous studies.<sup>6,7,20</sup>

The varied treatment outcomes are potentially influenced by factors including age, size, and lesion location. Eruption potential decreases with advancing age, necessitating additional interventions such as orthodontic treatment in older children. The odontoma's size and location could also impact the degree of displacement or impaction, consequently affecting the likelihood of spontaneous eruption or the need for further intervention. Conversely, early detection and timely intervention increase the chances of spontaneous eruption, as the affected tooth has less time to become severely displaced or impacted. Hence, routine radiographic screening is advocated, especially during mixed dentition stages, to enable early detection and timely intervention before significant dental complications arise.

#### CONCLUSION

Although odontomas are rare oral lesions, they commonly cause unerupted or displaced primary or permanent teeth. This study's primary treatment approach was surgical enucleation, and follow-up showed no recurrence or complications. This highlights the importance of standard treatment modalities and multidisciplinary management involving oral surgeons, orthodontists, and paediatric dentists working together to achieve optimal functional and aesthetic outcomes for children.

#### Financial Support

Nil

#### Conflict of Interest

None Declared

#### REFERENCES

1. Soluk-Tekkesin M, Wright JM. The World Health Organization classification of odontogenic lesions: a summary of the changes of the 2022 (5th) edition. *Turkish Journal of Pathology*. 2022;38(2):168.
2. Preoteasa CT, Preoteasa E. Compound odontoma-morphology, clinical findings and treatment. Case report. *Rom J Morphol Embryol*. 2018;59(3):997-1000.

3. Thompson LD. Odontoma. *Ear, Nose & Throat Journal*. 2021;100(5):536S-7S
4. Raval N, Mehta D, Vachhrajani K, Nimavat A. Erupted odontoma: a case report. *J Clin Diagn Res*. 2014;8(7):10-11.
5. Junquera L, de Vicente JC, Roig P, Olay S, Rodríguez-Recio O. Odontoma intraóseo erupcionado: Una infrecuente patología Intraosseus odontoma erupted into the oral cavity: An unusual pathology. *pathology*. 2005; 10:248-51.
6. Tekkesin MS, Pehlivan S, Olgac V, Aksakalli N, Alatli C. Clinical and histopathological investigation of odontomas: review of the literature and presentation of 160 cases. *Journal of Oral and Maxillofacial Surgery*. 2012;70(6):1358-61.
7. Troeltzsch M, Liedtke J, Troeltzsch V, Frankenberger R, Steiner T, Troeltzsch M. Odontoma-associated tooth impaction: accurate diagnosis with simple methods? Case report and literature review. *Journal of Oral and Maxillofacial Surgery*. 2012;70(10): e516-20.
8. Adebayo ET, Ajike SO, Adekeye EO. Tumours and tumour-like lesions of the oral and perioral structures of Nigerian children. *International journal of oral and maxillofacial surgery*. 2001;30(3):205-8.
9. Lawal AO, Adisa AO, Popoola BO. Odontogenic tumours in children and adolescents: a review of forty-eight cases. *Annals of Ibadan postgraduate medicine*. 2013;11(1):7-11.
10. Ajayi OF, Ladeinde AL, Adeyemo WL, Ogunlewe MO. Odontogenic tumors in Nigerian children and adolescents-a retrospective study of 92 cases. *World journal of surgical oncology*. 2004; 2:1-5.
11. Ladeinde AL, Ajayi OF, Ogunlewe MO, Adeyemo WL, Arotiba GT, Bamgbose BO, Akinwande JA. Odontogenic tumors: a review of 319 cases in a Nigerian teaching hospital. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 2005;99(2):191-5.
12. Aregbesola B, Soyele O, Effiom O, Gbotolorun O, Taiwo O, Amole I. Odontogenic tumours in Nigeria: A multicentre study of 582 cases and review of the literature. *Medicina oral, patologia oral y cirugía bucal*. 2018(6):e761.
13. Al-Khateeb T, Hamasha AA, Almasri NM. Oral and maxillofacial tumours in north Jordanian children and adolescents: a retrospective analysis over 10 years. *International journal of oral and maxillofacial surgery*. 2003;32(1):78-83.
14. Tanaka N, Murata A, Yamaguchi A, Kohama G. Clinical features and management of oral and maxillofacial tumors in children. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 1999;88(1):11-5.
15. Sato M, Tanaka N, Sato T, Amagasa T. Oral and maxillofacial tumours in children: a review. *British journal of oral and maxillofacial Surgery*. 1997;35(2):92-5.
16. Ulmansky M, Lustmann J, Balkin N. Tumors and tumor-like lesions of the oral cavity and related structures in Israeli children. *International journal of oral and maxillofacial surgery*. 1999;28(4):291-4.
17. Aborisade A, Okolo C, Aminu R, Moghalu H, Aminu N, Bamgbose B. Pattern of dental services utilization among adolescents and adults in Kano, Northern Nigeria. *Pyramid Journal of Medicine*. 2024;7(1).
18. Isola G, Ciccio M, Fiorillo L, Matarese G. Association between odontoma and impacted teeth. *Journal of Craniofacial Surgery*. 2017;28(3):755-8.
19. Mazur M, Di Giorgio G, Ndokaj A, Jedliński M, Corridore D, Marasca B, Salucci A, Polimeni A, Ottolenghi L, Bossù M, Guerra F. Characteristics, diagnosis and treatment of compound odontoma associated with impacted teeth. *Children*. 2022;9(10):1509.
20. Garcia-Consuegra L, Junquera LM, Albertos JM, Rodriguez o. Odontomas. A clinical-histological and retrospective epidemiological study of 46 cases. *Med Oral*. 2000;5(5):367-372.
21. Nelson BL, Thompson LD. Compound odontoma. *Head and neck pathology*. 2010; 4:290-1.
22. Amado CS, Gargallo AJ, Berini AL, Gay EC. Review of 61 cases of odontoma. Presentation of an erupted complex odontoma. *Med Oral*. 2003;8(5):366-73.
23. Hisatomi M, Asaumi JI, Konouchi H, Honda Y, Wakasa T, Kishi K. A case of complex odontoma associated with an impacted lower deciduous second molar and analysis of the 107 odontomas. *Oral Dis*. 2002;8(2):100-5