Unerupted maxillary central incisors: a case report and review of the literature

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Abstract

Missing or unerupted central incisors in a child can have a major impact on oro-facial aesthetics. This may be a source of great psychological concern to child and parents by virtue of its prominent anterior location. Non-eruption could be due to hereditary and local environmental factors. Surgical and/or orthodontic intervention is often required in the management of the condition especially after six months since the eruption of the contra lateral tooth. In this report, a nine year old boy presented with unerupted maxillary right central and lateral incisors. The management involved clinical, radiographic and orthodontic assessment. A diagnosis of hyperplastic gingivae preventing eruption of the incisors was made. Removal of the obstruction and exposure of the crowns of the teeth resulted in their spontaneous eruption and subsequent alignment in the maxillary arch.
It is concluded that teeth which have not erupted six months after their normal eruption time be examined radiographically. Early removal of causative factors leads to better prognosis This mixed dentition anomaly of tooth eruption was conservatively managed by paedodontists.

Key words: Unerupted maxillary incisors, management

Introduction

The problem of delayed eruption or tooth impaction is often encountered in clinical dental practice. The prevalence of impacted teeth is between 5.6 to 18.8% in the general population [1-5]. Tooth impaction can be defined as a tooth that is prevented from erupting into its usual place in the dental arch [2,5]. In the permanent dentition, the teeth most often involved are the third molars, , maxillary canines, premolars and maxillary central incisors.
Studies on the prevalence of delayed eruption of permanent maxillary teeth is sparse. However, studies in the Western world have reported a prevalence of 1.5- 2.6% for maxillary canines [6-8]. Similar studies in Nigeria have also reported a prevalence of 2.0 to 2.1% [9,10] . However, recent hospital based study in Nigeria on unerupted maxillary central incisors (UMCI) reported a prevalence of 1.7%, with the maxillary right central incisor being the most frequently involved,39.0% [11].
Delayed eruption of maxillary incisors poses a problem which requires monitoring or intervention especially when eruption of the contra lateral teeth occurred 6 months previously, or if the opposing teeth erupted few months previously, or as long as 12 months previously.

Aetiology

The aetiology of UMCI has been associated with local or environmental and hereditary factors [12-17]. The more common local factors include mucosal barrier, malposition of tooth germ, impaction, dilacerations, trauma, ankylosis and hormonal factors [2,5,11].
The hereditary causes include generalized retarded eruption, abnormal tooth-tissue ratio, syndromes (cleido-cranial dysostosis), gingival fibromatosis, cleft palate and presence of odontomes or supernumerary teeth [2,5,11]. Reports in the scientific literature on UMCI, have shown a high association with isolated odontomes, 20.5%[11] and supernumerary teeth, 47% [18].

Presentation

This condition is most often associated with the maxillary permanent incisors in the mixed dentition stage[3,18,19], posing clinical and aesthetic problems for the maxillary anterior teeth [3,18]. The maxillary central incisor is most often affected than the lateral [5,11], and often of a unilateral presentation. However, it is not unusual to have incisors in both quadrants being involved at the same time [5,11]. An unusual bulge in the labial sulcus, delayed eruption of the tooth and the unaesthetic appearance becomes a source of concern for the patient/guardian.

Complications and Management

The unerupted maxillary central incisor is unaesthetic because of the bulge and edentulous space in the anterior region. Associated problems especially if untreated include development of abnormal or delayed tooth eruption, ectopic eruption, cystic changes, development of malocclusion, problems with speech and mastication (functional) and the psychological effects of poor aesthetics or quality of oral health (QoI) [18-20].
A number of techniques have been suggested for treating the unerupted maxillary central incisor [12,16,21-23]. The main

consideration will be the decision on whether to retain or surgically remove the obstructions, exposure of the teeth affected, application of orthodontic traction, need for space creation and maintenance, diagnosis and treatment of associated systemic conditions [3,16,17].

Choice of treatment will depend on presentation, clinical and radiographic assessment The options are:

1. If there is no physical obstruction and the tooth is in a good position to erupt, it should be kept under observation for possibility of spontaneous eruption. Surgical exposure with orthodontic traction may be used if tooth does not erupt especially if root development is more than two-thirds.
2. Removal of the obstruction to allow for eruption of the tooth. About 75% of incisors treated with this method erupt spontaneously and out of these, 55% align spontaneously within about 6 months [3,11]
3. Removal of obstruction and the tooth. The tooth is then replanted or transplanted with a fixed or removable prosthesis.
4. Removal of obstruction and affected tooth followed by orthodontic space closure,
5. Extraction of adjacent tooth/teeth to create space.
6. Expansion of arches.

Case report

A healthy looking 9 year old boy presented at the Child Dental Health clinic of the Lagos University Teaching Hospital with his mother for complaints associated with delayed eruption of the maxillary right permanent central and lateral incisors. They were most concerned about the bulge related to the unerupted teeth and the resultant unaesthetic appearance. There was a past history of trauma to the maxillary primary central and lateral incisors. He did not present any significant medical history. Oral examination showed clinically healthy oral mucosa, mixed dentition with no carious lesions. There were two bulges along the alveolar ridge related to where the maxillary central and lateral incisor teeth would have erupted **(Figure 1).** The maxillary left incisors had erupted twelve months previously.

Figure 1. Preoperative clinical photograph showing the bulge over the unerupted maxillary right central and lateral incisors

Figure 2. Postoperative clinical photograph showing the surgically exposed crowns of the maxillary right central and lateral incisors.

A periapical radiograph showed normal development of the incisors, with no obstruction in the path of eruption. They were well aligned within the soft tissue and in good positions to erupt. Orthodontic evaluation was carried out concurrently, so as to assess the need for orthodontic intervention. A diagnosis of unerupted maxillary right central and lateral incisors was made.

A surgical exposure was done labially, whereby the hyperplastic gingiva was removed, and by a minimalist approach two small elliptical windows were created to expose the central and lateral incisors (Figure 2). The attached gingiva was preserved with a non eugenol based dressing. Post surgical instruction was given. Patient was placed on Amoxicillin capsules 250 mg 8 hourly for 5 days, Paracetamol tablets 500mg 8hourly for 3 days. A chlorhexidine mouth wash was recommended for use 24 hours after the surgery. The patient was reviewed after 24 hours, 1 week and 6months by which time the teeth were erupted and well aligned in the maxillary anterior segment.

Discussion

Management of the unerupted maxillary central incisor depends on the presentation [11,12,15,21]. A thorough assessment of the aetiology, clinical situation and definite radiographic investigation will determine the specific treatment option.

There was no associated systemic or significant local condition in this patient, hence it was treated conservatively in the Paedodontic Unit . A surgical window created in the hyperplastic gingivae to expose the crowns of the incisors resulted in their accelerated eruption. Reports in the literature showed that approximately 70-78% of UMCI erupted spontaneously following the removal of obstruction such as fibrous tissue, odontome or a supernumerary tooth [11,12,19]. The position of the impacted incisors, that is the distance from the alveolar crest, rotation, angulations and inclination will further determine the level of surgical procedures and need for comprehensive orthodontic treatment [1-3,5,11,13-16,18]. Similar studies in the scientific literature have also reported that late developing permanent lateral incisors, severe caries or fusion of the primary teeth may be associated with

eruption disturbances of maxillary permanent incisors [22]. Fusion of the primary teeth is most frequent in the anterior region. When a fused tooth appears in the primary dentition, an anomaly is found in 40-50% of the permanent successors [24].

The timing of the intervention has been suggested as being important. A number of studies in the literature have reported that the younger the patient, (with approximately half to two-thirds of root formed) the quicker the tooth erupts [13-16,24],whereas some reports suggest that age of intervention has no effect [6,9,19]. These differences may be explained by the short mean time differences of about 3 months in eruption, inadequate sample sizes and unmatched age groups.

The treatment of UMCI may often require additional adjunctive procedures to improve aesthetics [11,12,15,17,25]. Depending on the assessment after eruption of the tooth, one of the following procedures may be indicated; gingival surgery to recontour attachment levels between incisors and to correct relapse which may accompany initial displacement or tooth rotation and the use of a retainer to maintain the occlusion [12,15,17,25]. The UMCI can have major impact on dental and facial aesthetics if untreated. Though very few studies have reported functional problems from missing incisors, speech difficulties have been recorded in some cases [17,18]. Missing maxillary incisors may affect self esteem and general social interaction hence early diagnosis and intervention is recommended [12,25] The present case highlights the importance and benefits of early diagnosis and appropriate treatment of UMCI prior to root closure. It also describes one of the minor irregularities often seen in the developing dentition which can be conservatively managed by paedodontists.

The position of the impacted incisors determines the treatment option that is, the distance from the alveolar crest, if it is within the alveolar bone and the level of rotation, angulation and inclination if the crown is within the soft tissue.

Conclusion

Teeth which have not erupted in six months after their normal eruption time be examined radiographically. A better prognosis can be achieved through early removal of causative factors.

The duty of the oral healthcare professional to his patient involves not only the oral health but also general psychological well being in order to achieve maximum benefits from oral health care.

References

1. Ojo MA, Umweni AA. Eruption disturbances of maxillary central incisors. Nig Qt J Hosp Med 1997; 7:338-341.
2. Kokich VG, Mathews DP. Surgical and orthodontic management of impacted teeth. Dent Clin North Am 1993; 37:181-204.
3. Betts A, Camilleri GE. A review of 47 cases of unerupted maxillary incisors Int J Paed Dent 1999; 9:285-292.
4. Magnusson H. Saving impacted teeth. J Clin Orthod 1990;24:246-249.
5. Beeching BW. Developmental anomalies. Part 2. Unerupted, impacted and misplaced teeth. Dent Update. 1979; 4:335-339.
6. Bass TB. Observations of the misplaced upper canine tooth. Dent Practit 1967; 18:25-33.
7. Rayne J. The unerupted maxillary canine. Dent Practit 1969; 19: 194-204.
8. Mckay C. The unerupted maxillary canine. An assessment of the role of surgery in 2,500 treated cases. Br Dent J 1976; 145: 207-210.
9. da Costa OO, Isiekwe MC. The incidence of unerupted maxillary canine in a Nigerian Orthodontic population. Nig Qt Hosp Med 1998; 8: 87-90.
10. Isiekwe MC, Logan WW. An analysis of the first 100 orthodontic patients treated in the Lagos University Teaching Hospital. Nig Dent J 1980; 1:1-6.
11. Sanu OO, Temisanre OT. A review of 39 cases of unerupted maxillary incisors. Nig J Clin Pract 2002; 6:60-64.
12. Suri L, Gagari E, Vastardis A. Delayed tooth eruption: pathogenesis diagnosis and treatment. A literature review. Am J Orthod Dentofacial Orthop 2004;126:432-445.
13. Goho C. Delayed eruption due to overlying fibrous connective tissue. J Dent Child 1987; 54:359-360.
14. Garvey MT, Barry HJ, Blake M. Supernumerary teeth- An overview of classification, diagnosis and management. J Can Dent Assoc 1999; 65: 612-616.
15 Utomi IL. The management of unerupted maxillary central incisor using the closed eruption technique. A case report. Nig J Hlth Biomed Sci 2004; 3: 112-115.
16. Brin I, Zilberman Y, Azaz B. The unerupted maxillary central incisor, review of its etiology and treatment. J Dent Child 1982;49:352-356.
17. Ajayi EO, Ajayi YO. A case report of compound odontome associated with an unerupted maxillary central incisor. Nig Qt J Hosp Med 2006; 16:128-131.
18. Crawford LB. Impacted maxillary central incisor in mixed dentition treatment. Am J Orthod Dentofacial Orthop 1997; 112:1-7.
19. Munns D, Surrey AHA. Unerupted incisors. Br Orthod 1981;8:39-42.
20. Becker A. Early treatment for impacted maxillary incisor. Am J Orthod Dentofacial Orthop 2002; 121: 586-587.
21. Kurol J. Early treatment of tooth eruption disturbances. Am J Orthod Dentofacial Orthop 2002;121:588-591.
22. Kobayashi H, Taguchi Y, Noda T. Eruption disturbances of maxillary permanent central incisors associated with anomalous adjacent permanent lateral incisors. Int J Paed Dent 1999; 9:277-284.
23. Mc Donald F. Management of unerupted maxillary incisors: Clinical Guidelines Summaries 5th edition. Faculty of Dental Surgery, Royal College of Surgeons, England. Accessed www.rcseng.uk/dental/fds
24. Mason C, Azam N, Holt RD, Rule DC. A retrospective study of upper maxillary incisor associated with supernumerary teeth. Br J Oral Maxillofac Surg 2000; 38: 62-65.
25. Jones JN, Husain J. Management of the unerupted incisor. Dent Update 1996; 23: 36-39.