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A Case of Non-Syndromic Idiopathic Multiple Missing and Impacted Teeth in A Young Adult

Harishithaa Kuttuva[1], Shivayogi Charantimath[2], Arvind Shetti[3], Vaishali Keluskar[4], Pavithra G[5]

[1,5]Post graduate student, Department of Oral medicine and Radiology, KLE VK Institute of dental sciences, Belagavi.
[2]Reader, Department of Oral medicine and Radiology, KLE VK Institute of dental sciences, Belagavi.
[3]Professor, Department of Oral medicine and Radiology, KLE VK Institute of dental sciences, Belagavi.
[4]Professor and HOD Department of Oral medicine and Radiology, KLE VK Institute of dental sciences, Belagavi.

Abstract

BACKGROUND: Multiple missing teeth in a young adult with no underlying cause, poses a challenge to arrive at a diagnosis and proceed with the treatment. These kinds of cases are extremely rare and a multidisciplinary approach should be tailored to provide significant results. A 27-year-old male reported to OPD of a dental department with a history of multiple missing teeth in both the upper and lower arches. There were no systemic or genetic abnormalities noted in the patient. Clinical examination revealed a missing permanent teeth and radiographic evaluation revealed un-erupted and impacted teeth. Patient was then subjected to blood investigations to exclude metabolic disorders and all the parameters were normal. The final diagnosis was idiopathic multiple impacted and missing teeth—a rare condition with no identifiable cause. The strategy for intervention includes surgical exposure, orthodontic guidance and prosthetic rehabilitation.

Keywords: Idiopathic tooth impaction, Impacted teeth, Dental anomalies.

INTRODUCTION:

Tooth eruption is the course of action by which newly formed teeth move between their germs within the jaw to position them inside the occlusal plane. (1) Impacted teeth are commonly associated with a problem in space, ectopic position of tooth buds, crowding, or syndromes. (1) Still, in circumstances where there is nothing other than multiple missing or impacted teeth and no known syndrome, trauma, or cause, the condition is often labelled idiopathic (2). These cases are extremely rare and pose a diagnostic and therapeutic challenge. The following case report provides further insights with regard to idiopathic multiple impacted teeth in a young adult.

PATIENT INFORMATION AND CLINICAL FINDINGS:

A 27-year-old male reported to the dental hospital seeking advice for missing teeth in both upper and lower arches. The patient had difficulty with mastication and speech. There was no relevant medical history, history of trauma, and no positive family for similar findings. Also, no previous significant dental history

or any major childhood illnesses or delayed milestones.

General physical examination, revealed a young adult of normal built and no obvious skeletal deformities or other stigmas. On intraoral examination, there were multiple missing teeth in the maxillary and mandibular arches. The remaining teeth were well developed but spacing was noted. Retained deciduous teeth were still present, but no evidence of permanent teeth. The surrounding oral mucosa appeared healthy, with no signs of infection, inflammation, or other pathology. Examination of occlusion revealed a compromised bite due to the missing teeth.

The patient expressed concerns regarding aesthetics and difficulty chewing certain foods. The patient's speech was affected due to the missing anterior teeth, which typically aid in pronunciation.

Radiographic investigation was done following the clinical examination. Orthopantomogram (OPG) revealed several unerupted permanent teeth, including molars, canines, and premolars, impacted within the dental arches. These impacted teeth were at different stages of development, with some fully formed and others partially developed, indicating interrupted eruption.

Blood tests, including serum calcium (9.9 mg/dl), phosphorous(3.6mg/dl), alkaline phosphatase (104 U/L) and parathyroid hormone levels(44.5pg/ml), were normal, ruling out metabolic disorders such as hypoparathyroidism. Based on clinical examination, radiographic findings, and the absence of any systemic, metabolic, or syndromic conditions, diagnosis of idiopathic multiple impacted and missing teeth was established.

Figure1: Patient with normal profile, shows no abnormality.

Figure 2: Intraoral images showing multiple missing teeth in maxillary and mandibular arches.

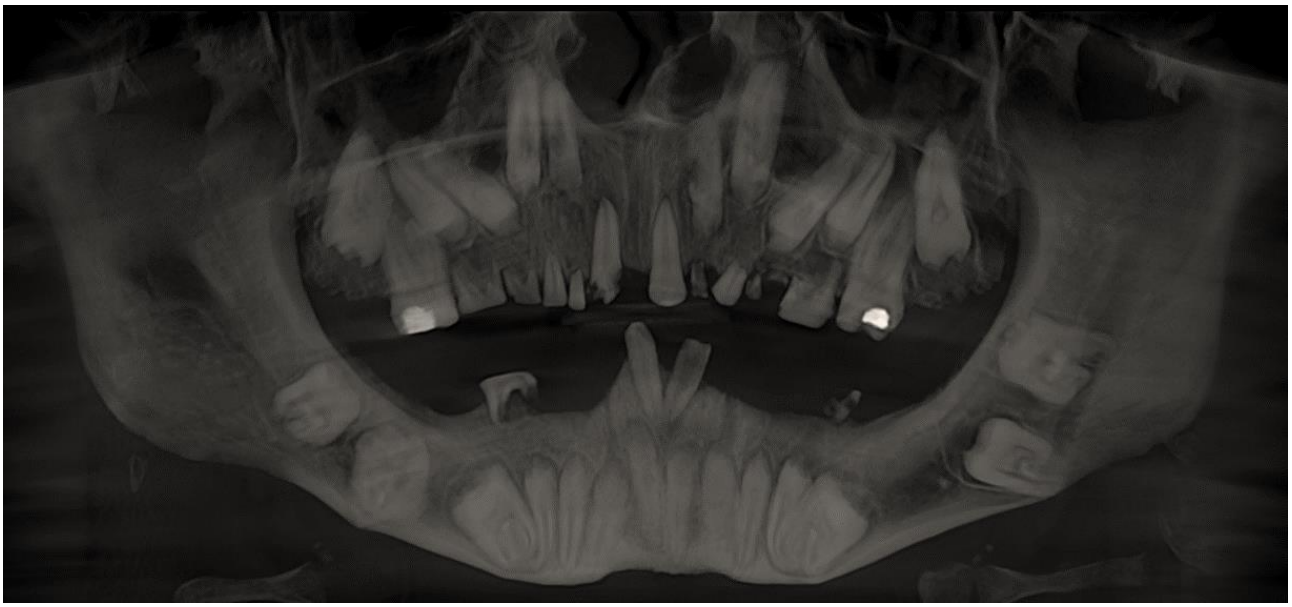

Figure 3: OPG image reveals multiple impacted teeth in the dental arches.

The treatment plan includes:

Initially the patient was counselled to undergo treatment for removable dentures.

1. **Surgical Exposure & Orthodontic Traction:** Selected impacted teeth with potential for eruption would be surgically exposed and guided into occlusion using orthodontic appliances.
2. **Selective Extractions:** Deeply impacted or mal positioned teeth with poor prognosis should be extracted.
3. **Prosthetic Rehabilitation:** Dental implants and prostheses can be planned for missing teeth to restore function and aesthetics. Regular assessments should be scheduled to monitor eruption, alignment, and overall oral health [13,15].

DISCUSSION

A case of multiple missing or impacted teeth, without a syndromic or metabolic cause, is rare and presents significant diagnostic and treatment challenges. Most cases of missing or impacted teeth are typically associated with syndromes such as cleidocranial dysplasia, Down syndrome, or hypoparathyroidism, as well as genetic conditions affecting skeletal or dental development [9,12]. Hence this case was diagnosed as Idiopathic multiple impacted and missing teeth, due to no known identifiable cause.

Tooth eruption is a complex physiological process in which the teeth move from their developmental position within the alveolar bone to their final functional position in the oral cavity. This process is typically orchestrated by various genetic and molecular signals [7,8]. When this process is disrupted, as in cases of tooth impaction, it may be due to multiple factors such as inadequate space in the dental arch, abnormal positioning of tooth buds, or overlying soft tissue or bone that prevents eruption. [10,16]

In syndromic conditions, such as cleidocranial dysplasia, impacted teeth are often seen due to defective bone remodelling or underdeveloped jaws. In this case, the patient presented with sufficient arch space and no crowding, henceforth ruling out the typical case of impaction, due to mechanical obstruction. The pathophysiology of idiopathic tooth impaction remains poorly understood. Molecules such as colony-stimulating factor-1 (CSF-1), nuclear factor-kappa B (NFB), and transforming growth factor-beta (TGF-b1) are involved in osteoclastic and osteoblastic activities which are crucial for the eruption pathway. A disruption in the function of these signalling molecules could impede the tooth's ability to erupt through the alveolar bone [8,10].

Unfortunately, genetic testing was not conducted in this case due to the lack of a significant family history. In this case, the patient presented with multiple missing teeth and several impacted teeth, indicating a disruption of the normal tooth development and eruption process. Congenitally missing teeth, or tooth agenesis, can occur due to genetic mutations affecting the tooth development pathways.

The literature documents cases of non-syndromic oligodontia, a condition characterized by the absence of six or more permanent teeth, which is inherited in an autosomal dominant pattern. The absence of a family history of similar dental anomalies in this patient makes this case atypical and further points toward an idiopathic cause. Impaction of permanent teeth is commonly seen in cases of crowding or misalignment of the dental arches. Retention may be related to ankylosis, which is probably due to a localised alteration of the periodontal ligament, but it has not yet been determined whether impairment of the eruptive mechanism occurs before or after ankylosis [11]. However, in this patient, the arches were well-formed with no signs of dental crowding. This rules out mechanical obstruction or positional anomalies as the primary cause of impaction [14]. The absence of clavicular abnormalities or other skeletal deformities, further supports the idiopathic nature of the condition. [3-6] The absence of key functional teeth such as incisors and molars significantly compromise the patient's ability to chew food. The incisors, play a crucial role in the pronunciation of certain sounds, and this patient exhibited slight speech impairment and could worsen without timely intervention. In addition to functional concerns, the aesthetic impact of missing anterior teeth is profound. Missing teeth, particularly in the anterior region, can lead to social stigma, self-esteem issues, and psychosocial stress [10,12]. The primary goals of treatment are to restore function, improve aesthetics and prevent future complications such as infections, cysts [7-10].

CONCLUSION:

Idiopathic cases of multiple impacted and missing teeth are rare but must be diagnosed early to prevent long-term functional and aesthetic complications. This case highlights the importance of a comprehensive clinical and radiographic evaluation in patients presenting with missing teeth, as early detection promotes effective management and improved outcomes. Advances in genetic testing may help identify specific mutations or defects in the signalling pathways responsible for tooth development and eruption. Moreover, prospective studies focusing on optimal treatment modalities, the exact timing of surgical intervention and the use of orthodontics, could help improve the management of patients with multiple impacted teeth.

Ethics approval and consent to participate

Informed consent was obtained from the patient.

Competing interests

The authors declare that they have no conflicts of interest.

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