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From Absence To Excess: Exploring Anomalies In Tooth Number– A Clinical Review

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ABSTRACT

This article explores the various anomalies in tooth number, including hypodontia, hyperdontia, Supernumery teeth and Impacted teeth. Hypodontia involves the congenital absence of one or more teeth, while hyperdontia refers to the presence of extra teeth. These conditions can lead to various complications, including functional impairments, aesthetic concerns, and increased susceptibility to dental issues such as caries and periodontal disease. The etiology of tooth number anomalies is multifactorial, encompassing genetic factors, environmental influences, and developmental disturbances. This article reviews the types of anomalies related to tooth number, their clinical implications, and current diagnostic approaches. It also discusses available treatment strategies, emphasizing the importance of early detection and intervention to optimize oral health outcomes and improve the quality of life for affected individuals.

Key Words: Anomaly, Disturbances, Missing, Supernumery

INTRODUCTION

The human dentition is a finely tuned system, typically comprising a specific number of teeth that are essential for effective function and aesthetics. However, anomalies in tooth number can occur, leading to conditions such as hypodontia (the absence of one or more teeth) and hyperdontia (the presence of extra teeth). These anomalies can significantly impact oral health, affecting bite alignment, oral hygiene, and overall quality of life. The causes of tooth number abnormalities can be multifactorial, ranging from genetic predispositions to environmental influences. Understanding the implications of these conditions is crucial for timely diagnosis and intervention. This article explores the various types of tooth number anomalies, their underlying causes, clinical manifestations, and the latest treatment options, highlighting the importance of early recognition in maintaining optimal dental health.

ANODONTIA

Anodontia refers to the complete lack of teeth and is considered a rare form of dental agenesis. This genetic disorder is characterized by the congenital absence of all primary or permanent teeth and is categorized into two types: the total absence of teeth or the absence of some teeth. It is often associated with a group of skin and nerve syndromes known as ectodermal dysplasias.(1)

- Hypodontia describes the condition where one to six permanent teeth are missing.
- Oligodontia refers to the absence of more than six permanent teeth, though not all.

Anodontia signifies the congenital absence of teeth, which can affect some or all teeth, while partial anodontia (or hypodontia) involves either the primary and permanent dentitions or solely the permanent dentition. The WNT10A gene is regarded as the primary gene associated with hypodontia and oligodontia. These genetic factors play a role in the development of these conditions. If anodontia is present in either the maternal or paternal lineage, the likelihood of it being passed down increases. (2)

CLINICAL CONSIDERATIONS

- The primary indication of anodontia is when a child has not developed any permanent teeth by the age of 12.
- Absence of primary teeth by 12 to 13 months
- Symptoms linked to anodontia may include alopecia, absence of sweat glands, cleft lip or palate, and missing fingernails.
- These symptoms are commonly observed because anodontia is often associated with ectodermal dysplasia. (1)

TREATMENT AND MANAGEMENT

Anodontia is a genetic disorder that cannot be prevented. However, missing teeth can be replaced through prosthetic options such as dental implants or dentures. These treatments can effectively enhance the aesthetic appearance of patients with anodontia. Research indicates that the risk of implant failure is significantly greater in individuals under 18 years old, but there are compelling reasons to consider this treatment approach for older patients. Overall, implant-prostheses offer considerable functional, aesthetic, and psychological benefits compared to conventional dentures for these individuals. (3)

Fig :1 opg showing partial anodontia

(Image source adopted from: Shilpa P H et al)

Fig :2 opg showing complete anodontia with absence of permanent tooth bud

(Image source adopted from: Chaitra Ravishankar Telgi et al)

SUPERNUMERY TEETH

Supernumerary teeth refer to any additional teeth that develop beyond the normal dentition, a condition also known as "hyperdontia." These extra teeth can be linked to various syndromes, including cleidocranial dysplasia, Gardner's syndrome, Ehlers–Danlos syndrome, and Fabry–Anderson syndrome. In these instances, supernumerary teeth often present in various forms. However, they can also occur in individuals without any syndromic conditions, appearing as single, double, or multiple teeth, and can be either unilateral or bilateral. [4] The exact etiology of supernumerary teeth remains unclear, and several theories have been suggested. The most widely accepted explanation is that these teeth arise due to the horizontal proliferation or increased activity of the dental lamina. [5]

CLINICAL CONSIDERATIONS

- Primosch et al. categorized supernumerary teeth into eumorphic (supplemental) and dysmorphic (rudimentary) types.
- The eumorphic type (invisible) closely resembles normal teeth in structure and size, while the dysmorphic type features abnormal shape and size.
- Based on their structure, supernumerary teeth can be classified into several morphological types: conical, tuberculate, supplemental teeth, and odontoma. The conical variation (31–75%) is the most commonly observed in permanent dentition.
- Mesiodens refers to a tooth located between the upper central incisors, typically exhibiting a conical or peg shape. It can present as a single tooth or multiple teeth, occurring unilaterally or bilaterally, and may be either fully erupted or impacted.
- Peg lateral is a peg-shaped anomaly affecting lateral incisors and is one of the most prevalent forms of localized microdontia that alters the shape of permanent maxillary lateral incisors. This condition is characterized by a reduction in the mesiodistal width at the incisal edge compared to the cervical region. Such shape anomalies can lead to anterior diastemas, which pose significant functional and aesthetic concerns for affected individuals. [6]
- The tuberculate variation (12–28%) is larger than the conical type and consists of one or more tubercles. Its development is often delayed compared to conical teeth, frequently resulting in incomplete apexogenesis or the absence of roots. This type rarely occurs in isolation and is typically found in the palatal region of the upper incisors.
- Parapremolar refers to a supernumerary tooth situated in the premolar area, with the supplemental variation being the most common form.
- Paramolar is a supernumerary molar tooth, typically in a vestigial form and small size, located buccally or palatally/lingually in the molar region, often in the interproximal space between the upper second and third molars.

- Distomolar, also known as a fourth molar, is located distally or distolingually to the wisdom teeth. It generally presents in a vestigial form and small size, rarely hindering or delaying the eruption of other teeth. (7)

TREATMENT AND MANAGEMENT

- The standard treatment involves the extraction of the supernumerary tooth.
- Repositioning the tooth within the dental arch may also be considered as an alternative option.
- For supernumerary teeth situated in the upper anterior region, surgery is advised between the ages of eight and ten, once the root development of the incisors is complete.
- Rao and Chidzonga suggest that extraction should only take place when the roots of adjacent teeth are fully formed. (5)

Fig :3 Image showing upper anterior supernumery teeth (tuberculate type)

(Image source adopted from: Arun Kumar et al)

IMPACTED TEETH

An impacted tooth is one that remains completely or partially unerupted and is positioned against another tooth, bone, or soft tissue, making further eruption unlikely. These teeth are categorized based on their anatomical position. Impacted teeth can lead to periodontal disease and dental caries in adjacent teeth, resulting in pain, discomfort, and a loss of function.(8) The contemporary diet lacks substantial chewing effort, leading to reduced growth stimulation of the jaws, which contributes to the occurrence of impacted and unerupted teeth in modern humans. It has been proposed that the primary underlying cause of aberrant or impacted teeth in adults from Western Europe, Great Britain, Ireland, the USA, and Canada is linked to the artificial feeding of infants, childhood habits, crossbreeding, and an increased consumption of sugary foods among children and adolescents. This results in jaw discrepancies that lead to tooth impaction. (9)

CLINICAL CONSIDERATIONS

- Impacted teeth are generally painless.
- However, when infections occur in the surrounding tissues, intense pain can result from pressure on the inferior alveolar nerve, particularly in cases of deeply positioned lower third molar impactions.
- The presence of impacted teeth makes the adjacent erupted teeth more susceptible to periodontal disease and the development of caries.
- There may be difficulty in opening and closing the mouth with mandibular molar impaction.
- Pericoronitis may also occur. (10)

TREATMENT AND MANAGEMENT

In situations where deciduous teeth are present alongside impacted teeth, it is important to understand that the long-term outlook for retaining the deciduous teeth is unfavorable, regardless of the root length or crown height. Due to this poor prognosis, extraction of the deciduous teeth will likely be necessary in the future. Several treatment options for addressing impacted teeth include:

- Autotransplantation
- Extraction and repositioning of adjacent teeth
- Extraction of the impacted canine, followed by segmental osteotomy to advance the posterior segment
- Replacement of the impacted teeth if they cannot be preserved
- Surgical exposure of the impacted teeth with orthodontic traction to align the tooth within the occlusion (9)

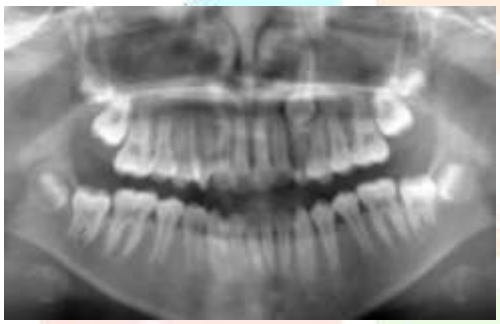

Fig :4 Image showing upper left anterior impacted canine

(Image source adopted from: Himawan Halim et al)

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