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## **Hypodontia and Hyperdontia as Examples of Developmental Disorders in Tooth Number: Literature Review and Clinical Case Reports**

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### **Abstract**

**Introduction and purpose:** Hypodontia and hyperdontia are two common developmental dental anomalies characterized by an abnormal number of teeth and they present a significant

challenge in dentistry, affecting both the functionality and aesthetics of the dentition. Hypodontia refers to the congenital absence of one or more teeth, while hyperdontia is characterized by the presence of supernumerary teeth in the oral cavity. These conditions can lead to various complications, such as bite issues, speech disorders, and difficulties in daily functioning.

**State of knowledge:** Tooth number anomalies can have various causes, ranging from evolutionary reduction in dentition due to lifestyle changes over the years. The reduction in the number of teeth is currently among the most common developmental dental defects. Environmental factors also influence tooth number, acting as either local or general factors. Genetic influences should also be considered, as hypodontia and hyperdontia can be hereditary, and gender also plays a role in the predisposition to these conditions. Numerical anomalies in teeth can also be a symptom of certain genetically determined syndromes.

**Summary:** Hypodontia and hyperdontia are examples of developmental disorders related to the number of teeth in the oral cavity, with various underlying causes. Diagnosis and subsequent treatment are crucial in managing these conditions. These disorders may require long-term therapies involving different areas of dentistry and interdisciplinary cooperation or may simply require ongoing clinical and radiological observation. Treatment depends on the severity of the disorder and the individual needs of the patient. However, thanks to advances in diagnosis and treatment, it is possible to effectively prevent complications.

**Keywords:** anodontia, tooth, supernumerary, tooth abnormalities, odontogenesis

## **Introduction**

Dental anomalies, such as hypodontia and hyperdontia, are common issues in clinical dentistry that significantly impact oral health and overall patient well-being. Early diagnosis of these conditions is crucial to prevent irreversible changes in the permanent dentition, which can lead to serious health and aesthetic complications. Many of these anomalies are also

associated with various systemic conditions, highlighting their diagnostic importance. Hypodontia refers to the congenital absence of one or more teeth, excluding the third molars. It can occur as part of a genetic syndrome or as an isolated, non-syndromic trait. [1] Hypodontia is more frequently observed in the permanent dentition compared to the primary dentition. Clinical signs include delayed tooth eruption, spacing in the dentition, and the presence of retained primary teeth. This condition is linked to various genetic and environmental factors, including genetic mutations and evolutionary reduction in the dentition. Treatment of hypodontia requires an interdisciplinary approach, involving orthodontics, prosthetics, and surgery. [2] Hyperdontia is a developmental disorder characterized by the presence of extra teeth. These can be supernumerary teeth with abnormal morphology or additional teeth with normal structure. [3] Hyperdontia can be classified into true hyperdontia and pseudohyperdontia. True hyperdontia results from excessive dental lamina activity and involves having more than 32 permanent teeth or more than 20 primary teeth. Pseudohyperdontia is due to the presence of retained primary teeth. This condition can lead to complications such as delayed or impaction of tooth eruption, resorption of permanent teeth, and aesthetic issues. [2]

## **Literature Review**

On July 17 and 20, 2024, a search of scientific literature was conducted through PubMed, medical textbooks, and scientific journals. The search spanned the years 2014–2024 and included keywords like 'hypodontia,' resulting in 1,498 findings. From these, 728 were excluded due to limited accessibility, with additional articles discarded for being irrelevant to the study. Further searches using terms such as 'hyperdontia' (481 results), 'supernumerary teeth' (586 results), and 'supplementary teeth' (526 results) included only open-access articles. To ensure thorough validation, guidelines from books like „Dentistry of the Developmental Age” by Dorota Olczak-Kowalczyk and „An Outline of Modern Orthodontics” by Irena Karłowska were referenced. Ultimately, 19 articles were selected as the foundation for this work.

## **Hypodontia**

Hypodontia, or agenesis of teeth, is the most common developmental defect of the craniofacial skeleton in humans. Excluding third molars, the reported prevalence of hypodontia ranges from 1.6% to 6.9%, depending on the population studied. [1] The prevalence of mild (1-2 missing teeth), moderate (3-5 missing teeth), and severe hypodontia (6+ missing teeth) is 81.6%, 14.3%, and 3.1%, respectively. [4] Hypodontia should be suspected if a child exhibits: delayed and altered eruption patterns, spacing in the dentition, lack of alveolar ridge projection at the site of tooth eruption, or the presence of retained primary teeth beyond age 12. [2] To confirm hypodontia, a panoramic radiograph is required. Hypodontia is often associated with delayed eruption patterns and changes in tooth positioning as well as alterations in crown and root morphology. These dental changes frequently accompany growth disturbances, which can negatively affect occlusion and facial appearance. [5]

### **Epidemiology**

Women are more frequently affected by hypodontia and microdontia, whereas men are more prone to macrodontia and supernumerary teeth (1.5:1). [6] Hypodontia occurs more often in the permanent dentition (1-13% - excluding third molars) compared to the primary dentition (0.5%-2.4%). [2] In the primary dentition, the most commonly missing teeth are the central or lateral incisors of the mandible. In the permanent dentition, the most commonly absent teeth are the third molars, the second premolars of the mandible, and the lateral incisors of the maxilla. Although it is unclear whether individuals with hypodontia have distinct skeletal characteristics and growth patterns, several clinical features are often observed, including microdontia, tooth transposition, ectopic permanent teeth, and infraocclusion of primary molars. [7] Approximately 25% of individuals have a congenital absence of third molars, while 3.5% to 7% of the population exhibit hypodontia involving other permanent teeth. [8,9]

### **Etiology**

Recent studies suggest that both genetic and environmental factors are involved in the etiology of this condition, with genetics playing a more significant role. [7] Phylogenetic reduction of dentition, or the adaptation of dental arches to decreasing bony bases, is also mentioned. This is associated with the consumption of soft foods that do not require intense chewing by modern humans. [10] Tooth agenesis is observed in genetic syndromes such as Down syndrome, Apert syndrome, Pierre Robin syndrome, ectodermal dysplasia, and

achondroplasia. [2] Hypodontia is characterized by distinctive dental features, including differences in tooth size and shape, as well as variations in craniofacial morphology. [11-14] In individuals with hypodontia, "compensatory interactions" occur. The growth potential of developing teeth increases if more space is available. However, in many cases of congenital tooth absence, the size of the formed teeth is reduced. [15] Twin studies investigating possible compensatory interactions among developing maxillary anterior teeth have confirmed that developmental changes in lateral incisors are associated with morphogenetic variability of adjacent teeth, and that environmental factors influence the complex adaptive system of tooth development during morphogenesis. [14] Environmental factors influencing the occurrence of tooth hypodontia can be divided into general and local causes. General factors include improper nutrition, diseases, medication use during pregnancy (e.g., thalidomide and antiepileptic drugs), hormonal disorders, and chemotherapy in children. Local factors include local inflammatory or neoplastic processes, irradiation of tooth buds and bone, and mechanical trauma. [2]

### **Treatment:**

Treatment options for hypodontia range from non-intervention to interdisciplinary approaches that involve collaboration among various dental specialists, including orthodontists, prosthodontists, periodontists, oral surgeons, geneticists, and psychologists. [16] The therapeutic strategy for hypodontia depends on the child's age, the number of missing teeth, the condition of the remaining teeth, and the occlusal relationships. It may involve orthodontic closure of the space, space maintenance, or space restoration to address the missing tooth. [2]

## **Clinical Case Descriptions**

### **Case Report 1**

A 7-year-old patient presented for a dental examination due to a family history of maxillary lateral incisor agenesis in one of the parents. To assess the risk of similar anomalies, a panoramic X-ray was taken, which revealed the absence of the left upper lateral incisor germ (tooth 22). (Fig. 1) The absence of the tooth germ may indicate a genetic basis for the agenesis. For this patient, early implementation of a treatment plan in collaboration with an orthodontist and pediatric dentist is recommended. The plan should include monitoring jaw growth and development, planning orthodontic treatment, and considering prosthetic options.

**Figure 1.** Panoramic radiograph revealing hypodontia of tooth 22.



## **Case Report 2**

A 9-year-old patient presented for a dental examination due to the presence of a retained primary tooth 71. A panoramic X-ray revealed the absence of the lower central incisor bud (tooth 31) as well as the absence of the tooth buds for teeth 15, 25, 35, and 45 (Fig. 2). The findings indicate multiple hypodontia, or the absence of several permanent tooth buds. In this case, the patient's parents do not have a history of hypodontia. For this patient, a comprehensive treatment plan is recommended, involving collaboration with an orthodontist, pediatric dentist, and prosthodontist.

**Figure 2.** Panoramic radiograph revealing hypodontia of teeth 15, 25, 31, 35, and 45.



### **Clinical Analysis**

Hypodontia, being one of the most common developmental disorders of the craniofacial complex, is a multifaceted clinical issue that can significantly impact the development of dentition and the morphology of the patient's face, as shown by both the literature review and the described clinical cases. These cases confirm that hypodontia often affects permanent teeth, such as maxillary lateral incisors and second premolars, which can lead to significant aesthetic and functional problems. Additionally, when hypodontia of permanent teeth is diagnosed, it becomes crucial to properly care for the primary teeth. This helps extend their longevity and maintain the space and bone level in good condition, which will facilitate future implantation. Ultimately, these cases highlight the importance of early detection of hypodontia, as implementing appropriate treatment at a young age can greatly minimize the risk of further complications by allowing control over jaw growth and development. Otherwise, lack of treatment or delayed intervention can lead to more challenging aesthetic and functional problems in adulthood. As seen with the analyzed patients, long-term observation and interdisciplinary collaboration among dentists of various specialties,

including orthodontists, oral surgeons, and prosthodontists, are crucial to ensure optimal function and aesthetics of the patient's dentition.

## **Hyperdontia**

Hyperdontia, or the presence of excess teeth in the oral cavity, can occur with either erupted or unerupted teeth. [3] Compared to hypodontia, hyperdontia is a much less common dental anomaly. True hyperdontia occurs in 0.03% to 3.8% of cases, being twice as frequent in males, predominantly in the permanent dentition, and more often in the maxilla (90-98%). [17] Typically, individual supernumerary teeth are found in approximately 80% of cases, while multiple supernumerary teeth are rarer (<1%). Single supernumerary teeth usually appear in the maxilla, whereas multiple teeth are more common in the mandible. [2] Supernumerary teeth in the permanent dentition are often associated with various dental anomalies. They can be classified into atypical (dysmorphic, supernumerary) teeth, which have abnormal structures such as conical shapes, and typical (eumorphic, additional) teeth with normal morphology. There are also instances of heterotopic supernumerary teeth, which erupt in locations outside the oral cavity, such as the nasal cavity. [18] Central supernumerary teeth, or mesiodens, make up about 50% of all supernumerary teeth. They may appear singly or in pairs or triples in approximately 20% of cases. They are most commonly located between the central incisors of the maxilla and often have a conical shape. In addition to this group, supernumerary lateral incisors, premolars (typically located between the premolars), and molars (usually positioned behind the wisdom teeth) are also observed. [2]

## **Etiology**

Hyperdontia is primarily caused by genetic factors, including conditions such as Gardner's syndrome, Apert syndrome, Marfan syndrome, and cleidocranial dysplasia. It may also result from abnormal development of dental buds during embryonic development, leading to the formation of additional teeth. Additionally, hormonal disorders and mutations in genes that regulate tooth development can disrupt the tooth formation process. Among local causes, factors such as inflammatory conditions, mechanical trauma, scarring, pressure, and cellular disorders are also mentioned. [19]



## **Treatment**

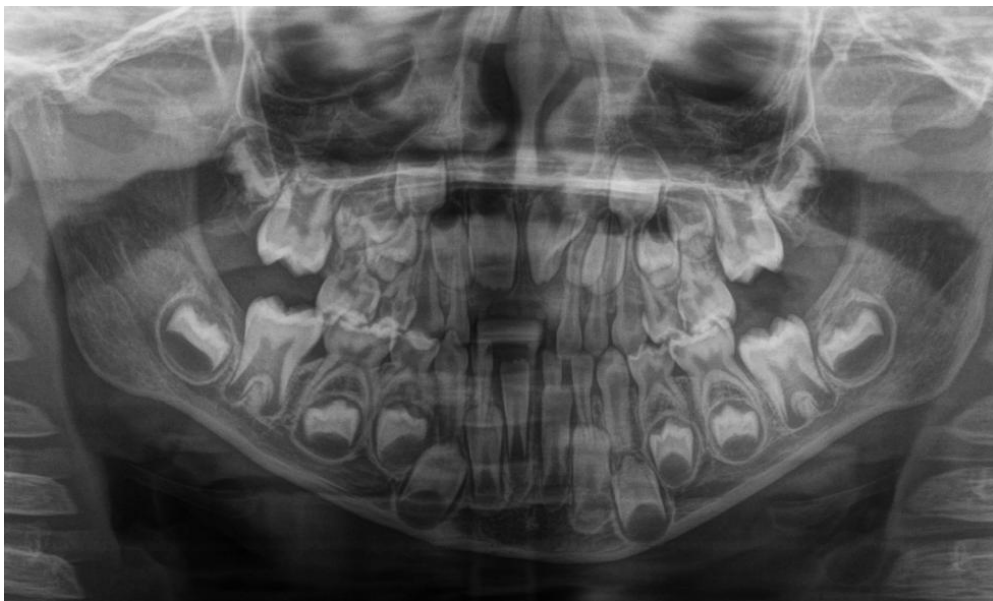
Supernumerary teeth can lead to several adverse effects, such as the retention of primary teeth, delayed eruption, impaction, or misalignment of permanent teeth, crowding, diastemas, primary or dental follicle cysts, root resorption of adjacent teeth, and neuralgic pain. They can also predispose individuals to caries and periodontal disease, with mesiodens presenting an additional aesthetic concern. [19, 20] The treatment approach depends on factors such as the age of the patient, the number and location of the supernumerary teeth, local complications, occlusal conditions, and the degree of root formation. Primary supernumerary teeth typically require clinical monitoring and are extracted if they cause mucosal trauma or interfere with chewing function. Permanent supernumerary teeth are usually removed when they obstruct proper eruption of adjacent teeth or complicate orthodontic treatment. [2, 21]

## **Clinical Case Descriptions.**

### **Case Report 1**

A 7-year-old boy presented to the dental office due to the absence of eruption of the upper central permanent incisors. The primary upper central incisors had fallen out about 6 months ago. Analysis of a panoramic X-ray revealed the presence of tooth buds 11 and 21, as well as a rare case of hyperdontia - an additional upper lateral incisor on the left side (Fig. 3) and a significant lack of space for the eruption of the remaining upper permanent teeth. The treatment plan included a consultation with an orthodontist to assess the need for upper jaw expansion and to determine the cause of the delayed eruption of teeth 11 and 21. Additionally, it was necessary to investigate whether the supernumerary tooth affects the delayed eruption of teeth 11 and 21 and other adjacent permanent tooth buds. Further actions focused on evaluating whether the supernumerary tooth could be removed to allow proper eruption of the remaining permanent teeth and ensure appropriate development of the dental arch.

**Figure 3.** Panoramic radiograph revealing hyperdontia of the upper left lateral incisor.



## **Case Report 2**

A 20-year-old patient presented to the dental office for restorative treatment. He particularly noted pain in the area of tooth 18. Due to the significant treatment needs, a panoramic X-ray was taken to plan comprehensive care. During the analysis of the panoramic X-ray, a supernumerary tooth—a molar tooth in quadrant 1—was incidentally revealed (Fig. 4). Further management included referring the patient for a CT scan to assess the prognosis and options for restoring tooth 18. There was a risk of root resorption of tooth 18 due to the supernumerary tooth. The plan for further action recommended a surgical consultation to evaluate the need for potential extraction of the supernumerary tooth. This tooth could be a source of infection and inflammation. Additionally, the lack of space in the arch and the inability to orthodontically reposition the additional tooth highlight the need to decide on its removal to prevent further complications and ensure appropriate conservative treatment.

**Figure 4.** Panoramic radiograph revealing hyperdontia of a distomolar in quadrant 1.



#### **Clinical Analysis.**

The literature and the presented clinical cases illustrate how supernumerary teeth can lead to a range of adverse health and aesthetic effects, highlighting the need for early diagnosis and appropriate treatment. In the case of a 7-year-old patient, the additional lateral incisor not only caused a delay in the eruption of permanent teeth but also posed risks such as impaction, positional changes, the formation of a diastema, and resorption of adjacent permanent tooth buds. If such a tooth erupts, it may also present aesthetic problems due to its potential morphological underdevelopment and abnormal shape. This case corroborates literature reports on the delayed eruption of permanent teeth and space deficiency in the dental arch caused by supernumerary teeth. In the case of a 20-year-old patient, the presence of an additional molar tooth, revealed during panoramic X-ray analysis, required further evaluation

with a CT scan. There was a risk of root resorption of the adjacent tooth 18, consistent with literature that emphasizes supernumerary teeth can lead to such resorptions. Additionally, the supernumerary tooth might have caused neuralgic pain and local inflammation, such as cyst formation. The lack of space in the arch and the potential need for extraction of the supernumerary tooth were justified to avoid further complications and ensure proper restorative treatment.

### **General Discussion:**

The analyzed clinical cases and the literature on hypodontia and hyperdontia emphasize the complexity of issues related to dental development. Hypodontia, being one of the most common developmental disorders, can significantly impact the aesthetics and functionality of dentition. Supernumerary teeth can lead to delays in the eruption of permanent teeth, issues with space in the dental arch, and morphological abnormalities, as confirmed by the described cases. The presented cases and literature emphasize the importance of early diagnosis, interdisciplinary management, and an individualized approach to ensure optimal treatment and minimize the risk of further complications.

### **Summary:**

Hypodontia and hyperdontia are examples of anomalies related to an abnormal number of teeth in the oral cavity, which are commonly encountered in dental practice. Both conditions can lead to significant aesthetic and functional problems. That's why, making early detection, thorough clinical and radiological diagnostics, and planning an appropriate treatment strategy is crucial. Treatment may require collaboration among specialists from various dental fields or may simply involve regular monitoring and observation. However, awareness of the condition is essential to minimize potential complications in the future.

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**References:**

1. Al-Ani AH, Antoun JS, Thomson WM, Merriman TR, Farella M. Hypodontia: An update on its etiology, classification, and clinical management. *Biomed Res Int.* 2017;2017:9378325. doi: 10.1155/2017/9378325.
2. Olczak-Kowalczyk D. *Contemporary Pediatric Dentistry.* Med Tour Press International; 2017.
3. Eshgian N, Al-Talib T, Nelson S, Abubakr NH. Prevalence of hyperdontia, hypodontia, and concomitant hypo-hyperdontia. *J Dent Sci.* 2021;16(2):713–717. doi: 10.1016/j.jds.2020.09.005.
4. Khalaf K, Miskelly J, Voge E, Macfarlane T V. Prevalence of hypodontia and associated factors: a systematic review and meta-analysis. *J Orthod* 2014; 41: 299-316.

5. Chung, L K, Hobson R S, Nunn J H, Gordon P H, Carter N E. An analysis of the skeletal relationships in a group of young people with hypodontia. *J Orthod* 2020; 27: 315-318.
6. Brook A. H., O'Donnell M. B., Hone A., et al. General and craniofacial development are complex adaptive processes influenced by diversity. *Australian Dental Journal*. 2014;59, supplement 1:13–22. doi: 10.1111/adj.12158.
7. Al-Ani A. H. Genetic and environmental factors associated with hypodontia [Thesis, Doctor of Clinical Dentistry] Dunedin, New Zealand: University of Otago; 2016.
8. Carter K., Worthington S. Morphologic and Demographic Predictors of Third Molar Agenesis: A Systematic Review and Meta-analysis. *J. Dent. Res.* 2015;94:886–894. doi: 10.1177/0022034515581644.
9. Khalaf K., Miskelly J., Voge E., Macfarlane T.V. Prevalence of hypodontia and associated factors: A systematic review and meta-analysis. *J. Orthod.* 2014;41:299–316. doi: 10.1179/1465313314Y.0000000116.
10. Karłowska I. Outline of Contemporary Orthodontics. PZWL; 2016.
11. Brook A.H., Jernvall J., Smith R.N., Hughes T., Townsend G.C. The dentition: The outcomes of morphogenesis leading to variations of tooth number, size and shape. *Aust. Dent. J.* 2014;59:131–142. doi: 10.1111/adj.12160.
12. Wright J., Bosio J.A., Chou J.C., Jiang S.S. Maxillary lateral incisor agenesis and its relationship to overall tooth size. *J. Prosthet Dent.* 2016;115:209–214. doi: 10.1016/j.prosdent.2015.07.010.
13. Kerekes-Mathe B., Brook A.H., Martha K., Szekely M., Smith R.N. Mild hypodontia is associated with smaller tooth dimensions and cusp numbers than in controls. *Arch. Oral. Biol.* 2015;60:1442–1449. doi: 10.1016/j.archoralbio.2015.06.005.
14. Kerekes-Máthé B., Mártha K., Brook O'Donnell M., Brook A.H. Dental Arch Dimensions in a Matched Pairs Study of Hypodontia Patients and Controls. *Biomed. J. Sci. Tech. Res.* 2022;41:32426–32433.
15. Tadros M., Brook A.H., Ranjitkar S., Townsend G.C. Compensatory interactions between developing maxillary anterior teeth in a sample of twins. *Arch. Oral. Biol.* 2019;97:198–207. doi: 10.1016/j.archoralbio.2018.10.010.
16. Gill D.S., Barker C.S. The multidisciplinary management of hypodontia: a team approach. *Br Dent J.* 2015;218:143–149.

17. Harris E.F., Clark L.L. Hypodontia: an epidemiologic study of American black and white people. *Am J Orthod Dentofacial Orthop.* 2008;134:761–767
18. Ata-Ali F, Ata-Ali J, Peñarrocha-Oltra D, Peñarrocha-Diago M. Prevalence, etiology, diagnosis, treatment and complications of supernumerary teeth. *J Clin Exp Dent* 2014; 6:e414-8; PMID:25593666; [https://doi.org/ 10.4317/jced.51499](https://doi.org/10.4317/jced.51499)
19. Lu X, Yu F, Liu J, Cai W, Zhao Y, Zhao S, Liu S. The epidemiology of supernumerary teeth and the associated molecular mechanism. *Organogenesis.* 2017;13(3):71–82. doi: 10.1080/15476278.2017.1332554.
20. Fleming PS, Xavier GM, DiBiase AT, Cobourne MT. Revisiting the supernumerary: the epidemiological and molecular basis of extra teeth. *Br Dent J* 2010; 208:25-30; PMID:20057458; [https://doi.org/ 10.1038/sj.bdj.2009.1177](https://doi.org/10.1038/sj.bdj.2009.1177)
21. Laganà G, Venza N, Borzabadi-Farahani A, Fabi F, Danesi C, Cozza P. Dental anomalies: prevalence and associations between them in a large sample of non-orthodontic subjects, a cross-sectional study. *BMC Oral Health* 2017; 17(1):62:1-7; PMID:28284207; [https://doi.org/ 10.1186/s12903-017-0352-y](https://doi.org/10.1186/s12903-017-0352-y)