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Hypodontia in the Korean orthodontic population: Prevalence and characteristics of a nationwide multicenter study

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Objective: To investigate the prevalence and clinical characteristics of hypodontia among orthodontic patients in university dental hospitals in Korea. **Methods:** A total of 15,422 patients who visited the Departments of Orthodontics at 10 university dental hospitals in Korea between 2021 and 2023 were enrolled as the study cohort. Among these, patients with one or more congenitally missing permanent teeth (excluding third molars) were identified using panoramic radiographs and diagnostic records. The prevalence of hypodontia, number and location of missing teeth, associated dental anomalies, skeletal malocclusion patterns, and treatment methods were evaluated. **Results:** The overall prevalence of hypodontia was 11.9% (n = 1,835). Younger patients (< 16 years) showed a slightly higher proportion of hypodontia (13.2%) than older patients (11.0%). Most cases involved the absence of one or two teeth (68.7%), while oligodontia occurred in 10.6% of cases. Bilateral cases were more prevalent (56.6%), with 80.8% exhibiting symmetrical patterns. Mandibular second premolars were the most frequently affected (20.7%), followed by maxillary second premolars (14.7%) and lateral incisors (12.0%). Among patients with hypodontia, 37.8% had other dental anomalies, such as impacted teeth and microdontia. A Class I skeletal pattern was the most common overall (40.4%), but a Class III relationship was predominant in patients with oligodontia (42.6%). The most frequent treatments were orthodontic space closure (39.9%), observation (29.5%), and space opening for prosthetic restoration (27.5%). **Conclusions:** Hypodontia is relatively common among Korean orthodontic patients, especially in younger patients. Accurate diagnosis and individualized, multidisciplinary treatment plans are essential for effective long-term care.

Keywords: Hypodontia, Prevalence, Characteristics, Multicenter study

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INTRODUCTION

Hypodontia, defined as the congenital absence of one or more primary or permanent teeth, is one of the most common developmental dental anomalies, with the exception of third molar agenesis.[1-3] It is caused by abnormalities in the early stages of tooth development[4] and is clinically diagnosed through intraoral examination and radiographs (such as panoramic radiographs). Hypodontia may be localized to a single tooth or involve multiple teeth, resulting in oligodontia.

Hypodontia causes multiple problems for patients.[4,5] Functionally, it causes dental discrepancies, malocclusions, and reduced masticatory efficiency. The displacement and tilting of adjacent teeth into edentulous spaces can lead to occlusal interferences and mandibular deviation, which may compromise craniofacial skeletal growth in the long term.[6-8] Aesthetically, the missing spaces result in poor facial aesthetics and disharmony of the smile line, which negatively affect self-esteem and social interactions, especially in adolescent patients.[6,9] The presence of multiple missing teeth requires a multidisciplinary approach, including orthodontic, prosthetic, and surgical treatments, and proper timing of diagnosis and comprehensive treatment planning.

Existing studies on the prevalence of tooth agenesis have primarily been based on limited samples from the general population or single institutions.[3,10-12] Although these studies have reported regional and ethnic differences, limitations include a lack of statistical reliability due to limited sample sizes, inconsistent diagnostic criteria, and the lack of extensive nationwide data. In particular, systematic investigations of tooth agenesis in orthodontic populations remain scarce.

Patients visiting the orthodontic departments are likely to exhibit a different prevalence pattern than the general population, as they are more aware of their orthodontic and aesthetic problems and often present with complex dental abnormalities. Therefore, accurate epidemiologic information in specialized practice settings is important to better understand patient characteristics and needs, which in turn provides a foundation for clinical decision-making, improves predictability in treatment planning, enhances orthodontic education, and informs national oral health policies.

This study aims to comprehensively analyze the prevalence and clinical characteristics of hypodontia among orthodontic patients across multiple university hospital-based orthodontic departments in Korea. Our investigation encompasses the overall prevalence of hypodontia, distribution patterns by location and number, sex and age-related differences in prevalence, associated dental anomalies and malocclusions, and primary treatment modalities for patients with missing teeth. The analysis is based on a substantial cohort of 15,422 patients who received orthodontic diagnosis at 10 university dental hospitals in Korea between 2021 and 2023. This research seeks to establish a comprehensive understanding of hypodontia patterns within the Korean specialized care environment, providing scientific evidence for developing patient-specific treatment protocols and informing oral health policy. Furthermore, the findings are expected to contribute to orthodontic curriculum enhancement and clinical guideline development.

MATERIALS AND METHODS

Participants

The study cohort consisted of 15,422 patients who visited the Departments of Orthodontics at 10 university dental hospitals in Korea between 2021 and 2023 and underwent comprehensive orthodontic diagnosis, regardless of tooth agenesis status. All patients had complete diagnostic records, consisting of panoramic radiographs, lateral cephalograms, dental casts, and clinical charts. From this cohort, patients with one or more congenitally missing teeth, excluding third molars, were identified as the hypodontia group. The exclusion criteria were: (1) agenesis limited to third molars only, (2) incomplete or missing diagnostic data, or (3) previous orthodontic treatment history. Younger patients were defined as those aged younger than 16 years at the time of diagnosis.

The Institutional Review Board approval numbers for each institution are: GWNUDH-IRB2025-A006, KNUDH-2025-05-07-00, KH-DT25013, DKUDHIRB 2025-11-003, PNUDH 2025-05-020, YUDHIRB 2-2025-0043, WKDIRB 202505-02, CNUDH-2025-019, CUH 2025-06-057-003, and CUDHIRB 2507007. The requirement for informed consent was waived due to the retrospective nature of the study.

Methods

Patient sex, age, and treatment method were determined from orthodontic diagnostic records. Tooth agenesis was diagnosed based on the absence of any crown formation or calcification visible on panoramic radiographs appropriate for the patient's chronological age. The mandibular second premolars are among the teeth that begin calcification later; therefore, to reduce the risk of false positives in younger children, the minimum age for inclusion was set at 6 years.[5] When the agenesis status was uncertain, cone-beam computed tomography (CBCT) was selectively used based on clinical judgment and institutional protocols. All participating institutions applied these diagnostic criteria consistently; however, formal examiner calibration across centers was not performed. Patients were categorized into younger (aged <

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16 years) and older (aged ≥ 16 years) groups at the time of diagnosis, as the reported prevalence may vary depending on the age distribution of the study population and diagnostic timing.[13-15] The number and location of missing teeth were documented according to arch (maxilla/mandible) and side (unilateral/bilateral). Symmetry was defined as the absence of the same type of tooth on both sides. Severity was classified as mild (1–2 teeth), moderate (3–5 teeth), or severe (≥ 6 teeth, oligodontia) based on the criteria proposed by AlShahrani et al.[11]

Skeletal anteroposterior relationships were assessed using the ANB angle on lateral cephalometric radiographs. Class I was defined as 0° < ANB < 4°, Class II as ANB ≥ 4°, and Class III as ANB ≤ 0°.[16] Class II was further subdivided into Division 1 (Div 1; proclined maxillary central incisors) and Division 2 (Div 2; retroclined maxillary central incisors with increased overbite), consistent with the Angle classification. Additional dental anomalies were investigated by multiple-choice selection, including impacted teeth, microdontia (especially peg-shaped lateral incisors), supernumerary teeth, tooth transposition, taurodontism, dens evaginatus, dens invaginatus, and delayed or ectopic eruption.

Treatment plans were categorized as: orthodontic space closure, space opening for prosthetic restoration, space maintenance using fixed or removable appliances, observation, autotransplantation, and surgical space closure (including segmental osteotomy and corticotomy-facilitated orthodontics). For younger patients who were not yet candidates for prosthetic rehabilitation, the use and type of space maintainers were also recorded.

The etiology of hypodontia was assessed based on clinical chart review and patient/guardian report at the time of diagnosis. Cases with no identifiable etiology were recorded as unknown and excluded from the etiologic subgroup analysis. No standardized diagnostic criteria or genetic testing were applied; therefore, etiological classification relied on retrospective clinical records and patient/guardian reports.

Table 1. Composition of the study population

University dental hospital	2021–2023 Orthodontic patients (n)	Percentage (%)
Gangneung-Wonju National University Dental Hospital	736	4.8
Kyungpook National University Dental Hospital	1,717	11.1
Kyung Hee University Dental Hospital	2,229	14.5
Dankook University Dental Hospital	1,184	7.7
Pusan National University Dental Hospital	1,643	10.7
Yonsei University Dental Hospital	4,706	30.5
Wonkwang University Dental Hospital	812	5.3
Chonnam National University Dental Hospital	702	4.6
Jeonbuk National University Dental Hospital	695	4.5
Chosun University Dental Hospital	998	6.5
Total	15,422	100.0

Statistical analysis

All statistical analyses were performed using IBM SPSS Statistics 28.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the prevalence and distribution patterns of congenitally missing teeth. Comparisons of categorical variables (sex, symmetrical patterns, and skeletal anteroposterior relationship patterns) were performed using the chi-square test. Multiple-response analysis was applied when multiple dental anomalies were present in a single patient. A P value < 0.05 was considered statistically significant.

RESULTS

Prevalence of hypodontia

Over the three-year period (2021 to 2023), 1,835 of the 15,422 patients in the total orthodontic cohort were identified as having one or more congenitally missing permanent teeth, excluding third molars, yielding an overall hypodontia prevalence of 11.9% (**Tables 1 and 2**). Of 6,225 younger patients (aged < 16 years), 819 had hypodontia, yielding a proportion of 13.2% (**Table 3**). Among the 9,197 older patients (aged ≥ 16 years), 1,016 had hypodontia (proportion: 11.0%).

Among patients with hypodontia, those aged ≥ 16 years accounted for the majority of cases (55.4%), while only 0.8% were aged 6 years. Among younger patients, the number gradually increased with age, peaking at 13 years (**Table 4**).

Table 2. Prevalence of congenital missing teeth in orthodontic patients

Year	Orthodontic patients (n)	Patients with missing tooth (n)	Prevalence (%)
2021	5,138	648	12.6
2022	5,204	594	11.4
2023	5,080	593	11.7
Total	15,422	1,835	11.9

When analyzed by sex, females accounted for a larger proportion of patients with hypodontia than males (females: 56.2% [n = 1,031]; males: 43.8% [n = 804]) (**Figure 1**).

Characteristics of hypodontia

The most frequent pattern was one missing tooth (39.3%, n = 722), followed by two missing teeth (29.4%, n = 539). Mild cases (1–2 teeth) accounted for 68.7%, moderate cases (3–5 teeth) for 20.7%, and severe oligodontia (≥ 6 teeth) for 10.6% (n = 195) (**Figure 2**).

Bilateral tooth agenesis was observed in 56.6% (n = 1,038) of cases, and unilateral absence was observed in 43.4% (n = 797). This difference was statistically significant (P = 0.016), indicating a non-random pattern across tooth types. Among bilateral cases, 80.8% exhibited symmetrical patterns with the same tooth type missing on both sides. No significant left–right difference was observed in unilateral cases ($P > 0.05$).

Tooth agenesis predominantly occurred in permanent teeth, with primary tooth agenesis accounting for only 2.1% (n = 39) of all cases. However, this figure should be interpreted as a substantial underestimate of the true prevalence, given that 55.4% of the study population were aged 16 years or older, in whom primary teeth would have already exfoliated prior to examination. In such cases, the patient and guardian report was utilized, where available, to retrospectively identify a history of primary tooth agenesis; however, complete ascertainment was not possible. Regarding primary tooth agenesis, the maxillary primary lateral incisor was the most prevalent (25.4%, n = 16), followed by the maxillary second primary molar, mandibular second primary molar, and mandibular primary lateral incisor (**Figure 3**). Among permanent teeth, the mandibular second premolar was the most commonly missing tooth (20.7%, n = 678), followed by the maxillary second premolar (14.7%, n = 481) and maxillary lateral incisor (12.0%, n = 394) (**Table 5**).

Etiology was identifiable in 284 patients (15.5% of the hypodontia group). These etiologic classifications were based on available clinical records and patient/guardian reports and should be interpreted as reported rather than confirmed causes. Among these, systemic diseases or syndromes (e.g., cleft lip and palate, ectodermal dysplasia) were the most common identifiable cause (n = 142, 50.0%), followed by trauma and infection. The remaining 1,551 patients (84.5%) had no identifi-

Table 3. Prevalence of congenital missing teeth in younger orthodontic patients (aged < 16 years)

Year	Orthodontic patients (n)	Patients with missing tooth (n)	Prevalence (%)
2021	1,944	264	13.6
2022	2,189	282	12.9
2023	2,092	273	13.0
Total	6,225	819	13.2

Table 4. Age distribution of patients with congenital missing teeth

Age (yr)	Patients (n)	Percentage (%)
6	15	0.8
7	28	1.5
8	41	2.2
9	84	4.6
10	92	5.0
11	116	6.3
12	127	6.9
13	129	7.0
14	110	6.0
15	77	4.2
≥ 16	1,016	55.4
Total	1,835	100.0

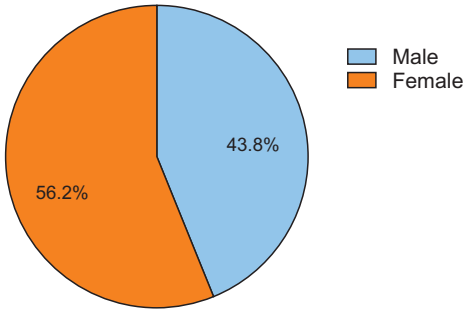

Figure 1. Distribution of hypodontia by sex (%). Values represent the distribution within the hypodontia group (n = 1,835).

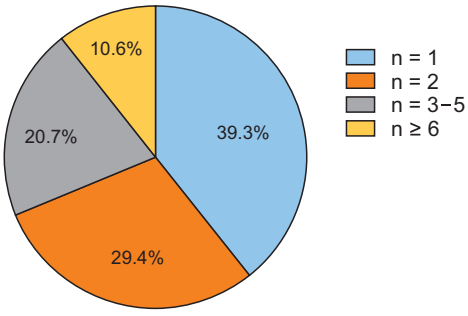

Figure 2. Distribution by number of congenitally missing teeth (n).

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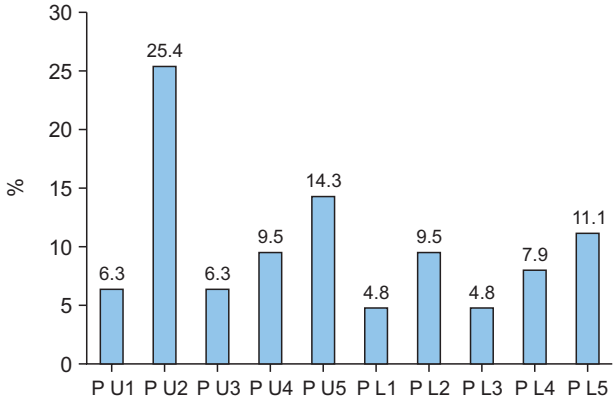

Figure 3. Prevalence of primary congenitally missing teeth (%, multiple-response).
P, primary; U, maxilla; L, mandible; 1, central incisor; 2, lateral incisor; 3, canine; 4, first molar; 5, second molar.

Table 5. Prevalence of congenitally missing permanent teeth (multiple-response)

Tooth type	Patients (n)	Percentage (%)
U1	60	1.8
U2	394	12.0
U3	166	5.1
U4	250	7.6
U5	481	14.7
U6	101	3.1
U7	137	4.2
L1	240	7.3
L2	300	9.1
L3	54	1.6
L4	154	4.7
L5	678	20.7
L6	132	4.0
L7	135	4.1
Total	3,282	100.0

Multiple responses per patient were allowed.
U, maxilla; L, mandible; 1, central incisor; 2, lateral incisor; 3, canine; 4, first premolar; 5, second premolar; 6, first molar; 7, second molar.

able etiology.

Characteristics of patients with hypodontia

Analysis of additional dental anomalies using a multiple-response approach revealed that 694 patients (37.8%) presented with one or more associated anomalies. Impacted teeth were the most prevalent (n = 293), particularly maxillary canine impactions (40.6% of all

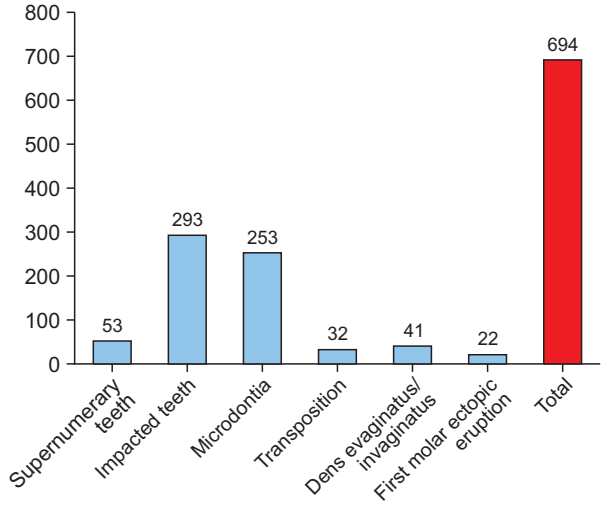

Figure 4. Distribution of associated dental anomalies in patients with hypodontia. Values represent the number of occurrences for each anomaly category. Multiple responses per patient were allowed; therefore, the sum of categories exceeds the number of patients (n = 694). The total number of patients with at least one associated anomaly is shown for reference.

impacted cases). Microdontia was identified in 253 patients, most of whom (94.9%) had peg-shaped maxillary lateral incisors. Supernumerary teeth were observed in 53 patients. Other abnormalities, including tooth transposition, dens evaginatus, dens invaginatus, and first molar ectopic eruption, were also identified (**Figure 4**).

Class I had the highest proportion at 40.4% (n = 742), followed by Class III at 30.1% (n = 553) and Class II at 29.4% (n = 540; Class II Div 1: n = 406 [22.1%], Class II Div 2: n = 134 [7.3%]). Among patients with oligodontia, Class III was the most prevalent at 42.6% (n = 83), followed by Class I at 35.4% (n = 69), Class II Div 1 at 11.3% (n = 22), and Class II Div 2 at 10.8% (n = 21) (**Figure 5**).

Collapse of adjacent teeth was observed in 764 patients, spacing in 929 patients, and crowding in 544 patients. Orthodontic space closure was the most common treatment choice (39.9%, n = 745), followed by observation (29.5%, n = 551) and space opening for prosthetic restoration (27.5%, n = 514). Space maintenance was recorded in 56 responses (3.0%). Autotransplantation was not performed (n = 0), and surgical space closure was performed in only one case (0.05%) (**Figure 6**). In growing patients, fixed or removable space maintainers were used to preserve space for future prosthetic restorations.

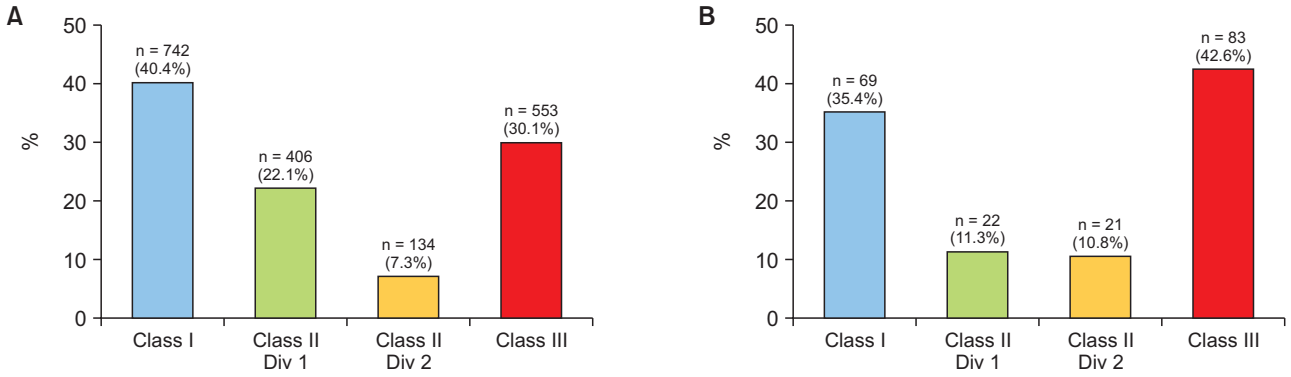

Figure 5. Skeletal anteroposterior relationship of patients with hypodontia. A, All patients with hypodontia (n = 1,835); **B**, Patients with oligodontia, defined as six or more congenitally missing teeth (n = 195).
Div, Division.

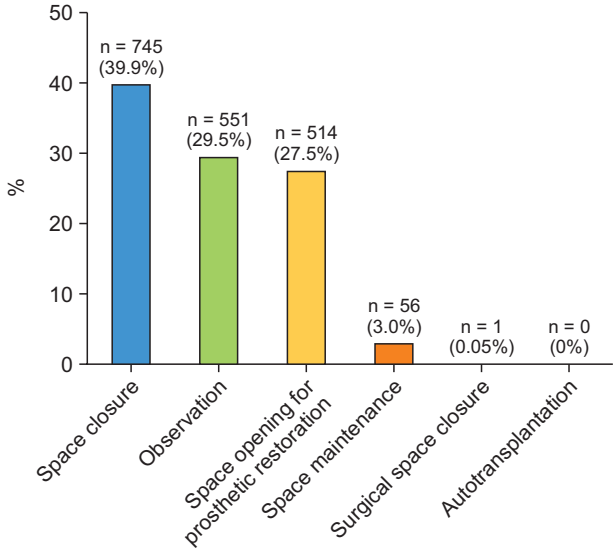

Figure 6. Treatment methods for hypodontia (multiple-response). Percentages are based on total treatment responses (n = 1,868). Multiple responses per patient were permitted.

DISCUSSION

To our knowledge, this is one of the largest hospital-based multicenter investigations of hypodontia in the Korean orthodontic population, encompassing 15,422 patients across 10 university dental hospitals over a three-year period (2021–2023). The prevalence of missing permanent teeth, excluding third molars, has been reported to range from 0.2% to 16.2% depending on ethnicity and geographic region.[17] Previous studies conducted on patients at Korean dental universities have also reported prevalence rates ranging from 8.0% to 12.2%,[18-20] and our results are consistent with these findings, reflecting the typical characteristics of patients treated at university dental hospitals.

The number of missing teeth was predominantly limited to one or two (39.3% and 29.4%, respectively), consistent with previous Korean studies reporting an average of 1.8 to 2.2 missing teeth per patient.[18-20] Notably, 10.6% of patients presented with oligodontia, defined as the absence of six or more teeth.

The mandibular second premolars were the most frequently missing teeth (20.7%), followed by the maxillary second premolar and maxillary lateral incisor, consistent with trends reported in East Asian populations.[20-23] It should be noted that mandibular second premolars are among the latest-calcifying teeth; therefore, diagnosis based solely on panoramic radiographs in patients aged 6 years carries a risk of false-positive agenesis. Uncertain cases were supplemented with CBCT to reduce this risk, but the possibility of overdiagnosis in the youngest patients cannot be entirely excluded. The observed tooth location patterns and bilateral symmetry may suggest a genetic involvement in hypodontia. Mutations in genes such as *MSX1* and *PAX9*, which encode transcription factors playing crucial roles in the early stages of tooth development, have been strongly associated with hypodontia patterns, particularly in East Asian populations,[24-26] and are known to cause bilaterally symmetrical tooth agenesis within the dental arch.[27,28] Consistent with this, 80.8% of patients with bilateral tooth agenesis exhibited symmetrical patterns with the same type of tooth missing on both sides. The statistically significant difference between bilateral (56.6%) and unilateral (43.4%) patterns across tooth types ($P = 0.016$) suggests that bilateral agenesis may reflect stronger genetic influence, though this interpretation requires caution in the absence of genetic analysis.[23,27,28] The absence of significant left–right differences in unilateral cases ($P > 0.05$)[29-31] suggests that asymmetric patterns may involve additional environmental or epigenetic factors beyond

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the primary genetic determinants.

Females accounted for a larger proportion of patients with hypodontia than males, with an approximate female-to-male ratio of 1.3:1. However, because sex distribution data for the full orthodontic cohort were unavailable, sex-specific prevalence comparisons could not be performed; therefore, this finding should not be interpreted as indicating a higher prevalence in females. This distribution aligns with previous studies conducted in Korean and other ethnic populations.[2,3,10,18-22] Various explanations have been proposed for these observed sex differences, including developmental factors such as differences in jaw size and growth rate,[17] as well as sex-specific patterns of tooth agenesis with a potential genetic component.[29-32] Further studies are needed to clarify sex-specific differences in hypodontia.

Primary tooth agenesis was identified in 39 patients (2.1%). This proportion likely underestimates the true prevalence, as 55.4% of the study population were aged 16 years or older, in whom primary teeth would have already exfoliated prior to examination. Although patient and guardian reports were utilized, where available, to retrospectively identify a history of primary tooth agenesis, complete ascertainment was not possible. Consequently, the reported prevalence of 2.1% should not be interpreted as a reliable estimate and is presented solely to characterize cases in which primary tooth agenesis was identifiable. Although less common than permanent tooth agenesis, its clinical significance lies in that 92.3% of affected patients also exhibited agenesis of the corresponding permanent successors.[12] The maxillary lateral incisor was the most frequently missing primary tooth, consistent with previous studies highlighting it as a frequent site of agenesis in both dentitions.[2,3,10,12,33] These findings support the role of primary tooth agenesis as an early indicator for future dental development issues. Younger patients with missing primary teeth should be carefully monitored for the presence of permanent successors through timely radiographic evaluation, and early interdisciplinary coordination among pediatric dentists, orthodontists, and prosthodontists is essential for optimizing long-term outcomes.

The prevailing etiological hypothesis is the polygenic model, in which interactions among multiple genes and environmental factors disrupt the initiation and proliferation stages of early tooth bud formation, resulting in tooth agenesis.[34,35] Etiology was identifiable in only 284 patients (15.5%), suggesting that the majority of cases were of unknown or multifactorial origin. The etiologic classification in this study was based on retrospective clinical records and patient/guardian reports, without standardized diagnostic criteria or genetic confirmation; therefore, misclassification and incomplete ascertainment cannot be excluded, and the reported etiologies should be interpreted with caution. These findings should be interpreted as reported rather than confirmed causes. Among identifiable cases, systemic diseases or syndromes were the most common cause (n = 142, 50.0%), including cleft lip and palate and ectodermal dysplasia.[3,5,8,10,11,22] Environmental factors, such as trauma and infection, were the next most common causes, and radiation exposure or severe primary caries may also contribute.[8] A thorough assessment of systemic health and medical history is therefore essential during clinical diagnosis.

A total of 694 patients (37.8%) exhibited associated dental anomalies, including impacted teeth, microdontia, and supernumerary teeth, as identified through a multiple-response assessment. The most common anomalies were maxillary canine impaction and peg-shaped lateral incisors. These findings suggest that hypodontia is often accompanied by various associated anomalies, including eruption disturbances, morphological abnormalities, and anomalies in tooth number.[3,5,20,36,37] Maxillary canine impaction, in particular, is one of the most common coexisting anomalies and is often associated with space deficiency or a genetic predisposition.

Class I skeletal pattern was the most prevalent (40.4%), followed by Class III (30.1%) and Class II (29.4%). Among patients with oligodontia, the proportion of Class III increased to 42.6%. This finding is descriptive in nature and should be interpreted with caution, as no adjustment for potential confounding variables was performed. Although similar patterns have been reported in previous studies,[38,39] causal relationships cannot be inferred from the present data. Proposed mechanisms in the literature include reduced occlusal vertical dimension, mandibular rotation, and relative maxillary retrusion associated with incisor agenesis.[10,19,35,39] However, these mechanisms were not directly evaluated in the present study.

Untreated tooth agenesis can lead to tilting of adjacent teeth (n = 764), spacing (n = 929), and crowding (n = 544). While spacing is the more intuitive consequence, crowding can arise through several mechanisms: (1) arch length discrepancy when agenesis is present in one arch but not the opposing arch; (2) mesial drift of posterior segments when posterior teeth are missing; (3) underlying skeletal or dental discrepancies in addition to tooth agenesis; and (4) remaining teeth larger than the available space after adjacent drift. These complications may result in further tooth displacement, occlusal interference, dental irregularity, and altered maxillomandibular relationships. Beyond functional limitations, anterior hypodontia can significantly affect facial esthetics, self-esteem, and social interactions, particularly in adolescents. These psychosocial impacts often motivate patients to seek orthodontic care, and early treatment planning

should therefore address occlusal, skeletal, and esthetic concerns simultaneously.

Orthodontic space closure was the most frequent treatment (39.9%), followed by observation (29.5%) and space opening for prosthetic restoration (27.5%). These three strategies were relatively evenly distributed, reflecting the individualized nature of treatment decisions. For growing patients, space maintenance is essential to facilitate future prosthetic rehabilitation, with fixed or removable appliances used depending on the clinical situation, allowing definitive prosthetic treatment once growth is complete. As emphasized in previous studies, treatment for hypodontia should be individualized based on patient age, number and location of missing teeth, and facial morphology.[6,20,35,40] A multidisciplinary approach involving orthodontics, prosthodontics, and oral and maxillofacial surgery is particularly essential for comprehensive management.[6,21,35,41]

In summary, this study confirmed that hypodontia occurs relatively frequently in Korean orthodontic patients and is associated with diverse clinical features. Because the study population consisted of patients seeking orthodontic treatment at university hospitals, the findings are representative of a hospital-based population with higher disease complexity and should not be generalized to the broader population without caution. Formal examiner calibration was not performed across participating institutions, which may have introduced inter-center variability in the diagnosis of hypodontia and associated anomalies. Additionally, because CBCT was applied selectively based on clinical judgment and institutional protocols, diagnostic sensitivity may have varied between patients and across centers, potentially affecting the detection and classification of tooth agenesis. The possibility of overdiagnosis in the youngest patients, particularly regarding mandibular second premolars, should also be considered when interpreting these findings. Despite these limitations, the findings may serve as an important reference for patient-specific care planning and the development of national oral health policies.

CONCLUSIONS

The present study analyzed the prevalence and clinical characteristics of hypodontia in a cohort of 15,422 orthodontic patients from 10 university dental hospitals in Korea between 2021 and 2023. Hypodontia was identified in 11.9% of patients overall, with a higher proportion (13.2%) observed in those younger than 16 years. Within the hypodontia group, females accounted for a larger proportion than males. The most commonly missing teeth were the mandibular second premolars, maxillary second premolars, and maxillary lateral incisors, with bilateral symmetrical patterns predominating.

A substantial proportion of patients presented with additional dental anomalies, particularly impacted teeth and microdontia. Class I malocclusion was most common; however, those with oligodontia (≥ 6 missing teeth) showed a higher proportion of Class III patterns. Treatment modalities were relatively evenly distributed among orthodontic space closure, space opening for prosthetic restoration, and observation, varying by developmental stage and the location of missing teeth.

In conclusion, hypodontia is a common developmental anomaly in orthodontic practice that requires early diagnosis, assessment of associated anomalies, and individualized treatment planning. These findings may serve as foundational data for clinical decision-making, treatment guideline development, and national oral health policy.

AUTHOR CONTRIBUTIONS

Conceptualization: SHK, YIK, SSK, SBP, YKC. Data curation: DSC, HJK, KAK, MHL, SHC, KMCL, YMJ, SJ. Investigation: DSC, HJK, KAK, MHL, SHC, SKC, KMCL, YMJ, SJ. Methodology: YKC, SHK, YIK, SSK. Visualization: YKC, SHK, YIK, SSK. Writing–original draft: YKC, SHK, SBP, YIK. Writing–review & editing: YKC.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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