ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

Mesiodistal dimensions of teeth in Serbian orthodontic patients with hypodontia

Marija Živković[1], Neda Lj. Stefanović[1], Branka Popović[2], Jovana Juloski[1], Ivana Šćepan[1], Branislav Glišić[1]

[1]University of Belgrade, School of Dental Medicine, Department of Orthodontics, Belgrade, Serbia;
[2]University of Belgrade, School of Dental Medicine, Institute of Human Genetics, Belgrade, Serbia

SUMMARY

Introduction/Objective Hypodontia is a common dental anomaly that occurs either in a non-syndromic form or as a part of various syndromes. It is considered a multifactorial condition with genetic, epigenetic, and environmental influences, the interplay of which can lead to various anomalies in tooth size and number.

The aim of this study was to assess mesiodistal tooth dimensions in Serbian hypodontia orthodontic patients and compare them to healthy controls using digital study models.

Methods Fifty subjects (30 females, 20 males) divided into two groups – 25 with hypodontia (15 females, 10 males) and 25 sex-matched controls (15 females, 10 males) – were included in the study. Alginate impressions were taken and plaster models poured, digitized, and imported into software where mesiodistal dimensions were obtained.

Results Intra-operator reliability was high. All teeth in the hypodontia group had smaller mesiodistal dimensions compared to controls. Statistical significance was noted for all teeth except for upper canines. No statistically significant differences were found between males and females in neither the hypodontia nor the control group, except for lower canines, which were significantly smaller in both hypodontia and control females. The most commonly missing teeth were upper lateral incisors, and lower and upper premolars.

Conclusion Hypodontia group presented with smaller mesiodistal dimensions compared to controls. The greatest difference in mesiodistal dimensions was found in upper lateral incisors and lower first molars. Lower canines were significantly larger in males compared to females in both groups.

Keywords: hypodontia; tooth agenesis; mesiodistal dimensions; tooth size

INTRODUCTION

Tooth agenesis is a common dental anomaly that occurs either in a non-syndromic form or as a part of various syndromes. Non-syndromic hypodontia of permanent teeth is one of the most common developmental dental anomalies in humans. Different terms, such as hypodontia, oligodontia, and anodontia are used to describe it. Hypodontia is used when one to six teeth (excluding third molars) are congenitally missing. Oligodontia means that more than six teeth (excluding third molars) are missing, whereas anodontia denotes extreme cases of complete absence of teeth. Hypodontia is more common in permanent than in primary dentition. According to the literature, prevalence of tooth agenesis in permanent dentition varies 1.6–36.5% depending on the population [1]. Results of a recent systematic review on the prevalence of hypodontia, which included 93 studies from 2002 to 2012, concluded the prevalence of hypodontia was 6.4%. The same study found statistically significant differences in the geographic prevalence of hypodontia. It was highest in Africa (13.4%), followed by Europe (7%), Asia (6.3%), and Australia (6.3%), with the lowest prevalence in North America (5%) and Latin America and the Caribbean (4.4%).

However, the authors did not find statistically significant differences in prevalence depending on the examined population, i.e., school children, dental patients, and orthodontic patients. This study also showed that most commonly, one or two teeth were congenitally missing (about 81%), three to five teeth were missing in 14% of cases, while six or more teeth were missing in only 3% of cases [2]. Janošević et al. [3] have reported the prevalence of hypodontia in Serbian children to be 6.28%, which is similar to hypodontia prevalence amongst other south-Slavic nations, i.e., in the Croatian (5.52%), Slovenian (6.9%), and Macedonian (7.52%) populations [4, 5, 6]. Several studies reported hypodontia to be more prevalent in females than in males [2, 7].

The etiology of tooth agenesis is still unclear. Hypodontia has been regarded as a multifactorial condition with genetic, epigenetic and environmental influences, the interplay of which can lead to various anomalies in tooth size and number [8]. Hundreds of genes have been connected with the patterning, morphogenesis, and cell differentiation in teeth so far [9]. Numerous studies have reported on the connection between tooth number and tooth size anomalies, and most of them have concluded that tooth dimensions were smaller in

patients with hypodontia compared to controls [10, 11, 12]. Furthermore, a reduction in tooth size has also been observed in unaffected relatives of hypodontia patients [13], indicating a genetic influence on the link between the number and size of teeth.

Tooth size discrepancies affect buccal interdigitation, overjet, overbite, and midline position. Moreover, several authors have concluded that hypodontia impacts functional and psychosocial aspects of the patient's well-being, therefore affecting their quality of life [14–17]. Thus, the evaluation of tooth size and tooth number anomalies plays an important part in orthodontic diagnosis and treatment planning [13]. Both researchers and clinicians have used different techniques to evaluate and quantify tooth size and shape. The most common tool used for more than a century has been a caliper, which has been modernized into a digital caliper. Three-dimensional (3D) imaging and scanning has been introduced to orthodontics at the beginning of the 21st century. Laser scanners, cone-beam computed tomography scanners, stereophotogrammetry, amongst others, have been used for obtaining 3D images of teeth, jaws, and soft-tissues for over a decade now [18, 19]. Apart from being used to store patients' models and information electronically, 3D imaging has also found its place in virtual 3D diagnostics and tooth movement analyses by superimposition of pretreatment and posttreatment models [20, 21].

The aim of our study was to assess mesiodistal tooth dimensions in hypodontia patients and compare them to those of healthy controls using digital study models.

METHODS

Study sample

The study involved 50 subjects (30 females, 20 males) treated at the Department of Orthodontics, School of Dental Medicine, University of Belgrade. The sample was divided into two groups – one consisted of 25 subjects (15 females, 10 males) with hypodontia and the other consisted of 25 sex-matched controls (15 females, 10 males) without hypodontia.

Inclusion criteria

Inclusion criteria for the hypodontia group were as follows:
- one or more congenitally missing teeth (excluding third molars);
- no evidence, reported by the patient or noted upon clinical examination, of any syndrome known to be associated with hypodontia.

Inclusion criteria for the control group were as follows:
- no sign of hypodontia (excluding third molars);
- sex-matched to the hypodontia group.

Diagnosis of tooth agenesis was based on clinical examination, panoramic radiographs and anamnestic data. Deciduous teeth, erupting teeth, impacted teeth, teeth with large lesions or dental restorations, and teeth with defects

on the dental casts were excluded from the study. Sixty-seven teeth were excluded from the hypodontia group, while 82 teeth were congenitally missing. Thirty-eight teeth were excluded from the control group. Upper and lower incisors, canines, premolars and first molars were measured. A total number of 451 teeth were measured in the hypodontia group and 562 in the control group. In the hypodontia group, 56% of patients had one or two teeth congenitally missing, 28% had three to six teeth missing, and 16% had more than six teeth missing.

This research was approved by the Human Research Ethics Committee of the School of Dental Medicine, University of Belgrade (resolution number 36/31 from December 4, 2014).

Data collection

Alginate impressions were taken for patients in both groups. Plaster models were poured on the same day and study models were trimmed. Each study model was positioned on a stand and scanned by a single operator (MZ) using the NextEngine 3D scanner HD (Next Engine Inc., Santa Monica, CA, USA; Figure 1). Digitized study models were saved as stereolithography (.stl) files and imported into the Geomagic Control software (Raindrop

Figure 1. Scanning of a study model positioned on a stand with NextEngine 3D scanner HD (Next Engine Inc., Santa Monica, CA, USA)
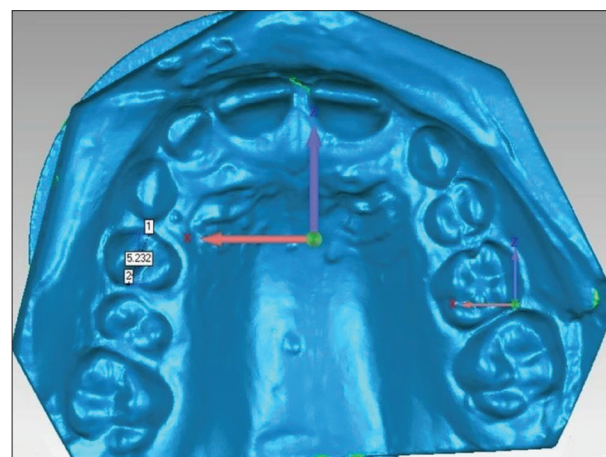
Figure 2. Measuring the mesiodistal dimension of upper right first premolar in the Geomagic software

Geomagic Inc, Cary, NC, USA), where they were converted to the .wrp format, a file format proprietary to Geomagic. Mesiodistal crown width was measured as the greatest distance between the contact points on the interproximal surfaces of tooth crowns (Figure 2). Upper and lower incisors, canines, premolars and first molars were measured on both the left and the right side of each dental arch and the dimensions were averaged. All measuring was done by the same operator (MZ). All teeth in the hypodontia group were measured twice, approximately one week apart. A total number of 451 teeth from the hypodontia group were included in the intra-operator error study. The values for left and right teeth were averaged and compared between two measurements.

Statistical analysis

All recorded data was analyzed using IBM SPSS Statistics, Version 20.0 (IBM Corp., Armonk, NY, USA). The Kolmogorov–Smirnov test revealed the sample was normally distributed – therefore, parametric tests were used. The independent samples t-test was used to evaluate whether the diagnosis (presence/absence of hypodontia) and sex had an effect on the measurements. Paired samples t-test was used to evaluate the differences between measurements. Level of significance was set at p < 0.05.

RESULTS

Intra-operator reliability levels were high, with no statistically significant differences between the two sets of measurements (Table 1).

All the teeth in the hypodontia group had smaller mesiodistal dimensions compared to the controls (Tables 2 and 3). Statistically significant differences in mesiodistal dimensions between the groups were noted for all teeth, except for upper canines (Table 2). Upper lateral incisors (Table 2) and lower first molars (Table 3) showed the greatest differences in mesiodistal dimensions between the hypodontia and the control group.

No statistically significant differences were found between males and females in neither the hypodontia (Tables 4 and 5) nor the control group (Tables 5 and 6), except for lower canines, which were significantly smaller in females in both the hypodontia (Table 5) and the control group (Table 7).

Table 1. Intra-operator error assessment between two measurements in the hypodontia group

Tooth	Maxilla			Mandible		
	n	Error (mm)	SD	n	Error (mm)	SD
I1	25	0	0.24	24	-0.08	0.23
I2	13	0.07	0.21	25	0.02	0.22
C	15	0.08	0.31	20	-0.01	0.29
PM1	21	0.02	0.19	19	0.07	0.19
PM2	13	0.02	0.24	12	-0.01	0.15
M1	24	0.02	0.17	24	0.10	0.33

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar

Table 2. Mean values and standard deviations for the hypodontia and the control group – maxilla

Tooth	Group	n	Mean	SD	p
I1	Hypodontia	25	8.04	0.45	< 0.001***
	Control	25	8.59	0.48	
I2	Hypodontia	13	5.47	0.74	< 0.001***
	Control	25	6.74	0.48	
C	Hypodontia	15	7.44	0.54	0.114
	Control	25	7.67	0.38	
PM1	Hypodontia	21	6.43	0.46	0.001**
	Control	14	7.03	0.44	
PM2	Hypodontia	13	6.16	0.43	0.003**
	Control	25	6.61	0.42	
M1	Hypodontia	24	9.25	0.59	< 0.001***
	Control	25	10	0.53	

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar;
*p < 0.05;
**p < 0.01;
***p < 0.001

Table 3. Mean values and standard deviations for the hypodontia and the control group – mandible

Tooth	Group	n	Mean	SD	p
I1	Hypodontia	24	5	0.4	< 0.001***
	Control	25	5.4	0.27	
I2	Hypodontia	25	5.49	0.38	< 0.001***
	Control	25	6.01	0.32	
C	Hypodontia	20	6.59	0.51	0.029*
	Control	25	6.89	0.38	
PM1	Hypodontia	19	6.51	0.57	0.006**
	Control	21	6.95	0.39	
PM2	Hypodontia	12	6.33	0.42	< 0.001***
	Control	25	6.96	0.48	
M1	Hypodontia	24	9.38	0.72	< 0.001***
	Control	24	10.44	0.58	

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar;
*p < 0.05;
**p < 0.01;
***p < 0.001

Table 4. Mesiodistal dimensions of teeth by sex in the maxilla – hypodontia group

Tooth	Sex	n	Mean	SD	p
I1	Male	10	7.86	0.45	0.104
	Female	15	8.16	0.43	
I2	Male	5	5.56	0.61	0.753
	Female	8	5.41	0.85	
C	Male	5	7.61	0.69	0.397
	Female	10	7.35	0.47	
PM1	Male	7	6.34	0.25	0.541
	Female	14	6.48	0.53	
PM2	Male	5	5.82	0.3	0.018*
	Female	8	6.37	0.37	
M1	Male	9	9.28	0.68	0.841
	Female	15	9.23	0.55	

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar;
*p < 0.05;
**p < 0.01;
***p < 0.001

Table 5. Mesiodistal dimensions of teeth by sex in the mandible – hypodontia group

Tooth	Sex	n	Mean	SD	p
I1	Male	9	5.12	0.48	0.304
	Female	15	4.94	0.35	
I2	Male	10	5.58	0.4	0.312
	Female	15	5.43	0.36	
C	Male	7	6.90	0.48	0.040*
	Female	13	6.42	0.46	
PM1	Male	7	6.70	0.7	0.265
	Female	12	6.39	0.48	
PM2	Male	5	6.2	0.21	0.395
	Female	7	6.42	0.52	
M1	Male	9	9.23	0.96	0.434
	Female	15	9.47	0.55	

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar;
*p < 0.05;
**p < 0.01;
***p < 0.001

Table 6. Mesiodistal dimensions of teeth by sex in the maxilla – control group

Tooth	Sex	n	Mean	SD	p
I1	Male	10	8.68	0.54	0.414
	Female	15	8.52	0.45	
I2	Male	10	6.94	0.34	0.098
	Female	15	6.61	0.53	
C	Male	10	7.75	0.37	0.454
	Female	15	7.63	0.4	
PM1	Male	9	7.13	0.46	0.264
	Female	5	6.85	0.38	
PM2	Male	10	6.61	0.41	0.977
	Female	15	6.61	0.44	
M1	Male	10	9.97	0.42	0.810
	Female	15	10.02	0.61	

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar;
*p < 0.05;
**p < 0.01;
***p < 0.001

Table 7. Mesiodistal dimensions of teeth by sex in the mandible – control group

Tooth	Sex	n	Mean	SD	p
I1	Male	10	5.40	0.31	0.982
	Female	15	5.4	0.26	
I2	Male	10	6.01	0.31	0.947
	Female	15	6.01	0.33	
C	Male	10	7.12	0.42	0.012*
	Female	15	6.74	0.28	
PM1	Male	10	6.98	0.45	0.742
	Female	11	6.92	0.34	
PM2	Male	10	6.92	0.44	0.762
	Female	15	6.98	0.52	
M1	Male	9	10.66	0.43	0.140
	Female	15	10.3	0.63	

I1 – central incisor; I2 – lateral incisor; C – canine; PM1 – first premolar;
PM2 – second premolar; M1 – first molar;
*p < 0.05;
**p < 0.01;
***p < 0.001

The most commonly missing teeth in our study sample were upper lateral incisors (35% of all congenitally missing teeth), followed by lower (24%) and upper (16%) second premolars.

DISCUSSION

The purpose of this study was to evaluate and compare mesiodistal dimensions of teeth in patients with and without hypodontia using 3D scans of dental casts and the Geomagic software. Results of our study showed that patients with hypodontia had significantly smaller mesiodistal crown dimensions compared to controls, except for upper canines, where no statistical significance was found. This is in accordance with the results published by Brook et al. [10], Gungor and Turkkahraman [11], Al Shahrani et al. [22], Fekonja [23], and Kerekes-Mathe et al. [24]. Brook et al. [10] have also found no statistically significant differences for upper canines, and upper left, and lower right first premolars in females. However, in their hypodontia male group, all teeth were significantly smaller compared to controls, except for lower right central incisors and upper right first and second premolars, which even showed an increase. They have found the difference in size to be greater in patients with more severe hypodontia [11]. Fekonja [23] has found teeth in the hypodontia group to be significantly smaller compared to controls as well, and so have Kerekes-Mathe et al. [24]. Al-Shahrani et al. [22] have similarly reported a decrease in tooth dimension in the hypodontia group compared to controls, with statistical significance present in the severe hypodontia group only, while Gungor and Turkkahraman [11] reported statistical significance for both the mild and the severe hypodontia group, the latter showing greater differences.

According to the results of our study, upper lateral incisors and lower first molars showed the greatest differences in mesiodistal dimensions between the hypodontia group and the controls. The fact that upper lateral incisors showed that the greatest difference is in line with the theory of morphogenetic fields (incisor, canine, premolar, molar), according to which "key teeth" (maxillary central incisor, mandibular lateral incisor, canine, first premolar, first molar) display the highest heritability, whereas those positioned more distally within the field show lower heritability, and therefore are more prone to morphological variability [25]. Several studies, including a recent one of the Croatian population, by Vidaković et al. [26], have confirmed this theory, while other authors failed to find proof for these trends [27]. The reasons stated in the research of authors who failed to find proof for the morphogenetic fields theory might explain the fact that in our research lower first molars, which are considered "key" teeth, showed greater variability and were significantly smaller in the hypodontia group compared to the control group. Gungor and Turkkahraman [11] found upper first premolars (mild hypodontia group) and upper lateral incisors (severe hypodontia group) to be the teeth with the greatest differences in mesiodistal dimensions. According to the results published by Brook et al [10], upper lateral

incisors were again the teeth with the smallest mesiodistal dimensions, followed by lower central incisors. These authors have also found upper first molars and lower canines to be markedly smaller in the female hypodontia group of their sample. On the other hand, Kerekes-Mathe et al. [24] reported that in female subjects, upper first premolars had the smallest dimensions, followed by upper canines, upper central incisors, lower central incisors, and lower second premolars. In male subjects of the same study, teeth with the smallest dimensions were upper central incisors, upper lateral incisors, upper canines, lower second premolars and lower central incisors, respectively. According to a recent study by Khalaf et al. [2], upper lateral incisors were, again, the most affected in terms of tooth size reduction, whereas the least affected were lower first molars, which is opposite to our findings.

Comparing tooth sizes between sexes in our sample has revealed that lower canines had significantly greater mesiodistal dimensions in males than in females in both groups. However, in the hypodontia group upper second premolars were significantly larger in females. This might not have been the case if larger samples had been available, since second premolars are often congenitally missing, and only five second premolars were available in the male hypodontia group, and eight in the female hypodontia group of our sample. Insignificantly larger mesiodistal dimension in females compared to males were found for upper first premolars and central incisors, and lower second premolars and first molars in the hypodontia group, and for upper first molars and lower second premolars in the control group. Gungor and Turkkahraman [11] also found insignificantly larger upper central incisors in the female hypodontia group, while Fekonja [23] found insignificantly larger upper left first premolars and upper right first molars in the female hypodontia group. Kerekes-Mathe et al. [24] reported significantly smaller tooth crown dimensions in females compared to males of the hypodontia group.

The most commonly missing teeth in our study sample were upper lateral incisors, followed by lower and upper second premolars. These results are in line with those published in the meta-analyses by Khalaf et al. [2] and Polder et al. [7], which reported the most commonly congenitally missing teeth were lower second premolars, upper lateral incisors, and upper second premolars. Same results were published by Janošević et al. [3], where lower second premolars and upper lateral incisors were the most commonly missing teeth in the Serbian population sample.

Even though we did not evaluate the reliability or accuracy of digital versus plaster study model measurements, we thought we should mention that most studies published so far have found excellent reproducibility, reliability, and accuracy of measurements made on scanned digital models and the differences between measurements made on digital and plaster models were clinically acceptable and reproducible [28, 29]. The software used in our research, Geomagic, was also used by Zhou et al. [30], who found the mean difference between the plaster and virtual model measurements were approximately 0.05 mm. That is both clinically and statistically insignificant and speaks in favor of the reliability of the measurements obtained in our study. High intra-operator reliability levels and no significant differences between measurements in our study also confirm the reliability of Geomagic software for obtaining mesiodistal tooth dimensions.

CONCLUSION

Hypodontia group presented with smaller mesiodistal dimensions compared to healthy controls. The greatest difference in mesiodistal dimensions was found in upper lateral incisors and lower first molars. Lower canines were significantly larger in males compared to females in both groups.

ACKNOWLEDGEMENT

Conflict of interest: None declared.

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.
2. Khalaf K, Miskelly J, Voge E, Macfarlane TV. Prevalence of hypodontia and associated factors: a systematic review and meta-analysis. J Orthod. 2014;41(4):299–316.
3. Janošević M, Filipović G, Rusić-Tasić V. Frequency of hypodontia of permanent teeth in children. Acta Stomatologica Naissi. 2004;20(45):219–26.
4. Visković R, Juršić A, Cmelnik N. Hipodoncija-prevalencija i varijacije u ortodontskih pacijenata. Acta Stomat Croat. 1988;22(1):23–31.
5. Fekonja A. Hypodontia prevalence over four decades in a Slovenian population. J Esthet Restor Dent. 2015;27(1):37–43.
6. Acev DP, Gjorgova J. Prevalence of Hypodontia in the Permanent Dentition of Macedonian Population. Balk J Dent Med. 2014;18(2):93–8.
7. Polder BJ, Van't Hof MA, Van der Linden FP, Kuijpers-Jagtman AM. A meta-analysis of the prevalence of dental agenesis of permanent teeth. Community Dent Oral Epidemiol. 2004;32(3):217–26.
8. Jeong KH, Kim D, Song YM, Sung J, Kim YH. Epidemiology and genetics of hypodontia and microdontia: a study of twin families. Angle Orthod. 2015;85(6):980–5.
9. Thesleff I. From understanding tooth development to bioengineering of teeth. Eur J Oral Sci. 2018;126 Suppl 1:67–71.
10. Brook AH, Griffin RC, Smith RN, Townsend GC, Kaur G, Davis GR, et al. Tooth size patterns in patients with hypodontia and supernumerary teeth. Arch Oral Biol. 2009;54 Suppl 1:S63–70.

11. Gungor AY, Turkkahraman H. Tooth sizes in nonsyndromic hypodontia patients. Angle Orthod. 2013;83(1):16–21.

12. Schalk-van der Weide Y, Steen WH, Beemer FA, Bosman F. Reductions in size and left-right asymmetry of teeth in human oligodontia. Arch Oral Biol. 1994;39(11):935–9.

13. Sisman Y, Uysal T, Gelgor IE. Hypodontia. Does the prevalence and distribution pattern differ in orthodontic patients? Eur J Dent. 2007;1(3):167–73.

14. Anweigi L, Allen PF, Ziada H. The use of the Oral Health Impact Profile to measure the impact of mild, moderate and severe hypodontia on oral health-related quality of life in young adults. J Oral Rehabil. 2013;40(8):603–8.

15. Kotecha S, Turner PJ, Dietrich T, Dhopatkar A. The impact of tooth agenesis on oral health-related quality of life in children. J Orthod. 2013;40(2):122–9.

16. Crossan E, O'Connell AC. Parental perception on oral health-related quality of life and dental features of ectodermal dysplasia and isolated hypodontia in children. BMC Oral Health. 2021;21(1):510.

17. Elsherif N, Rodriguez J, Ahmed F. The prevalence and management of patients with hypodontia: A cross-sectional study. J Orthod. 2021;14653125211065457.

18. Palomo JM, El H, Stefanovic N, Eliliwi M, Elshebiny T, Pugliese F. 3D Cephalometry. In: Retrouvey JM, Abdallah MN, editors. 3D Diagnosis and Treatment Planning in Orthodontics. Springer, Cham; 2021. p. 93–127.

19. Elshebiny T, Pugliese F, Stefanovic N, Eliliwi M, Palomo JM. Intraoral Scanning. In: Retrouvey JM, Abdallah MN, editors. 3D Diagnosis and Treatment Planning in Orthodontics. Springer, Cham; 2021. p. 129–46.

20. Taneva E, Kusnoto B, Evans CA. 3D scanning, imaging, and printing in orthodontics. In: Farid Bourzgui, editor. Issues in contemporary orthodontics. London, UK: IntechOpen; 2015. p. 148.

21. Tarraf NE, Ali DM. Present and the future of digital orthodontics. Semin Orthod. 2018;24(4):376–85.

22. Al-Shahrani I, Dirks W, Jepson N, Khalaf K. 3D-Geomorphometrics tooth shape analysis in hypodontia. Front Physiol. 2014;5:154.

23. Fekonja A. Comparison of mesiodistal crown dimension and arch width in subjects with and without hypodontia. J Esthet Restor Dent. 2013;25(3):203–10.

24. Kerekes-Mathe B, Brook AH, Martha K, Szekely M, Smith RN. Mild hypodontia is associated with smaller tooth dimensions and cusp numbers than in controls. Arch Oral Biol. 2015;60(9):1442–9.

25. Butler PM. The Teeth of the Jurassic Mammals. Proceedings of the Zoological Society of London. 1939;B109(3–4):329–56.

26. Vidaković A, Anić-Milošević S, Borić DN, Meštrović S. Mesiodistal and Buccolingual Dimensions in Croatian Orthodontic Hypodontia Patients'Teeth. Acta Stomatol Croat. 2018;52(1):12–7.

27. Dempsey PJ, Townsend GC. Genetic and environmental contributions to variation in human tooth size. Heredity (Edinb). 2001;86(Pt 6):685–93.

28. Verma RK, Singh SP, Verma S, Kumar V, Bhupali NR, Arora S. Comparison of reliability, validity, and accuracy of linear measurements made on pre- and posttreatment digital study models with conventional plaster study models. J Orthod Sci. 2019;8:18.

29. Camardella LT, Ongkosuwito EM, Penning EW, Kuijpers-Jagtman AM, Vilella OV, Breuning KH. Accuracy and reliability of measurements performed using two different software programs on digital models generated using laser and computed tomography plaster model scanners. Korean J Orthod. 2020;50(1):13–25.

30. Zhou Q, Wang Z, Chen J, Song J, Chen L, Lu Y. Development and evaluation of a digital dental modeling method based on grating projection and reverse engineering software. J Prosthet Dent. 2016;115(1):42–6.

Мезиодисталне димензије зуба ортодонтских пацијената са хиподонцијом у српској популацији

Марија Живковић[1], Неда Љ. Стефановић[1], Бранка Поповић[2], Јована Јулоски[1], Ивана Шћепан[1], Бранислав Глишић[1]

[1]Универзитет у Београду, Стоматолошки факултет, Клиника за ортопедију вилица, Београд, Србија;
[2]Универзитет у Београду, Стоматолошки факултет, Институт за хуману генетику, Београд, Србија

САЖЕТАК
Увод/Циљ Хиподонција је честа стоматолошка аномалија која се јавља одвојено или у оквиру различитих синдрома. Сматра се мултифакторијалним обољењем на које утичу генетика, епигенетика и спољашња средина, чија интеракција доводи до различитих неправилности у величини и броју зуба.
Циљ ове студије био је да се одреде мезиодисталне димензије зуба пацијената са хиподонцијом и да се упореде са промерима зуба здравих пацијената помоћу дигиталних студијских модела.
Методе Педесет пацијената (30 особа женског пола, 20 особа мушког пола) подељено у две групе – 25 са хиподонцијом (15 особа женског пола, 10 особа мушког пола) и 25 полно усклађених здравих особа (15 особа женског пола, 10 особа мушког пола) – укључено је у истраживање. На основу алгинатних отисака изливени су гипсани модели, који су дигитализовани и унети у рачунарски програм у коме су одређени мезиодистални промери зуба.

Резултати Интраоператорска поузданост је била висока. Сви зуби пацијената са хиподонцијом су имали мање мезиодисталне промере у поређењу са контролном групом. Статистичка значајност је уочена за све зубе, осим за горње очњаке. Статистички значајне разлике између полова нису уочене ни у оквиру групе са хиподонцијом ни у оквиру контролне групе, осим за доње очњаке, који су били значајно мањи код особа женског пола у обе групе. Најчешће су недостајали латерални секутићи, затим доњи, па горњи премолари.
Закључак Пацијенти са хиподонцијом су имали мање мезиодисталне промере зуба у односу на контролну групу. Највећа разлика је уочена код горњих латералних секутића и доњих првих молара. Доњи очњаци су били значајно већи код особа мушког пола у обе групе.

Кључне речи: хиподонција; агенеза зуба; мезиодисталне димензије; величина зуба