

## Diastema today and yesterday\*

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**Bull Int Assoc Paleodont. 2018;12(1):29-32.**

### Abstract

Diastema in dentistry is the space between teeth. The most characteristic is maxillary midline diastema between upper central incisors. The aim of the paper was to present the prevalence of diastema and the attractiveness of diastema in different cultures and countries from ancient till contemporary times. In anthropoid apes, diastemas were present in the maxilla between the lateral incisors and canines and in the mandible the pre- and post-canine regions in connection with large elongated canines. The prevalence of individuals with diastema from Late Antique and Early Medieval period was approximately 5% and nowadays it is between 3.7% to as much as 36.8%. The perception of diastema has been the same for ages – it is a symbol of attractiveness.

**Keywords:** diastema; paleontology; ancient populations; contemporary populations

*\* Authors are responsible for language correctness and content.*



## Introduction

The word diastema comes from Greek *diastasis* and means separation. Diastema in dentistry is the space between teeth. The most characteristic is maxillary midline diastema (MMD) between upper central incisors (1).

The most relevant for diastema occurrence are environmental factors, such as movement of teeth because of periodontitis, bad habits, loss of teeth or incisors protrusion, genetic factors. Very often diastema appears in family history and this suggests its genetic background. The hereditary factors in diastema occurrence are more important in Caucasian than Negroid population. Its genealogy suggests the autosomal dominant inheritance (2).

In anthropoid apes, diastemas were present in the maxilla between the lateral incisors and canines and in the mandible the pre- and post-canine regions in connection with large elongated canines (3). In contrast, humans had both canines and jaws smaller than apes. Furthermore some researchers (4) have suggested that the reduction in size of the canines was accompanied by a reduction in jaw size, and the subsequent closure of the interproximal spaces to a point where "diastemas are lost in man".

The prevalence of diastemas is different in different populations and ages. The prevalence of individuals from Late Antique (third–fifth centuries AD) and Early Mediaeval (sixth–tenth centuries AD) period in Croatia with diastema was approximately 5% (Figure 1 and 3). The prevalence of adults with maxillary midline diastema was 2.4% in the past in Early Medieval times (5) but the most frequent were diastemas between the upper second incisors and the upper canines (the upper "primate space") (31.6% of all diastemas), followed by upper medial diastema (26.3% of all diastemas). The occurrence of diastema in the past in Late Antique people from Croatia was observed only in males (4.92%). Different results were noted in Early Medieval times, when 5.77% females and 4.04% males had diastema (5). The lower "primate space", the space that occurs between canine and first premolar in lower jaw was recorded three times in two individuals (15.8% of all diastemas).

Lavelle in 1970s noted that in the United Kingdom spaces in dentition were observed in approximately 50% in three different human populations. He found that 3.4% of Caucasians, 5.5% of Negroids and 1.7% of Mongoloids were affected by this condition (6). Another study

conducted by Lindsey showed the results of about two-thirds of children in whom only central incisors had erupted and exhibited the MMD (7). Nowadays the prevalence of diastemas is between 3.7% (8) to as much as 36.8% (9). Such large discrepancies in results are related to the size of diastema and different groups of investigated population. Brunelle et al. investigated prevalence and distribution of occlusal characteristics in the US population between 1988 and 1991 years and they found that the incidence of diastema greater than 2 mm among Americans is different in different ethnic groups. The incidence of diastema in African Americans was 16.2%, among Mexican Americans it was 6.6% and only 4.9% in white Americans (10). Moreover diastema was more common in men (7.7%) than in women (5.3%) (10). In Nigeria the incidence of diastema greater than 1mm in the adolescent population between 12 and 17 years of age was 36.8%, which is more common than crowding of the teeth, which accounts for 20% (9).

The occurrence of diastema is changing during growth. A study in Columbia showed that the incidence of diastema greater than 2 mm was the greatest in the early mixed dentition which is called "ugly duckling stage" (11) and in this stage of growth there was 13.5% of diastemas. Then occurrence of diastema decreased during growth to 4% in the late mixed dentition and finally it occurred in 3.7% of adults (8). Similarly, decreased occurrence of diastema with age was among Taiwanese children. Diastema greater than 0.5 mm occurs in 64.6% of six-year old children. After lateral incisors and canines eruption the frequency of diastema decreased. At the age of 12 years, 23.2% of boys and 5.4% of girls had diastema. This significant difference between the sexes was related to the earlier development of the dentition in girls than in boys (12).

Also it has been observed that the size of diastema is different in different ages. In the Early Medieval samples the size of maxillary midline diastema was the following: 3.4 mm for females, and 2.5 mm for males (5). In nowadays research the average size of maxillary midline diastema in Polish young adult groups of patients (Figure 2 and 4) was observed as 2.09 mm +/- 0.87 (13).

Another aspect is the attractiveness of diastema that is different in different cultures and countries. In Nigeria, it is an indication of attractiveness and natural beauty, especially in women (9). There are interesting ritual

behaviors in Toposa tribe in South Sudan. From early childhood diastema is purposely created by inserting wooden sticks between central incisors and keeping them till adulthood, achieving this symbol of formosity (14).



Figure 1. Maxillary Midline Diastema present in Late Antique dentition – palatal view.



Figure 2. Maxillary Midline Diastema present in contemporary dentition – palatal view.

This atypical precedent we can even observe today when young female adolescents in order to look like famous actresses or models try to create by themselves the diastema between central incisors by grinding the surface of enamel. In France diastema is called „Teeth of good luck” (15). Nowadays, maxillary midline diastema has become more popular in British fashion magazines. Lewis et al. showed that the appearance of photographs of Caucasian females displaying maxillary midline diastema

found in British Vogue and Glamour increased between 2003 and 2012 (16).



Figure 3. Convergent Maxillary Midline Diastema in Late Antique dentition – en face view.



Figure 4. Convergent Maxillary Midline Diastema in contemporary dentition – en face view.

Even from the dental point of view diastema is a tooth disorder which influences the smile and face esthetics but on the other hand the presence of midline diastema among dentition of celebrities makes them more characteristic and even increases their sexuality. So from ancient till contemporary times the perception of diastema is the same – it is a symbol of attractiveness.

### Acknowledgements

Authors would like to express their gratitude to assoc. prof. Marin Vodanovic from the Department of Dental Anthropology, School of Dental Medicine University of Zagreb in Croatia for his kind support with images.

### References

1. Erdemir U, Yildiz E. Esthetic and Functional Management of Diastema: A Multidisciplinary Approach. Springer International Publishing; 2015.
2. Gass JR, Valiathan M, Tiwari HK, Hans MG, Elston RC. Familial correlations and heritability of maxillary midline diastema. *Am J Orthod Dentofac Orthop.* 2003;123(1):35-9.
3. Schultz AH. The relation in size between premaxilla, diastema and canine. *Am J Phys Anthropol.* 1948;6(2):163-80.
4. Montagu MFA. The significance of the premaxillary diastema in *pithecanthropus robustus* (Skull IV). *Am J Phys Anthropol.* 1946;4(2):193-8.
5. Vodanović M, Galić I, Strujić M, Peroš K, Šlaus M, Brkić H. Orthodontic anomalies and malocclusions in Late Antique and Early Mediaeval period in Croatia. *Arch Oral Biol.* 2012;57(4):401-12.
6. Lavelle CL. The distribution of diastemas in different human population samples. *Scand J Dent Res.* 1970;78(6):530-4.
7. Lindsey D. The upper mid-line space and its relation to the labial fraenum in children and in adults. A statistical evaluation. *Br Dent J.* 1977;143(10):327-32.
8. Thilander B, Pena L, Infante C, Parada SS, De Mayorga C. Prevalence of malocclusion and orthodontic treatment need in children and adolescents in Bogota, Colombia. An epidemiological study related to different stages of dental development. *Eur J Orthod.* 2001;23(2):153-67.
9. Onyeaso CO. Prevalence of malocclusion among adolescents in Ibadan, Nigeria. *Am J Orthod Dentofac Orthop.* 2004;126(5):604-7.
10. Brunelle JA, Bhat M, Lipton JA. Prevalence and distribution of selected occlusal characteristics in the US population, 1988-1991. *J Dent Res.* 1996;75:706-13.
11. Broadbent H. The Face of the Normal Child. *Angle Orthod.* 1937;7(4):183-208.
12. Liu JF, Hsu CL, Chen HL. Prevalence of developmental maxillary midline diastema in Taiwanese children. *J Dent Sci.* 2013;8(1):21-6.
13. Sękowska A, Chalas R. Diastema size and type of upper lip midline frenulum attachment. *Folia Morphol.* 2017;76(3):501-5.
14. Garve R. Zahn, Kultur Und Magie Orofaziale Und Kraniale Mutilationen Des Menschen Im Kulturellen Kontext. Quintessenz Verlag Berlin; 2015.
15. Attia Y. Midline diastemas: closure and stability. *Angle Orthod.* 1993;63(3):209-12.
16. Lewis KC, Sherriff M, Stewart Denize E. Change in frequency of the maxillary midline diastema appearing in photographs of Caucasian females in two fashion magazines from 2003 to 2012. *J Orthod.* 2014;41(2):98-101.