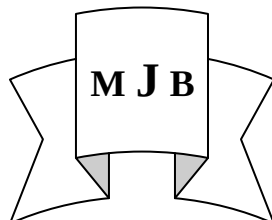


Median Diastema in a College Students Sample in the Baghdad City

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Abstract

Background: Maxillary midline diastemas are a common esthetic problem that dentists must treat. Many innovative therapies have been used, varying from restorative procedures to surgery (frenectomies) and orthodontics. This study aimed at determining the prevalence, heredity and acceptance of diastema in a sample of Iraqi students in institute of medical technology in Baghdad.

Material and method: This study was based on examination of a sample of students of institute of medical technology/ Baghdad to determine the prevalence, satisfaction and heredity of median diastema in Baghdad from October 2010 till June 2011, the age was ranged between 18 -21 years. A total of 200 students (100 males and 100 females) were randomly selected. Gathered information included the presence of midline central diastema.

Results: The incidence of midline diastema was 28% (maxillary 22.5%, mandibular 2.3%, and both arches- 3.2%). It occurred more frequently in males (40%) than females (16%), and also better appreciated in females (50.6%) than in males (4.1%). A female is more likely to have a maxillary midline diastema (81.2% females: 65% males), while a male is more likely to have a mandibular midline diastema (22.5% males: 12.5% females). Majority of females (87.5%) found with median diastema were dissatisfied with their esthetic and seek treatment, whereas only (40%) were dissatisfied. Close to two-thirds (62.5%; $p>0.05$) of the cases of diastema were inherited, with equal chances in both genders.

Conclusion: The results of this study showed that median diastema is common in the study sample of Iraqi population, most of sample students were unpleasant with their diastema, and diastema could run between families. Further studies on the variations and hereditary patterns of midline diastema among different populations will help greatly on cosmetic dentistry.

Key words: median diastema, prevalence, satisfaction

الفتحة الوسطى للأسنان الأمامية في عينة من الطلبة الجامعيين في مدينة بغداد

الخلاصة

تعتبر الفتحة الوسطية للأسنان الأمامية من المشاكل الشائعة في طب الأسنان والتي يجب علاجها. وهناك طرق عديدة للعلاج منها: ترميم الأسنان الأمامية، الجراحة، أو بتقويم الأسنان.

تختلف نسبة حدوث هذه الحالة من مجتمع إلى مجتمع آخر. إن الغاية من إجراء البحث الحالي هي دراسة مسببة وجود الفتحة الوسطية للأسنان الأمامية في عينة من المجتمع العراقي (ذكور وإناث) وذلك نسبة تقبلها من الناحية الجمالية للأشخاص الذين وجدت لديهم وفي كلا الجنسين وكذلك نسبة وجودها في أحد والديهم أو كليهما وذلك لمعرفة احتمال انتقال هذه الحالة.

تم اخذ ٢٠٠ طالب و طالبة من طلبة المعهد الطبي التقني في بغداد كعينة للبحث (١٠٠ ذكور و ١٠٠ إناث) تتراوح أعمارهم بين ١٨-٢١ سنة و بعد الفحص السريري و السؤال عن مدى تقبل هذه الحالة و مدى رغبته في علاجها أو عدم تأثرها و اعتبارها علامة ايجابية من الناحية الجمالية و كذلك السؤال عن وجود أو عدم وجود هذه الحالة في أحد أو كلا الوالدين.

أظهرت النتائج أن ٢٨% من العينة كان لديهم الفتحة الوسطية للأسنان الأمامية منهم ٢٢.٥% في الفك الأعلى، ٢.٣% في الفك الأسفل و ٣.٢% في كلا الفكين. كما أنها أكثر شيوعاً في الذكور (٤٠%) منها في الإناث (١٦%).

كما إن نسبة وجود الفتحة الأمامية العليا أكثر شيوعاً في الإناث (٨١.٢%) في حين إن الفتحة الأمامية السفلى هي الأكثر في الذكور (٢٢.٥%).

أما من الناحية الجمالية فإن الغالبية العظمى من الإناث (٨٧.٥% إناث مقابل ٤٠% ذكور) قد كن غير موافقات على وجودها و يعتبرن العلاج منها أمراً ضرورياً . كما أظهرت الدراسة أن ما يقرب من ثلثي كل من الذكور و الإناث و بنسبة متساوية (٦٢.٥%) كان لديهم احد أو كلا الوالدين يمتلكان نفس الحالة ما يعني إن الفتحة الأمامية الوسطية قد تنتقل بالوراثة من الآباء إلى الأبناء

Introduction

Maxillary midline diastemas are a common esthetic problem that dentists must treat. Many innovative therapies have been used, varying from restorative procedures to surgery (frenectomies) and orthodontics. At times, these procedures have been performed by the dentist without full appreciation of the factors contributing to the diastemas [1].

Diastema is a distinctive gap or space between two teeth, or it is an anterior midline spacing greater than 0.5 mm between proximal surfaces of crowns of fully erupted maxillary and mandibular central incisors [2]. It is also called “open-teeth” or “gapped

teeth”. It is most commonly applied to an open space between the upper incisors, that is, maxillary midline diastema, being the most common of all the various types [3,4]. This specific diastema has been attributed to genetic and environmental factors, even though it is often a normal feature of growth, especially in primary and mixed dentition. The need for treatment is mainly attributed to esthetic and psychological reasons, rather than functional ones. Although it is often the case, treatment plans should not be selected empirically but rather should be based on adequate scientific documentation[3].



Figure 1 a- Maxillary b-Mandibular c-Maxillary and Mandibular median diastema

A midline diastema usually is part of normal dental development during the mixed dentition. However, several factors can cause a diastema that may require intervention. An enlarged labial frenum has been blamed for most persistent diastemas, but its etiologic role now is understood to represent only a small proportion of cases. Other etiologies associated with diastemas include oral habits, muscular imbalances, physical impediments, abnormal maxillary arch structure, and

various dental anomalies [5]. A possible genetic basis has been suggested for diastema, with a greater role of environmental factors in the Black, than the White population [6].

The incidence of midline diastema varies greatly with the age-group, gender, population and race. This condition is very common in the paediatric age-group at the early stages of dental development [2]. Naturally, after the eruption of the permanent teeth, the gap closes in majority of

them. However, where the diastema remains after the eruption of the permanent incisors and canine, such may not close on its own [1]. Oesterle and Shellhart, in 1999, reported 97% incidence in 5-year-old patients, and this decreased with age [5]. While midline diastema was found in 37% adolescent in Nigeria[4]

There are divergent views on diastema. The aesthetic importance varies in relation to culture, age group and racial background. Influenced by such culture and social forms, individuals without a diastema may desire to have it created through cosmetic dentistry, while some others with diastema would rather want it closed or removed, because they find it aesthetically displeasing. [5, 6].

In Africa, maxillary midline diastema is regarded as an attractive dental feature, a sign of beauty, especially in the females, and is used as notable successful trademark[4]. Meanwhile, a study by Oboro et al in 2008 reported that majority of patients interviewed did not support the artificial creation of midline diastema [7].

This study aimed to determine the prevalence, heredity and acceptance of diastema in a sample of Iraqi students in institute of medical technology in Baghdad.

Materials and Methods

Two hundred students were examined in this study, 100 females and 100 males whose age range was

18-21 years. They were selected at random, and examined by millimeter vernier after sitting comfortably on dental chair and reflection of upper and lower lips by lip and cheek retractor, the space between central incisors more than 0.5mm was regarded as median diastema [2]. All sample students are subjected to same criteria that should not have congenital deformity like cleft lip and /or palate, not had trauma to anterior teeth, also should not have caries or filling or veneer crowns in anterior region.

Participants were required to provide information on: the presence or absence of diastema; their perception and preference for diastema; and, the presence or absence of diastema in their parents who are invited to undergo the same examination and same criteria by millimeter vernier after sitting comfortably on dental chair. The incidence and percentage of diastema were determined by simple percentage method, subjected to statistical analysis using the chi-square, with the SPSS software package.

Results

Findings from the study showed that 28% of the study sample students had midline diastema (Table 1). Out of this percentage, the incidence of maxillary midline diastema was 22.5%, mandibular midline diastema was 2.3%, and that of co-existing maxillary and mandibular midline diastema was 3.2% (Table 2a).

Table 1 Presence and absence of median diastema

Occurrence	Female (%)	Male (%)	Total (%)
Present	16(16)	40 (40)	56 (28)
Absent	84 (84)	60 (60)	144 (72)
Total	100 (100)	100 (100)	200 (100)

Table 2a Distribution of the types of Diastema

Type of Diastema			
Maxillary median diastema (%)	Mandibular median diastema (%)	Coexisting maxillary and mandibular (%)	Total (%)
22.5	2.3	3.2	28%

The difference in the types of diastema and gender was statistically significant. About two thirds of the sample with diastema (69.7%: comprising 81.2% females and 65% males) had maxillary midline diastema ($p<0.05$), while 19.6% (12.5%

females; 22.5% males, $p<0.05$) had mandibular midline diastema, and 10.7% (6.3% females; 12.5% males, $p<0.05$) of them had both maxillary and mandibular midline diastema (Table 2b).

Table 2b Distribution of types of Diastema according to gender

Type	Female (%)	Male (%)	Total (%)
Maxillary median diastema	13(81.2)	26(65)	39(69.7)
Mandibular Median diastema	2(12.5)	9(22.5)	11(19.6)
Both	1(6.3)	5(12.5)	6(10.7)
Total	16(100)	40(100)	56(100)

About half of the sample (53.6%, $p<0.05$) considered diastema as an

esthetic problem and were preferring treatment (Table 3).

Table 3 Satisfaction with presence of median diastema

	Female(%)	Male(%)	Total(%)
Satisfied	2(12.5)	24(60)	26(46.4)
Dissatisfied	14(87.5)	16(40)	30(53.6)
Total	16(100)	40(100)	56(100)

It was shown that the heredity of midline diastema in a sample of students in institute of medical

technology in Baghdad was found to be 62.5% ($p>0.05$) (Table 4).

Table 4 Diastema in one or both parents (Heredity)

	Female %	Male %	Total %
Median diastema	10(62.5)	25(62.5)	35(62.5)
No median diastema	6(37.5)	15(37.5)	21(37.5)
Total	16(100)	40(100)	56(100)

Discussion

Previous studies have shown that there are variations in the incidence of this dental feature from one population to another, among people of different racial background, age-group, gender,

as well as the importance attached to it by people of different cultures [2,3,8].

Factors have been implicated as the possible aetiology of diastema among which are the presence of a superior labial frenum, a mismatch between

teeth and jaws, tongue thrusting, or an abnormal jaw bone structure [1, 9,10].

In the current study of diastema in a sample of students in institute of medical technology in Baghdad, an incidence of 28% was found, of which 22.5% had maxillary midline diastema, 2.3% had mandibular midline diastema, and 3.2% had both maxillary and mandibular midline diastema.

The incidence of median diastema found in current study is close to that found in Kuwait (26.8%) [11]. A study among Turkish population showed that midline diastema was observed in (4.5%) of the patients and it was almost equally distributed between the females and males, 35 in females and 33 in males [12], whereas a study among Tanzanians found the incidence to be 26%, 11% and 8% for maxillary, mandibular, and both arches midline diastema respectively (13). These figures were lower in these populations than in the current study. The percentage of median diastema 12.59 % is considerably higher in a study done in Pakistan [14] as compared to prevalence in United Kingdom 3.4 % of Caucasians and 1.6 % of South Indians.

This difference could be attributed to the difference in inclusion criteria, sampling technique or genetic predisposition.

Occurrence of diastema was less in the females, as 16 (16%) of the female sample had diastema, while only 40 (40%) of the male sample had it. This disagrees with an earlier study by Oji and Obiechina (1994) which found diastema to be more prevalent in females [3].

Studies in different population groups consistently showed that maxillary midline diastema occurs more frequently than mandibular midline diastema [2,3,14]. This was also observed in the present study where out of the 28% incidence of

midline diastema, 22.5% was maxillary, 2.3% was mandibular, and the remaining 3.2% comprised of coexisting maxillary and mandibular midline diastema.

While the incidence of mandibular midline diastema in this study was lower than that of diastema occurring in both arches, the study by Athumani and Mugonzibwa (2006) showed higher incidence in the Tanzanian population [14].

Meanwhile, mandibular midline diastema occurred more in males 9(22.5%) than females 2 (12.5%), just as maxillary midline diastema occurred more in females 13(81.2%) than males 26 (65%)[15].

Cultural influence was one of the reasons why some people considered diastema as a disfiguring dental feature requiring treatment, while some others saw it as an advantage to their personality, an enhancement of their beauty, giving them an admirable look and smile [16,17]. In this current study about half students who showed median diastema 26 (46.4%) were satisfied and saw it not affecting the beauty and refused any kind of the treatment by orthodontic, cosmetic light cure or ceramic crowns, while others 30(53.6%) were dissatisfied and seeking treatment.

Fourteen out of sixteen(87.5%) of females found with median diastema were unpleasant, while only 16 out of 40 males (40%) were dissatisfied, this could be attributed to sex difference in esthetic interest at this age in our society.

However, people that see diastema as an aesthetic problem have the opportunity of closing the space. Procedures for closure include frenectomy, orthodontics, restorative dentistry, use of veneers, and various combinations of several dental treatments [1,18,19].

The heredity of midline diastema from the present study was 62.5%, with a equal probability for both males and females (62.5%) to inherit it.

Conclusion

Variations abound in the occurrence of midline diastema from one population to the other. This study shows that maxillary midline diastema occurs more frequently than mandibular midline diastema, and that females are more likely to have a maxillary midline diastema, while males are more likely to have a mandibular midline diastema. Diastema runs in families.

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