

## Incidence of Maxillary Midline Diastema in Iraqi Students in Baghdad City

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### Abstract:

Maxillary midline diastema is one of important numerical anomalies of teeth which character as an open space between the maxillary central incisors so that many studies have been carried out in different countries of the world to find the prevalence of maxillary midline diastema. The purpose of this study was to determine the prevalence of the maxillary midline diastema and assess the gender difference in a selective sample of college and institute Iraqi student age (18-22) year in Baghdad city.

A total sample of (1460) students distributed into (680) males and (780) females. The statistical analysis shows the incidence of maxillary midline diastema is (55) cases in the total sample with percent (3.8%) which is in males (3.4%) and (4.1%) in female. So it is found in females more than in males, the maxillary Midline Diastema.

**Keywords:** *Diastema, maxillary, Supernumerary teeth, central.*

### الفراغ المركزي في الفك العلوي الواقع بين القواطع المركزية لدى طلبة عراقيين في مدينة بغداد

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الفراغ المركزي في الفك العلوي هو أحد المتغيرات المهمة الحاصلة في الأسنان الأمامية، المتمثلة بوجود فراغ بين القواطع المركزية للأسنان الأمامية في الفك العلوي. عدة بحوث ودراسات تمت في مختلف بلدان العالم تناولت توزيع وأسباب حدوث هذا الفراغ.

الغرض من هذه الدراسة هو إيجاد نسبة توزيع هذا الفراغ المركزي على أساس الجنس في مجموعة مختارة من طلبة الجامعات والمعاهد متكونة من (1460) طالباً والذين تتراوح أعمارهم من (18-22) سنة توزعت على 680 ذكور و780 إناث.

أظهرت العمليات الإحصائية بأن هناك (55) حالة لديهم الفراغ المركزي بنسبة (3.8%) موزعة على (3.4%) في الذكور و(4.1%) في الإناث حيث أظهرت الدراسة أن نسبة حدوث الفراغ المركزي في الإناث أكثر منه في الذكور. **الكلمات المفتاحية:** فراغ، الفجوة، الأسنان الزائدة، مركزي.

### Introduction:

The maxillary midline diastema has been of great interest to clinician for a long period of time, Farrer<sup>[1]</sup> described a treatment for it in 1882. Keen<sup>[2]</sup> defined a diastema as a space greater than 0.5 mm between the proximal surfaces of adjacent teeth.

The literature revealed, that the midline diastema has been discussed in the past, mostly from the point of view of etiology and treatment, but with very little

emphasis on prevalence, racial and sexual differences<sup>[3]</sup>.

Angle<sup>[4]</sup> described the midline diastema as a somewhat common form of mal occlusion distinguished by a space between the upper central incisors and occasionally, though very rarely, between the lower centrals, always it's presenting an unple-asing appearance and interfering with speech in proportion to its width.

Diastema is a distinctive gab or space between two teeth<sup>[5,6]</sup>. It's most commonly applied to an open space between the upper central incisors, that is,

maxillary midline diastema<sup>[7,8]</sup> as shown in Figure-1.



**Figure-1: Maxillary Midline Central Diastema.**

The early diagnosis of midline diastema, which easily noticed by parents or general practitioners or pediatric dentists make easily the treatment<sup>[9]</sup>. No definite etiology for midline diastema has been identified. Angle's<sup>[4]</sup> suggestion of abnormal frenum as the cause of midline diastema has been supported by Stones<sup>[10]</sup>, Sicher<sup>[11]</sup> and others. Tait<sup>[12]</sup> stated that the frenum is an effect and not a cause of the diastema. Ceremello<sup>[13]</sup> concluded that the character of frenum is not correlated with the presence or width of diastema. A study by Gass *et al.*<sup>[14]</sup> has suggested there may be genetic susceptibility to development of midline diastema.

Investigation by Numerous authors Nik-Hussen<sup>[15]</sup> and Tay *et al.*<sup>[16]</sup> found a high proportion of patient with supper nummerary teeth have badly displacement of permanent incisors with midline diastema also<sup>[17]</sup> another causes of midline diastema-physiological, dentoalveolar disproportion, missing teeth<sup>[18]</sup>. There have also recently been reports of self-inflicted pathological case of diastema caused by tongue piercing<sup>[19]</sup>. Lavelle<sup>[20]</sup> studied the distribution of diastema in different human population. The study was conducted on (656) subjects belonging to the three major racial groups which included (266) Caucasoid (British), (218) Negroids (West Africa) and (172) Mongoloids (Chinese from Hong Kong and Malaya) ranging in age from (18-25) years.

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The percentage of midline diastema distributions in the three different races were found to be (3.5) in Caucasoid, (5.2) in Negroids and (3.4) in Mongoloids. Taylor<sup>[21]</sup> examined 1067 high school students ranging from (12-18) years and found 75 (7%) to show midline maxillary diastema.

There was no mention of sex and race difference in Taylor's study. Keene<sup>[2]</sup> reported the frequency of diastema in 183 white male Naval recruits selected from a total of 641. The age ranged from 17 to 25 years. He found 8.3% (27 men) to show a maxillary midline diastema. Steigman and Weissberg<sup>[22]</sup> in a study of spaced dentition in adolescent (12-18) years found the incidence of midline maxillary diastema to be (1.4) percent occurring. Hashim Nainar and *et al.*<sup>[7]</sup> in a cross section study of midline diastema in a south India (Madras) population, 9774 patients aged (13-35) years were screened.

The incidence of true maxillary midline diastemas in this population is (1.6) percent (160/9774) which is greater in male. The maxillary midline diastema was assessed by many authors, Horowitz<sup>[23]</sup> reported his finding on the study of occlusal relations on 712 children, 397 Negroes and 321 whites ranging from (10-12) years. He found that the prevalence of the maxillary midline diastema was greater in Negro children than it was in white children.

### **Materials and Methods:**

A sample of one thousand and four hundred and sixty university and institute students participated in this study including all college classes and institute in Baghdad city. A selected sample of students was examined which has an age ranging from 18-22 years. The sample included 680 males and 780 females.

The examining group consisted of a dentist and three dental students of medical institute of technology using a diagnostic set (prope- mirror-twizer). The assessment procedures of maxillary midline diastema

were carried out via intra-orally using [vernier calipers].

A brief history was taken to exclude those students who have a presence or prior orthodontic treatment, and those with incisor or canine tooth extracted that those factors might have created or changed the width of midline diastema and also having no signs and symptoms of any congenital and facial deformity.

The measurements were recorded according to sex counting only those diastema larger than (0.5) mm.

The data were subjected to statistical analysis relative to prevalence and sex.

**Results:**

The finding of this study showed that there were (55) students having maxillary midline diastema from total sample (1460) students examined.

Those (55) cases of maxillary midline diastema were distributed according to the gender of (23) cases in males from (680) students and (32) in females from (780). The percent of maxillary midline diastema was (3.8%) among the total sample which shows that a percent of (3.4%) in males while (4.1%) in females, as shown in table-1.

**Table -1: The number of maxillary midline diastema and its percentage in the sample**

Gender	No. of sample	No. of midline diastema	Percent of Maxillary diastema
Male	680	23	3.4%
Female	780	32	4.1%
Total M and F	1460	55	3.8%

**Discussion and Conclusion:**

Central diastema or so called maxillary midline diastema is a space or gap between proximal surfaces of central incisors<sup>[2,4]</sup> which described by Angle<sup>[4]</sup> as a somewhat formed of mal occlusion. This study shows that maxillary midline diastema is not rare and not common but it is present in a 3.8 percent in the student have been examined some of these cases caused mal occlusion or bad appearance so it needs a treatment. The result of this study presents a slight difference in percent of maxillary midline diastema in females than males; this could be due to genetic or familial factors or hereditary.

This result is less in percent than what found by Taylor<sup>[21]</sup> in studying maxillary midline diastema in 1067 high school student the age (12-18) years. This difference could be due to age range which include 12 years old in which a maxillary midline diastema may be closed spontaneously by growth leading to decrease the percent of maxillary midline diastema later on<sup>[17]</sup>.

Taylor<sup>[21]</sup> also found there was no sexual difference in percent between males

and females which is different from the results in our study which found the percent in females higher than in males, this could be due to the difference in racial human population.

The incidence of maxillary midline diastema in this study compared to a study done by Lavelle<sup>[20]</sup> which is studying the prevalence of maxillary midline diastema in three major racial groups Caucasoid, Negroids and Mongoloids shows it is approximately same as found in Caucasoid and Mongoloids but differ from percent in Negroids, this may be due to different in racial human population.

The findings of this study show the percent of maxillary midline diastema is more than found by Hashim Nainary *et al.*<sup>[23]</sup> which studied the incidence and etiology of midline diastema in a population in South India age 13-35 years and a study done by Steigman and Weissberg<sup>[22]</sup> in adolescents, they found the prevalence of maxillary midline diastema in male is more than in female. This difference may be related to different in racial of population or due to aging group. Also the finding of this study shows a less percent of

distribution of maxillary midline diastema in Iraqi student compared to different studying of prevalence of maxillary midline diastema.

Keene<sup>[2]</sup> reported the frequency of diastema in white male naval recruits age ranged from 17 to 25 is 8.3%.

Horowitz<sup>[24]</sup> reported his finding on the study of occlusal relation on children of Negros and whites ranging from 10-12 years maxillary midline diastema was greater in Negro children than white children, this was due to difference in racial population.

The finding of this study shows that maxillary diastema is less in Iraqi students when it is compared to other studies done in other countries; this difference is mainly due to difference in racial human population.

Also all those persons which are having maxillary midline diastema desire to close it for improving aesthetic and occlusion. This is the same as found in some dentally aware societies the presence of diastema in the anterior region can be so displeasing that many patients are motivated to improve such appearance by orthodontic treatment or restorative veneer<sup>[24,25]</sup>.

However, the perception of diastema varies in relation to culture age group and racial background-Taylor<sup>[21]</sup> Elisha *et al.*<sup>[3]</sup>, Keene<sup>[2]</sup>, Lavelle<sup>[20]</sup>, Hashim Nainary *et al.*<sup>[7]</sup>, Stigman and Weissberg<sup>[22]</sup>.

In a previous report in South Western part of Negroid maxillary diastema is generally regarded as a symbol of beauty, hence individual with midline diastema often enjoy a lot of compliments in the society<sup>[6]</sup>.

As a report done by Arigbede and Adesuwa<sup>[26]</sup> found it is not uncommon among some African natives to find individuals demanding for artificially creating midline diastema from dental practitioner for more beauty.

Also, in South Western part of Nigeria, it was revealed that about (30%) of the respondents would not mind having

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artificially created diastema<sup>[6]</sup>. Black population and Negros is said to have a higher incidence of maxillary midline diastema compared to the white population and the result of this study<sup>[27]</sup>.

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