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บทวิทยานิพนธ์

**การศึกษาความชุกของการเกิดฟันรูปทิ่ม
ในฟันตัดซี่ข้างแท้ในนักเรียนของโรงเรียน
มัธยมศึกษาแห่งหนึ่ง ในกรุงเทพมหานครฯ**

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The prevalence of peg-shaped permanent
lateral incisors in students of a secondary school
in Bangkok

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The prevalence of peg-shaped permanent lateral incisors in students of a secondary school in Bangkok

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Abstract

Peg-shaped incisors or conical-shaped incisors are a dental anomaly in size and shape which is commonly found in lateral incisors of human beings. The purpose of this study was to investigate the prevalence of peg-shaped incisors among 1481 secondary school students in mattayomsuksa 1-6 in Bangkok. A total of 678 male and 803 female students between the ages of 13 and 17 years were examined. Numbers and quadrants of the peg-shaped teeth were included and data were collected. The results of this study show a high prevalence of the peg-shaped tooth in the maxillary permanent lateral incisors (7.02% in #12 and 6.96% in #22) and a low prevalence in the mandibular permanent lateral incisors (0.20% in #42 and 0.27% in #32). There was no significant difference between sex. The maxillary lateral permanent incisors had a significantly higher prevalence of peg-shaped teeth than other teeth. This present study has the same result of the peg-shaped incisors comparable with many previous studies in other countries.

KEY WORDS : Peg-shaped incisors, prevalence, students

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การศึกษาความชุกของการเกิดฟันรูปหมุดในฟันตัดซี่ข้างแท้ใน นักเรียนของโรงเรียนมัธยมศึกษาแห่งหนึ่ง ในกรุงเทพมหานครฯ

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บทคัดย่อ

ฟันรูปหมุด ถือว่าเป็นความผิดปกติในด้านการเจริญและพัฒนาการของฟันเรื่องขนาดและรูปร่างของฟัน ซึ่งพบได้บ่อยในฟันตัดซี่ข้างของมนุษย์ วัตถุประสงค์ของการศึกษาค้างนี้ เพื่อศึกษาถึงความชุกในการเกิดฟันรูปหมุดในฟันตัดข้างในชั้นมัธยมศึกษาโรงเรียนสาธิตประสานมิตร ระดับมัธยมศึกษาที่ 1 ถึง 6 จำนวน 1,481 คน โดยเป็นชาย 678 คน และหญิง 803 คน ช่วงอายุอยู่ระหว่าง 13-17 ปี และบันทึกลักษณะของการมีฟันรูปหมุด โดยบันทึกแยกตามซี่ฟันและแยกตามจุดภาค ผลการศึกษาพบว่า ฟันตัดซี่ข้างบนแท้ มีอัตราการเกิดฟันรูปหมุดสูง (ซี่ฟัน # 12 ร้อยละ 7.02 และซี่ฟัน # 22 ร้อยละ 6.96) ขณะที่ฟันตัดซี่ข้างล่างแท้ มีอัตราที่ต่ำกว่า (ซี่ฟัน # 42 ร้อยละ 0.20 และซี่ฟัน # 32 ร้อยละ 0.27) เมื่อเปรียบเทียบอัตราการเกิดฟันรูปหมุดระหว่างเพศชายและเพศหญิง ไม่พบความแตกต่างอย่างมีนัยสำคัญ โดยการเกิดฟันรูปหมุดพบได้มากที่สุดที่ฟันตัดซี่ข้างบนแท้เมื่อเปรียบเทียบกับฟันหน้าซี่อื่นอย่างมีนัยสำคัญ และการศึกษาในครั้งนี้ได้ผลสรุปของการศึกษาตรงกับการศึกษาหลายฉบับที่ศึกษาถึงความชุกของการเกิดฟันรูปหมุดในประเทศอื่นๆ

คำรหัส : ฟันรูปหมุด ความชุก นักเรียน

The prevalence of peg-shaped permanent lateral incisors in students of a secondary school in Bangkok

Introduction

Developmental anomalies of the dentition are commonly observed in the clinic during routine dental examination¹. These include anomalies in number, shape, position and structure. Many previous studies reported on the prevalence of the various dental anomalies¹⁻⁸. Focal or localized microdontia refers to a single tooth that is smaller than normal⁹. This phenomenon is most commonly seen with peg-shaped or conical-shaped incisors⁹. This is one of the dental anomalies in size and shape which are commonly found in the maxillary lateral incisors of human beings².

An autosomal dominant inheritance pattern has been associated with this condition and peg-shaped teeth are of no significance other than cosmetic appearance¹⁰. In addition, there are many studies reporting on the prevalence of peg-shaped maxillary lateral incisors associated with palatally displaced canine (PDC) anomaly¹¹⁻¹⁴. Brabant¹⁵ and Carbonell¹⁶ reported that the maxillary lateral incisors are more commonly peg-shape involved than the maxillary central incisors. In comparison, Brabant¹⁷ showed the frequency of peg-shaped incisors seem to be lesser in permanent mandibular incisors than in permanent maxillary incisors.

The purpose of this present study was to investigate the prevalence of peg-shaped permanent lateral incisors in secondary school students in Bangkok. No previous studies has been carried out on this population.

Materials and methods

There were 1,481 students of the Satit Prasarnmit School, Srinakarinwirote University (secondary school mattayomsuksa 1-6), 678 males and 803 females, aged between 13 and 17 years. All students were examined clinically in their annual oral health examination at the Faculty of Dentistry, Srinakarinwirote University. The subjects were investigated for the presence of the peg-shaped incisors in the anterior maxillary and mandibular region. Inclusion criteria were as follows: No deciduous dentitions were recorded and the incisal width of the tooth is less than the cervical width. Data collected were pooled and the Chi-square test and descriptive percentage were used for frequency, sex distribution and tooth type involved.

Results

The collected data of the peg-shaped teeth are shown in Tables 1 and 2. In Table 1, 274 peg-shaped teeth were found from 1481 students (18.5%) and the number of the students that have the peg-shaped tooth was 130 from 1481 (8.78%). The prevalence of peg-shaped teeth in both sexes was highly statistically significant in the maxillary permanent lateral incisors (7.02% in #12, 6.95% in #22 and 8.17% in average per person) while in the maxillary permanent central incisors there was a lower prevalence rate (1.76% in #11, and 1.96% in # 21). In the mandible, the prevalence rate of the peg-shaped tooth was lower comparable

Table 1 The prevalence of peg-shaped incisors in students of a secondary school (mattayomsuksa 1-6, Bangkok, Thailand)

Tooth	#12	#11	#21	#22	#42	#41	#31	#32	Peg-shaped/ person	
									All Peg	#12,22
Total	104	26	29	103	3	2	3	4	130	121
Percent	7.02	1.76	1.96	6.95	0.20	0.14	0.20	0.27	8.78	8.17
Total (1,481)	274 (18.5%)									

Table 2 The prevalence of peg-shaped incisors in students of a secondary school in Bangkok by comparing the sexes

SEX	No. of students	No. of Peg-shaped teeth	#12	#11	#21	#22	#42	#41	#31	#32
			%	%	%	%	%	%	%	%
Female	803	69	55	14	14	55	1	1	1	2
		8.59	6.85	1.74	1.74	6.85	0.12	0.12	0.12	0.25
Male	678	61	49	12	15	48	2	1	2	2
		9.00	7.23	1.77	2.21	7.08	0.29	0.15	0.29	0.29
Total	1,481	130	104	26	29	103	3	2	3	4
	%	8.78	7.02	1.76	1.96	6.95	0.20	0.14	0.20	0.27

with that of the maxilla which in the mandibular permanent central and lateral incisors was 0.20% in #42 and #31, 0.14% in #41 and 0.27% in #32. In addition, there was no peg-shaped tooth found in all maxillary and mandibular permanent canine. If comparing the prevalence rates of peg-shaped incisors between both sexes, there were no statistically significant differences (Table 2).

Discussion

Although there have been several studies reporting the prevalence of various dental anomalies, no study has been conducted on Thai school students. Hence, there was no data from Thais available for comparison with other racial populations. In the present study, the prevalence of peg-shaped incisors was high in the maxillary permanent lateral incisors. These findings

were similar to those in many previous studies reported from many countries^{1, 2, 4, 6, 8, 12, 15-18}. The prevalence of peg-shaped maxillary lateral incisors shown in this study (8.17%) was higher than those reported by Clayton (1956)⁴, Meskin & Gorlin (1963)¹⁹, Malik (1972)²⁰, Buenviaje & Rapp (1984)¹, Brin et al. (1986)¹² and Salem (1989)⁸ (0.33%, 0.88%, 0.34%, 0.91%, 1.80% and 0.37% respectively) and others in Table 3. One possibility of these different percentages may be caused by the population and races of the previous studies. In Tables 3, the maxillary permanent lateral incisors were investigated in different populations. The prevalence of peg-shaped maxillary lateral incisors in the American, African and European (mostly Caucasian) was considerably lower than amongst Asians (most are Mongoloid). In comparison with

Table 3 Previous reports on the prevalence and distribution of peg-shaped incisors in subjects from different population areas

Areas	Authors	Country	Year	No. of Subjects	From	% of Peg-shape incisors			Most common Localization	
						Ages	Male	Female		
America	Meskin & Gorlin	USA	1963	8289	University	Adult	0.83	0.96	0.88	22>12
	Peck et al.	North USA	1996	58	Ortho Clinic	14.2	-	-	17.2	12
	Thongudomporn & Freer	Queen-sland	1998	111	Ortho Clinic	10.2 to 26.4	4.5	5.4	9.9	12,22
	Kook & Park	USA	2003	114	Ortho Clinic	Adult	-	-	52.6	22>12
Africa	Cleaton-Jones	Africa	1970	189	Bushman	Adult	5.55	7.07	6.35	22>12
Europe	Sonnesen et al.	Denmark	1998	104	Ortho Clinic	7 to 13	-	-	13.5	12,22
	Backman & Wahlin	Sweden	2001	739	City of Umea	7	1.3	0.2	0.81	12,22
Asia	Brin et al.	Israel	1986	2440	School	14 to 18	1.79	1.81	1.8	12,22
	al-Emran	Saudi	1990	500	Male School	13.5 to 14.5	2	-	2	22>12
	Salama & Abdel-Megid	Saudi	1994	1300	School	5 to 10	-	-	0.7	12,22
	Ooshima et al.	Japan	1996	745	School	15 to 18	-	-	3.2	12,22

another Mongoloid, the percentages of peg-shaped lateral incisors among Japanese students (3.20%)¹⁸ was also lower than in Thai students (8.17%) but still higher than among Caucasians^{12, 19, 21}. These results may be related to the genes of human beings because many studies reported on the relationship of peg-shaped teeth to genetic factors^{13, 22-25} but there was no any article concerning the cause of relationship between the ped-shaped teeth and genetic. For

example, in Downs' syndrome (trisomy G or Mongolism) there is hypodontia, crown-size reduction and a patterned departure from the population norm²⁶. When compared with the results of the findings from different sources of subject (community school and dental clinic), subjects from the dental clinic (mostly from orthodontic clinic^{14, 27-29}) showed higher prevalence of peg-shaped maxillary lateral incisors than those from the community school^{12, 18, 19, 21, 30}

Table 4 Previous reports on the prevalence and distribution of peg-shaped incisors in subjects from school or dental clinic

Subjects	Authors	Country	Year	No. of Subjects	From	% of Peg shape teeth			Most common Localization	
						Ages	Male	Female Total		
Community School	Meskin & Gorlin	USA	1963	8289	University	Adult	0.83	0.96	0.88	22>12
	Brin et al.	Israel	1986	2440	School	14 to 18	1.79	1.81	1.8	12,22
	Backman & Wahlin	Sweden	2001	739	City of Umea	7	1.3	0.2	0.81	12,22
	al-Emran	Saudi	1990	500	Male School	13.5 to 14.5	2	-	2	22>12
	Salama & Abdel-Megid	Saudi	1994	1300	School	5 to 10	-	-	0.7	12,22
Dental Clinic	Ooshima et al.	Japan	1996	745	School	15 to 18	-	-	3.2	12,22
	Peck et al.	North USA	1996	58	Ortho Clinic	14.2	-	-	17.2	12
	Thongudomporn & Freer	Queen-sland	1998	111	Ortho Clinic	10.2 to 26.4	4.5	5.4	9.9	12,22
	Kook & Park	USA	2003	114	Ortho Clinic	Adult	-	-	52.6	22>12
	Cleaton-Jones	Africa	1970	189	Bushman	Adult	5.55	7.07	6.35	22>12
	Sonnesen et al.	Denmark	1998	104	Ortho Clinic	7 to 13	-	-	13.5	12,22

(Table 4). This difference may be due to the tendency of patients with peg-shaped teeth to have orthodontic problem. So the peg-shaped teeth can be found in a higher prevalence in the dental clinic^{14, 27-29, 31}.

Finally, the present study demonstrated that the frequency of peg-shaped incisors seems to be lower in permanent mandibular incisors than in maxillary incisors which is consistent with those in previous investigations^{12, 17, 18}. There was no

significant difference between the sexes in our study similarly to most studies in other racial populations^{1-4, 8, 11, 12, 14, 18, 27}. Although, some studies^{8, 12} reported the differences between males and females.

Conclusion

The present study investigated the prevalence of peg-shaped incisors in a group of secondary school students in mattayomsuksa

1-6 in Bangkok. It was found that the maxillary permanent lateral incisors showed the highest prevalence of peg-shaped incisors in comparison with other incisors and there was no difference between the sexes. The our present study provides information on the prevalence of peg-shaped incisors in a defined group of Thai

school students. Further studies are required to determine the prevalence of other dental anomalies in the Thai population on a large scale or in other regions, and the cause of relationship between genetics and the prevalence of peg-shaped teeth.

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