

OCCLUSION OF THE PRIMARY DENTITION IN KOREAN

(2nd Report)

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INTRODUCTION

Many studies of development of occlusion of the teeth have been carried out in various part of the world, but only a few these studies have been conducted on Korean children.

In 1977, a cross section study of occlusion and spacing condition in primary dentition was started in Korea.

The study has two main purposes: 1. to describe pattern of occlusion and spacing in aging 2. to describe changes in the occlusion and spacing pattern from the aging.

Bogue(1908) maintained that if malocclusion was found in the primary dentition, it was to be expected that the same irregularities would occur in the corresponding permanent dentition.

Kisling and Ravn (1973—1978) started a longitudinal study of occlusion and spacing condition in preschool children.

Rasmussen and Helm examined 406 kindergarten children aged 2-6 years in Hvidovre and determined the frequencies of certain malocclusion symptom.

Bonnar(1956-1960) as part of a longitudinal study of occlusion development reported in the anterior relationship between the upper and lower second primary molars in 29 children at age of 3 years 5 months.

Many other studies have focussed interest in special symptom of malocclusion in preschool children such as open bites, cross bites and deviations in sagittal molar and incisal occlusion.

MATERIALS AND METHODS

113 children selected random sample of the population age from 3-5 years.

Alginate impression taking of the upper and lower dental arches were taken and the model using the following criteria(Foster and Hamilton) 1969.

1. Spacing; a lack of contact between adjacent teeth.
2. Molar occlusion
 - a) Class 1. the dental surface of upper and lower second primary molars in the same vertical plane in centric occlusion

- b) Class 2. The distal surface of the lower second primary molars in posterior relationship to that of the upper second primary molar in centric occlusion
 - c) Class 3. The distal surface of the lower second primary molar in anterior relationship to that of the upper second primary molar in centric occlusion
3. Canine relationship
- a) Class 1. The tip of upper primary canine tooth in the same vertical plane as the distal surface of the lower primary canine tooth in centric occlusion
 - b) Class 2. The tip of the upper primary canine tooth in anterior relationship to the distal surface of the lower primary canine tooth in centric occlusion
 - c) Class 3. The tip of the upper primary canine tooth in posterior relationship to the distal surface of the lower primary canine tooth in centric occlusion
4. Overjet
- a) Ideal. A positive incisor overjet not exceeding 2 mm measured on the primary upper central incisors
 - b) Increased. A positive incisor overjet of more than 2 mm
 - c) Edge-to-edge. Upper and lower primary central incisors in an edge to edge position in centric occlusion
 - d) Reversed. The lower primary central incisors in anterior relationship to the upper primary central incisor in centric occlusion
5. Overbite
- a) Ideal. The incisor tips of the primary lower central incisors contacting the upper primary central incisors in centric occlusion
 - b) Reduced. The incisal tip of the primary lower central incisors not contacting the palate in centric occlusion, there being a positive overbite
 - c) Anterior open bite. The incisal tips of the lower primary central incisors being below the level of the incisors in centric occlusion
 - d) Increased. The incisal tips of the lower primary central incisors touching the palate in centric occlusion
6. Crossbite. The upper primary molars occluding in lingual relationship to the lower primary molars in centric occlusion

RESULT

1. Sagittal canine and molars relationship.

The information in table 1 was obtained from a study of the primary canines and molars. An assessment was made of each side separately, and the combination of the two sides is shown partly in the total number and partly as a percentage of the overall total.

It will be seen that the same occlusion at both sides occurs in a total of 116 children or 82.7% in molars region and 102 children or 88.2% of the overall total, the remaining 23 or 17.3% and 17 or 12.8% having different occlusion at the each side.

Normal molar termination are shown 44.3%, 32.3% in class 1 and class 11, and only abnormal relationship appear 6.1%.

It was same pattern in canine region.

Table 1. Sagittal relationship of canine and molars in 133 children

Occlusion tooth	Class 1	Class 2	Class 3	Different between Right and Left
Canine	85(63.9)	3(2.3)	28(21.0)	17(12.8)
2nd Molars	59(44.3)	8(6.1)	43(32.3)	23(17.3)

2. Vertical relationship

The vertical overbite is shown in table 2, which shows that in 4 children 3.1%, there was an absence of contact, viz. an open bite. In overbite, the study showed that 51 children (39.1%), the majority of the sample we were between 1.1mm and 2.0mm in overbite, 54.2% were below 2mm, 83.2% were below 3mm.

3. Horizontal relationship

In overjet, 78.8% of 133 children in number showed below 2mm, 5 children(38%) severe overjet. (refer to table 3)

4. Transversal relationship

a) Cross-bite; Of total study samples, there was not a posterior crossbite, but the author observed only anterior cross-bite of 7 children (5.3%)

Of this anterior crossbite, 4 children (3%) showed crossbite in individual tooth unilaterally.

b) Scissor bite; of total study samples, 6 children (4.6%) showed of scissor bites, 3 children of this scissorbite showed unilaterally, 3 children of this scissorbites bilaterally.

Table 2. Overbite in mm among 131 children

overbite in mm	number	percentage
anterior open bite	4	3.1
43.1	20	15.2
1.1-2.0	51	39.0
2.1-3.0	38	29.0
3.1-4.0	16	12.2
4.1-5.0	2	1.5
Total	131	100%

5. Spacing

In maxilla, the regions which had a large interdental space were between pri-

mary lateral incisors and primary canines, which was consistent with primary molars and 2nd primary molars, and nearly same space generally in the other regions.

DISCUSSION

Chapman(1935), Friel(1953), Graber(1966) and Wather(1967) several authors

Table 3. Overjet in mm among 133 children

overjet in mm	number	percentage
less than 0	2	1.5
0-1.0	63	47.3
1.1-2.0	52	39.0
2.1-3.0	10	7.6
3.1-4.0	1	0.8
?	5	3.8
total	133	100%

Table 4. Interdental space 133 children

location	05/04	04/03	03/02	02/01	01/01	01/02	02/03	03/04	04/05
upper %	9.8	61.7	77.4	43.6	27.0	45.9	76.7	64.7	6.8
lower %	4.5	47.3	43.6	42.1	43.6	45.9	44.4	49.6	3.8

have described features of the ideal of normal occlusion of the primary teeth at the completion of their eruption. The present study represents the results of a screening of occlusion and spacing characters age from three to five years in city of Seoul. The purpose of this study is, as described previously, preventive correction malocclusion by understanding the primary occlusion thoroughly and foreseeing the future type of permanent occlusion.

In study method, there are two methods, one is direct observation of oral cavity, the other is observing the model constructed by impression taking. As we can observe the occlusion more closely and correctly by the latter method than by the former, the author took the model taking method.

In sagittal canine and molar relationship, there was a remarkable difference between Koreans and Westerners at class II and class III pattern. The author thinks that it is probably because there is a difference in anatomical features between orientals and occidentals, and in measuring method.

Favorable agreement is noted in cases with normal canine relationship, 90% having normal or straight termination of the distal surface on the primary second molars.

As Kisling had studied the sagittal molar relationship, he had reported that

it was more important to observe the mesial surface of 2nd primary molar than the distal surface of that in understanding the dento-alveolar relationship, and there would be possibly difference according to these methods.

In anterior relationship such as overbite, overjet, crossbite and scissor bite at incisor region, there were remarkable differences when the author compared with the results of Kisling and Ravn study and generally normal occlusion existed more in Koreans than in Westerners.

The terminal plane and the occlusion of 1st molars had ever been reported by Moyers; that is, if the terminal plane was at same vertical plane, the 1st molars erupted to be end relationship.

After the primary 2nd molars were exfoliated, end to end relationship resulted in class I occlusion, normal occlusion due to larger mesial migration of mandibular 1st molar than that of maxillary 1st molar, which Moyers called late mesial shift. If the terminal plane was distal step relationship, the occlusion of the 1st molars tended to be class III occlusion. If the terminal plane was mesial step relationship the 1st molars erupted to be formed class I occlusion immediately.

If the mesial step of 2nd primary molars was severe, the 1st molars were apt to be formed class III occlusal relationship because mandibular 2nd primary molars were positioned more mesially.

There were quite a few reports as to primary occlusion, but it was difficult to make out and foresee the malocclusion perfectly.

In this treatise, the author reported the statistic results about occlusion of primary molars and primary canines, but because the limited criteria was adapted in evaluating individual occlusions, for instance, in case a certain occlusion showed scissor bite, while its terminal plane showed class II occlusal relationship, and its canine relationship showed class III occlusal relationship bilaterally or unilaterally, the author thought that there were more or less unsolved problems to make out the complexity of the characteristic individual occlusions.

SUMMARY

The author studied occlusion of the primary dentition in Korean age from 3 to 5 years old of 133 children in Seoul city.

In sagittal canine relationship, class I occlusion pattern showed 63.9%, class II occlusion pattern showed 2.3%, class III occlusion pattern showed 21% and in each side a different canine relationship was 12.2%.

In sagittal molar relationship, class I occlusion pattern showed 44.3%, class II was 6.1%, class III was 32.3% and in each side a different molars relationship was 17.3% and 90% having same pattern canine and molars relationship.

In anterior relationship such as overbite, crossbite and scissor bite at incisor region, there were remarkable differences than in westerners.

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