CHAPTER I
INTRODUCTION

While the Angle classification of malocclusion focuses only on the anteroposterior discrepancies of the maxilla and the mandible, in fact, vertical dysplasia is also of major importance. Cases which are most difficult to treat and have the least favorable prognosis are frequently those with a vertical skeletal discrepancy manifested anteriorly either as a deep overbite or as an open bite (Cangialosi, 1984).

Anterior open bite is a failure of a tooth or teeth to meet antagonists in the opposite arch while the remaining teeth are in occlusion (Moyer, 1975). An anterior open bite causes improper functioning of the anterior teeth and an unattractive long face. The degree of openness can be varied from patient to patient. The etiology of anterior open bite is multifactorial. This may be the result of an interplay between genetic factors and external environmental factors (Watson, 1981). However, cases of open bite are seldom reported in Thailand.

It is important to distinguish between dental open bite and skeletal open bite : (1) dental open bite occurs when the skeletal components of the individual are relatively normal, and (2) skeletal open bite occurs when there is a vertical discrepancy in the cranial base, mandible, and/or maxilla. Several types of anterior open bite can be differentiated by means of lateral cephalometric radiographs (Nahoum, 1971). Furthermore, anterior open bite may be associated with anteroposterior and/or transverse malocclusion.

The earliest diagnosis is essential, and the elimination of all etiologic factors as soon as possible is of importance. Lateral cephalometric appraisal of anterior open bite subjects and normal subjects has proved to be a useful tool in pointing out the morphologic differences in both parameters and indicates the specific area responsible for anterior open bite. In addition, the individual facial pattern is an important criteria not only in the diagnosis of anterior open bite condition but also in the treatment planning and the prognosis.

This study would be investigated lateral cephalograms of anterior open bite and normal subjects of adult Northern Thais.

Purposes of the study

1. To investigate the cephalometric values of the skeletal, dental and soft tissue components in anterior open bite malocclusion and normal occlusion for adults.

2. To differentiate the cephalometric values of anterior open bite malocclusion from normal occlusion for adults. Therefore, null hypotheses, H_0, are :

2.1. There are no significant differences for any cephalometric values by the main effect of type of occlusion.

2.2. There are no significant differences for any cephalometric values by the main effect of sex.

2.3. There are no interaction effects for any cephalometric values between type of occlusion and sex.

3. To compare the cephalometric values between sexes in anterior open bite malocclusion and normal occlusion for adults. Therefore, null hypotheses, H_0, are :

3.1. There are no significant differences between cephalometric values in males and females for anterior open bite group.

3.2. There are no significant differences between cephalometric values in males and females for normal group.

4. To compare the cephalometric values among skeletal Class I, Class II and Class III anterior open bite malocclusion for adults. Therefore, null hypothesis, H_0, is :

There are no significant differences for any cephalometric values among skeletal Class I, Class II and Class III in the anterior open bite group.

5. To find out the correlations between cephalometric values in anterior open bite malocclusion and normal occlusion for adults. Therefore, null hypotheses, H_0, are :

> 5.1. There are no significant correlations between cephalometric values for anterior open bite group.
>
> 5.2. There are no significant correlations between cephalometric values for normal group.

6. To find out which of the cephalometric values makes a significant contribution to the prediction of anterior open bite malocclusion. Therefore, null hypothesis, H_0, is :

> Anterior open bite can not be predicted by any cephalometric values.

Scope of this study

This study would be investigated lateral cephalograms of anterior open bite malocclusion and normal occlusion for adult Northern Thais both males and females. The cephalometric values were limited to skeletal, dental and soft tissue parts in anteroposterior and vertical dimensions.

Definition

Adult

: person who passed adolescent growth spurt which had growth changes less than 0.2% per year ; $\geq$ 15 years and $\geq$ 17 years of age for female and male respectively (Nabangxang et al., 1978).

Age

: refer to chronological age

Anterior open bite

: negative overbite which was measured perpendicular to the functional occlusal plane in centric occlusion from pretreatment lateral cephalogram.
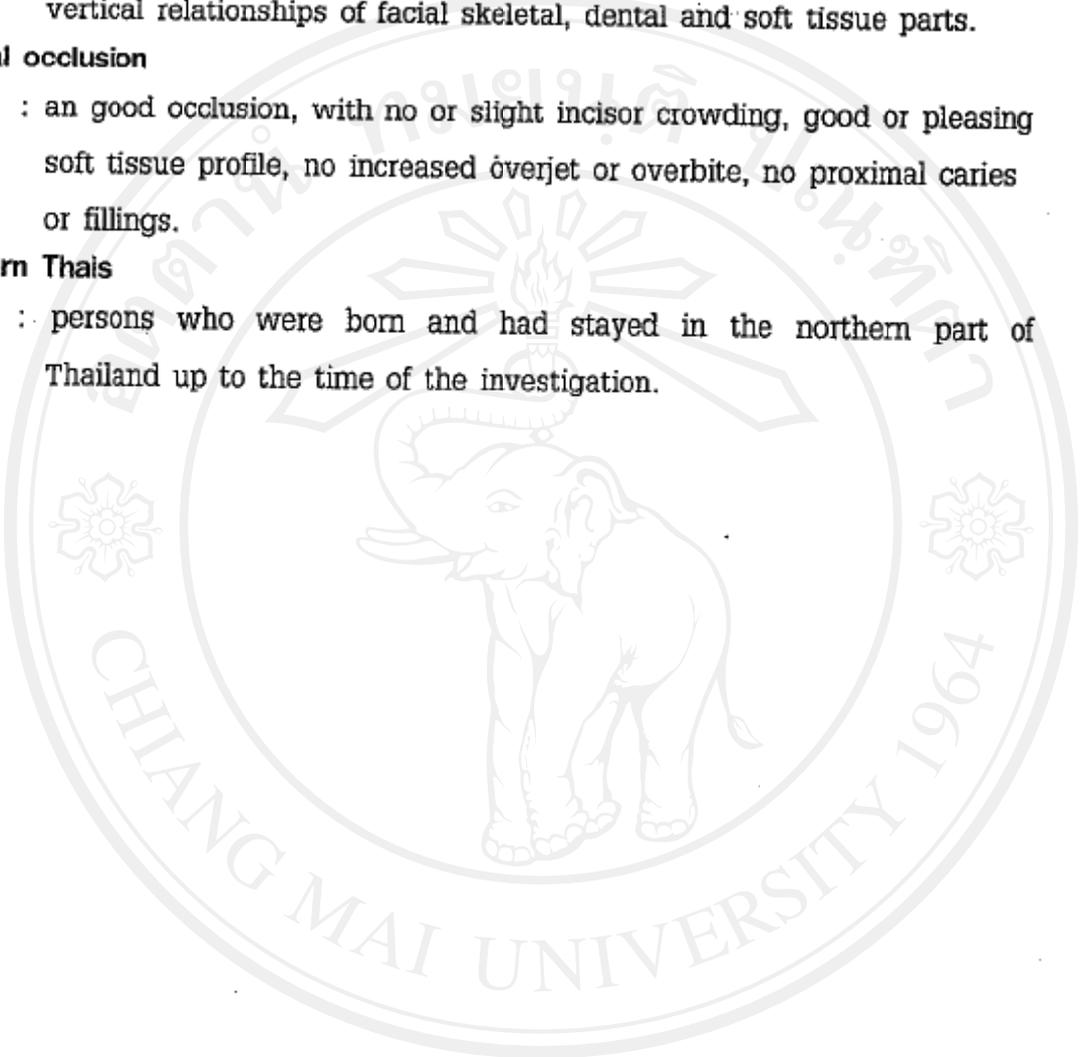
Lateral cephalogram

    : a two-dimensional image of the skull in lateral view in centric occlusion for morphological analysis by evaluating the sagittal and vertical relationships of facial skeletal, dental and soft tissue parts.

Normal occlusion

    : an good occlusion, with no or slight incisor crowding, good or pleasing soft tissue profile, no increased overjet or overbite, no proximal caries or fillings.

Northern Thais

    : persons who were born and had stayed in the northern part of Thailand up to the time of the investigation.