

# Patterns of skeletal class II in patients reporting to Khyber College of Dentistry

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## Abstract

**Introduction:** Skeletal class II results from anteroposterior disproportion in size or discrepancy in position of jaws rather than malposition of teeth relative to jaws. The aim of this study was to determine the patterns of skeletal class II.

**Material and Methods:** One hundred patients with skeletal class II were recruited in this study. The data was collected on specially designed proforma. Lateral cephalogram were traced for data analysis.

**Results:** Fifty-five female and forty-five males participated in this study. The age ranged from 9 to 34 years. Short mandible (50%) and vertically high angle (48%) were the common patterns.

**Conclusions:** The common patterns among the skeletal class II patients were with short mandible and high angle.

**Keywords:** short mandible; retrognathia; lateral cephalogram.

## Introduction

Researchers have employed different methods to differentiate between the various components of malocclusion. Most of the researchers have used Angle's classification<sup>1</sup> while others have used different indices<sup>2-5</sup> to get information about prevalence.<sup>6-8</sup> Cephalometric analysis<sup>9</sup> has been used in researches for individual malocclusion,<sup>10</sup> e.g., class II or class III malocclusion. In Pakistan little work is available on establishing of prevalence of malocclusion and identifying the components of malocclusion especially using cephalometric analysis.

Skeletal class II results from anteroposterior disproportion in size or discrepancy in position of jaws rather than malposition of teeth relative to jaws.<sup>11</sup> Skeletal class II malocclusion can be subdivided conveniently into those comprised of either mandibular deficiency or maxillary excess.<sup>12</sup> Skeletal class

II presents in various patterns like maxillary excess with lower facial height (LFH) decreased, increased or normal ; mandibular deficiency with LFH decreased , increased or normal and combination of maxillary excess & mandibular deficiency with any lower facial height pattern.<sup>13</sup>

Many methods have been used for determination of skeletal class II patterns but the Cephalometric Analysis is most valuable.<sup>14</sup> Clinical examination is helpful and starting point for orthodontist for determination of skeletal class II patterns but cannot quantify the severity of malocclusion. In Asian population skeletal class II with mandibular deficiency is most prevalent.<sup>11</sup>

The objective of this study was to evaluate the patterns of skeletal class II in local population for better treatment of patients at proper time by taking the advantage of growth period which varies in different patterns of skeletal class II.

## Material and Methods

This retrospective (cross-sectional) study was undertaken in the Department of Orthodontics at Khyber College of Dentistry, Peshawar from February 2013 to April 2013. The protocol was approved by the

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Institutional Ethical Committee of Khyber College of Dentistry, Peshawar. Previous records were utilized for collection of data for 100 patients on specifically designed proforma. The inclusion criteria consisted of patients from both genders with age ranged from 8 to 35 years having skeletal class II jaw relation with any dental relationship. Patients with orofacial Syndromes, maxillofacial trauma and those with pathology were excluded from the study.

Traced and analyzed lateral cephalogram was used for each patient. Composite cephalometric analysis was performed. Eight parameters (3 angular and 5 linear measurements) were used to evaluate sagittal relationship,<sup>11,15</sup> six parameters (5 angular and one linear measurement) were used to evaluate the vertical growth patterns of patients<sup>15</sup> (Table I). From clinical examination; facial type, facial divergence, chin position and gummy smile were used to supplement the diagnosis of different skeletal class II patterns.

The completed questionnaire values were then entered in SPSS (Statistical Package for Social Sciences) version 17.0 for statistical analysis of age mean, standard deviation and gender ratio.

## Results

Fifty five were females (55%) and 45 were males (45%). Their chronological ages ranged from 9 to 34 years with mean of  $16.76 \pm 5.21$  years. The most common age group was the second decade (73%) (Table I).

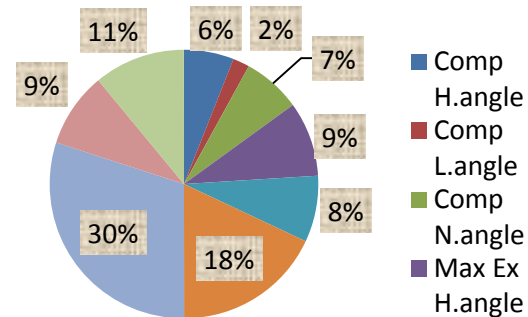
The most common pattern in skeletal class II patients was short mandible with high angle (30%) followed by short mandible with normal vertical pattern (11%) (Figure 1).

Table II shows prevalence of each class II pattern among the skeletal class II population, short mandible is the most common.

Table III shows the mean and standard deviation of the composite cephalometric analysis of class II patients.

**Table I: Age Distribution**

Age(years)	n	%
8 - 10	6	6
11 -20	73	73
21 -30	18	18
31 - 40	3	3



**Figure 1: Patterns of skeletal class II**

**Table III: Composite cephalometric analysis**

n=100		
	Mean	S.D ±
<i>Sagittal Analysis</i>		
SNA	83.34	3.91
SNB	76.84	3.58
ANB	6.58	1.59
AO-BO	1.78	0.71
SN-Length	62.4	7.64
Mand-Length	64.59	8.07
<i>Vertical Analysis</i>		
SN-Mand angle	34.93	7.08
SN- Pt	8.23	3.78
MMA	28.22	7.20
FMA	28.51	6.24
Y-Axis	68.68	6.16
LAFH/TAFH	57.29	4.29

**Table II: Prevalence of different skeletal class II patterns**

Skeletal pattern	%age
Short mandible	50
Maxillary excess	35
Composite	15

## Discussion

The term skeletal class II refers to one resulting from an anteroposterior disproportion in size or discrepancy in position of jaws rather than malposition of the teeth relative to jaws.<sup>16</sup>

Waheed-ul-Hamid<sup>17</sup> conducted a study at de'Montmorency on prevalence of skeletal components of malocclusion, using 100 patients. Although he studied whole malocclusion types but his skeletal class II results shows that the common patterns were retrognathic mandible (29%) and high angle (38%) cases. The results of study are quite similar to our study.

Moyers<sup>18</sup> carried out a study by means of computer-based statistical methods, several types of class II malocclusion had been discovered; six types in anteroposterior dimension of face and five types in vertical using cephalometric analysis. In his study, in accordance to our study, short mandible and squarish face (moderately high angle) was the most common.

Ishii<sup>19</sup> studied different patterns of malocclusion in Chinese population using anteroposterior and vertical Cephalometric analysis. His study showed highest percentages for short mandible and steeper mandible plane angle. This result goes in favor of our study.

Baccetti<sup>20</sup> and co-workers performed a study on early dentofacial features of class II malocclusion, a longitudinal study from deciduous through the mixed dentition. They also concluded that class II due to short

mandible and vertically increased lower anterior facial height were the most prevalent results, which approve our study.

Willems<sup>21</sup> performed a study in Belgian population on 1477 patients on prevalence of dentofacial characteristics of malocclusion. He used composite cephalometric analysis for sagittal and vertical pattern. Short mandible and high angle cases were the commonest results, in accordance to results of the present study.

## Conclusions

Using composite cephalometric, the most common patterns are short mandible (50%) and steep mandibular plane (48%) in local population.

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