

## ORIGINAL RESEARCH

### Assessment of esthetics outcome after extraction or non extraction orthodontic treatment in class II division I malocclusion patients- A comparative study

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#### ABSTRACT:

**Background:** Orthodontic treatment can influence patient's profile and aesthetics, especially when extractions and extensive anterior retraction are involved. The present study was conducted to evaluate the esthetics outcome after extraction or non extraction orthodontic treatment in class II div I malocclusion patients. **Materials & Methods:** The present study was conducted on 68 females patients undergoing orthodontic treatment. Patients were divided into 2 groups of 34 each. Group I were those who underwent premolar extraction and group II were those without premolar extraction. Patients were subjected to lateral cephalograms. Parameters such as nasolabial angle, mento- labial angle, z angle, N- Sn- Pog, sulcus- superious- E line, sulcus- inferious- E line were assessed and compared inn both groups. **Results:** There was significant difference in pre- treatment and post- treatment values of nasolabial angle, z angle and sulcus- inferious- E line. Mento- labial angle, N- Sn- Pog and sulcus- superious- E line showed non-significant difference ( $P > 0.05$ ). **Conclusion:** Authors found there was significant difference in pre- treatment and post- treatment values of nasolabial angle, z angle and sulcus- inferious- E line in extraction and non- extraction groups.

**Key words:** Nasolabial angle, Orthodontics, sulcus- inferious- E line

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#### INTRODUCTION

There is a general belief that orthodontic treatment can affect facial profile attractiveness. However, no consensus has been reached on the best treatment modality to achieve ideal esthetics.<sup>1</sup> Angle, in the early 20th century, only believed in non-extraction orthodontic treatment. He believed that a balanced occlusion would lead to facial adaptation and balance and presumed that orthodontic appliances would reinforce bone growth and there would be no need for tooth extraction.<sup>2</sup>

Orthodontic treatment can influence patient's profile and aesthetics, especially when extractions and extensive anterior retraction are involved. The effects of extraction and non-extraction therapies have been widely investigated, but it seems that the debate about the extraction effects is still far from finishing. Soft-tissue thickness, pre-treatment labial tension, type of malocclusion, crowding, and face height are some of the factors that seem to influence the effects of tooth extraction on the soft-tissue profile.<sup>3</sup>

Facial esthetic is the major concern of patients seeking orthodontic treatment therefore the clinicians should consider this point upon treatment planning (extraction vs non-extraction). However, achieving this goal is challenging. Although there are several certain criteria for selection of extraction or non- extraction orthodontic treatment plan, several patients represent a borderline status and selecting either of the treatments is challenging. Another challenging issue is the judgment about facial esthetics and attractiveness.<sup>4</sup> The present study was conducted to evaluate the esthetics outcome after extraction or non extraction orthodontic treatment in class II div I malocclusion patients.

#### MATERIALS & METHODS

The present study was conducted in the department of Orthodontics. It comprised of 68 females patients undergoing orthodontic treatment. The study protocol was approved from institutional ethical committee. All

patients were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 34 each. Group I were those who underwent premolar extraction and group II were those without premolar extraction. Patients were subjected to lateral cephalograms. Parameters such as nasolabial angle, mento- labial angle, z angle, N- Sn- Pog, sulcus- superious- E line, sulcus- inferious- E line were assessed and compared inn both groups. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Groups	Group I (Extraction)	Group II (Non- extraction)
Number	34	34

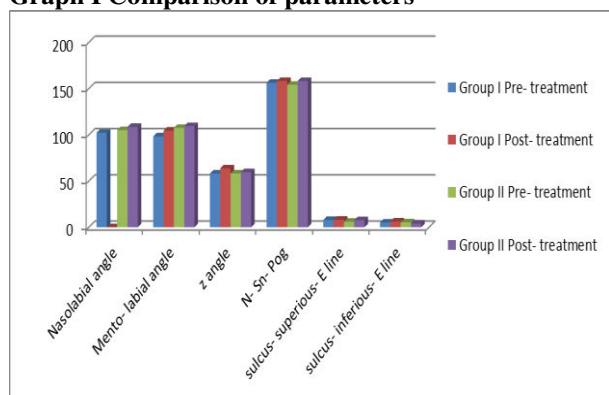
Group I was extraction group and group II was non-extraction group. Both had 34 patients.

**Table II Comparison of parameters**

Parameters	Group I		Group II		P value
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	
Nasolabial angle	102.3	109.4	105.2	108.6	0.01
Mento- labial angle	98.3	104.5	107.6	109.4	0.34
z angle	58.2	63.8	58.2	59.7	0.01
N- Sn- Pog	156.4	158.2	154.1	158.2	0.42
sulcus- superious- E line	7.89	8.25	6.09	7.62	0.41
sulcus- inferious- E line	5.12	6.24	5.34	4.01	0.01

Table II, graph I shows that there was significant difference in pre- treatment and post- treatment values of nasolabial angle, z angle and sulcus- inferious- E line. Mento- labial angle, N- Sn- Pog and sulcus- superious- E line showed non- significant difference (P> 0.05).

**Graph I Comparison of parameters**



**DISCUSSION**

Evaluation of facial profile and balance is a continuous learning process for orthodontists. However, most studies concerned with the effects of orthodontic treatment on

facial profile have been based mostly on assumptions than on actual changes in the relationship between the incisors and lips. Some only suggest favourable changes in the long term.

There are concerns that premolar extractions might cause greater lip retrusion and impair the resulting profile more than treatment without extractions. The speculation is that anterior retraction would result in an undesirable flattened facial appearance. Although many recent studies have refuted this hypothesis this issue keeps been studied. However, there are no consistent data regarding the amount of soft-tissue changes in Class II malocclusion treatment with 2- or 4-premolar extractions.<sup>5</sup> The present study was conducted to evaluate the esthetics outcome after extraction or non extraction orthodontic treatment in class II div I malocclusion patients.

In present study, Patients were divided into 2 groups, extraction group and group II was non- extraction group. Both had 34 patients. Lim et al<sup>6</sup> in their study, seven borderline class I patients were chosen and the outcome of orthodontic treatment with and without extraction of the four premolars was simulated using lateral cephalograms. Images showing the outcomes of extraction and non-extraction treatments were placed next to each other pairwise and were shown to 12 Iranian orthodontists, 10 general dentists and 21 laypersons. The observers were asked to score the images as 0 (least attractive) and 10 (most attractive). The results demonstrated that the orthodontists did not observe any difference in the profile attractiveness between extraction and non-extraction treatments however, the general dentists and laypersons found the non-extraction profile more attractive. There was a significant difference between the three observer groups regarding the profile attractiveness.

We observed that there was significant difference in pre-treatment and post- treatment values of nasolabial angle, z angle and sulcus- inferious- E line in both groups. Mento- labial angle, N- Sn- Pog and sulcus- superious- E line showed non- significant difference.

Several authors have reported difficulty in precisely measuring the NLA and their variations, due to its great standard deviation. From all the studies that evaluated it, all reported an increase, either in 2- or 4-premolar extraction protocols. Nevertheless, it is possible to observe that the groups submitted to two extractions had a greater range of variation in NLA changes only because of two outliers, compared to patients who had undergone 4-premolar extractions. When there was extraction in both arches, the variation ranged was from 1.0 to 6.5 degrees.<sup>7,8</sup>

Majid et al<sup>9</sup> found that heterogeneous information about malocclusion severity before treatment was found in most articles. Statistically significant soft-tissue changes reported included nasolabial angle (NLA) increasing from 2.4 to 5.40 degrees in 2-premolar extraction protocol and from 1 to 6.84 degrees in 4-premolar extraction protocol. Retrusion of the upper and lower lips were also verified, with less retraction of the lower lip in 2-premolar extraction groups.

## CONCLUSION

Authors found there was significant difference in pre-treatment and post-treatment values of nasolabial angle, z angle and sulcus-inferioris-E line in extraction and non-extraction groups.

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