

**COMPARISON OF SOFT TISSUE CHANGES IN EXTRACTION VERSUS NON  
EXTRACTION ORTHODONTIC CASES****Dr. Mudasir Khan<sup>1</sup>, Dr. Nazia Lone<sup>2</sup> and Dr. Ifzah Usman<sup>\*3</sup>**<sup>1</sup>Consultant, Govt. District Hospital Anantnag, Srinagar.<sup>2</sup>Associate Professor and Head, Department of Pedodontics and Preventive Dentistry, Govt. Dental College and Hospital, Srinagar.<sup>3</sup>Registrar, Department of Pedodontics and Preventive Dentistry, Govt. Dental College and Hospital, Srinagar.**\*Corresponding author: Dr. Ifzah Usman**

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**INTRODUCTION**

The extraction versus non-extraction controversy is the oldest as well as the most enduring controversy and still remains a topic of debate in the field of orthodontics. Facial appearance of an individual governs the decision to extract teeth as a part of orthodontic treatment.<sup>[1]</sup> Angle (1907) was the pioneer to describe normal occlusion and classify malocclusion. He was influenced by the biologic concept of his time, emphasizing the perfectibility of man, therefore extraction of teeth for orthodontic purposes seemed inappropriate, because man was thought to be inherently capable of having a perfect dentition; thus extraction of teeth was rare in the early 20th century. However after occlusion was found to be much stable in a few cases that were previously treated without extraction, the extraction controversy started and still continues.<sup>[2]</sup> This study was undertaken to assess the changes in soft tissues after orthodontic treatment in patients treated with and without extraction.

**METHODOLOGY**

40 patients consisting of 20 girls and 20 boys with an age range of 14-25 years were selected for the study. Patients having class I skeletal and dental malocclusion before treatment with a full complement set of teeth excluding third molars were included in the study. Patients having missing teeth, previous history of orthodontic treatment, clefts or any dentofacial deformities were excluded from the study. In first group, 20 patients were treated with extraction of 4 premolars and in second group 20 patients were treated without extractions. All patients were well treated in a private clinic with the standard edgewise system. Decision to extract the premolars was based on severity of crowding. Pre and post treatment lateral cephalograms were obtained from patients in a standing position and relaxed lips.

Cephalometric landmarks, reference lines, linear and angular measurements used in the study are depicted in Figure 1,2 and 3.

**Soft-tissue measurements****Angular**

1. Nasolabial angle: Angle formed between tangent to columella and tangent to upper lip.
2. Mentolabial angle: Angle formed between tangent to soft-tissue chin and tangent to lower lip at ILS.
3. 'Z' angle: Angle formed between FH plane and most protrusive lip to pog line.

4. N'-Sn-Pog': Facial convexity.

**Linear**

1. Sulcus superius - E line.
2. Sulcus inferius - E line.
3. Max. 1 to labrale superius.
4. Md. Mandibular 1 to labrale inferius.
5. Sn-Stms: Upper lip length.
6. Stmi-ILS: Lower lip length.
7. Stms-Stmi: interlabial gap.

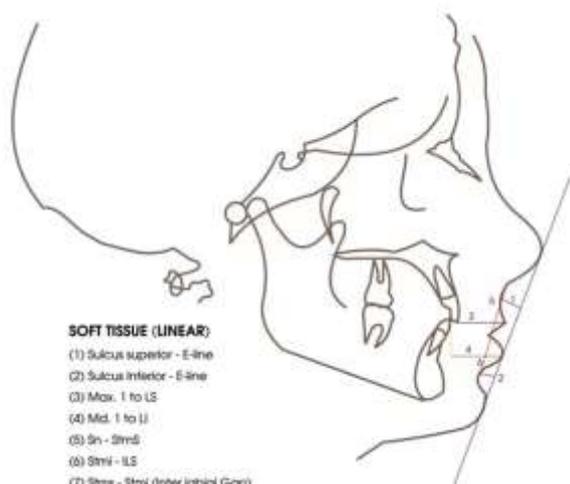
**RESULTS**

A significant difference between groups was found for the changes in lower lip and lower incisor only. Lower lip retraction relative to the esthetic plane was greater in the extraction group. Upper lip was retracted in both the groups as related to nasiolabial angle, sulcus superior -E line, but the change was more in extraction group.



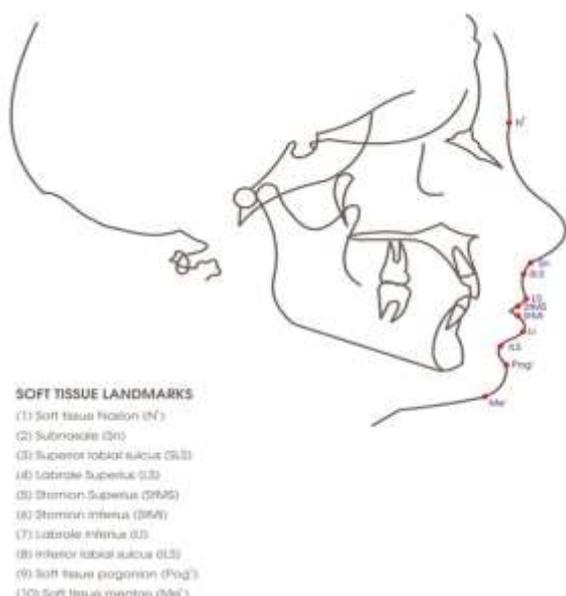
**SOFT TISSUE (ANGULAR)**  
 (1) Nasolabial angle  
 (2) Labiomental angle  
 (3) 'L' angle  
 (4) N'-Sn-Pog

**Figures-1.**



**SOFT TISSUE (LINEAR)**  
 (1) Sulcus superior - E-line  
 (2) Sulcus inferior - E-line  
 (3) Max. 1 to LS  
 (4) Mid. 1 to LI  
 (5) Sn - S1mS  
 (6) S1mI - ILS  
 (7) S1mS - S1mI (Infer labial Gap)

**Figures-2.**



**SOFT TISSUE LANDMARKS**  
 (1) Soft tissue nasion (N')  
 (2) Subnasale (Sn)  
 (3) Superior labial sulcus (SLS)  
 (4) Labrale Superius (LS)  
 (5) Stomion Superius (S1mS)  
 (6) Stomion inferius (S1mI)  
 (7) Labrale inferius (LI)  
 (8) Inferior labial sulcus (ILS)  
 (9) Soft tissue pogonion (Pog')  
 (10) Soft tissue menton (Mn')

**Figures-3.**

**DISCUSSION**

This study showed a significant retraction of the upper and lower lips in response to incisor retraction, which was also responsible for a significant reduction in the SNA angle due to retraction of point A. Nasolabial and mentolabial angles were significantly increased in extraction cases which may be due to upper lip and lower lip retraction respectively. Researches have shown that changes in lower lip in response to orthodontic tooth movement are more predictable than those of the upper lip, as the complex functional musculoskeletal anatomy of the nasomaxillary complex contributes to the variability of upper lip response to extraction therapy.<sup>[4]</sup> Caplan and Shivapuja's findings with regards to soft tissue correlation, support the present findings where the high correlation between the upper and lower lips suggests that the soft tissue structures of the lips tend to support each other.<sup>[4]</sup> Although the premolar extraction group showed greater soft-tissue changes with treatment, post-treatment comparisons showed that both groups finished within the same soft-tissue parameters. These comparisons suggest that the extraction or non-extraction decision, if based on sound diagnostic criteria, seem to have no systematic detrimental effects on the facial profile. Satisfactory results can be obtained consistently either by extracting premolar or without extracting them. Yet clinicians should be aware of the observed changes during treatment planning of individual patients to creating any undesirable esthetic characteristics.<sup>[5]</sup>

**CONCLUSION**

Extraction and non-extraction groups finished within the same soft tissue parameters, signifying that premolar extraction does not necessarily cause undesirable changes in the soft tissue profile.

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