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Review Article

Cephalo metric Analysis of Soft tissue-A Review

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ABSTRACT:
Facial esthetic is one of the most important aspect of orthodontic treatment. Nowadays people are mostly looking for orthodontic treatment due to esthetic purpose. Soft tissue envelope of the face plays an important role in esthetics, functional balance and facial harmony. The changes occuring in soft tissue profile in the course of orthodontic therapy represent a major problem. Soft tissue analysis is considered as a reliable guide for occl usal treatment and attendant soft tissue changes. In this article few soft analysis are reviewed.

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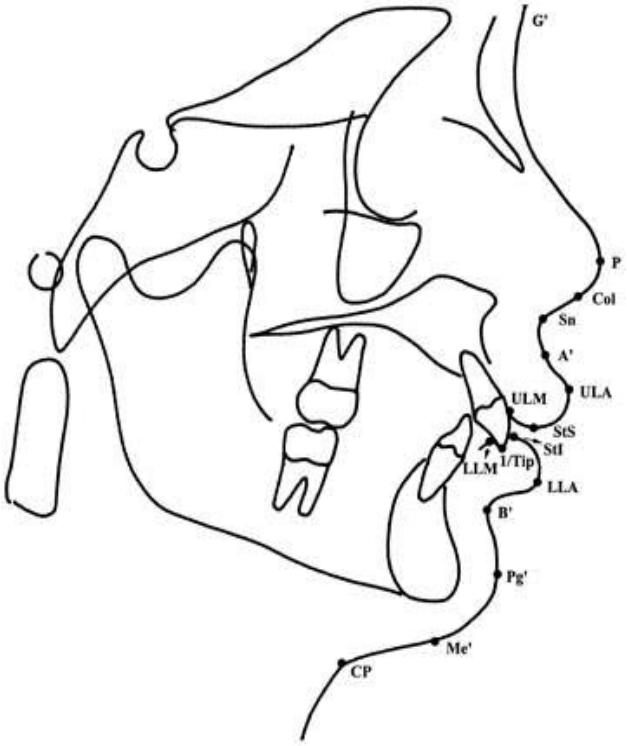
INTRODUCTION

Facial esthetic is one of the most important aspect of orthodontic treatment Importance of soft tissue consideration in establishing treatment goals for orthodontics and or thognathic surgery has been recognized and various cephalo metric analysis incorporating soft tissue parameters have evolved.[1-3] The soft tissue of the face plays an important role in facial esthetics and the orthodontist is frequently questioned about facial changes after treatment. Thus, it is recognized by most orthodontists that success of orthodontic treatment is closely related to improvement of the soft tissue profile.[4] Therefore in this article we will review all the soft tissue cephalo metric analysis. In facial aesthetics, soft tissue landmark recognition and linear and angular measurement play a critical role in treatment planning.

Soft tissue Cephalo metric Landmarks[5]



Soft Tissue Landmarks	
G'	Soft Tissue Glabella
P	Pronasale
Col	Columella
Sn	Subnasale
A'	Soft Tissue A Point
ULA	Upper Lip Anterior Point
ULM	Upper Lip mucosa side opposite A'
Sts	Stomiom Superious
I/Tip	Tip of Upper Incisor
Sti	Stomiom Inferious
LLA	Lower Lip Anterior Point
B'	Soft Tissue B Point
LLM	Lower Lip mucosa side opposite B'
Pg'	Soft Tissue Pogonion
Me'	Soft Tissue Menton
CP	Cervical Point

Soft Tissue Analysis

a) Hold away Analysis[3]

It was given by Reed Hold away in 1983

	Facial Angle	▪ Between FH plane and soft tissue plane ▪ Normal 91+/-7 ▪ Prognathic /Retrognathic
	Nasal Prominence	▪ Nose tip to line perpendicular to FH and running tangent to upper lip ▪ 14-24mm
	Superior Sulcus Depth	▪ Perpendicular to FH and tangent to Vermilion border of upper lip ▪ 3mm
	Soft tissue subnasale to H line	▪ Ideal=5mm ▪ 3-7mm Normal ▪ Short thin lip-3mm ▪ Long thicker lip-7mm
	Skeletal profile Convexity	▪ From point A to hard tissue facial plane ▪ Varies with H angle
	Basic Upper lip thickness	▪ Upper lip thickness is measured horizontally from a point 3mm below point A to outer border of upper lip. ▪ Average value=15mm
	Upper lip strain measurement	▪ Vermilion border of upper lip to the most anterior portion of central incisor ▪ Range=13mm-14mm
	H Angle	▪ Between soft tissue facial plane and harmony line. ▪ Ideal=10 degrees ▪ Measures upper lip prominence or retrogna thism of the soft tissue chin.
Lower lip to H line		▪ H line to most prominrnt point on lower lip ▪ 0-0.5mm ideal ▪ <-1mm= Lingually positioned lower anteriors ▪ >2mm=Protrusive

Inferior sulcus to H line	▪ Measured from the deepest point in the curvature between the lower lip and the chin and the H line ▪ Average value-5mm
Soft tissue chin thickness	▪ Soft tissue thickness is measured from hard tissue pogonion to soft tissue pogonion ▪ Average Value-10 to 12mm

According to Hold a way a perfect profile should have:

ANB=2 degrees
H line angle=-7 to 8 degrees
Lower lip should touch the H line
H line should bisect S curve between pronasale and Sub nasale
Tip of the Nose-should be 9mm anterior to H line
There should be no lip tension on closure

b) Merrifield Z A ngle[7]

Formed by FH plane and profile line(line formed by touching chin and most procumbent lips),
Normal range-70 degrees

E line[8]

Also called Esthetic line, described by Ricketts
E line is formed by joining tip of nose and soft tissue pogonion

c) **S line[9]**

Steiners S line is formed by line bisecting the middle of S formed the nose and soft tissue pogonion
In a well balance face the upper and lower lips should touch the S line.
Lips ahead of it are considered protrusive and behind it are retrusive

COGS (cephalometrics for or thognathic surgery)[10]

Facial Convexity Angle	• Drop a line from Glabella 'G' to Subnasale 'Sn' and a line Sn to soft tissue pogonion 'Pg' • Mean value: 12-+4 degrees • Increased +ve value: Convex profile • Increased –ve value-Concave value
Maxillary Prognat hism	• Drop line perpendicular to horizontal plane from Glabella. Measure the distance from perpendicular line to Sn • Mean value:6+-3mm • +ve=maxillary prognathism • -ve=maxillary retrognathism
Mandibular Prognat hism	• Drops a perpendicular line to HP from Glabella. Measure the position of the pogonion from this line parallel to HP • Mean value:0+/-4 • Increased –ve value indicate mandible is retrognathic
Vertical Height Ratio	• Drop a perpendicular line to HP from Glabella to this line drop a perpendicular line to Sn and M. Measure the distance from G-Sn and Sn-Me • The ratio of middle 3rd to lower 3rd facial height measured perpendicular to HP. • Ratio less than 1= denotes disproportionality and there is large lower 3rd face and vice versa
Lower Face Throat Angle	• Formed by the intersection of lines Sn-Gn & Gn-C • Mean value:100degree +-7degrees
Lower Vertical Height Depth Ratio	• Drop a line from Sn to Gn and C to Gn. • Measure the distance from Sn- Gn and C –G n • Mean value: 1.2:1 • If the ratio is more than 1=Short neck
Nasolabial Angle	• Draw a line from Sn to Cm and drop a line from Sn to Ls • Measure the angle formed

	• Mean value:102 degrees =/-8degrees
Upper Lip Protrusion	• Draw a line from Sn to Pg' • Assessing the anteroposterior maxillary dysplasia

CONCLUSION

In conclusion facial esthetic still one of the mean reasons that lead many patients to seek for orthodontic treatment so many instances evaluations of facial esthetics seem to be especially influenced by the orthodontist's concept of a pleasing face and that lead them to create many techniques to assess the facial soft tissue. Comprehensive cephalometric and facial analyses allow us to identify the structural etiology of the malocclusion. Computerized cephalometry will continue to evolve rapidly, presenting both a challenge and an opportunity to the dental profession to improve visualization of the esthetic and functional impact of treatment plans.

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