



### RESEARCH ARTICLE

## RELATION OF ALA TRAGUS LINE WITH OCCLUSAL PLANE IN DIFFERENT FACIAL FORMS IN DELHI POPULATION

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### Abstract

The aim of this study was to check the parallelism of ala tragus line with occlusal plane in different facial forms with the help of cephalograms in dentulous subjects. A total of 200 dentulous subjects (100 female and 100 male) were selected in an age group of 18-30 years to obtain the lateral cephalograms. To evaluate the facial form, the bizygomatic width and facial length were measured using a digital caliper from Nasion to Gnathion (N- Gn). Facial form was then obtained from the formulae  $(N-Gn / Bi \text{ Zygomatic width}) \times 100$  and divided into leptoprosopic, mesoprosopic and euryprosopic. The results of this study demonstrated that in maximum percentage of the participants, the occlusal planes were parallel to lines joining the inferior borders of the ala of the nose and the middle parts of the tragus.

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### Introduction:-

Rehabilitation of edentulous patients with conventional complete dentures, whether tissue supported or implant supported, is always a challenge to any prosthodontist. Various biological and mechanical factors to restore functions and health of the stomatognathic system have to be considered.[1]. The correct orientation of the occlusal plane plays a vital role in achieving both function and esthetics.[2]. The plane of occlusion forms an essential part of the concept of mechanically balanced articulation [3]. The position of occlusal plane in denture wearers should be as close as possible to the plane, which was previously occupied by the natural teeth [4].

One of the most popular methods to determine the plane of occlusion of any patient is to draw a line parallel from the lowest point of the ala of the nose to the external auditory meatus or tragus. Numerous studies have shown that all the three parts of the tragus i.e. superior, middle and inferior can be guides for occlusal plane orientation in edentulous patients [2].

The aim of this study was to check the orientation of ala tragus line with occlusal plane in dentulous patients with different facial forms by using cephalograms.

### Materials and Methods:-

In this cross sectional study, a total of 200 dentulous subjects (100 female and 100 male) were selected in an age group of 18-30 years to obtain the lateral cephalograms. Written consent forms were obtained from all subjects.

#### Exclusion criteria for selection of patients:

1. Presence of any fixed or removable partial dentures

2. Severe attrition or abrasion of teeth
3. Crowding of teeth
4. Periodontically compromised teeth

**Inclusion criteria for selecting patients:**

1. Angles class I occlusal relationship
2. Complete natural dentition
3. No history of orthodontic or prosthetic treatment

After selecting the patients, one stainless steel ball was attached at the ala of the tragus and three stainless steel balls were attached to the tragus with carding wax on the superior, middle and inferior parts of the tragus. Once this was done, cephalometric radiographs were obtained from each patient. (Fig 1)

To determine the facial form, the bizygomatic width was measured with the help of a digital caliper. The facial length was measured from Nasion to Gnathion (N- Gn) using digital caliper. Facial form was then calculated from the formulae [3],

$$\text{Facial index} = (\text{N-Gn} / \text{Bi Zygomatic width}) \times 100$$

The facial forms of the patients were categorised into three categories (Banister's classification) as euryprosopic, mesoprosopic and leptoprosopic. This was done on the basis of the calculations.

**Fig 1:-** Showing placement of stainless steel balls on tragus and ala of nose.

**Results:-**

It was observed that the line from middle part of the tragus with the ala of nose coincided with the occlusal plane. This was common with all the facial forms.

In euryprosopic face form 25.08% of males and 30.04% of females coincided with middle part of tragus. (Table 1)

In mesoprosopic face form 16.2% of males and 22.9% females coincided with middle part of tragus. (Table 2)

In leptoprosopic face form 22.9% of males and 31.5% of females coincided with middle part of tragus. (Table 3)

**Table 1:-** Showing which part of tragus coincides in Euryprosopic face form.

Part of the tragus		Superior	Middle	Inferior
euryprosopic	Male	8(11.6%)	17(25.08%)	8(13.8%)
	Female	7(10.1%)	21(30.4%)	6(8.6%)
		15(21.7%)	38(56.48%)	15(22.4%)
Total	67			

**Table 2:-** Showing which part of tragus coincides in Mesoprosopic face form.

Part of the tragus		Superior	Middle	Inferior
Mesoprosopic	Male	4(18.9%)	13(16.2%)	11(14.86%)
	Female	13(17.5%)	17(22.9%)	7(9.45%)
		17(36.4%)	30(39.1%)	18(24.31%)
Total	75			

**Table 3:-** Showing which part of tragus coincides in Leptoprosopic face form.

Part of the tragus		Superior	Middle	Inferior
Leptoprosopic	Male	5(8.7%)	14(22.9%)	8(11.6%)
	Female	3(10%)	18(31.5%)	7(10.1%)
		8(18.7%)	32(54.4%)	15(21.7%)
Total	58			

**Discussion:-**

The results of this study showed that the occlusal planes were parallel to lines joining the inferior borders of the ala of the nose and the middle parts of the tragus in majority of the patients , irrespective of their facial forms.. In Euryproscopic face form 25.08% of males and 30.4% of females coincided with middle part of tragus. In mesoproscopic face form 16.2% of males and 22.9% of females coincided with middle part of tragus. In leptoproscopic face form 22.9% of males and 31.5% females coincided with middle part of tragus.

The results of this study was in agreement with studies done by Shigliet al. [5] and Gupta and Singh<sup>6</sup> where occlusal plane relators were used to determine the relative parallelism of the ala-tragus line and occlusal plane. Gupta and Singh concluded that in 72% of the male population of their participants , the line drawn from the ala of the nose to the middle of the tragus was found to be parallel to the maxillary occlusal plane. (6)

**References:-**

1. D'Souza N, Bhargva K. A cephalometric study comparing the occlusal plane in dentulous and edentulous subjects in relation to the maxillomandibular space. J Prosthet Dent. 1996; 75:177-182.
2. Shetty et al. Occlusal Plane Location in Edentulous Patients: A Review. J Indian Prosthodont Soc. 2013; 13(3):142-148.
3. Posselt V. Physiology of occlusion and rehabilitation, 2nd edn. Blackwell, Oxford, 1968.
4. Celebic A, Valentic-Peruzovic M, Kraljevic K, Brkic H. A study of the occlusal plane orientation by intra-oral method. J Oral Rehabil. 1995; 22:233-236.
5. Shigli K, Chetal B, Jabade J. Validity of soft tissue landmarks in determining the occlusal plane. J Indian Prosthodont Soc. 2005; 5:139-145.
6. Gupta R, Singh SP. Relationship of anatomical landmarks with occlusal plane. J Indian Prosthodont Soc. 2009; 9:142-147.