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## Parallelism of ala tragus line with occlusal plane in different facial forms in Kashmiri population

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### Abstract

The aim of this study was to check the orientation of ala tragus line with occlusal plane in different facial forms in dentulous subjects with the help of cephalograms. A total of 200 dentulous subjects (100 male and 100 female) were selected from Government Dental College, Srinagar in an age group of 18-25 years to obtain the lateral cephalograms. To determine the facial form, the bizygomatic width was measured using a digital caliper. The facial length was measured using 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 euryprosopic, mesoprosopic and leptoprosopic. 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.

**Keywords:** Parallelism, occlusal plane, Kashmiri

### Introduction

Complete denture prosthodontics is a challenge for the restoring dentist for the reason that rehabilitation of edentulous patients with conventional complete dentures, be it tissue supported or implant supported, has to be done by considering various biological and mechanical factors to restore functions and health of the stomatognathic system<sup>[1]</sup>. The correct orientation of the occlusal plane plays a vital role in optimal esthetic achievement<sup>[2]</sup>. The plane of occlusion, forms an essential part of the concept of mechanically balanced articulation<sup>[3]</sup>. 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<sup>[4]</sup>.

One of the most popular methods is to orient the occlusal plane parallel to a line drawn from the lowest point of the ala of the nose to the external auditory meatus or tragus. Numerous authors have stated as well as researched in this area and found out that all the three parts of the tragus i.e. superior, middle and inferior have been proved to be guides for occlusal plane orientation in edentulous patients<sup>[2]</sup>.

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

### Materials and methods

In this cross sectional study, a total of 200 dentulous subjects (100 male and 100 female) were selected from Government Dental College, Srinagar in an age group of 18-25 years to obtain the lateral cephalograms. Written comments were obtained from all subjects.

### Inclusion criteria

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

### Exclusion criteria

1. Periodontically compromised teeth
2. Teeth grossly attrited or abraded
3. Presence of fixed or removable partial dentures
4. Crowding of teeth

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

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

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

Depending on the value, the facial form is divided into three categories (Banister's classification) as euryprosopic, mesoprosopic and leptoprosopic.



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

**Results**

It was seen in all the face forms that the line from middle part of the tragus with the ala of nose coincided with the occlusal plane.

In euryprosopic face form 31.5% of males and 22.8% of females coincided with middle part of tragus. (Table 1)

In mesoprosopic face form 30.4% of males and 26.08% of females coincided with middle part of tragus. (Table 2)

In leptoprosopic face form 22.9% of males and 16.2% females coincided with middle part of tragus. (Table 3)

**Table 1:** Showing which part of tragus coinciding in euryprosopic face form

Part of the tragus		Superior	Middle	Inferior
euryprosopic	Male	3 (10%)	18 (31.5%)	7(10.1%)
	Female	5 (8.7%)	13(22.8%)	8(11.6%)
		8 (18.7%)	31 (54.3%)	15(21.7%)
Total			57	

**Table 2:** Showing which part of tragus coinciding in mesoprosopic face form

Part of the tragus		Superior	Middle	Inferior
Mesoprosopic	Male	7 (10.1%)	21(30.4%)	6 (8.6%)
	Female	8(11.6%)	18(26.08%)	9 (13.8%)
		15(21.7%)	39(56.48%)	15(22.4%)
Total			69	

**Table 3:** Showing which part of tragus coinciding in leptoprosopic face form

Part of the tragus		Superior	Middle	Inferior
Leptoprosopic	Male	13(17.5%)	17(22.9%)	7(9.45%)
	Female	4(18.9%)	12(16.2%)	11(14.86%)
		17(36.4%)	29(39.1%)	18(24.31%)
Total			74	

**Discussion**

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. In Euryprosopic face form 31.5% of males and 22.8% of females coincided with middle part of tragus. In mesoprosopic face form 30.4% of males and 26.08% of females coincided with middle part of tragus. In leptoprosopic face form 22.9% of males and 16.2% females coincided with middle part of tragus.

The results of this study was in agreement with studies done by Shigli *et 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, concluded that 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. Gupta and Singh [6] found this result in 72% of the male population.

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