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### RESEARCH ARTICLE

#### LOCATION OF POSTERIOR OCCLUSAL PLANE WITH REFERANCE TO RETROMOLAR PAD IN KASHMIRI POPULATION.

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#### Manuscript Info

##### Manuscript History

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#### Abstract

**Introduction:** Relocation of posterior occlusal plane is of prime importance in prosthodontic practice. Various landmarks are used to determine the occlusal plane like lateral border of the tongue, retromolar pad, ala- tragus line, cephalometry. The purpose of this study was to determine which part of the retromolar pad correlates with the occlusal plane in kashmiri population.

**Material and methods:** The study was done on 50 males and 50 females. A stainless steel scale was used to record the level of retromolar pad coinciding with the occlusal plane intraorally.

**Results:** In majority of subjects occlusal plane coincided with middle part of retromolar pad in both males and females.

**Conclusion:** In kashmiri population middle third of retro molar pad can be taken as a reliable landmark for relocating occlusal plane in complete denture construction.

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#### Introduction:-

Relocation of occlusal plane is of prime importance in prosthodontic practice. The position of occlusal plane of orientation forms the basis for ideal tooth arrangement. According to GPT 8 (Glossary of prosthodontic terms); Occlusal plane may be defined as “the average plane established by the incisal and occlusal surfaces of teeth.” Generally it is not a plane but represents the planar mean of curvature of these surfaces<sup>1</sup>. Lang & Swartz reported that occlusal plane in complete dentures shall be located in same position in which it existed in natural dentition<sup>2</sup>. Anteriorly occlusal plane mainly helps in achieving esthetics and phonetics while posteriorly, it forms a milling surface where tongue and buccinators muscle are able to position the food bolus onto it and hold it there during mastication<sup>3</sup>. If a clinician fails to place artificial teeth in alignment with the plane of occlusion, problems like food collection in sulcus and other extremes of cheek / tongue biting might occur.

Incorrect record of occlusal plane would hamper esthetics, phonetics and mastication resulting in instability of complete dentures and hence alveolar bone resorption<sup>3</sup>. A number of methods are employed for correct relocation of occlusal plane which include: Height of retro molar pad, Lateral Border of tongue, Parotid Papilla, HIP Plane, buccinator groove as intraoral landmarks and Ala tragus line, inter pupillary line, upper lip length as extraoral landmarks and cephalometry<sup>3</sup>.

Each of the above mentioned methods have their merits and limitations and they are subjected to inter population variation. So a need was felt to co- relate occlusal plane with the intraoral landmarks in kashmiri population to ensure quick and easy relocation. Considering retro molar pad height to be a prominent, stable and easily accessible

landmark, this study was conducted with a purpose of relating retro molar pad height with occlusal plane in kashmiri population, in order to eliminate inter population error. Effect of gender on various occlusal planes was also investigated. The purpose of this study was to check reliability of retro molar pad as an intraoral landmark in re establishing occlusal plane in kashmiri population.

**Materials and methods:-**

The study was conducted on 100 dentate subjects (50 males and 50 females) selected from a group of approximately 200 dental students from Government Dental College Srinagar, Kashmir. Written consent of the subjects was taken and all of them participated in the study voluntarily. Clearance from Institutional Ethical Committee was obtained. Subjects within the age group of 17-21yrs, ideal arch form and alignment, no history of trauma, no spacing and crowding, no dental abrasion/attrition, no history of orthodontic treatment and no gingival/periodontal condition which would undermine a healthy tooth tissue relationship, were included in the study.

Impressions of mandibular arches were made with irreversible hydrocolloid material (alginate) and the casts were poured in dental stone. The casts were separated from the impression material 45min after pouring. The location of retro molar pad in relation to the plane of occlusion was determined by sliding a thin stainless steel scale posteriorly over the cusps of mandibular posterior teeth ensuring its contact with the tip of cuspid on one side of the mandibular arch extending to the disto-lingual cusp tip of second or third mandibular molar (Figure 1). Disto lingual cusp tip was used because it has more close anatomic relation with retro molar pad. The vertical height of the pad was divided into three parts (lower, middle and upper). The zone of contact between the scale and retro molar pad was recorded.

Initially this procedure was accomplished both intra orally and on the cast. Because of consistent correlation of these two determinants, the intraoral procedure was utilized. The procedure was carried out in both the right and left sides.

**Figure 1:-** Using stainless steel to obtain relation of retromolar pad with posterior occlusal plane**Table 1:-** Percentage distribution of different levels of retromolar pad in males and females

PART OF RETROMOLAR PAD	MALES No. Of subjects	FEMALES No. Of subjects	TOTAL %age
UPPER THIRD	0	0	0
MIDDLE THIRD	31	30	61
LOWER THIRD	19	20	39

**Results:-**

Our results suggested that in 61% of subjects, mandibular occlusal plane coincided with middle part of retro molar pad and in 39% it coincided with lower half. Upper half correlation was found in none of the patients. Hence forth these findings suggest that mandibular occlusal plane coincided with middle part in majority of patients. Inter gender variation seemed to be insignificant. (Table 1)

**Discussion:-**

Relocation of occlusal plane is of prime importance in complete denture therapy. It is advocated that establishing the plane of occlusion in full dentures as close as possible to the position which was previously occupied by the occlusal plane of natural teeth is must in order not to change the proprioceptive regulatory mechanisms which ensure normal function of cheek, tongue and masticatory muscles.<sup>4</sup>

Retro molar pad height is a prominent and stable anatomical landmark which is also easily accessible. A number of studies have been conducted in different populations comparing the relation of retro molar pad height with occlusal plane. Jack Piermatti(2006)<sup>5</sup> said the occlusal plane should terminate at upper level of retromolar pad while Arthur O. Rahn and Charles M. Heartwell (1986)<sup>6</sup> said posterior height should not exceed half of the height of retro molar pad. K. Shigli et al<sup>3</sup> concluded that mandibular occlusal plane was coincident with lower one third of retro molar

pad. Rubina et al<sup>7</sup> concluded that it coincided with the middle third of retromolar pad. Donald O.Lundquist and Colonel et al<sup>8</sup> concluded that occlusal plane coincided with the lower half of retromolar pad. Our study concluded that the middle third of retro molar pad coincided with the occlusal plane in both genders in kashmiri population. The results of our study coincided with study conducted by Rubina et al<sup>7</sup>.

**Conclusion:-**

In kashmiri population middle third of retro molar pad can be taken as a reliable landmark for relocating occlusal plane in complete denture construction. This method is reliable, easily accessible, economical and less time consuming.

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