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Review Article

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AN INSIGHT TO INCISIVE PAPILLA

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ABSTRACT

The incisive papilla remains relatively constant in position and is frequently used as an anatomic landmark for anterior teeth. Many studies have been conducted to determine the relationship between incisive papilla and maxillary central incisor and measured the papilla incisor distance in dentate subjects to extrapolate this distance as a guide to place maxillary central incisors in complete dentures. Papilla incisor measurements were made either from the middle or posterior border of the papilla and certain ethnic and national norms have been recommended to set the central incisors in complete dentures.

KEYWORDS: Incisive papilla, biometric guides, canine-papilla-canine line.

INTRODUCTION

"Perception" is a Greek word and aesthetic is derived from it which has two dimensions, objective and subjective.

The various **aesthetic objectives** related to orofacial complex such as unity, form, structure, balance, colour, function and display of dentition should be fulfilled by employing suitable technique.[1]

Aesthetics is a primary concern for patients seeking prosthodontic treatment. The position of tooth plays an important role in restoring the appearance in the edentulous state. The maxillary anterior teeth should be positioned as close as possible to the positions originally occupied by natural teeth to achieve a natural appearance in making complete dentures. To determine the most appropriate position for anterior teeth, to achieve a proper speech, lip support, and harmonious incisal guidance certain anatomical landmarks are required, which are called as biometric guides. Some of the proposed **biometric guides** are labial gingival margin, incisive papilla (IP), canine-papilla -canine (CPC) line, scar line and the inner surface of maxillary denture border corresponding to cephalometric point subspine.[2,3] Among these biometric guides, the most reliable anatomical landmark is the **incisive papilla.**

The incisive papilla is a small, pear or oval-shaped mucosal eminence situated on the median line of the palate just behind the central incisors in dentate individuals and distal to or on the centre of the ridge in edentulous individuals.

Classification of Incisive Papilla

Type I: Large pear
Type 2: Small pear
Type 3: Inverted pear
Type 4: Tapering/ flame
Type 5: Cylindrical/spindle
Type 6: Round/oval/football
Type 7: Dumb-bell/bowling pin
Type 8: Double papilla
Type 9: Rudimentary and difficult to recognize.

Pear shaped

Round

Flame shaped

Notched Pear

Cylindrical

Football Shaped

Dumbbell

Bowling Pin Shaped

Double

Base of papilla not recognizable

Papilla absent

Another anatomic landmark that may be used in complete denture construction is the **pterygomaxillary notch-incisive papilla plane**, which is parallel to the occlusal plane that uses the mesiolabial incisal edge of the maxillary right central incisor as the anterior reference point and the mesiobuccal cusp tips of the maxillary first or second molars as the posterior reference point.[4,5]

The **incisive papilla** is one of the most important biometric guides, as it is a stable landmark and remains unchanged after the anterior teeth extraction and subsequent resorption of the maxillary ridge.

Hence, it can serve as an anatomical landmark for assessing the position of maxillary incisors of the patient's denture, and as a biometric guideline in the placement of removable central incisors and maxillary dentures in a comprehensive denture therapy.[6]

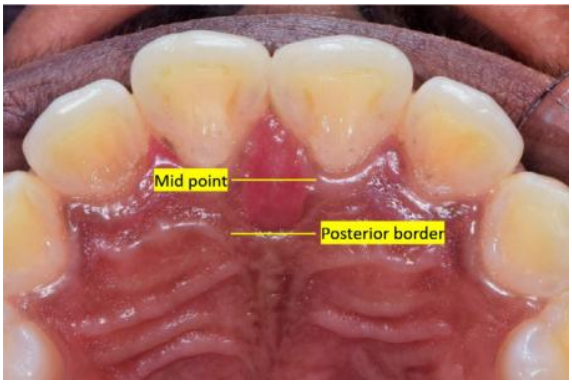
By determination of incisive papilla, arrangement as well as positioning of artificial teeth in accordance to it will reproduce normal function, speech and pleasing appearance.

The relationship of the incisive papilla to the anterior teeth depend on the ethnicity of the population studied and on whether measurements were made from the anterior or posterior border of the incisive papilla.

Anterior border of the incisive papilla is not a reliable landmark, particularly when the papilla is continuous with the interdental papilla since post extraction changes occur at the anterior border. During edentulous transformation as the papilla changes to round form, its center also changes.

Walt and Likeman[7] stated that the pattern of alveolar resorption can cause superior movement of the incisive papilla and to compensate for this, the posterior border of the papilla has to be considered as the reference instead of the middle or anterior border. However, the midpoint of the incisive papilla is more commonly used as the reference point, although the posterior part of the incisive papilla is more stable.

McGee, Hickey, Mavroskoufifis, Watt and Macgregor related the middle of the incisive papilla while **Ortman and Tsao, Grave and Becker** used the base of incisive papilla as a reference for the measurement.



Harper who stated in 1949 that the position of the incisive papilla remains fairly constant in the edentulous patient, was the first to suggest the use of incisive papilla as a guide to the placement of maxillary anterior teeth.

He suggested that the incisal edges of the maxillary central incisors should be 5 to 8 mm at the horizontal direction in front of the centre of the papilla.

Watt., *et al*. stated that canines should be located in a coronal plane passing through the posterior border of the papilla.

McGee recommended to set the labial surface of central incisors 8 mm anterior to the papilla in order to place the upper central incisors in complete denture as close as possible to their original position.

Hickey, Boucher and Woelfel in 1962 recommended that the labial surface of central incisors in dentures should be 8–10 mm anterior to the middle of papilla.

Martone in 1963 emphasized that the best guide in setting anterior teeth was the papilla incisor relationship and recommended the incisors should be 10 mm in front of the incisive papilla.

Mavroskoufifis and Ritchie believed that the incisive papilla is a stable landmark for arranging the labial surfaces of central incisors 10 mm anterior to the incisive papilla. They also recommended the tips of the canines should be set on a horizontal line which pass through the posterior border of incisive papilla.[8]

Ortman and Tsao stated that the most anterior part of the maxillary central incisors and the posterior of the incisive papilla was 12.45 mm.

Grave and Becker proved this similar measurement as 12 to 13 mm.

Lassila et al found measurement of the same distance as 12 mm.

Solomon., *et al*. have found this distance in Indian individuals as 11 to 12 mm.

Park et al. in 2007 suggested similar results (11.96 ± 1.37) mm with the three dimensional measurement method, with a virtual model of the maxillary anterior teeth and incisive papilla.

In the research conducted by **Fu et al.** in 2007 amongst young adults in Taiwan discovered that the mesiolabial incisal edge of the upper central incisor was 7.30 ± 0.64 mm anterior to the center of the incisive papilla.

Elfadil's study in 2008 measured the distances from the labial surface of the central incisor to the center and posterior point of the incisive papilla.

The data obtained suggested that the average distance of 12.4 mm when the posterior point of the incisive papilla was used as the reference point and 8.93 mm when the center of the papilla was used as the reference point.[9,10]

CONCLUSION

Among the different intra-oral landmarks, the incisive papilla has been a matter of interest to many researchers. This is because it provides valuable guidelines for establishing the positional relationship of anterior teeth in dentures. It can be concluded that there exists a definite relationship between the incisive papilla and the labial surface of incisor teeth. Positioning of anterior teeth has unquestionable influence on speech and esthetics and incisive papilla is a useful reference both to the dentist and the technician.

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