

# Biomethrics Study of the Retromolar Pad

## Estudio Biométrico de la Papila Retromolar

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**ABSTRACT:** The retromolar pad is a mucosal formation that is used for determining the height of the occlusal plane. The present study analyzes the biometric characteristics of 81 retromolars pad, maximum longitudinal and transverse diameters were measured and classified according to shape. The maximum transverse diameter present an average of 7.94 mm (SD 2.09), while the maximum longitudinal diameter average was 11.202 mm (SD 2.5089), there were no significant differences between the average obtained on the right and left side retromolar pad ( $p < 0.05$ ). The 53.1% was classified as oval ( $N = 43$ ), 29.6% rounded ( $N = 24$ ) and 17.3% as triangular ( $N = 14$ ).

**KEY WORDS:** retromolar pad, occlusal plane, piriformis papilla.

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### INTRODUCTION

The retromolar pad, also called piriformis papilla, is a mucosal elevation located in the retromolar area covering the retromolar triangle (Taieb & Carpentier, 1989; Suazo *et al.*, 2007). Several authors have described the possibility of anesthetizing the inferior alveolar nerve by infiltration in the retromolar triangle, placing the puncture site in the retromolar pad (Silva, 1998; Suazo *et al.*, 2000; Sandoval, 2002; Suazo *et al.*, 2007).

The correct determination of mandible occlusal plane is necessary for a complete prosthesis that has an acceptable functional and cosmetic result.

In the anterior mandibular area, the height of the occlusal plane in an edentulous patient can be determined using the superior edge of the lower lip, at the level of premolars and canine projected at the level of oral commissure. In the posterior area, the main reference described corresponds to the retromolar pad (Ogawa *et al.*, 1996).

According to Wright (1966), in the occlusal plane, the height of the first inferior molar is 2 mm under the highest point in the retromolar pad. Some authors divide it into thirds, locating the occlusal plane between

the upper and middle third (Curtis *et al.*, 1987), which is in contrast to those reported by Shigli *et al.* (2005) indicating that the occlusal plane is always projected among the lower and the middle third of the retromolar pad.

Celebic *et al.* (1995) determined that there is a high correlation between the height of the retromolar pad and the real occlusal plane in edentulous patients, which (Nissan *et al.*, 2003) suggests that in order to establish the level of the occlusal plane, the cephalometrics parameters must be accompanied by intraoral references.

When a mandible complete denture is manufactured, the marginal seal is essential for the stability of the apparatus; one of the most important anatomical elements contributing to the subsequent sealing is the retromolar pad. According to Abe *et al.* (1997), medial pterygoideus muscle can be inserted in this area, causing instability and mucosal lesions.

The shape of the retromolar pad would be determined by histologic characteristics of the mucosa (McCrorie & Hall, 1965), which may be changed by the activity of the muscles that are inserted into their

margins as buccinator muscle and distal fascicle temporalis muscle.

The purpose of this study was to analyze the biometric and shape aspects of the retromolar pad in total and partial edentulous patients.

## MATERIAL AND METHOD

Biometrics was conducted indirectly from the retromolar pad in 45 total and partial jaw edentulous patients, unilateral or bilateral posterior free end (Class I, II, Kennedy Applegate), from the plaster models made after anatomical impressions.

We excluded those models that were not completely reproduced from the retromolar pad or those with margins that were not clearly distinguishable.



In each model, a single operator defined the retromolar pad using a pencil and then determined the maximum longitudinal and transverse diameter using a manual caliper. The significance of the differences in average per side was analyzed through t-test with a p-value < 0.05.

The retromolar pad was also classified by shape into three groups: rounded (Fig.1), oval (Fig. 2), and triangular (Fig. 3). The descriptive statistical analysis of the sample was done using SPSS for Windows 11.5.



## RESULTS

Eighty-one retromolar pads were identified and measured (right N= 38, left N= 43). The maximum transverse diameter had an average of 7.94 mm (SD 2.09), while the maximum longitudinal diameter average was 11.202 mm (SD 2.5089). There were no significant differences between the averages obtained on the right- and left-side retromolar pads ( $p < 0.05$ ).

According to shape, 53.1% was classified as oval (N = 43), 29.6% as rounded (N = 24), and 17.3% as triangular (N = 14).



## DISCUSSION

The retromolar pad is a mucosal formation with some mobility, which is used as an intraoral reference for the location of occlusal plane (Amrhein *et al.*, 1990) during complete prosthesis of the artificial posterior teeth (Celebic *et al.*), whose shape is determined by histologic characteristics, as well as modeling muscle (McCrorie & Hall; Abe *et al.*).

The present study analyzes the biometric characteristics of the retromolar pad. The results are consistent with those reported by various studies that show great variability in the shapes and dimensions of the retromolar pad (Nissan *et al.*; Ogawa *et al.*). In addition, variations in the level of insertion and in the activity of the muscles that were projected to their

margins indicate a low confiability level of the retromolar pad as a single indicator. According to Rignon-Bret *et al.* (2002) and Celebic *et al.*, determining the location of the occlusal plane is more accurate when using various intraoral parameters.

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**RESUMEN:** La papila retromolar es una formación mucosa que se utiliza para la determinación de la altura del plano oclusal. En el presente estudio se analizan las características biométricas de 81 papilas retromolares, se midieron los diámetros transversal y longitudinal máximo y se clasificaron de acuerdo a forma. El diámetro transversal máximo presentó una media de 7,94 mm (DS 2,09), mientras que la media del diámetro longitudinal máximo fue de 11,202 mm (DS 2,5089), no se encontraron diferencias significativas entre las medias obtenidas en la papila retromolar del lado derecho e izquierdo ( $p < 0,05$ ). El 53,1% fue clasificada como ovalada (N=43), el 29,6% como redondeada (N=24) y el 17,3% como triangular (N=14).

**PALABRAS CLAVE:** papila retromolar; plano oclusal; papila piriforme.

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