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SPACE AVAILABLE FOR THE ERUPTION OF LOWER THIRD MOLARS

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Third molars are teeth that tend to be retained or impacted, whether totally or partially. Third molars are the predominantly impacted teeth and these constitute 98% of all impacted teeth.1 The causes of this retention or impaction are very variable, from poor bone growth, a thick mucosa, a larger crown size, to systemic conditions.

This impaction or retention brings with it many problems such as resorption of the second molar, pericoronitis, pathologies such as cysts or tumors, facial pain, problems with the temporomandibular joint, among others. 2

An important aid in the diagnosis of the eruption of third molars are panoramic radiographs. They are used recurrently in the diagnosis of variations in the eruption of third molars, and correct and timely evaluation facilitate a diagnosis. correct and timely treatment.

Imaging acquisition and analysis through a panoramic radiograph is the standard for a timely diagnosis for the general practice dentist and the specialist, since it reveals the presence of certain anomalies and dental pathologies that are impossible to detect through clinical examination in the cavity. oral. 3

There are many studies on impacted and/or retained third molars, varying the percentage according to different ethnic groups or the study population. Castañeda Diego points out in his study on the prevalence of retained, included and impacted teeth in a population from Bogotá, Colombia; that found 2,510 findings, of which 2,465 (98.2%) were third molars. 3 – 6, 11-15

The objective of this research work was to determine the prevalence of third molars without the capacity for normal eruption (retention – impaction) in digital panoramic radiographs.

MATERIALS AND METHOD

An observational, descriptive, cross-sectional study was carried out on 1894 lower molars from 947 digital panoramic radiographs, selected under the age criteria of 12 to 30 years, with the appropriate parameters of contrast, brightness, degree of distortion, sharpness, that allowed observing and appropriately measure dental and anatomical structures (Figure 1 and 2). All radiographs were from a single radiological center in the city of San Francisco de Campeche, Mexico. Exclusion criteria were all radiographs that were outside the age range, as well as those that did not meet the radiographic quality requirement. Two examiners trained and standardized (kappa -.05) on the criteria of Pell and Gregory (7) to determine the depth of the third molars and the ramus space relationship, for the classification of the position the Winter criteria (8) were used, were in charge of collecting the data. All the data obtained were analyzed in a statistical program S.P.S.S. version 25, inc Chicago Illinois.

RESULTS

There were a total of 1894 third molars measured from 947 panoramic images, of which 62.9% (597 were female), while 37% (350 were male); with an average age X= 18.93 years with a Ds= 4.52.

Our research showed that 79.4% of third molars do not have sufficient space (minimum 11mm of space) for their eruption, only 20.6% of the molars studied have that space greater than 11mm.

Within the observation of Winter's criteria, it was found that the most prevalent position was the mesioangular position with 52.2% (469 right molars), followed by the vertical position with 30.7% (275 right molars), the horizontal position was the third most observed position with 20.4% (93 right molars). For the observation of the left side,

51.3% (455 molars) were in the mesioangular position, 30.7% (272 molars) were in the vertical position and 11.7% (104 molars) were in the vertical position, (Table 1).

The Pell and Gregory classification showed that for right molars according to gender, class II was the most observed with 62.1% (363 molars) for women, 37.8% (221 molars) in men, finding that class I was the second most prevalent with 57% (101 molars) for women, 43% (76 molars) in men¬; and class III was the least prevalent with 67.16% (90 molars) for women, and 32.08% (43 molars) for men; A statistically significant association was found between gender and the branch-space relationship (Pell and Gregory), Chi2= 9.327 P value=05, (tables 2 and 3).

For Pell and Gregory's relative depth of the right molars according to the gender of the subjects, position A was the most prevalent with 59.68% (231 molars) of women, observing 40.31% (156 molars) of men, the position C remained among the most observed with 66.32% (197 molars) of women, 33.67% (100 molars) were of men, position B remaining in last place of observation with 59.71% (126 molars) of women and 39.81% (84 molars) of men; No statistically significant association was found between these two variables.

The crown-root angulation of the third molars (measured from the longitudinal axis of the crown-root to the plane of the mandibular border showed that the Median was 70.84 degrees with a minimum value of 56.86 degrees and a maximum value of 90.44 degrees for the right molars, while for the left molars the Median was 71.13 degrees with a minimum value of 55.42 degrees and a maximum value of 90.70 degrees.

The retromolar space that consisted of measuring the anterior edge of the ascending ramus to the distal surface of the second molar was median of 8.00 mm with a minimum value of 5.8 mm and maximum of 10.5 mm for right molars; while for left molars it was a Median of 8.00 mm with a minimum value of 5.7 mm and a maximum value of 10.2 mm.

Regarding the width of the crown of the right molar, X= 11.43 mm with a Ds= 1.15mm was found, while for the width of the crown of the left molar it was X= 11.40 with Ds= 3.82mm.

Bivariate correlation tests were performed (Pearson correlation), finding that for the right retromolar space and age a weak Pearson correlation of P=.319 was found, value of P=.000; while for the left correlation it was P=.255 value of P=.000 (tables 4 and 5).

DISCUSSION

In our research it was shown that 79.4% of third molars do not have enough space for their eruption, having a difference with what was found by Hashemipour in a population of Iran with 59.4%, and contrasting with Gatti's research in a metropolitan area. from Buenos Aires who found 41% of retained third molars, the differences may be due to racial type, type of diet, etc.; therefore differences and similarities with other investigations, Hattab et al 33%, Morris and Jerman 65.6%, Hassan 40.8%.

Regarding the position according to Winter's classification, our study found that the mesioangular position was the most prevalent with 52.2%, agreeing with the study by Hashemipour in a population from the southeast of Iran who found 48.3%, most likely due to the formation late molar and lack of jaw growth. Agreeing with the results of Bishara, Quek, Bui, Meisami.

According to the Pell and Gregory Classification, our study showed that class II was the most prevalent with 62.1%, agreeing with the findings of Hashemipour, Almendros, Bishara, and Obiechina, followed by Class I and the least prevalent class III. Regarding depth, our study showed depth A as the

most prevalent with 59.68%, agreeing with the research of Gatti, Hashemipour, Bishara, Almendros, Shaari.

Our variable to predict the eruption of the lower third molar is the retromolar space, between the distal surface of the second molar and the anterior edge of the ascending ramus, it is agreed that the space is not enough since the molars in class II and class III do not have enough space, Gatti, Montevichi, Bishara.

CONCLUSIONS

The study shows that 79.4% of third molars do not have the space required for their correct eruption. Class I and class III of the Pell and Gregory classification were the most prevalent and in the case of depth, Depth A and depth C were the most prevalent. The lower retromolar space (distal of the lower second molar) was on average smaller than the average mesiodistal width of the third molars. A statistically significant weak correlation was found between the retromolar space and age, which shows us that the retromolar space increases very little with the patient's age, which manifests itself in a lack of space for the eruption of the third molars.

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ANNEXES: TABLES, GRAPHS AND FIGURES

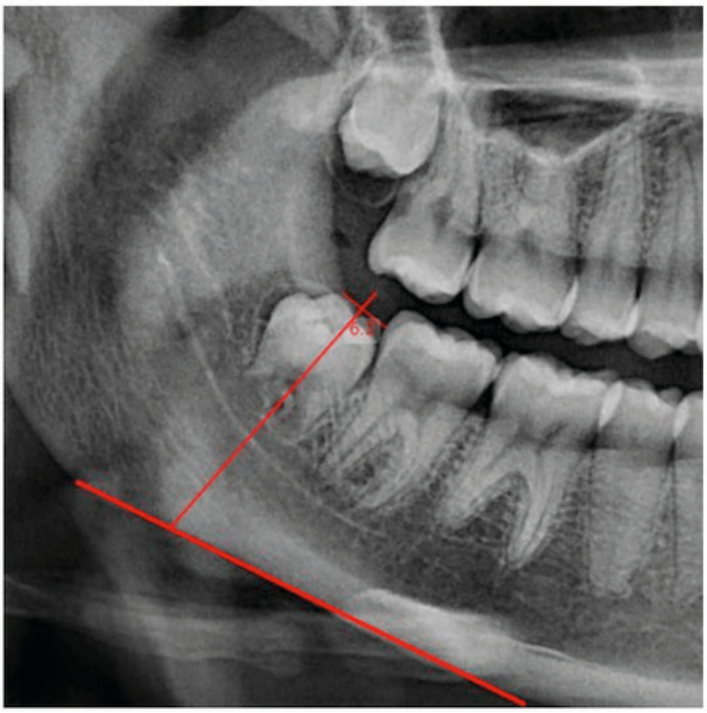

Figure 1: Measurement of the retromolar space (distal aspect of the second molar to the anterior ridge of the ramus); The inclination of the longitudinal axis of the third molar with respect to the mandibular plane is shown.

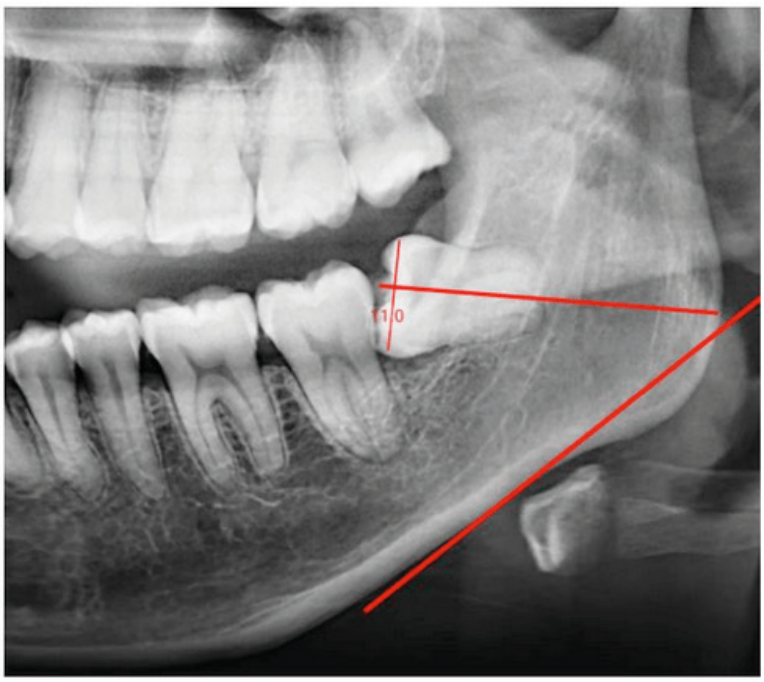

Figure 2: Mesio – distal measurement of the crown width of the third molar; the inclination of the longitudinal axis of the third molar with respect to the mandibular plane is shown.

Position of the right lower third molar	Frequency	Percentage
UPRIGHT	275	30.7
HORIZONTAL	93	10.4
LINGUOANGULAR	3	.3
DISTOANGULAR	7	.8
MESIOANGULAR	469	52.4
BUCOANGULAR	48	5.4
TOTAL	895	100%

Table 1: Percentage of the position relationship of the lower right third molar, according to Winter's classification.

*Direct source

Relationship Branch Space Right	Frequency	Percentage
CLASS I	177	19.8
CLASS II	584	65.3
CLASD III	134	15.0
TOTAL	895	100%

Table 2: Percentage of the branch-space relationship of the lower right third molar, according to the classification of Pell and Gregory.

*Direct source

Branch Relationship Left Space	Frequency	Percentage
CLASS I	166	18.7
CLASS II	584	65.8
CLASS III	137	15.4
TOTAL	887	100%

Table 3: Percentage of the branch-space relationship of the left lower third molar, according to the classification of Pell and Gregory.

*Direct source

		EDAD	ESPACIO RETROMOLAR
AGE	PEARSON CORRELATION	1	.319
One. (bilateral=			.000
RETROMOLAR SPACE	PEARSON CORRELATION	.319	1
n		895	895

Table 4: Pearson correlation between the lower right retromolar space and age

* Direct source

		AGE	RETROMOLAR SPACE
AGE	PEARSON CORRELATION	1	.255
One. (bilateral=			.000
RETROMOLAR SPACE	PEARSON CORRELATION	.255	1
n		887	887

Table 5: Pearson correlation between the left lower retromolar space and age.

* Direct source