MANDIBULAR FORAMEN
CONTRIBUTION TO YOUR LOCALIZATION
TO THE ANESTHETICAL TECHNIQUES

FORAME DA MANDÍBULA -
CONTRIBUIÇÃO SOBRE SUA LOCALIZAÇÃO
PARA AS TÉCNICAS ANESTÉSICAS

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ABSTRACT

In the Dentistry, the absence of parameters of measures for localization of the mandibular foramen where it penetrates the lower alveolar nerve stimulated the accomplishment of the present research. The imperfections in the anesthesia for regional blockade of the lower alveolar nerve generally must to the difficulty of localization of the mandibular foramen and not the observance of anesthetical techniques that in facilitate this localization to them. Anesthetical techniques for regional blockade of the lower alveolar nerve idealized by some authors, do not present given consistently that they allow to the localization of the foramen and its variations, being to this one of the purposes of the research.

RESUMO

Na Odontologia a ausência de parâmetros de medidas para localização do forame da mandíbula, local em que penetra o nervo alveolar inferior na mandíbula, estimulou a realização da presente pesquisa. As falhas na anestesia por bloqueio regional do nervo alveolar inferior são geralmente devidas à dificuldade para a localização do forame da mandíbula e, devido à não observância de técnicas anestésicas que vêm facilitar esta localização. As técnicas anestésicas por bloqueio regional do nervo alveolar inferior idealizadas por vários autores, não apresentam dados consistentes que permitam a localização do forame bem como, suas variações.

Uniterms: Mandibular foramen; Inferior alveolar nervous and bundles; Inferior alveolar nerve regional block; Mandibular lingula; Anesthetic techniques.

Unitermos: Forame da mandíbula; Vasos e Nervo alveolar inferior; Bloqueio regional do nervo alveolar inferior; Língula da mandíbula; Técnicas anestésicas.

INTRODUCTION

The mandibular nerve is a mixing nerve with sensitive predominance, emerging of the skull through oval foramen and, arriving at infratemporal fosse emits the first motor branches for the masticators muscles. It emits, also, a sensitive one, the buccal nerve, that passage below of the external face of the buccinators muscle follows, giving branches for region understood between as molar and as the premolar one.

The mandibular nerve if divides in the sensitive branches, the nerve auricular-temporal, the lingual nerve, lower alveolar who runs together to the lingual, giving branches for the alveoli, menton and lower lip.

The supplemental innervations or anatomizes through buccal nerve, milohioide, face, cervical nerves, upper posterior alveolar nerve and, high branches of the mandibular nerve had been considered as responsible by the maintenance of accessory ways for conduction of pain (9, 12, 16, 19, 20, 29, 30, 40, 46).

The foramen where it penetrates the lower alveolar nerve is the objective of the present research being situated in internal face of the branch of the mandible, to some dos millimeters above do occlusal plain of the lower molar teeth.
mandible foramen – contribution to your localization to the anesthesiological techniques

and, presenting anatomical variations of individual for individual, as it will be observed given told us an research.

For the foramen of the mandible they penetrate the lower alveolar nerves and vases and, the canal of the mandible if it extends until the medium plan, giving origin in its continuation, to a small canal that if opens in the mentual foramen.

The lower alveolar nerve was described as that most voluminous one amongst the branches of the mandibular nerve \(^{(03, 29, 61)}\).

The passage of the lower alveolar nerve in the space to pterigomandibular was described being outstanding that, above of the foramen of the mandible, the nerve does not keep relations of continuity with the branch of the mandible \(^{(29, 30, 32, 43, 44)}\).

The angle of the lower alveolar nerve passing to the foramen of the mandible is defined as being almost of 90 degrees \(^{(34)}\).

It is obtained 98.3% of success with use of the conventional technique for anesthesia for regional blockade of the lower alveolar and lingual nerves \(^{(13)}\).

It is affirmed to be necessary that the anesthetical solution enters in contact with 6 or more millimeters of the nerve to produce a blockade absolute \(^{(29, 30)}\), opposing the affirmation of the necessity of contact of the at the very least 8 to 10 millimeters of the anesthetical solution with the nervous fiber \(^{(06)}\).

Becoming fulfilled a preliminary analysis of the anatomical points, it is possible to skirt the variable, establishing itself an anesthesia accomplishes \(^{(42)}\).

A variation of the technique of Archer of anesthesia for regional blockade of the lower alveolar nerve was proposal, for which had obtained that the needle penetrated above of lingulae of the mandible, having reached the ridge of mandible, finding 96.5 % of success \(^{(01)}\).

In literature the scientific works are scarce that supply measure parameters localization of the foramen of the mandible, thus justifying the reason of the accomplishment of the present research, for the great chance that they will have the professionals of if perfecting in this type of anesthetical technique, accurately knowing the position of the mandibular foramen.

The intention of the accomplishment of the present research was that one to supply fixed control points anatomical that assist in the localization of the foramen of the mandible locating it in the internal portion of the branch of the mandible. It consisted basically of surveying in the distance enters the lower edge of the foramen and the upper of lingulae of the mandible, with the edges of the branch of the mandible in the upper, lower, anterior and posterior directions. With this, the access to this region more will be facilitated and known, being able it to use minor amount of anaesthetic in the regional blockades, for the biggest proximity of the needle to lower alveolar nerve and, with bigger security.

In this way, it will be evaluated in the distance between the definite points as being:

1. Edges of the branch of the mandible and the lower edge of the foramen of the mandible.

2. Between foramen and angle of the mandible, for use of the values in osteotomies and other possible procedures in the region.

3. It enters the lower edge of the foramen of the mandible and the upper edge of lingulae of the mandible, the measure of the mandible angle.
4. The distance anterior-posterior and upper-lower of the branch of mandibles dentate and made toothless comparing the values between the same ones.

LITERATURE REVIEW

The foramen of the mandible was situated in internal fosse of the mandible branch, some millimeters above of the occlusal plan of lower molar teeth, next to the incisures of the mandible (04, 10, 15, 29, 30).

Looking for to offer more details, how to the entrance of the lower alveolar nerve in the foramen of the mandible, to increase the index of success in anesthesia, as much had been found and such variations how to the situation of lingulae of the mandible. In a similar way in relation to the dimensions anterior-posterior and upper-lower of the mandible branch, in relation to the occlusal plan of lower molar teeth, or to the portion most concaves of the previous edge of the mandible branch, the point of not being possible to supply to the physician a reference standard (08, 23, 33, 45, 47).

The lower alveolar nerve is born of the mandible nerve, 4 or 5 mm below of the oval foramen, descends between the two pterigoids muscles, interposing it the medial pterigoid muscle and to the mandible branch. It concludes that in its passage, the nerve is envelops for tissue greasy, that surrounds it since its origin up to 1 cm of the foramen of the mandible, penetrating in that it is opened for top and it stops backwards, in the internal face of the branch of the mandible, the equal distance between the edges anterior, posterior, lower and concavity of the mandible incisures (21).

The passage of the lower alveolar nerve passes of the oval foramen to the foramen of the mandible in approach angle of 45 degrees with the branch (25).

The localization of the mandible foramen for anesthesia for regional block of the lower alveolar nerve for the direct technique is obtained placing the left-hand indicating finger in the point of bigger depression of the anterior edge of the mandible branch. The needle will have to be inserted in the depression of the mucosa between the fold of the ligament to pterigo-maxilar and on the inside, the internal oblique line for is with the syringe directed toward premolar of the opposing side (30).

Imperfections in the attainment of the anesthesia of the lower alveolar nerve must, generally, to the lack of observance of the localization of the mandible foramen, noticing themselves its variations (45).

It are done demonstration through conventional techniques differing between itself in the maneuvers, however agreeing to the objective of deposition of the anesthetical solution in the ridge of the mandible cool, in a plan little above of lingualae, where if it locates the mandible foramen (08, 22, 33, 30, 34, 35, 37).

The localization of the foramen of the mandible for the extra-oral technique saw anterior of Nevin and Puterbaugh is made with the localization initially of the anterior and posterior edges of the mandible branch. A horizontal line is traced after that that passes 1 cm above of the occlusal plan of the lowers molars, dividing itself this line in three equal parts, distributing consequently this branch of the mandible in three equal parts. The foramen of the mandible is placed approximately in the way of the medium portion, more or less the 2 cm of the anterior edge it mandible branch (08).
The extra-oral technique for anesthesia the lower way of the canal of the mandible of Thoma modifying the techniques of Kantorowicz and Gadd consists of tracing a line leaving of tragus until the anterior-lower edge of the masseter muscle. Leaving of the medium portion of the master muscle, it traces new parallel line to the posterior branch of the mandible branch. In the intersession of these two lines are located the foramen of the entrance of the lower alveolar nerve where the needle will have to penetrate 2,5 cm approximately, directed of low for top to the level of the medium portion of the masseter muscle, passing for the skin and medial pterigoid muscle (05).

The modification of the technique of Thoma for Seldin consists of tracing the first line from the posterior-lower edge of the masseter muscle until the superior portion of coronoid process and, the second line being the same one praised by Thoma, that is, parallel to the posterior edge of the mandible branch, leaving of the medium portion of the masseter muscle (05).

In the technique of regional blockade of the lower alveolar nerve for the extra-oral posterior way of Finochietto or Peackcht and Schloesser, a line is traced that passes for the labial commissural, parallel to the occlusal plan of teeth and bees situated to follow it the lobe of the ear. The foramen is located in a line that 1 cm below of the lobe of the ear passes and another one 1 cm above of the line that passes for the labial commissural, penetrating the needle 2 cm, behind for front, passing through parotid and the medial pterigoid muscle (05).

In the regional blockade of the lower alveolar nerve for the extra-oral superior way of Finochietto, a line is traced that goes of tragus to the lower edge of zygomatic bone and, after that, demarcates with a line the arc that corresponds to the mandible incisures. It penetrates from top to bottom with the needle crossing skin, masseter muscle until arriving at the external face of the mandible, in the neighborhoods of the mandible incisures. It leaves needle directing it for top until finding the incisures that is when its tip penetrates in fosse infratemporal, being introduced until the height of the foramen (05).

The anatomical variations of hard tissues and other causes, as bifid nerve, had been made responsible by the failure of the regional blockades of the lower alveolar, lingual and buccal nerves (22, 34).

The lower alveolar nerve is born 4 or 5 millimeters under the oval foramen, cross the zygomatic region, dirges for low under the medial pterigoid muscle, for backwards and for it are of the lingual nerve, passing enters the internal face of the mandible branch and sphen-mandibular ligament, penetrating in the mandible foramen (02, 17, 30, 48).

Using parted frozen heads, with the widely open mouth, to the height of the labial commissural and to the level of the plan of penetration of the needle for anesthesia in one common technique of regional blockade of the lower alveolar nerve, in a plan above of lingulae of the mandible and in a lower plan of section, had evidenced that the lower alveolar nerve finds if moved away from the mandible branch until the entered one of the nerve in the mandible foramen (30, 52).

The deposition of the liquid anaesthetic can more be made in raised level than the normal one, differentiating of the direct and indirect technique-standard where the anaesthetic is deposited immediately behind the foramen of the mandible that is approximately 1 cm above of the occlusal plan of lower molar teeth (11).
In the method of **Vazirani**, the anaesthetic is applied intra-oral with the closed mouth, being the inserted needle parallel to the gingival edges of upper teeth or the alveolar crest, with penetration of the same one in the fold to pterigomandibular crossing skin, mucosa, buccinators muscle, buccal aponeurosis, internal face of the ascending branch, space to pterigomandibular, with depth of 15 cm where if it locates the mandible foramen (51).

In the external boarding for anesthesia of the lower alveolar nerve for the method of **Kurt**, the mandible foramen with the following points of repair bes situated: anterior edge of the masseter muscle with patient being currant teeth and, in the point lowest of this crest traces a line binding this point with brings it of auditory meat external and, the average point of this line determines the position of the mandible foramen. Another descending line is drawn to break of this point and parallel to the posterior edge of the mandible until its lower edge where it will be the point of penetration of the needle (49).

To make the anesthesia of the lower alveolar nerve for the ways anterior and posterior, it is introduced needle in an equidistant point to the horizontal lines of 15 16 mm, where the penetration will be lesser for the posterior way that stops the anterior, therefore the distal foramen of posterior edge 13,9 mm and anterior edge 16,2 mm. For anesthesia for the ways upper/lower, the needle in an equidistant point to the vertical lines must be introduced, where it stops by lower, the needle penetrates 25 mm and for upper way 23 mm. This because in the distance of the foramen to the mandible incisures it is of 22,3 mm and of the foramen to the lower edge is of 24,6 mm (04).

In the extra-oral technique of regional blockade of the lower alveolar nerve for the four ways two tangent lines of the mandible incisures another one for the lower edge of the mandible are traced to the anterior and posterior edge of the mandible branch and, others two lines, the one in the height of and, initiating themselves in its angle. The point of penetration of the needle will be equidistant to the two lines that possess one same vertical and horizontal orientation (29).

Dissected hemi-heads saw intrabucal met the lower alveolar nerve to protect, for lingulae of the mandible in the region of the foramen, of possible traumas during injections for blockade. Due to divergence with the body of the mandible and irregularities of the medial surface of the branch of the mandible, the lower alveolar nerve meets laterally to the lingual nerve, being able itself simultaneously to anesthesia the two nerves in the parallel imaginary line to the lower edge of the body of the mandible, little above of the foramen, extending itself of the ridge of the cool of the mandible to the premolar region of the side the opposite (41).

Three reasons are pointed with respect to failure of the anesthesia of the lower alveolar, lingual and buccal nerves for the conventional techniques: 1, deposition of the anesthetical solution in the level below of the mandible foramen; 2, supplemental enervation proceeding from the auricular-temporal nerves, miloideo and possibly of cervical plexus; 3, inadequate dose of anesthetical solution, affirming that the volume of 2ml used frequently is insufficient (18).

The technique of **Gow-Gates** of regional blockade of the lower alveolar nerve brought better resulted in relation to the anesthesia for the conventional technique, attributing this difference to the anatomical variations in distinct races (18, 26, 53), opposing the presented results of bigger success with use of the conventional anesthesia technique for regional blockade of the alveolar nerve in
relation to the technique of *Gow-Gates*, also, attributing this result to the anatomical variations between races (87).

Some authors have developed studies in the direction to verify the advantages of the technique of *Gow-Gates* for anesthesia of the mandible nerve in relation to the conventional techniques for anesthesia for regional blockade of the alveolar nerve (86, 12, 20, 24, 27, 30, 39, 42).

The localization of the mandible foramen is the 1 cm above of the occlusal of the lower molar and, also, in the gingival height of papillae of upper teeth in an individual with the closed mouth (30).

The raised index of insensibilities conventional after-anesthesia if must mainly to the anatomical variability of the localization of the mandible foramen, as well as the absence of fixed control anatomical points that would assist in the accurate localization of the foramen (36).

The tax of failure in the regional blockades of the lower alveolar nerves must to the anatomical variation of the height of the mandible foramen in the lingual face of the branch and, to the necessity of bigger depth of penetration in soft tissues (31).

The regional blockade of the lower alveolar nerve intra-orally follows the following points of repair for localization of the mandible foramen. A finger in the coronoid incisures indicates height of the introduction of the needle and, the introduction point will be to the long one of this line, two thirds the three quarters of the distance between the coronoid incisures and the posterior point of the branch indicated for rafe to pterigomandibular being the area of introduction defined for imaginary lines.

Horizontally through the coronoid incisures, parallel to the plan of mandible occlusion and vertically two thirds the three quarters of the distance between the coronoid incisures and the posterior edge of the branch of the mandible, parallel to the oclusal plan of lower molar teeth, 6 to 10 mm above of this plan, in the majority of the patients. One affirms that the tax of failure in the blockades must to the anatomical variations in the height of the mandible foramen in the lingual face of the branch (28, 30).

Factors exist that can affect the relative position of the mandible foramen: 1. width of the ascending branch (how much bigger the width of the ascending branch, more posterior will be the localization of the mandible foramen); 2. width of the mandible arc (the more ample it will be the arc, more stops backwards the body of the syringe will have to be located in the opposing side to the one of the injection, so that the needle exceeds the internal oblique crest, reaching the mandible foramen); 3. inclination of the mandible angle (the more oblique it will be the mandible angle, more for front and for top it will be the foramen) (38).

A morphometric study in 60 hemi-mandibles was become fulfilled human beings parted between the mentuals foramens and of the mandible, in 9 segments of 7 mm. These cuts had been studied morphometrically in fifteen different places, in each one of the cuts C2, C3, C4, C5, C6, C7 e C8. In the C9 cut, beyond the fifteen mensurations, three mensurations with specific information of the branch of the mandible had been made others, related with internal and external incisures, foramen, bone boards in vertical direction and, with very important information for Dentistry and the implantodonty specifically (50).
The intra-oral points of repair for localization of the mandible foramen are the anterior edge of the mandible branch, the internal oblique line, the pterigomandibular ligament and, the occlusal plan of the lower molar.

To carry through the regional blockade of the lower alveolar nerve the left-hand indicating finger is introduced being situated the repair points and, in the point of bigger depression of the mandible branch places it pulp of the finger, turning it such way that the nail is come back toward the sagittal plan.

The center of the nail will show to the accurate point of the insertion of the needle the 01 cm above of the molar occlusal plan tangenciated oblique line internal and, with the syringe come back toward premolar of the opposing side, introduces-and the needle with depth such, that comes to find bone resistance (30).

The localization of the foramen of the mandible for the anesthesia technique for regional blockade of the lower alveolar nerve with closed mouth is carried through in the anterior edge of the mandible branch, having calculated itself 1 cm above of the occlusal plan of lower teeth (this height is situated approximately in papillae gingivals of the upper molar) going deep it needle until arriving in the height of mandible lingulae (30).

MATERIAL

For unfolding of this research 240 mandibles, being 120 had dentulous and 120 edentulous. They had been considered indented the carrying mandibles of molar teeth or its respective dental alveoli, meaning that the absence of the tooth in question must to its loss or fall, however existing the preservation of the characteristics of the alveolar eminences. For the gauging of measures they had been used goniometry, paquimetry and compass of dry tip.

METHOD

To survey in the distance measured or values of localization of the mandible foramen, with mensuration of the lower edge of the mandible foramen and the upper edge of mandible lingulae in relation to the points located in the edges of the mandible branch, points (Figure 2) and lines (Figure 1) in the mandibular branch for mensuration with paquimetry had been defined. The value of the mandible angle is evaluated with goniometric.

They had been defined colon anatomical in the mandible branch:
Point A, located in the lower edge of the mandible foramen and,
Point B, located in the upper edge of mandible lingulae.

Six lines had been traced: two tangents the anterior edges and posterior of the mandible branch (lines 5 and 6), two tangent lines to the points and the B (lines 2 and 4) parallel bars to the line 1 in the base of the mandible and line 3 in the condilar process and parallel to line 1:
Line 1: tangent line to the base of the mandible.
Line 2: parallel to line 1 passing for the lower edge of the mandible foramen (point).
Line 3: parallel to line 1, tangent the upper edge of the condilar process of the mandible.
Line 4: parallel line 1, passing in the upper edge of mandible lingulae (point B).
Line 5: tangent to the posterior edge of the mandible branch.
Line 6: tangent to the anterior edge of the mandible branch.

The intersession between the lines and the points of repair of the mandible defines 6 more external points of the mandible branch:
- Point C: located in the bissetriz of the angle formed between lines 1 and 5 in the mandible angle.
- Point D: located in line 1 and it defines the posterior point most lowery and of the base of the mandible.
- Point E: intersession of lines 2 and 5.
- Point F: intersession of lines 2 and 6.
- Point G: intersession of lines 4 and 5.
- Point H: intersession of lines 4 and 6.
- Point I: intersession of lines 3 and 5.

Mandible angle: formed for lines 1 and 5.

Through goniometry the values of the angle of right mandible and left and had been measured, traced the lines that define the points (Figures 1 and 2). With the aid of paquimetry the distances in millimeters between these points had been measured and, in degrees the angle between lines 1 and 5.

These measures had been carried through in the 120 dentate mandibles and 120 edentulous and, placed in a table that later, had been analyzed statistically.

The results in the tables that present * indicate significant difference statistically.

In the following figures the evaluated and mensurates places are demonstrated:

![Figure 1 - Lines defined for delimitation of the edges of the branch of the mandible.](image)
**RESULTS**

The gotten results are presented below transcribed in tables:

**TABLES 1, 2, 3 and 4:** Mensurations in the 120 dentated mandibles of the left and right side, and 120 made edentulous of the left and right side, writing down the values: medium, maximum and minimum of the mandible angle and the distances between the edges of the mandible branch and the points previously defined.
TABLE 1 - Mensurations carried through in the 120 dentated mandibles of the left side with the maximum, minimum, average values and shunting line standard of the mandible angle and the distances between the definite points *.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Average</th>
<th>Minimum</th>
<th>Maximum</th>
<th>S.L. Standard</th>
</tr>
</thead>
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<td>108°</td>
<td>140°</td>
<td>6.462800</td>
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<td>27.8083</td>
<td>16</td>
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<td>14</td>
<td>33</td>
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<td>24</td>
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<tr>
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<tr>
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* nm: not measurable places. 
Values supplied in millimeters and degrees.

TABLE 2 - Mensurations carried through in the 120 dentated mandibles of the right side with the maximum, minimum, average values and shunting line standard of the mandible angle and the distances between the definite points *.

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* nm: not measurable places. 
Values supplied in millimeters and degrees.
The distances between points A-F had not been carried through in the 120 dentated mandibles of the left side and, for the presence of the not resorption alveolar processes, what it hinders with this, the mensurate them distances between these points.

The distances between points B-I, B-H and A-B, had been mensurate in 119 dentated mandibles of right side, for the absence of lingulae of right side in one of the 120 mandibles.

In the distance between points A-F it was mensurate in only a dentated mandible of right side for presenting resorption alveolar processes thus allowing the mensurate of this distance. The measures of the distances between points A-F had been mensurate in only 54 edentulous mandibles of the left side and, for these will only present resorpted processes, thus allowing the measure between these points.

**TABLE 3** - Mensurations carried through in the 120 edentulous mandibles of the left side with the maximum, minimum, average values and shunting line standard of the mandible angle and the distances between the definite points *.

<table>
<thead>
<tr>
<th>Basic statistical data</th>
<th>Left edentulous mandibles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>No</td>
</tr>
<tr>
<td>Ângle mandible</td>
<td>120</td>
</tr>
<tr>
<td>B-C</td>
<td>120</td>
</tr>
<tr>
<td>A-C</td>
<td>120</td>
</tr>
<tr>
<td>B-G</td>
<td>120</td>
</tr>
<tr>
<td>A-E</td>
<td>120</td>
</tr>
<tr>
<td>B-D</td>
<td>120</td>
</tr>
<tr>
<td>A-D</td>
<td>120</td>
</tr>
<tr>
<td>B-I</td>
<td>120</td>
</tr>
<tr>
<td>A-I</td>
<td>120</td>
</tr>
<tr>
<td>B-H</td>
<td>120</td>
</tr>
<tr>
<td>A-F</td>
<td>54</td>
</tr>
<tr>
<td>A-B</td>
<td>120</td>
</tr>
</tbody>
</table>

* nm: not measurable places. Values supplied in millimeters and degrees.

The measures of the distances between points A-F had been mensurate in only 59 dentated jaws of the right side for will present resorpted processes, thus allowing the measure between these points.
TABLE 4 - Mensurations carried through in the 120 edentulous mandibles of the right side with the maximum, minimum, average values and shunting line standard of the mandible angle and the distances between the definite points *.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Average</th>
<th>Minimum</th>
<th>Maximum</th>
<th>S L Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ângle mandible</td>
<td>120</td>
<td>130,8667°</td>
<td>112°</td>
<td>144°</td>
<td>6,506536</td>
</tr>
<tr>
<td>B-C</td>
<td>120</td>
<td>26,5500</td>
<td>16</td>
<td>37</td>
<td>4,283739</td>
</tr>
<tr>
<td>A-C</td>
<td>120</td>
<td>19,6583</td>
<td>12</td>
<td>34</td>
<td>3,733779</td>
</tr>
<tr>
<td>B-G</td>
<td>120</td>
<td>17,6583</td>
<td>11</td>
<td>24</td>
<td>2,374571</td>
</tr>
<tr>
<td>A-E</td>
<td>120</td>
<td>15,7500</td>
<td>8</td>
<td>21</td>
<td>2,287158</td>
</tr>
<tr>
<td>B-D</td>
<td>120</td>
<td>27,8167</td>
<td>18</td>
<td>40</td>
<td>4,537395</td>
</tr>
<tr>
<td>A-D</td>
<td>120</td>
<td>20,3417</td>
<td>12</td>
<td>37</td>
<td>4,082131</td>
</tr>
<tr>
<td>B-I</td>
<td>120</td>
<td>20,4583</td>
<td>13</td>
<td>33</td>
<td>3,666555</td>
</tr>
<tr>
<td>A-I</td>
<td>120</td>
<td>27,9417</td>
<td>17</td>
<td>42</td>
<td>4,387331</td>
</tr>
<tr>
<td>B-H</td>
<td>120</td>
<td>18,6333</td>
<td>12</td>
<td>27</td>
<td>3,121983</td>
</tr>
<tr>
<td>A-F</td>
<td>59</td>
<td>22,2373</td>
<td>15</td>
<td>32</td>
<td>3,103607</td>
</tr>
<tr>
<td>A-B</td>
<td>120</td>
<td>7,4750</td>
<td>3</td>
<td>13</td>
<td>1,905157</td>
</tr>
</tbody>
</table>

* nm: not measurable places.
Values supplied in millimeters and degrees.

TABLE 5 - Application of test "t" comparing dentate mandibles with edentulous of the left side in the distances between the definite points and the mandible angle *.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dentated Average</th>
<th>Edentulous Average</th>
<th>T</th>
<th>Df</th>
<th>P</th>
<th>Number teeth</th>
<th>Number edentulous</th>
<th>S L Standard dentate</th>
<th>S L Standard edentulous</th>
<th>f-ratio variances</th>
<th>P variances</th>
</tr>
</thead>
<tbody>
<tr>
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<td>130,9833*</td>
<td>-</td>
<td>238*</td>
<td>.000000*</td>
<td>120*</td>
<td>120*</td>
<td>6,462800*</td>
<td>6,650941*</td>
<td>1,059070*</td>
<td>.754772*</td>
</tr>
<tr>
<td>B-C</td>
<td>27,8083*</td>
<td>26,6083*</td>
<td>5,43366*</td>
<td>238*</td>
<td>.024570*</td>
<td>120*</td>
<td>120*</td>
<td>4,073476*</td>
<td>4,143023*</td>
<td>1,034437*</td>
<td>.853793*</td>
</tr>
<tr>
<td>A-C</td>
<td>20,6667*</td>
<td>19,3333*</td>
<td>2,26248*</td>
<td>238*</td>
<td>.004469*</td>
<td>120*</td>
<td>120*</td>
<td>3,644573*</td>
<td>3,551147*</td>
<td>1,053310*</td>
<td>.777427*</td>
</tr>
<tr>
<td>B-G</td>
<td>17,9583</td>
<td>18,2000</td>
<td>2,87034*</td>
<td>238*</td>
<td>.417071*</td>
<td>120</td>
<td>120</td>
<td>2,163081</td>
<td>2,434348</td>
<td>1,266542*</td>
<td>.198926</td>
</tr>
<tr>
<td>A-E</td>
<td>16,2750</td>
<td>15,9000</td>
<td>-.081293</td>
<td>238*</td>
<td>.160802*</td>
<td>120</td>
<td>120</td>
<td>1,851470</td>
<td>2,258132</td>
<td>1,487528</td>
<td>.031206</td>
</tr>
<tr>
<td>A-D</td>
<td>29,5833*</td>
<td>27,4917*</td>
<td>1,46876*</td>
<td>238*</td>
<td>.000308*</td>
<td>120*</td>
<td>120*</td>
<td>4,235868*</td>
<td>4,603608*</td>
<td>1,181169*</td>
<td>.365070*</td>
</tr>
<tr>
<td>B-D</td>
<td>21,9167*</td>
<td>20,1500*</td>
<td>3,66266*</td>
<td>238*</td>
<td>.000760*</td>
<td>120*</td>
<td>120*</td>
<td>3,899113*</td>
<td>4,121373*</td>
<td>1,117255*</td>
<td>.546292*</td>
</tr>
<tr>
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<td>22,6083</td>
<td>20,3333*</td>
<td>3,41109*</td>
<td>238*</td>
<td>.000006*</td>
<td>120*</td>
<td>120*</td>
<td>3,798044*</td>
<td>3,833364*</td>
<td>1,018685*</td>
<td>.919739*</td>
</tr>
<tr>
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<td>20,1500*</td>
<td>27,7667*</td>
<td>4,61825*</td>
<td>238*</td>
<td>.000010*</td>
<td>120*</td>
<td>120*</td>
<td>4,124498*</td>
<td>4,559105*</td>
<td>1,221847*</td>
<td>.275866*</td>
</tr>
<tr>
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<td>18,9167</td>
<td>4,36544*</td>
<td>238*</td>
<td>.567609*</td>
<td>120</td>
<td>120</td>
<td>3,323832</td>
<td>3,074928</td>
<td>1,109139</td>
<td>.572976</td>
</tr>
<tr>
<td>B-H</td>
<td>7,6167</td>
<td>7,3250</td>
<td>1,18528</td>
<td>238</td>
<td>.237090</td>
<td>120</td>
<td>120</td>
<td>1,768935</td>
<td>2,034007</td>
<td>1,322151</td>
<td>1,129132</td>
</tr>
</tbody>
</table>

* Statistically significant difference. The values are supplied in millimeters and degrees. The acronym nm indicates not measurable places.
Mandibular angle: This joined angle was of:

**Right Side Dentate:** The average value of the examined mandible angle in the 120 was of 126°, with the minimum value of 110° and the maximum of 140°.

**Left Side Dentate:** The average value of the left side was 126°, with the minimum of 108° and maximum of 140°.

**Right Side Edentulous:** The average value in the 120 edentate mandible of the right side was of 130°, with the minimum of 112° and the maximum of 144°.

**Left Side Edentulous:** In the edentate mandible of the left side, the average was of 130°, with the minimum of 112° and the maximum of 148°.

**Points B and C:** In the distance average found the upper edge of the mandible lingulae (B) enters and the intersession of the bissetriz of lines 1 and 5 with the angle of the mandible was of:

**Right Side Dentate:** In the 120 dentate mandible of in the distance average the right side it was of 27mm with the minimum value of 15mm and the maximum of 36mm.

**Left Side Dentate:** In the distance average found in the dentate mandible of the left side it was of 27 mm with the minimum value of 16 mm and the maximum of 39 mm.

**Right Side Edentulous:** In the distance average in the 120 edentulous mandible of the right side it was of 26 mm with minimum value 16 mm and the maximum of 37 mm.

**Left Side Made Edentulous:** In the edentulous mandible of the left side the average of the distance was of 26 mm, with minimum value 17 mm and of maximum 37 mm.

**Points A and C:** In the distance average found the lower edge of the mandible foramen enters and the intersession of the bissetriz of lines 1 and 5 with the angle of the mandible was of:

**Right Side Dentate:** In the 120 dentate mandible of the right side it was of 20 mm, with the minimum value of 13mm and the maximum value of 29 mm.

**Left Side Dentate:** In the distance average in the dentate mandible of the left side it was of 20 mm, with the minimum value of 14 mm and the maximum of 33 mm.

**Right Side Edentulous:** In the distance average in the 120 edentulous mandible of the right side it was of 19 mm, with minimum value 12 mm and the maximum of 34 mm.

**Left Side Edentulous:** In the edentulous mandible of the left side the average of the distance was of 19 mm, with minimum value 12 mm and the maximum of 33 mm.
Points B and G: In the distance average found the upper edge of the mandible lingualae enters and posterior edge of the mandible branch was:

Right Side Dentate: In the 120 dentate mandible of the right side it was of 17 mm with the minimum value of 11 mm and the maximum of 26 mm.

Left Side Dentate: In the distance average in the dentate mandible of the left side it was of 17 mm, with the minimum value of 11 mm and the maximum of 24 mm.

Right Side Edentulous: In the distance average in the 120 edentulous mandible of the right side he was 17 mm with minimum value 11 mm and the maximum of 24 mm.

Left Side Edentulous: In the edentulous mandible of the left side the average of the distance was of 18 mm, with minimum value 13 mm and the maximum of 24 mm.

Points B and G: In the distance average found the superior edge of the mandible lingualae enters and posterior edge of the mandible branch was:

Right Side Dentate: In the 120 dentate mandible of the right side it was of 17 mm with the minimum value of 11 mm and the maximum of 26 mm.

Left Side Dentate: In the distance average in the dentate mandible of the left side it was of 17 mm, with the minimum value of 11 mm and the maximum of 24 mm.

Right Side Edentulous: In the distance average in the 120 edentulous mandible of the right side he was 17 mm with minimum value 11 mm and the maximum of 24 mm.

Left Side Edentulous: In the edentulous mandible of the left side the average of the distance was of 18 mm, with minimum value 13 mm and the maximum of 24 mm.

Points A and E: In the distance average found the lower edge of the mandible foramen enters and the posterior one of the mandible branch was of:

Right Side Dentate: In the 120 dentate mandible of the right side of 16 mm the minimum value was of 12 mm and the maximum value of 23 mm.

Left Side Dentate: In the distance average in the dentate mandible of the left side it was of 16 mm with the minimum value of 12 mm and the maximum of 23 mm.

Right Side Edentulous: In the distance average in the 120 edentulous mandible of the right side it was of 15 mm, with minimum value 8 mm and the maximum of 21 mm.

Left Side Edentulous: In the edentulous mandible of the left side the average of the distance was 15 mm, with minimum value 10 mm and the maximum of 21 mm.
**Points B and D:** In the distance average the base of the mandible enters and the upper edge of the mandible lingulae was of:

*Right Side Dentate:* In the 120 dentate mandible of the right side it was of 29 mm, with the minimum value of 20 mm and the maximum of 40 mm.

*Left Side Dentate:* In the distance average in the dentate mandible of the left side it was of 29 mm, with the minimum value of 20 mm and the maximum of 40 mm.

*Right Side Edentulous:* In the distance average in the 120 edentulous mandible of the right side it was of 27 mm, with minimum value 18 mm and the maximum of 40 mm.

*Left Side Edentulous:* In the edentulous mandible of the left side the average of the distance was of 27 mm, with minimum value 17 mm and the maximum of 39 mm.

**Points A and D:** In the distance average found the inferior edge of the mandible foramen enters and the base of the mandible was of:

*Right Side Dentate:* In the 120 dentate mandible of the right side it was of 21 mm, with the minimum value of 14 mm and the maximum of 34 mm.

*Left Side Dentate:* In the distance average found in the dentate mandible of the left side it was of 21 mm, with the minimum value of 14 mm and the maximum of 35 mm.

*Right Side Edentulous:* In the distance average in the 120 edentulous mandible of the right side it was of 20 mm, with minimum value 12 mm and the maximum of 37 mm.

*Left Side Edentulous:* In the edentulous mandible of the left side the average of the distance was of 20 mm with minimum value 12 mm and the maximum of 36 mm.

**Points B and I:** In the distance the upper edge of the process enters to condilar of the mandible branch and the upper edge of the mandible lingulae was of:

*Right Side Dentate:* In the 120 dentate mandible of the right side it was of 22 mm, with the minimum value of twelve meters and the maximum of 33 mm.

*Left Side Dentate:* In the distance average in the dentate mandible of the left side it was of 22 mm, with the minimum value of 13 mm and the maximum of 33 mm.

*Right Side Edentulous:* In the distance average in the 120 edentulous mandible of the right side it was of 20 mm, with minimum value 13 mm and maximum 33 mm.

*Left Side Edentulous:* In the edentulous mandible of the left side the average of the distance was of 20 mm, with minimum value 12 mm and the maximum of 32 mm.
Points A and I: In the distance average found the lower of the mandible foramen enters and the upper edge of the mandible condilar process was of:

**Right Side Dentate:** In the 120 dentate mandible of the right side it was of 30 mm, with the minimum value of 19 mm and the maximum of 39 mm.

**Left Side Dentate:** In the distance average in the dentate mandible of the left side it was of 30 mm, with the minimum value of 19 mm and maximum of 41 mm.

**Right Side Edentulous:** In the distance average in the 120 edentulous mandible of the right side it was of 27 mm, with the minimum value of 19 mm and the maximum of 42 mm.

**Left Side Edentulous:** In the edentulous mandible of the left side the average of the distance was of 27 mm, with the minimum value of 16 mm and the maximum of 42 mm.

Points B and H: In the distance average found between upper edge of mandible lingulae and the anterior edge of the mandible branch it was:

**Right Side Dentate:** In the 120 dentate mandible of the right side it was of 18 mm, with the minimum value of 12 mm and the maximum of 28 mm.

**Left Side Dentate:** In the distance average in the dentate mandible of the left side it was of 18 mm, with minimum value of 13 mm and maximum of 29 mm.

**Right Side Edentulous:** In the distance average in the 120 edentulous mandible of the right side it was of 18 mm, with minimum value 12 mm and the maximum of 27 mm.

**Left Side Edentulous:** In the edentulous mandible of the left side the average of the distance was of 18 mm, with minimum value 11 mm and maximum 28 mm.

Points A and F: In the distance average found the lower edge of the mandible foramen enters and the anterior edge of the mandible branch was:

**Right Side Dentate:** The only dentate mandible of the possible right side of being measured presented average of 22 mm, with the minimum value of 22 mm and the maximum of 22 mm, therefore the alveolar process being situated below of the lower edge of the foramen allowing its mensuration.

**Left Side Dentate:** In the distance average in the dentate mandible of the left side it was not possible to be measured, equally in the values minimum and maximum for the height of the alveolar process to present itself above of the inferior edge of the foramen.

**Right Side Edentulous:** In the distance average in the 59 edentulous mandible of the right side it was of 22 mm, with minimum value 15 mm and the maximum of 32 mm, not being possible the mensuration of this distance due the alveolar process if not to present below of the lower edge of the foramen, not allowing the mensuration of this distance.

**Left Side Edentulous:** In the 54 edentulous mandible of the left side the average of the distance was of 22 mm, with the minimum value of 16 mm and the maximum of 30 mm, not being possible the mensuration of this distance, for the alveolar process if not to present below of the lower edge of the foramen, not allowing the mensuration of this distance.
Points A and B: In the distance average the lower edge of the mandible foramen enters and the upper edge of mandible lingulae was of:

Right Side Dentate: In the 120 dentate mandible of the right side of 7 mm, with the minimum value of 3 mm and the maximum value of 12 mm.

Left Side Dentate: In the distance average in the dentate mandible of the left side it was of 7 mm, with minimum value 3 mm and the maximum of 12 mm.

Right Side Edentulous: In the distance average in the edentulous mandible of the right side he was 7 mm, with minimum value 3 mm and the maximum of 13 mm.

Left Side Edentulous: In the edentulous mandible of the left side the average of the distance was of 7 mm, with minimum value 3 mm and the maximum of 13 mm.

TEST "t"

Sides Left and Right
Dentate and Edentulous
Relation to the Angle of the Mandible:
In table V significant difference is observed statistically enters the average value of 126° in the dentate mandible of the left side and 130° in those edentulous of the left side, occurring the same for the right side (Table 6).

TABLE 6 - Application of test "t" comparing dentate mandibles with edentulous of the right side in the distances between the definite points and the mandible angle *

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dentated Average</th>
<th>Edentulous Average</th>
<th>t</th>
<th>Df</th>
<th>P</th>
<th>Number teeth</th>
<th>Number edentulous</th>
<th>S.L Standard dentate</th>
<th>S.L Standard edentulous</th>
<th>F-ratio variances</th>
<th>p variances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle mandible</td>
<td>126,2833*</td>
<td>130,8667*</td>
<td>-</td>
<td>238*</td>
<td>,000000*</td>
<td>120*</td>
<td>120*</td>
<td>6,405333*</td>
<td>6,506536*</td>
<td>1,031849*</td>
<td>.864502*</td>
</tr>
<tr>
<td>B-C</td>
<td>27,2917</td>
<td>26,5000</td>
<td>5,4901</td>
<td>238</td>
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<td>120</td>
<td>120</td>
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<td>4,283739</td>
<td>1,052491</td>
<td>.780672</td>
</tr>
<tr>
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<td>19,6583</td>
<td>238</td>
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<td>120</td>
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</tr>
<tr>
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<td>119</td>
<td>120</td>
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<td>1,006580</td>
<td>.971378</td>
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</tr>
<tr>
<td>A-C</td>
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<td>15,7500</td>
<td>238</td>
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<td>120</td>
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</tr>
<tr>
<td>A-E</td>
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<td>27,8167*</td>
<td>-</td>
<td>237*</td>
<td>.011801*</td>
<td>119</td>
<td>120</td>
<td>4,145585*</td>
<td>4,537395*</td>
<td>1,197958*</td>
<td>.327160*</td>
</tr>
<tr>
<td>B-D</td>
<td>21,7583*</td>
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<td>238</td>
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<td>120</td>
<td>120</td>
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<td>4,082131*</td>
<td>1,151569*</td>
<td>.442598*</td>
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<tr>
<td>A-D</td>
<td>22,8151*</td>
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<td>1,95941</td>
<td>237*</td>
<td>.000001*</td>
<td>119</td>
<td>120</td>
<td>3,593701*</td>
<td>3,666555*</td>
<td>1,049095*</td>
<td>.827629*</td>
</tr>
<tr>
<td>B-I</td>
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<td>27,9417*</td>
<td>238</td>
<td>.000020*</td>
<td>120</td>
<td>120</td>
<td>4,064570*</td>
<td>4,387331*</td>
<td>1,165122*</td>
<td>.405739*</td>
<td></td>
</tr>
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<td>119</td>
<td>120</td>
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<td>3,121983</td>
<td>1,063222</td>
<td>.739389</td>
<td></td>
</tr>
<tr>
<td>B-H</td>
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<td>.939827</td>
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<td>59</td>
<td>3,103607</td>
<td>3,100000</td>
<td>0,000000</td>
<td>1,00000</td>
</tr>
<tr>
<td>A-F</td>
<td>7,5294</td>
<td>7,4750</td>
<td>237</td>
<td>.816814</td>
<td>119</td>
<td>120</td>
<td>1,716439</td>
<td>1,905157</td>
<td>1,231983</td>
<td>.257772</td>
<td></td>
</tr>
</tbody>
</table>

* Statistically significant difference. The values are supplied in millimeters and degrees. The acronym nm indicates not measurable places.
Points B and C:
The average value of the distance enters the upper edge of mandible lingulæ and the intersession of the bissetriz of lines 1 and 5 with the mandible angle, of the left side of the dentate mandible was of 27,8 mm and the edentulous of 26,6 mm (Table 5), presenting difference significant statistics. The average value in the right side of the dentate mandible was of 27,2mm and the left of 26,5 mm (Table 6), not presenting significant difference statistically.

Points A and C:
The average value of the distance enters the lower edge of the mandible foramen and the intersession of the bissetriz of lines 1 and 5 with the mandible angle, of the left side of the dentate mandible was of 20,6 mm and the edentulous of 19,3 mm (Table 5), with statistically significant difference. The average value in the right side of the dentate mandible was 20,2mm and of the left of 9,6 mm (Table 6), without statistically significant difference.

Points B and G:
The average value of the distance between posterior edge of the mandible branch and the upper edge of mandible lingulæ, of the left side of the dentate mandible and was of 17 mm, the edentulous mandible of 18 mm (Table V). The average value in the right side of the dentate mandible was of 17 mm and in the edentulous of 17 mm (Table 6), without statistically significant difference.

Points A and E:
The average value of the distance enters the edge of the mandible foramen and the posterior edge of the mandible branch of the left side of the dentate mandible was of 16mm and, the edentulous mandible of 15 mm (Table V). The average value in the right side of 16 the dentate mandible was of mm and, in the edentulous of 15 mm (Table 6), without statistically significant difference.

Points B and D:
The average value of the distance enters the upper edge of the condilar process of the mandible and the upper edge of mandible lingulæ of the left side of the dentate mandible was of 22 mm and, the edentulous mandible of 20 mm (Table 5). The average value in the right side of 22 the dentate mandible was of mm and, in the edentulous of 20 mm (Table 6) with difference significant statistics.

Points A and D:
The average value of the distance enters the base of the mandible and the lower edge of the mandible foramen in the left side of the dentate mandible was of 21 mm and, the edentulous mandible of 20 mm (Table 5). The average value in the right side of 21 the dentate mandible was of mm and, in the edentulous of 20 mm (Table 6), with difference significant statistics.
Points B and I:
The average value of the distance enters the upper edge of the condilar process of the mandible branch and the upper edge of mandible lingulæ of the left side of the dentate mandible was of 22 mm and, the edentulous mandible of 20 mm (Table 5). The average value in the right side of 22 the dentate mandible was of mm and, in the edentulous of 20 mm (Table 6) with difference significant statistics. In the distance the upper edge of the condilar process of the mandible enters and the upper edge of mandible lingulæ between dentate and edentulous mandible varies in 2 mm.

Points A and I:
The average value of the distance enters the lower edge of the mandible foramen and embroiders superior of the condilar process of the mandible in the left side of the dentate mandible jaws was of 30 mm and, the edentulous mandible of 27 mm (Table 5). The average value in the right side of 30 the dentate mandible was of mm and, in the edentulous of 27 mm (Table 6), with difference significant statistics. It is noticed with the data of the previous item that in the distance enters the lower edge of the mandible foramen and upper edge of the condilar process of the mandible was bigger in the dentate mandible of that in the edentulous in average of 3 mm.

Points B and H:
The average value of the distance between points B and H of the left side of 18 the dentate mandible was of mm and, in the edentulous mandible of 18 mm (Table 5). The average value in the right side of 18 the dentate mandible was of mm and, in the edentates of 18 mm (Table 6), without difference significant statistics.

Points A and F:
The average value of the distance enters the base of the mandible foramen and the anterior edge of the branch of the left side of the dentate mandible was not possible to be measured by the height of the process. In the 59 edentulous mandibles with the height of the base of the foramen below of the process allowing the mensuration was of 22 mm (Table 5). The average value in the right side of the only mandible indented with height of the rim that allowed mensuration of the 54 edentulous mandible was of 22 mm (Table 6), without presenting difference significant statistics in both the cases.

Points A and B:
The average value of the distance enters the lower edge of the mandible foramen and the upper edge of the mandible lingulæ of the left side of the dentate and edentulous mandibles was of 7 mm (Table 5). The average value in the right side of the dentate and edentulous mandibles was of 7 mm (Table 6), without difference significant statistics.
TABLE 7 - Application of pared test "t" comparing the sides right and left of the 240 mandibles in the distances between the definite points and in the mandible angle *.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Number</th>
<th>Shunting</th>
<th>Sem</th>
<th>t=</th>
<th>P=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle</td>
<td>E</td>
<td>240</td>
<td>6.938</td>
<td>0.448</td>
<td>1.224</td>
<td>0.222</td>
</tr>
<tr>
<td>Angle</td>
<td>D</td>
<td>240</td>
<td>6.840</td>
<td>0.441</td>
<td>1.224</td>
<td>0.222</td>
</tr>
<tr>
<td>B-C</td>
<td>E</td>
<td>240</td>
<td>4.144</td>
<td>0.267</td>
<td>1.987</td>
<td>0.048*</td>
</tr>
<tr>
<td>B-C</td>
<td>D</td>
<td>240</td>
<td>4.237</td>
<td>0.274</td>
<td>1.987</td>
<td>0.048*</td>
</tr>
<tr>
<td>A-C</td>
<td>E</td>
<td>240</td>
<td>3.652</td>
<td>0.236</td>
<td>0.436</td>
<td>0.663</td>
</tr>
<tr>
<td>A-C</td>
<td>D</td>
<td>240</td>
<td>3.599</td>
<td>0.232</td>
<td>0.436</td>
<td>0.663</td>
</tr>
<tr>
<td>B-G</td>
<td>E</td>
<td>240</td>
<td>2.301</td>
<td>0.149</td>
<td>4.729</td>
<td>0.001*</td>
</tr>
<tr>
<td>B-G</td>
<td>D</td>
<td>240</td>
<td>2.375</td>
<td>0.154</td>
<td>4.729</td>
<td>0.001*</td>
</tr>
<tr>
<td>A-E</td>
<td>E</td>
<td>240</td>
<td>2.069</td>
<td>0.134</td>
<td>0.771</td>
<td>0.442</td>
</tr>
<tr>
<td>A-E</td>
<td>D</td>
<td>240</td>
<td>2.154</td>
<td>0.139</td>
<td>0.771</td>
<td>0.442</td>
</tr>
<tr>
<td>B-D</td>
<td>E</td>
<td>240</td>
<td>4.537</td>
<td>0.293</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>B-D</td>
<td>D</td>
<td>240</td>
<td>4.396</td>
<td>0.284</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>A-D</td>
<td>E</td>
<td>240</td>
<td>4.100</td>
<td>0.265</td>
<td>-0.146</td>
<td>0.884</td>
</tr>
<tr>
<td>A-D</td>
<td>D</td>
<td>240</td>
<td>4.001</td>
<td>0.258</td>
<td>-0.146</td>
<td>0.884</td>
</tr>
<tr>
<td>B-I</td>
<td>E</td>
<td>240</td>
<td>3.810</td>
<td>0.246</td>
<td>-1.256</td>
<td>0.211</td>
</tr>
<tr>
<td>B-I</td>
<td>D</td>
<td>240</td>
<td>3.975</td>
<td>0.257</td>
<td>-1.256</td>
<td>0.211</td>
</tr>
<tr>
<td>A-I</td>
<td>E</td>
<td>240</td>
<td>4.508</td>
<td>0.291</td>
<td>-1.054</td>
<td>0.293</td>
</tr>
<tr>
<td>A-I</td>
<td>D</td>
<td>240</td>
<td>4.385</td>
<td>0.283</td>
<td>-1.054</td>
<td>0.293</td>
</tr>
<tr>
<td>B-H</td>
<td>E</td>
<td>240</td>
<td>3.153</td>
<td>0.204</td>
<td>2.070</td>
<td>0.040*</td>
</tr>
<tr>
<td>B-H</td>
<td>D</td>
<td>240</td>
<td>3.070</td>
<td>0.199</td>
<td>2.070</td>
<td>0.040*</td>
</tr>
<tr>
<td>A-F</td>
<td>E</td>
<td>240</td>
<td>2.918</td>
<td>0.397</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>A-F</td>
<td>D</td>
<td>240</td>
<td>3.077</td>
<td>0.397</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>A-B</td>
<td>E</td>
<td>240</td>
<td>1.908</td>
<td>0.123</td>
<td>-0.183</td>
<td>0.855</td>
</tr>
<tr>
<td>A-B</td>
<td>D</td>
<td>240</td>
<td>1.810</td>
<td>0.117</td>
<td>-0.183</td>
<td>0.855</td>
</tr>
</tbody>
</table>

* Statistically significant difference.  
The values are supplied in millimeters and degrees.

TEST Left ` t ''

Comparison Left and Right Sides

Relation to the angle of the mandible:  
The average of the value of the angle was of 128° without statistically significant difference.

Points B and C:  
In the distance between points B and C was 26mm in the right side and was of 27 mm in the left side, with difference significant statistics.

Points A and C:  
In the distance average it enters the points A and C was 19mm in the right side and of 20mm in the left side, without statistically significant difference.

Points B and G:  
In the distance average between points B and G was 17mm in the right side and was of 18 mm in the left side, with statistically significant difference.
Points A and E:
In the distance average it enters the points A and E in the right and left side it was of 16mm, without statistically significant difference.

Points B and D:
In the distance average between points B and D in the right and left side it was of 28 mm, without statistically significant difference.

Points A and D:
In the distance average it enters the points A and D in the right and left side was of 21 mm, without statistically significant difference.

Points B and I:
In the distance average between points B and I in the right and left side it was of 21 mm, without statistically significant difference.

Points A and I:
In the distance average it enters the points A and I was 29mm in the right side and of 28mm in the left side, without statistically significant difference.

Points B and H:
In the distance average between points B and D was 18mm in the right side and 18mm in the left side, with estatisticamente significant difference.

Points A and F:
In the distance average it enters the points A and F in the right and left side was of 22mm, without statistically significant difference.

Points A and B:
In the distance average it enters the points A and B was of 7mm in the right side and, 7mm in the left side, without statistically significant difference.

DISCUSSION

Literature presents scarce information on the values of the mandible angle, evaluated in the present research, showing the average value in the dentate mandible of 126 degrees and, in the edentulous of 130 degrees, indicating that the mandible foramen will occupy a position more anterior-upper in the edentulous mandible, being in accordance with the data found in literature \(^{38}\). The average value of the mandible angle between side’s right and left of 128° without difference is verified in the research significant statistics.

Literature cites the localization of the mandible foramen, distributing itself the mandible branch in three equal parts, placing themselves approximately in the way of the medium portion, more or less the 2 cm of the anterior edge it branch \(^{05}\). Such result agrees to the findings of the present research, in which it found a value average of the distance enters the anterior wall of the branch until the mandible foramen of 22 mm (2,2 cm), as much in the dentate mandible how in the edentulous.

The great majority of the authors makes responsible the imperfections in the attainment of the anesthesia of the lower alveolar nerve to the
lack of observance of the localization of the mandible foramen, noticing itself its variations, with the deposition of the anesthetical solution in the level below of the mandible foramen (07, 18, 22, 26, 30, 31, 34, 36, 39, 45, 53), showing to little our professionals studies of anatomy (30). Not the observance of the position around 10 mm (1 centimeter) above of the occlusal plan of lower molar teeth (11, 30) or still in the gingival height of papilla of upper teeth with the patient of closed mouth (04, 10, 15, 21, 30, 41, 51) and, in a plan next to mandible lingulae (08, 22, 30, 33, 34, 35, 37), beyond in the internal face the mandible branch (02, 17, 48). It can with these cause serious problems with the efficiency of the anesthesia, besides disagreeable complications with the patient, being able going since a lipotimie until the cardiac arrest one (30). It is agreed to literature being based to the findings of the present research that it shows in the distance enters the lower edge of the mandible foramen and, the base of the mandible of 21mm in dentate mandible and 20mm in the edentulous. Adding 7mm to this referring value at a distance the lower edge of the mandible foramen enters and, to the upper edge of mandible lingulae, in the distance of the nerve ideally displayed to the liquid anaesthetic it meets in average between 21mm and 28mm of the base of the mandible without significant difference between right and left sides statistically.

Literature is scarce how much to the information on in the distance it enters the lower edge of the mandible foramen and the upper edge of mandible lingulae, what it will facilitate with the values gotten in the research how much in the distance average in such a way enters the points A and B being of 7mm in the dentate and edentulous mandible how of the right side how of the left side, without difference significant statistics.

Still relates of the presence of as much and such variations are found mandible making it difficult the point of not being possible to supply to the professional, references standards (08, 23, 33, 45, 47). This comes to oppose the data gotten in the present research that supplies the average of the anterior-posterior distance of the mandible branch in the height of the mandible lingulae being resultant of the somatories of the values of 17mm (average of distance B-G) + 18 mm (average of distance B-H)=35mm. This everything, besides supplying to the average of the distance superior-lower of the mandible branch being resultant of the somatories of the values of 28mm (average of distance A-I) + 21 mm (average of the AD distance) = 49 mm.

The anesthesia of the lower alveolar nerve for the ways anterior and posterior, widely is divulged in literature as, introducing it needle in an equidistant point to the horizontal lines of 15 16 mm, where the penetration will be lesser for the posterior way that stops the anterior, therefore the distal foramen of the posterior edge 13,9 mm and, of anterior edge 16,2mm and the anesthesia for the ways upper/lower, having if to introduce the needle in an equidistant point the lines vertical lines, where for way inferior, the needle penetrates 25mm and for the way upper 23mm, because in the distance of the foramen the incisures of the mandible is of 22,3mm and the foramen the lower edge is of 24,6mm (04). The not condiz finding with the data harvested in the present research showing in the distance between the foramen and posterior edge of the branch of 16mm in dentate mandibles and 15mm in the edentulous. In the distance between the foramen and the anterior edge of the branch it is of 22mm in the dentate and edentulous mandibles. In the distance between the foramen and the base of the mandible is of 21mm in dentate and 20mm in the edentulous. In the distance between the foramen
The localization of the mandible foramen, also is divulged as being in the internal face of the mandible branch, the equal distance between the anterior, posterior, lower edge and concavity of the mandibular incisures confirming the data observed in the present research that presents as average value of the distance between superior edge of mandible lingue and the posterior edge of the mandible branch (distance B-G) of 17mm (Tables 5 and 6), as value medium of the distance between the upper edge of mandible lingue and the anterior edge of the mandible branch (distance B-H) of 18mm (Tables 5 and 6), demonstrating equidistance between these values. The average value of the distance enters the lower edge of the mandible foramen and the base of the mandible (AD distance) is of 21mm (Table 7), the average value of the distance enters the lower edge of the mandible foramen and the upper edge of mandible condile process (distance A-I) is of 28mm (Table 7), not leaving to deduct the value of the distance between lower edge of the mandible foramen and upper edge of mandible lingue with average of 7mm (Table 7) what it totalizes the value of 21mm, proving equidistance between these values.

Great importance is verified it that comes to bring this research for an efficient and correct anesthesia of the lower alveolar nerve.

**CONCLUSIONS**

Based in these results the following conclusions had been able to be taken off:

1. The dentate mandible have in average angle of 126° and the edentulous of 130°, confirming that the tooth absence makes the mandibular angle to increase.

2. The mandible angle between left and right side in the dentate and edentulous mandible is presented with average value of 128° without statistically significant difference.

3. In the distance the posterior edge of the mandible branch enters and the upper edge of the mandible lingue is in average of 17mm of right side and 18mm of the left, with difference significant statistics.

4. In the distance the upper edge of mandible lingue enters and the anterior edge of the mandible branch is in average of 18mm, as much for dentate mandibles as for the edentulous, having itself to observe this value when carried through penetration of the anesthetical needle in this region.

5. The foramen of the mandible being situated in an equidistant point enters in the distance anteroposterior of the mandible branch (H-G), 18mm of anterior edge (B-H) and, 17mm of the posterior edge of the branch (B-G), in the height of mandible lingue.

6. The mandible foramen being situated in an equidistant point enters upper-lower of the branch in the distance (IT GO), 21mm of the base of mandible (AD) and, 21mm of the upper edge of mandible condile (7 A-I=28 mm deducting itself mm referring in the distance enter the lower edge of the foramen and the upper edge of lingue resulting 21mm).

7. In the distance the lower edge of the mandible foramen enters and the upper edge of the mandible lingue is of 7 mm in average, as much in the
dentate mandibles how edentulous, independent of the side in question to be the left right or.

8. In the distance the lower edge of the mandible foramen enters and the base of the mandible is of 21mm in the dentate mandible and 20mm in the edentulous and, adding 7 mm to this value that are referring long-distance between the lower edge of the mandible foramen and the upper edge of the mandible lingulae, in the distance of the nerve ideally displayed the liquid anaesthetic finds if in average between 21mm and 28mm of the base of the mandible without statistically significant difference between sides right and left.

9. In the distance the lower edge of the mandible foramen enters and the upper edge of the condilar process of the mandible branch in average of 28 mm of the left side and 29 mm of right side and, the dentate mandibles are presented in average 3 mm higher in the region cited (30mm) in relation to the edentulous (27mm).

10. The inferior edge of the mandible foramen is in average 22mm of distance of the anterior edge of the mandible branch becoming necessary the deepening of the needle in 22mm in anesthesias for blockade of the lower alveolar nerve.

11. In the distance the lower edge of the mandible foramen enters and the posterior edge of the mandible branch is in average 16mm, without significant difference statistically between right and left side.

REFERENCES *

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* In accordance of the ABNT norms.

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