RADIOGRAPHIC DETERMINATION OF MENTAL FORAMEN IN PATIENTS WITH DIFFERENT SKELETAL OCCLUSIONS IN DUHOK GOVERNORATE

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ABSTRACT

Background: The mental foramen is one of the most critical anatomical structures in the body of mandible, and its determination is very significant before anesthesia administration, implant placement, orthodontic treatment, and even diagnosis. This study aims to determine the mental foramen by visibility, size, shape, number, and location, in patients with different skeletal occlusions in Duhok Governorate, in order to prevent any undesirable surgical and dental anesthetic complications.

Materials and Methods: This prospective cross-sectional study conducted for the period from June 2018 to February 2019, at the x-ray unit of Duhok Specialized Dental Center. Sixty patients participated in this study, 31 males and 29 females. The mean age was 38 years. Digital panoramic radiography used for determination of the mental foramen and a cephalometric radiograph used for determination of skeletal malocclusion by Steiner Analysis. Those patients categorized into three groups: Class I, Class II and Class III of skeletal occlusions.

Results: The results showed, Class I were 31 patients (%51.67), Class II 24 patients (40%) and Class III 5 patients (8.33%). The mental foramina appeared in most of the cases (99.17%). The overall mean diameter in all cases was 2.32 mm. The most dominant shape type was circular (50.42%). About the number, the single type was most of all (89.92%). The most appeared position of the foramen concerning the lower premolars was below the 2nd premolar (44.53%). There was symmetry in the position of the mental foramen in Class I (83.87%) & Class III (100%), while in Class II was non-symmetrical (29.17%). The overall mean distance of the foramen from the upper border of the mandible was 18.1 mm and from the lower border of the mandible was 12.39 mm. Finally, the overall mean distance of foramen from the midline was 31.75 mm for both sides.

Conclusion: The determination of mental foramen by digital panoramic radiography is of great importance, to avoid any unnecessary problems, before the local anesthesia injection, oral surgery, dental implantation, orthodontic treatment.

KEYWORDS: Mental Foramen, Mental Nerve, Panoramic Radiography, Skeletal Occlusion.

INTRODUCTION

The mental foramen is a funnel-shaped opening locatedon the lateral surface of the body of the mandible. Its opening is directed outward, upward, and posteriorly, viewed from inside out.(1)

The mental foramen transfers the mental vessels and nerve; the mental nerve is a terminal branch of the inferior alveolar nerve, it supplies sensory innervation to the lower lip, the buccal vestibule, and the mesial gingival area to the first mandibular molar. (2)

The mental nerve bundle can be injured in different surgical procedures, like tooth extraction, periapical surgery, removal of cysts or tumors, and many more, resulting in paresthesia, or anesthesia in the area which is supplied by the mental nerve. Also, awareness about the site of the mental foramen is helpful for accurate delivery of local anesthesia for the branches of the inferior alveolar nerve. Besides that, it is crucial in clarifying the anatomical landmarks inforensic sciences. (3)

It has been reported that the massive forces while pushing the molar teeth distally, and skeletal class III cases which requiring genioplasty, resulted in mental nerve paresthesia. (4)

According to (Yosue and Brooks, 1989), they classified the radiographic appearance of the mental foramen in panoramic x-ray into four types:

1. Continuous with the mandibular canal.

2. Separated from the mandibular canal

3. Diffuse with a distinct border of the foramen.

4. Unidentified type.(5)

However, the mental foramen has been reported to vary in its position and shape in various ethnic groups. Numerous studies have documented the most common location of the mental foramen to be between the lower premolar teeth. In studies done in the North American whites, Bangladeshis and Israelis, the mental foramen was located mostly between the 1st and 2nd premolars. On the other hand, studies conducted in Malawian, Peruvian, North Indian, Kenyan African,and Saudi populations have demonstrated that the mental foramen is frequently positioned in line with the second premolar tooth. (6)

The panoramic radiograph is an extra-oral procedure that views the entire maxillomandibular region on a single film. (7) It can be used in evaluation of impacted and supernumerary teeth, detecting any pathologies and lesions in the jaws, evaluating of traumatic injuries, identifying the TMJ diseases. (8) Also, it can be used in pediatric dentistry and in orthodontic treatments, as well as in implantology. (9)

So, this study was undertaken to facilitate the determination of the mental foramen in patients with different skeletal malocclusions in Duhok Governorate, by using the digital panoramic radiograph, to avoid the unnecessary complications during any dental procedure.

MATERIALS AND METHODS

This prospective cross-sectional study conducted in the dental x-ray unit of Duhok Specialized Dental Center, for the period between June 2018 and February 2019.

Sixty patients participated in this study (each one has a special code starts from C1 to C60). According to their sex, 31 male and 29 females. Thier ages ranged between 16 and 60 years of old. Each patient had two radiographs: cephalometric radiograph for determination of skeletal occlusion by Steiner Analysis and panoramic one for the determination of the mental foramen by visibility, size, Shape, number,the locations concerning lower premolar teeth and the location to some nearby anatomical landmarks.

These radiographs were taken by a panoramic X-Ray digital system, named Rotograph Evo, made by Villa Sistemi Medicali-Italy, with electrical specifications for the panoramic radiography: 66kv, 6mA, 13.8sec and for the cephalometric radiography: 74kv, 6mA, and 4.5sec.

These radiographs were processed by a software program called Villa-Quick Vision, installed on a regular VAIO - Sony laptop PC.

The exclusivepatients according to the medical history were:

1. Patients below 16 years old and above 60 years old.

2. Pregnant women.

3. Patients with neurological and motility disorders.

While the exclusive groups of patients according to the dental records were:

1. Any missing lower premolar tooth.

2. Incomplete eruption or incomplete development of any teeth at the area from the lower right first molar to the lower left first molar.

3. Presence of impacted teeth at mental foramen area, like an impacted canine, an impacted premolar or any other tooth.

4. Presence of supernumerary teeth at the lower jaw.

5. Presence of any lesion at the premolar area.

6. Evidence of the orthodontic treatment or the orthognathic surgery or trauma at the lower jaw.

The cephalometric radiographs were analyzed digitally by using a special tracing software developed by Audax d.o.o., called AudaxCeph SuperEasy, which contains different types of cephalometric analyses, and in our study, we have chosen the Steiner method.

In this method, the ANB angle was the key for our analysis to determine the skeletal occlusion,(A=A point on the maxilla, B=B point on the mandible, N=Nasion,the meeting point of nasal bone with frontal bone). If the angle was 2^{0}-4^{0}, the case was Class I, if the angle was more than 4^{0}, the case was Class II, if the angle was less than 2^{0}, the case was Class III.

Fig. (1): Cephalometric radiograph with the Most Used Points, Planes and Angles. (10)

After that, the mental foramen was described as the following:

1. Visibility: radiographical present or absent of the foramen.
2. Size: the diameter of the foramen measured in millimeters.
3. Shape: circular, oval or irregular.
4. Number: single, double or multiple foramen.
5. Position of the foramen in relation to the lower premolar teeth: mesial to 1st premolar, below 1st premolar, between 1st & 2nd premolars, below 2nd premolar and distal to 2nd premolar tooth. Also, the symmetry of the position of the foramen in both sides was recorded.

6. The distance of mental foramen from some anatomical landmarks: the distance is measured in millimeters form: a. The superior border of the foramen to the crest of the alveolar process, b. The inferior border of foramen to the inferior border of the mandible, c. From the medial edge of foramen to the midline drawn through anterior nasal spine along symphysis menti. (Fig.2)

The gathered data were analyzed by Microsoft Excel 2016, and many descriptive statistics were included,like Mean, Standard of Deviation, Chi-Square,etc. Moreover, the level of significance was determined to 0.05.

Fig. (2): Case no. C30 of this study, showing the localization or mental foramen to lower premolar teeth and from some anatomical landmarks. 1. The vertical orangeline is the midline drawn through the anterior nasal spine along the symphysis menti 2. The horizontal yellow lines: shows the distance of the foramen from the midline 3. The green lines: show the distance of foramen from the crest of alveolar process 4. The red lines: show the distance of foramen from the lower border of the mandible. (Note: all distances are in millimeters)

RESULTS

Many patients attended the x-ray unit of Duhok Specialized Dental Center; only sixty patients agreed to participate in our study within our inclusive criteria.

The sex of the patients was set into male and female (Table 1); the males were more than females.

Table (1): Male and female percentage

Sex	No.	Percentage
Male	31	51.67
Female	29	48.33
Total	60	100%

After analyzing the cephalometric radiographs, the results were organized into three groups: Class I, Class II and Class III (Table 2). The class I was more than half, and class III was less of all.

Table (2): Patients according to their skeletal malocclusion.

Skeletal Malocclusions	No.	Percentage
Class I	31	51.67
Class II	24	40.00
Class III	5	8.33
Total	60	100

Then, the panoramic radiograph was used for determination of mental foramen by different methodologies, and the results were organized according to the different classes of skeletal malocclusions:

1. Visibility: by vision, the mental foramen was determined into present or absent (Table 3). All the mental foramina were clear and visible except one case (C4) which was radiographically absent on the right side.

Table (3): Radiographical Visibility of Mental Foramen According to the Sides.

Side	Visibility	No.	Percentage
Right	Present	59	98.33
	Absent	1	1.67
Left	Present	60	100.00
	Absent	0	0.00

2. Size of the Foramen (Diameter): The diameter of the mental foramen was measured by the digital caliber of Villa Quick-Vision Program in millimeters. The mean value was2.34 mm (Table 4).

Table (4): Number of Cases and Mean Diameterof Mental Foramina Measured in Millimeters According to the Classes of Skeletal Occlusions, with Standard of Deviation. (*Non-Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Overall
	Cl. I	Cl. II	Cl. III		
No.	61	48	10	0.205*	119
Mean	2.34	2.38	2		2.32
SD	1.15	1.25	1.33		1.20

3. Shape: The shape of mental foramen was determined by vision, and it was classified into three types: Circular, Oval, and Irregular (Table 5). The most predominant type in all classes of skeletal malocclusions was circular followed by irregular and finally oval, except in class III, the second dominant type was oval then irregular.

Table (5): Correlation of the Shape Type of Mental Foramen to the Classes of Skeletal Occlusions. (*Non-significant Difference) (** Strong Positive Correlation)

Shape Type	Class I		Class II		Class III		P-Value	Subtotal	
	No.	%	No.	%	No.	%		No.	%
Circular	29	24.37	25	21.00	6	5.05		60	50.42
Oval	10	8.40	8	6.72	3	2.52	0.542*	21	17.65
Irregular	22	18.49	15	12.61	1	0.84		38	31.93
Total	61	51.26	48	40.33	10	8.41		119	100.00
Pearson Correlation Coefficient (r)	1**		0.968**		0.469**				

4. Number: The number of mental foramina was determined by vision, and three types were found: Single MF (one in number), Double MF (two in number, one the major foramen and the other one accessory MF) and Triple (three in number, one the major foramen and the others were two accessory MF) (Table 6). The most predominant type of numbers was single in all classes of skeletal malocclusions.

Table (6): The numbers of Mental Foramen According to the Classes of Skeletal Malocclusions. (*Non-significant Difference) (** Strong Positive Correlation)

Number	Class I		Class II		Class III		P-Value	Subtotal	
	No.	%	No.	%	No.	%		No.	%
Single	57	47.90	40	33.61	10	8.40		107	89.92
Double	1	0.84	4	3.36	0	0.00	0.356*	5	4.20
Triple	4	3.36	3	2.52	0	0.00		7	5.88
Total	62	51.26	47	40.33	10	8.41		119	100.00
Pearson Correlation Coefficient (r)	1**		0.997**		0.999**				

5. Position of Mental Foramen in Relation to Lower Premolars: The position of mental foramen was determined by vision in relation to the lower premolar teeth after drawing straight lines along their axes. Then the results were arranged according to the classes of skeletal malocclusions. In the right side, the most predominant position was below the lower second premolar (Table 7), while in the left side was between 1st and 2nd premolars (Table 8). However,the overall position was below the 2ndpremolar tooth (Table 9).

Table (7): Correlation of the Position of Mental Foramen in Relation to the Lower Premolar Teeth According to Classes of Skeletal Malocclusions (Right Side). (*Non-significant Difference) (**Very Strong Positive Correlation)

Position of Mental Foramen	Class I		Class II		Class III		P-Value	Total No.	%
	N	%	N	%	N	%			
Mesial to 1st Premolar	0	0.00	1	1.70	0	0.00		1	1.70
Below 1st Premolar	2	3.39	3	5.08	1	1.70		6	10.17
Between 1st & 2nd Premolars	12	20.34	8	13.55	2	3.39	0.421*	22	37.28
Below 2nd Premolar	15	25.42	11	18.64	2	3.39		28	47.45
Distal to 2nd Premolar	1	1.70	1	1.70	0	0.00		2	3.40
Grand Total	30	50.84	24	40.67	5	8.48		59	100.00
Pearson Correlation Coefficient (r)	1**		0.990**		0.933**				

Table (8): Correlation of the Mental Foramen in Relation to the Lower Premolar Teeth According to Classes of Skeletal Malocclusions (Left Side). (*This Table Does Not Meet Cochran's Criteria, 73% of the 15 Cells Have Expected Values <5, 6 Cells Have Expected Values <1) (**Very Strong Positive Correlation)

Position of Mental Foramen	Class I		Class II		Class III		P-Value	Total No.	%
	N	%	N	%	N	%			
Mesial to 1st Premolar	0	0.00	0	0.00	0	0.00		0	0.00
Below 1st Premolar	3	5.00	2	3.33	1	1.67		6	10.00
Between 1st & 2nd Premolars	13	21.67	12	20.00	2	3.33	---*	27	45.00
Below 2nd Premolar	14	23.33	9	15.00	2	3.33		25	40.00
Distal to 2nd Premolar	1	1.67	1	1.67	0	0.00		2	3.33
Grand Total	31	51.67	24	40.00	5	8.33		60	100.00
Pearson Correlation Coefficient (r)	1**		0.968**		0.962**				

Table (9): Correlation of the Position of Mental Foramen in Relation to the Lower Premolar Teeth According to Classes of Skeletal Malocclusions (Both Sides). (*Non-Significant Difference) (**Very Strong Positive Correlation)

Position of Mental Foramen	Class I		Class II		Class III		P-Value	Total No.	%
	N	%	N	%	N	%			
Mesial to 1st Premolar	0	0.00	1	0.84	0	0.00		1	0.84
Below 1st Premolar	5	4.20	5	4.20	2	1.68		12	10.08
Between 1st & 2nd Premolars	25	21.01	20	16.81	4	3.36	0.909*	49	41.18
Below 2nd Premolar	29	24.36	20	16.81	4	3.36		53	44.53
Distal to 2nd Premolar	2	1.68	2	1.68	0	0.00		4	3.36
Grand Total	61	51.26	48	40.34	10	8.4		119	100.00
Pearson Correlation Coefficient (r)	1**		0.994**		0.949**				

From the collected data and the results in the tables above, we can find that the position of the mental foramen in relation to the lower premolars is symmetrical in both sides right and left, for Class I (83.87%) and Class III (100%), While in Class II was non-symmetrical (29.17%) (Table 10)

Table (10): A Comparison Between the Position of the Mental Foramen in Both Sides in Relation to the Lower Premolar Teeth to Show the Symmetry of the Foramen Position in Classes of Skeletal malocclusion. (*Very High Significance Difference)

Class I				Class II				Class III				P-Value
Symmet-rical	%	Non Symmet-rical	%	Symmet-rical	%	Non Symmet-rical	%	Symmet-rical	%	Non Symmet-rical	%	0.0000*
26	83.87	5	16.13	7	29.17	17	70.83	5	100	0	0.00	

6.Position of Mental Foramen to Some Anatomical Landmarks: The position of mental foramen wasdetermined by the digital caliber of Villa Quick-Vision in millimeters, to some nearby anatomical landmarks, like:

A. Crest of the alveolar process. The mean value for the position of mental foramen from the crest of the alveolar process in right side was 18.47 mm (Table11), while its position in the left side was 17.68 mm (Table 12). The mental foramen is usually farther than the crest of the alveolar process in the right side more than the left side in Class I and Class II, but in class III is nearer.

Table (11): The Number of Cases and the Mean Distances Between the Superior Border of Mental Foramen to the Crest of Alveolar Process Measured in Millimeter, According to the Classes of Skeletal Occlusions, with Standard Deviation (Right Side). (*Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Overall
	Cl. I	Cl. II	Cl. III		
No.	30	24	5		59
Mean	18.6	18.71	16.6	0.049*	18.47
SD	4.72	3.39	1.67		4.03

Table (12): The Number of Cases and the Mean Distances Between the Superior Border of Mental Foramen to the Crest of Alveolar Process Measured in Millimeter, According to the Classes of Skeletal Occlusions, with Standard Deviation (Left Side). (*Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Overall
	Cl. I	Cl. II	Cl. III		
No.	31	24	5		60
Mean	18.23	17.13	17	0.031*	17.68
SD	4.25	2.59	2.12		3.52

B. Inferior border of the mandible. The mean value for the distance of inferior border of mental foramen to the inferior border of the mandible in right side was 12.51 mm (Table 13), while in left side was 12.27 mm (Table 14). The mental foramen is usually farther than the inferior border of the mandible in right side more than left side in class I and Class III but is nearer in class II.

Table (13): The Number of Cases and Mean Distances Between the Inferior Border of Mental Foramen to the Inferior Border of the Mandible Measured in Millimeter, According to the Classes of Skeletal Occlusions, with Standard Deviation (Right Side). (*Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Over-all
	Cl. I	Cl. II	Cl. III		
No.	30	24	5		59
Mean	12.23	12.5	14.2	0.017*	12.51
SD	2.90	2.27	2.77		2.65

Table (14): The Number of Cases and Mean Distances Between the Inferior Border of Mental Foramen to the Inferior Border of Mandible Measured in Millimeter, According to the Classes of Skeletal Malocclusions, with Standard Deviation (Left Side). (*Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Over-all
	Cl. I	Cl. II	Cl. III		
No.	31	24	5		60
Mean	12.03	12.67	11.8	0.021*	12.17
SD	3.02	2.76	3.83		2.95

C. Midline. The mean distance between the medial border of mental foramen to the midline was 31.93 mm in the right side (Table 15), while in left side was 31.57 mm (Table 16).

Table (15): The Number of Cases, Mean and Standard Deviation for Distances between the Medial Border of Mental Foramen to the Midline Measured in Millimeter, According to the Classes of Skeletal Malocclusions, with Standard Deviation (Right Side). (* High Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Over-all
	Cl. I	Cl. II	Cl. III		
No.	30	24	5		59
Mean	31.1	33.42	29.8	0.002*	31.93
SD	6.16	2.96	8.67		5.41

Table (16): The Number of Cases, Mean and Standard Deviation for Distances between the Medial Border of Mental Foramen to the Midline Measured in Millimeter, According to the Classes of Skeletal Malocclusions, with Standard Deviation (Left Side). (* High Significant Difference)

Criteria	Skeletal Malocclusions			P-Value	Over-all
	Cl. I	Cl. II	Cl. III		
No.	31	24	5		60
Mean	30.77	32.67	31.2	0.007*	31.57
SD	5.16	5.48	5.59		5.31

DISCUSSION

The principal objectives of this research were to determine the mental foramen (visibility, size, number, shape, and location) in patients with different skeletal malocclusions in Duhok Governorate, by using the digital panoramic radiography.

Many studies conducted to describe the mental foramen with different methodologies, but to determine the mental foramen according to the different classes of malocclusion had not been reported.

The results of classes of skeletal malocclusions suggested that the most common class is Class I, then class II and finally Class III. This prevalence is in agreement with previous studies, like (Angle, 1907) on Caucasians, (Phaphe, 2012) on urban Indian, and (Hamdan, 2001) on the Jordanian population. (11)

The absence of mental foramen was rare, one case in the right side of the patient no. C4 with class I skeletal malocclusion (1 out of 120, about 0.8%) De Freitas in 1979, reported the absence of mental foramen on the right side of mandible about 0.06% and in the left side about 0.03%. (12)

The mean diameter of the mental foramen in all cases was 2.32 mm with p-value 0.208 (class I = 2.34 mm, class II = 2.38 mm and class III = 2 mm), this result was close to that of (Afkhami, 2013) which stated that the mean diameter was 3.09 ± 0.69 with p-value 0.560. (14)

The most obvious shape type of mental foramen was circular in all classes of skeletal malocclusion, followed by irregular type then oval, with p-value 0.542, and the correlation was strong positive. According to (Verma et al., 2015) the most obvious type was circular followed by oval then irregular, with p-value 0.123. (15). While Agarwal and Gupta in 2010, stated that the shape of foramen was oval in 92% of cases and rounded in 8% of cases. (16)

While the incidence of the accessory mental foramen in this study was 5%, this result was approximate to the results of (Budhiraja et al., 2016) which were 6.6%. (13) The single type of mental foramen was most frequent in all classes of skeletal malocclusion, in class I was 92%, in class III was 85% and in class III 100%. The p-value was 0.356, and the correlation was strong positive.

In our study, the most position of mental foramen in relation to lower premolar teeth was below the second premolar on right side, and it was between first and second premolar in the left side with. But overall position was below the second lower premolars, with very strong positive correlation. In a comparison study on different ethnic groups (Central Indian, Northern Indian, Brazilian and Turkish), the most shown up position in all these groups was below the second premolar. (13)

This position was symmetrical in for both sides in Class I (26 cases out of 31 = 83.87%) and Class III (5 cases out of 5 = 100%), but it was non-symmetrical in Class II (7 cases out of 24 = 70.83%).

In recent study, the mean distance between the superior border of mental foramen and the crest of alveolar process was 18.47 mm in the right side with p-value 0.049, while in the left side was 17.68 mm with p-value 0.031. According to the classes of skeletal malocclusions, the mean distance was very close in both class I & II, with slight difference in class III. In other studies, there was a large variation in this distance between ethnic groups, for example, in Iranian population, the overall mean distance was 17.80 ± 2.45 and p-value was 0.04. (14) But in Kosovarian population, the mean distance was 20.59 mm in the right and 20.17 mm in the left side. (17) While in a study on Indian adult human skulls, the mean distance was 17 mm in the right side and 18.6 mm in the left side. (18)

The mean distance from the inferior border of mental foramen to the inferior border of mandible, in this study, it was about 12.51 mm in the right side with p-value 0.017, and in the left side, it was 12.27 mm with p-value 0.021. Again, according to the classes of skeletal malocclusions, the mean distance was very close in both class I & II, with slight difference in class III. In a radiographic study on Chilean population, they found that the mean distance was about 11.87 mm in the right side with p-value 0.000 (statistically significant difference), and about 11.98 mm in the left side with p-value0.000. (19) In a study on dry skulls in University of Peradeniya, Sri Lanka, the mean distance was 13.34 mm in the right side, and about 12.89 mm in the left side. (20)

Finally,the distance between the medial margin of the mental foramen and the midline that was drawn through the anterior nasal spine along to symphysis menti, the mean distance was 31.93 mm in the right side with p-value 0.002 and about 31.57 mm in the left side with p-value 0.007. There was a slight difference in that mean between the classes of skeletal malocclusions in both sides. In a study on dry adult human mandibles from north India, the mean distance was 25.39 mm in the right side and about 25.29 mm in the left side. (13) In Iranian population, the overall mean distance was 27.77 ± 3.20 mm with p-value 0.31. (21) While in Chilean population the mean distance in the right side was 24.46 ± 2.99 mm with p-value 0.674, and it was 25.85 ± 2.87 mm with p-value 0.703 in the left side. (19)

Measurement of distances from the mental foramen to some anatomical landmarks is a widely-used method for estimating its position as definitely as possible. (22)(23)(24)

In this study, we used the panoramic radiography, because for its availability and low cost, and the mental foramen was seen clearly more than the peri-apical radiographs. Philips et al., stated that the mental foramen on panoramic radiographs was slightly larger than reported on periapical radiographs. (25)

CONCLUSION

The overall appeared position of the foramen in relation to the mandibular premolars was below the 2nd premolar. The symmetry was clear in Class I & III, while Class II there was no symmetry.

This study helps the dentists to increase the attention to this essential foramen, so they can localize it easily to prevent any complications during any surgical procedures, like tooth extraction and implantation and even during local anesthesia injection. Also, the determination of mental foramen is of greater importance in orthodontic, orthognathic surgery and in forensic dentistry.

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الخلاصة

الخلفية: القناة العقلية هي واحدة من التركيبات التشريحية الأكثر أهمية في الفك السفلي لفم ألانسان، وتحديدها مهم جدا قبل إعطاء التخدير أو وضع الغرسة السنية او المعالجات التقويمية للأسنان، وحتى التشخيص. تهدف هذه الدراسة إلى تحديد هذه القناة من خلال الرؤية والحجم والشكل والعدد والموقع، في المرضى المشاركين في هذا البحث والمقسمين حسب الأنطباقات السنية الهيكلية المختلفة في محافظة دهوك، من أجل منع أي مضاعفات غير مرغوب فيها أثناء التخدير الموضعي أو الجراحات السنية أو غيرها

المواد والطرق: أجريت هذه الدراسة المحتملة المستعرضة للفترة من حزيران 2018 إلى شباط 2019، في وحدة الأشعة في مركز دهوك الاهلي التخصصي للأسنان. شارك في هذه الدراسة 60 مريضا،31 من الذكور و 29 من الإناث. كان متوسط العمر 38 سنة. أستخدم التصوير الشعاعي البانورامي الرقمي في تحديد القناة العقلية أما الأشعة الرأسية الجانبية فقد أستخدمت لتحديد صنف الأنطباقاالهيكلي بواسطة تحليل ستاينر. بعدها قسمت أصناف المرضى المشاركين الى ثلاثة: الصنف ألاول والصنف الثاني والصنف الثالث.

النتائج: أظهرت النتائج أن الصنف الأول كان 31 مريضا (51.67) والمرضى من الصنف الثاني 24 (40   ) والمرضى من الصنف الثالث 5 (8.33). ظهرت القناة العقلية في معظم الحالات (99.17   ). كان القطر المتوسط العام في جميع الحالات 2.32 ملم. كان الشكل الأكثر شيوعا هو الشكل الدائري (50.42). حول العدد , كان النوع الفردي أكثر من بقية الانواع (89.92   ). كان الموقع الأكثر وضوحًا للقناة بالنسبة للضواحك السفلية تحت السن الضاحك السفلي الثاني (43.7). كان هناك تناظر في موضع القناة في الصنف الأول (83.87) والصنف الثالث (100) بينما الصنف الثاني غير متماثل (29.17). كانت المسافة المتوسطة العامة للقناة من الحدود العليا للفك السفلي 18.1 ملم ومن الحد السفلي للفك السفلي 12.39 ملم. أخيرًا، كانت المسافة المتوسطة الإجمالية للقناة من خط الوسط هي 31.75 ملم لكلا الجانبين

الاستنتاجات: إن تحديد القناة العقلية عن طريق التصوير الإشعاعي البانورامي الرقمي له أهمية كبيرة قبل حقن التخدير الموضعي، وجراحة الفم، وزراعة الأسنان، وعلاج تقويم الأسنان، وطب الأسنان العدلي، لتجنب أي مشاكل لا داعي لها

پوختە

پێشەکی: ئال یان جویا مێشکێ   که ژ گرنگترین   ئاتێن تەشریحێ   بەشێ بنی ژ نێسکێن دەقێ مروڤی,
و دیارکرنا وێ زور یا گرنگە بەری دانا بەنجی (تەخدیری) ئان چاندنێ   نا یان راستکرنا ددانا، یان پشکنینێ.
مانج ژ قێ ،کولینێ   کرنا قی کەنالیە برێکا بینینێ   ئەبارە و شێوەی و ژمارە و جهی. نەخو ئێن
ژداربوی ل قێ ،کولینێ   ئاتینە دابەشکرن لدیف هەیکەلێ ددانا یێن جیاواز ل پارێزگەها دهوکێ. ژبو
بلانا هەر توشبونەکا نەیا ناسایی لدەمێ   بەنجی بەشی یان نەشتەرگەریا ددانا و یێن دی.

رەستە و رینکێن قەکۆلینێ: ڤ قەکولینێ گریمانی هاتیە کرن لماوێ خزیرانا 2018 تا مەها شوبات 2019 ل
یەکا تیشکی ل سەنتەرێ دهوك یا تایبەتمەندیا ددانا. 60 نەخوش بەشداربون، 31   ئرو و 29   ێ   ئاقەندا ژێن
وان 38 سالیبون. وینینێ   کا پانورامی یا دجیتال هاتیە بکارئینان بو دیارکرنا کەنالێ   پێشکی و هەروەهسا بو
تیشکا سەری و یا رەخی هاتیە بکارئینان بو دیارکرنا جورێ ئەفتنا لسەر ئێك یا ددانا برێکا شروڤەکرنا ستاینر,
ش جورێن نەخوشا بوینە سێ جور: جورێ ئێکێ و جورێ دووێ و جورێ   یێ.

ئەنجام: ئەنجام دیاربون کو جورێ ئێکێ 31 نەخوش (51,67 %)   نەخوشێن جورێ دووێ 24 (40%) و
جورێ   یێ 5 (8,33 %).   ئنالێ   شکی ل زوربەی حالەتا دیاربو (99,17 %). و تیرا ناقەندی یا گشتی بو
هەمی حالەتا 2,32 ملم. ڇ شێوێ   ریێن بازنەییبو (50,42%)   ئمارا تاك پتربو ژ یێن دی (89,92 %)   جهێ
ڕی زور بو نێسکێن بنی لژێر ددانێ دووێ   ێ بنی (43,7 %) هەرو   جهێن بەرامبەر ئێك ل جورێ ئێکێ
(83,87 %) و جورێ   یێ   یێ (100%)   لێ جورێ دووێ   یێ   ەك نێکبو (29,17 %). و دیراتیا ناقەند یا کەنالا
ژ سنورێ   ئکێن سەری 18,1   م، و نێسکێن بنی 12,39   م ، و لدوماهیێن   یراتیا ناقەند یا کەنالی ژ هێلا
ناقەراست 31,75 % ملم بو هەردوو لا.

دەرئەنجام: ئرکرنا کەنالێ مێشکی برێکا وینێ   ئێ پانورامی یا دجیتال کرنکیەکا زور یاهەی بەری دانانا
دەرزیا تەخدیرا بەشی، و نەشتەرگەریا دەقی، و چاندنا ددانا و چارەسەریا تەقویما ددانا و پزیشکا ددانا بو
دیرکەفتن ژ ئاریشا.