



POSITION AND SYMMETRY OF MENTAL FORAMEN AMONG POPULATION IN THIRUVALLUR DISTRICT

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ABSTRACT

INTRODUCTION: Knowledge of the position of mental foramen is important both when administering regional anesthesia and performing periapical surgery in the mental region of the mandible. The mental foramen is located in the apical region of the mandibular premolars.

AIM: The aim of the study was to evaluate the most common radiographic position and symmetry of the mental foramen on panoramic radiograph in relation to adjacent teeth.

METHODS: The present study was conducted in the department of Oral medicine and radiology in Priyadarshini dental college and hospital, Thiruvallur. 649 participants were selected in this study whose radiographic evaluation was done using OPG. The position of the image of the mental foramen was recorded according to the criteria given by Wei Cheong Ngeow and Yusof Yuzawati.

STATISTICAL ANALYSIS: The statistical analysis was done using SPSS software package version 19.0

RESULTS: The most common position was in line of second premolar (position 4) in 30.89% of the population. In both males and females the most common position was position 4. The mental foramen was symmetrical in 514 patients and was asymmetrical in 784 patients.

CONCLUSION: In this study the most common position was in line with second premolar (position 4).

KEYWORDS : Mental foramen, orthopantomograph

INTRODUCTION

The mental foramen(MF) is a funnel like opening in the lateral surface of the mandible at the terminus of the mental canal. The mental foramen has been reported to vary in position in different ethnic groups¹. Generally the mental foramen cannot be visualized or palpated by clinical examination. In radiographs the mental foramen appears as a radiolucent area in the lower premolar region and it can be found in various locations ranging from the root of first premolars to the roots of first molars².

The mental bundle can be traumatized during surgical procedures such as periapical surgery, extraction of impacted teeth, enucleation of cyst or tumor and so on, resulting in paresthesia or anesthesia in the area innervated by the nerve. Knowing the site of mental foramen allows for the accurate delivery of local anesthesia of terminal incisive branches of the inferior alveolar nerve³. It also aids in interpreting anatomical landmarks in oral pathology and forensics⁴.

Despite the development of advanced radiographic imaging modalities, conventional radiographs are the commonly used diagnostic imaging technique for localization of mental foramen in dentistry⁵. The present study was undertaken to evaluate the position and symmetry of mental foramen among population in Thiruvallur district using panoramic radiographs.

MATERIALS AND METHODS

The survey was a descriptive cross sectional study to identify the position of the mental foramen in relation to the apices of the teeth in panoramic radiographs. A total of 649 panoramic radiographs from the patients referred to the department of Oral medicine and radiology, priyadarshini dental college and hospital were evaluated. The panoramic radiographs belonged to the patient who attended because of third molar impaction and fully erupted permanent dentition. Patients with mixed dentitions were eliminated because of the possibility that a permanent tooth bud may obscure the mental foramen⁶.

Radiolucent and radiopaque lesions in the lower jaw were excluded. Patients with severe periodontal lesions those with

orthodontic treatment and with crowding and spacing in the lower jaw were excluded. The method of evaluation was adopted from Green⁷.

The radiographs were chosen according to the following criteria:

- A. High quality with respect to angulation and contrast
- B. All mandibular teeth from right first molar to the left first molar were present.
- C. Radiographs in which the lower teeth were missing, deep caries, root canal treatment were eliminated
- D. Radiographs that showed lower canine missing were excluded.

The Position Of The Image Of The Mental Foramen Was Recorded According To The Criteria Given By Wei Cheong Ngeow And Yusof Yuzawati. They Were

Position 1: situated anterior to the first premolar

Position 2: In line with the first premolar

Position 3: Between the first and second premolars

Position 4: In line with the second premolar

Position 5: Between the second premolar and first molar

Position 6: In line with the first molar.

The positions of the mental foramen were recorded in line with the longitudinal axis using metal ruler.

RESULT:

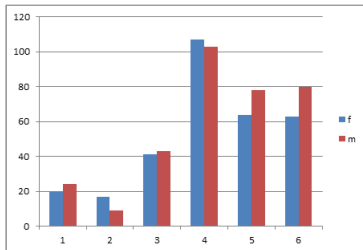
Table 1 Sex wise distribution of mental foramen

POSITION	MALE		FEMALE		TOTAL	
	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
1	24	39	20	36	44	75
2	9	57	17	60	26	117
3	43	72	41	49	84	121
4	103	98	107	93	210	191
5	78	31	64	29	142	60
6	80	40	63	45	143	85
TOTAL	337	337	312	312	649	649

This study is to determine the position and symmetry of mental foramen using 649 OPG. In which 337 were males(52%) and

312 were females(48%). The most common position was position 4 on right side (n=210) and left side (n=191).In males and females the most common position was position 4.A p-value of 1.52 was obtained for position right and A p- value of 0.53 was obtained.

Graph 1 Represents Position Right Of Mental Foramen In Male And Female



Graph 2 represents Position Left of mental foramen in male and female

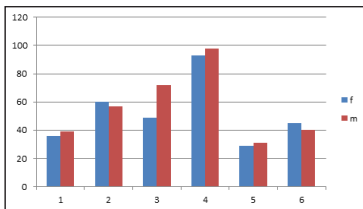


Table 2 represents the frequency of mental foramen in male and female

POSITION	MALE		FEMALE		TOTAL
	FREQUENCY	%	FREQUENCY	%	
1	63	9.34	56	8.97	119(9.16)
2	66	9.79	77	12.33	143(11.01)
3	115	17.06	90	14.42	205(15.79)
4	201	29.82	200	32.05	401(30.89)
5	109	16.17	93	14.90	202(15.56)
6	120	17.80	108	17.30	228(17.56)
TOTAL	674	100	624	100	1298(100%)

Table 2 represents that the most common position for mental foramen was position 4(n=401, 30.89%) and followed by position 6 with a frequency of 228(17.56) and followed by position 3 with a frequency of 205(15.79%).

Table 3 represents the symmetrical mental foramen in male and female

SYMMETRY	SYMMETRY RIGHT	SYMMETRY LEFT	FREQUENCY
MALE	141(49.64)	143(50.35)	284(100)
FEMALE	103(44.78)	127(55.21)	230(100)

The mental foramen was symmetrical in 514 out of 1298. A p value of 0.02 was obtained for the position right which is statistically significant. A p value of 0.65 was obtained which is not statistically significant.

Table 4

ASYMMETRY	POSITIONRIGHT	POSITIONLEFT	FREQUENCY
MALE	196(50.25)	194(49.74)	390(100)
FEMALE	209(53.04)	185(46.95)	394(100)

Table 4 represents there are asymmetrical mental foramen (784) found among 1298 in a total of 649 patients.

DISCUSSION:

Variations in position of mental foramen due to patients age, race, loss of teeth and resorption of the alveolar ridge has been recorded. Mental foramen is a key factor in many of the surgical as well as clinical procedures in routine clinical practice⁸.Knowing the site of mental foramen allows for the

accurate delivery of local anesthesia of terminal incisive branches of the inferior alveolar nerve³ It also aids in interpreting anatomical landmarks in oral pathology and forensics⁴.

In this study the most common position of mental foramen was position 4 with a frequency of 210 on the right side and 191 on the left side. The mental foramen seems to be asymmetrical in 784 among 1298 in a total of 649 patients. The mental foramen seems to be symmetrical in 514 among 1298 in a total of 649 patients.

The orthopantomograph provides the most effective way in evaluating the mental foramen since the mental foramen cannot be palpated. This study consisted of 337males and 312 female participants. There is higher frequency (201) of male participants in position 4 and a frequency of male (200) with a total of 30.89%.

Our study is limited with a group of people with permanent dentition as the permanent tooth buds in mixed dentition obscure the visibility of mental foramen.

Studies involving advanced imaging modalities are necessary to achieve more precise results⁶. In a study conducted by Gershenson in 1986, he found that in children before tooth eruption the mental foramen is somewhat closer to the alveolar margin; during the eruption period, the mental foramen descends to half way between the margins and in adults with the teeth preserved, and the mental foramen is somewhat closer to the inferior border. With the loss of teeth and bone resorption the mental foramen moves upward closer to the alveolar border³.The most common position was found to be in line with second premolar.

CONCLUSION:

An accurate assessment of position of mental foramen is very useful for the prevention of postsurgical neurovascular complications. The data is of clinical importance for accurate delivery of local anesthesia and holds the potential of contribution as an aid in forensics.

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