Section: Anatomy

Original Research Article

STUDY THE DISTANCE OF MANDIBULAR FORAMEN FROM THIRD MOLAR TOOTH IN DRY HUMAN MANDIBLE

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Abstract

Background: Purpose of the study is to know the distance of mandibular foramen from third molar tooth as the inferior alveolar nerve passes through this foramen which is important landmark for giving block anaesthesia in routine dental processors and knowledge of the position of mandibular foramen prevent nerve block fail and complications related to nerve block. **Materials and Methods:** Distance of mandibular foramen from centre of 3rd molar tooth were taken by digital vernier calliper in 135 dry human mandibles from Govt Medical College Bhavnagar and B. J. Medical College Ahmedabad, Gujarat, India. **Results:** The mean distance on right side 23.30± 3.22 mm and on left side 22.81±3.36 mm was noted from center of 3rd molar tooth to the mandibular foramen.

INTRODUCTION

The mandible forms lower jaw and is the only movable bone of skull. It is largest and strongest bone of face. It has a body & two ramus. Upper border of mandible bears sockets for teeth. The medial surface of ramus close to its center a mandibular foramen which transmit inferior alveolar nerve & vessels. The foramen leads downward and forward within the body of the mandible into mandibular canal. The teeth of lower jaw supplied by inferior alveolar nerve which is branch of mandibular division of trigeminal nerve.[1]

Inferior alveolar nerves play an important role in nerve block anesthesia for lower jaw in dental and reconstructive surgery. The success of this technique is depended on exact location of needle tip to the mandibular foramen at the time of anesthesia.

Anatomical variations in mandibular and mental foramen usually seen by its size, shape, location and direction of its opening. [2,3,4]

Different authors have used various methodologies to determine the location of the mandibular foramen in dry mandible, like distance from anterior border, posterior border, base of ramus and from mandibular notch. But in living subjects all are covered by soft tissues, so we have used only visible 3rd molar tooth as land mark for measurement of distance of Mandibular foramen from it. Hence, the goal of this study was to find exact distance of the mandibular foramen from the 3rd molar tooth in dry adult mandible.

MATERIALS AND METHODS

135 adult human dry mandibles were collected from the Department of Anatomy, Govt. Medical College, Bhavnagar and from B. J. Medical College Ahmedabad, Gujarat, India. The mandibles with erupted 3rd molar tooth were included in the study and damaged mandibles were excluded from the study.

The position of the mandibular foramen from the midpoint of the 3rd molar tooth to anterior margin of the mandibular foramen was recorded on both the sides of the mandibular ramus [Fig. 1]. By using Digital Vernier calliper for distance measurement. And recorded in millimeter. All measurements were taken from right and left side and data of both sides are compared.

The statistically we calculate the mean and standard deviation (SD) in Microsoft office excel 2007, and Student's t test was calculated by GraphPad by Dotmatics software used for the paired and independent samples, and the significant difference was evident when p value < 0.05.

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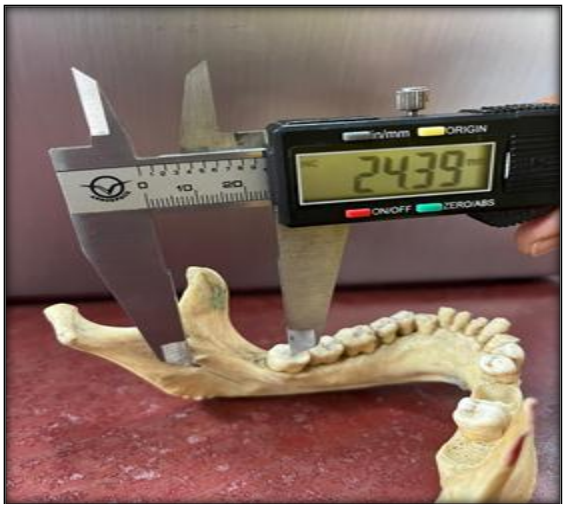

Figure 1: Distance from midpoint of 3rd molar tooth to mandibular foramen

RESULTS

In our study we observed that, the mean distance of the mandibular foramen from 3rd molar tooth is 23.30±3.22 mm on right side and 22.81±3.36 mm left side [Table no 1].

The minimum distance on the right side was 15.03 mm and on the left side was 13.9 mm. The Maximum distance on the right side and left side are respectively 34.2 mm and 34.1 mm. There was no significant difference between the distances on the right and left sides (p value= 0.22). The 95% confidence interval for difference of mean was -0.2971 to 1.283. The t value was 1.2283 and the standard error of difference was 0.401.

Table 1: Shows distance of mandibular foramen from centre of third molar tooth in millimeter(mm)

	Right	Left
Mean	23.30 mm	22.81 mm
Std. Deviation	3.22	3.36
Lowest Value	15.03 mm	13.9 mm
Highest Value	34.2 mm	34.1 mm

P value= 0.22, CI= -0.2971 to 1.283,
SED= 0.401, t value = 1.2283

DISCUSSION

Present study found mean distance of mandibular foramen from 3rd molar tooth 23.30±3.22 mm on right side and 22.81±3.36 mm left side, nearly similar with previously reported by Ghorai at el (2016) distance was 22.8±4.9 mm on right side & 21.7±4.7 mm left side in male & 21.8±6.6 on right side & 21.6±5.6 mm on left side in female.[5], Deepa G at el (2016)., distance was 2.55±0.33 cm(25.5±3.3 mm) on right & 2.51±0.37 cm(25.1±3.7 mm) on left side.[6], by Dr Anil Satsya at el (2018)., distance was 23.53±3.99 mm right side & 22.92±3.67 mm on left side.[7] By R Shalini at el (2016), distance was on right side 22.84±3.9 mm, on left side 23.23±4.21mm.[8]

South Indian study by Verma at el (2011).[9], distance was 1.5 cm right side and 1.8 cm left side were slightly differed from our results as distance was taken from the posterior border of the socket for 3rd molar tooth whereas in our study distance taken from centre of 3rd molar tooth.

In our study right and left side of mandibular foramen there is no significant difference in distance. Similar result observed in study findings of Oliver et al., (2009) in his Radiological study on Mandibular foramen.[10]

The most common and frequent failure while performing the nerve block in the inferior alveolar nerve is because of inappropriate setting of niddle due to inaccurate location of the mandibular foramen. (Hetson et al).[11]

In mandibular osteotomies and implants usually injury to neurovascular bundles occurs, for avoiding this injuries knowledge about position of mandibular foramen is important. (Kaffe at el).[12]

CONCLUSION

According to the results of this study done in Gujarat region, it gives fair information about position of mandibular foramen from 3rd molar tooth, so it is useful to perform anaesthetic block in inferior alveolar nerve for any dental and reconstructive surgeries in lower jaw for dental surgeons.

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