

Position and Symmetry of the Mental Foramen

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Abstract

Assessment of the position of the mental foramen is very important before all surgical procedures in mandible region. The aim of this study was to determine the distance from the mental foramen to the posterior border of the mandibular ramus and protuberantia mentalis in the dissected human cadaver specimens. Four hundred hemi mandible specimens from human cadavers were dissected and analyzed according to the mental foramen position.

The mean distance from the anterior border of the mental foramen to the posterior border of the mandibular ramus was 70,1 mm for left side and 70,8 mm for right side of mandible, whereas the mean distance from the anterior border of the mental foramen to the protuberantia mentalis 27,5 mm for left and 27.7 mm for right side of mandible. The mental foramen was not bilaterally symmetrical but no statistical differences were found.

Keywords: mental foramen; symmetry; mandible; anatomy

Introduction

The mental foramen (MF) can be injured during local anaesthesia, root canal treatment and other oral and dental operative treatment procedures in this region [1,2].

Therefore, knowledge of the anatomy, especially the position of the MF is essential to reduce damage of the mental nerve during implant placement, osteotomies and periapical surgery in mandibular premolar and molar region. Many studies have investigated the position of mental foramen using dried skulls [3-6] and clinical radiographs [7-9]. The anatomic position of the MF is not completely described.

Also, the aim of this study was to determine the distance from the MF to the posterior border of the mandibular ramus and protuberantia mentalis and MF symmetry investigated in a four hundred hemi mandible specimens from human cadavers.

Materials and methods

This study was based on the dissection of four hundred hemi mandible specimens (200 right and 200 left sides) from human mandibles obtained from cadavers in the Institute of Anatomy of the Medical University of Graz. 100 were from female and 100 from male cadavers. The human cadavers aged from 46-94 years (mean 73). The soft tissue was carefully removed and the mandibles were divided at the mental symphysis. The MF location was observed in the following positions:

Position 1: The distance from the MF to the protuberantia mentalis (Figure 1) (distance a).

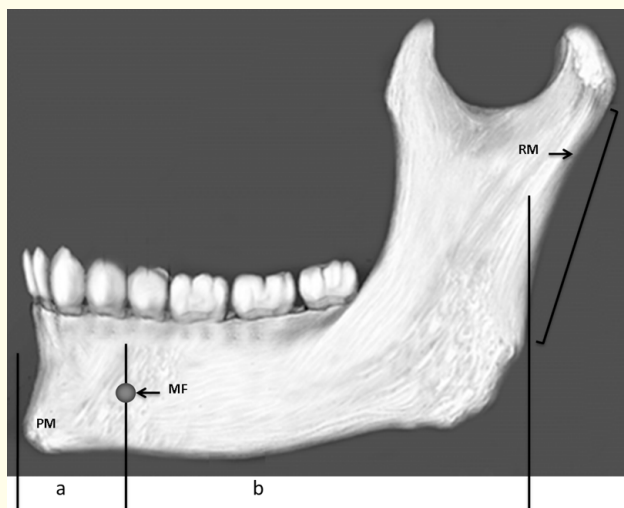


Figure 1: Position of the mental foramen (MF) in relation to protuberantia mentalis (PM) and ramus mandibulae (RM).
 a. The distance from the MF to PM.
 b. The distance from the MF to the posterior border of the RM.

Position 2: The distance from the MF to the posterior border of the mandibular ramus (Figure 1) (distance b). The data were analyzed using the descriptive statistics (Table 1).

Distance (mm)	a	b
mean	27,5	70,1
min	22,2	61,0
max	33,0	79,3

Table 1: Distance measuring from the MF to the protuberantia mentalis (a) and from the MF to the posterior border of the mandibular ramus (b).

Results

The mean distance from the anterior border of the mental foramen to the posterior border of the mandibular ramus was 70,1 mm for left side and 70,8 mm for right side of mandible, whereas the mean distance from the anterior border of the mental foramen to the protuberantia mentalis 27,5 mm for left and 27.7 mm for right side of mandible. The mental foramen was not bilaterally symmetrical but no statistical differences were found.

Discussion

The anatomical variations occur concerning the MF location has been reported [6,9-11]. The anatomical investigation methods used for assessment of the anatomical structure are essential and the most commonly used methods for examining of the anatomical structures.

With respect to detecting the anatomical structure the cadaveric dissection methods are more accurate than radiograph methods. The MF may not appear on conventional radiographs. The investigation methods used for assessment of location of the MF in the present study was the anatomical dissected method.

The mean distance from the mental foramen to the posterior border of the mandibular ramus was 64.29 mm for right and 60.67 mm for left sides [12]. The results of the present study agree with the previous study but in the present study the mean of the distance from the MF to the posterior border of the mandibular was 70.1-70.8 mm whereas the mean distance from MF to the protuberantia mentalis was 25.5-25.7 mm.

The mental foramen was not bilaterally symmetrical but no statistical differences were found and this result is similar with the other results [13-14]. The result of this study agrees with the report described in the anatomy textbooks.

Conclusion

Based on these anatomical findings, potential damage of the mental nerve and vessels during surgical technique in the foramina area can be alleviated. Before any operating procedures the location of mental foramen and its content must be considered.

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