A Pilot Radiographic Study on the Location of the Mandibular Canal in Malay Samples of Various Age-groups

Ngrow WC, BDS, FFDRCSI, FDSRCS. Faculty of Dentistry, University of Malaya, 50603 Kuala Lumpur, Malaysia.
Delitta D. Final year student 2006. Faculty of Dentistry, University of Malaya, 50603 Kuala Lumpur, Malaysia.
Ishak H. Final year student 2006. Faculty of Dentistry, University of Malaya, 50603 Kuala Lumpur, Malaysia.
Nambiar P. BDS, BSc, MSc, MSD, Postgraduate Diploma (Maxillofacial Radiology). Faculty of Dentistry, University of Malaya, 50603 Kuala Lumpur, Malaysia.

ABSTRACT
The mandibular canal is the canal within the mandible where the inferior alveolar (dental) nerve travels. Having good knowledge on its normal location and its variations in the mandible is of considerable importance especially for posterior mandibular endosseous implants placement, placement of screw and plates to treat fractured mandible and for performing mandibular osteotomy to correct facial deformity. The current study is a pilot radiographic study to locate the position of mandibular canal in Malay patients of various age-groups. In contrast to findings elsewhere, it was found that the mandibular canals in these Malay samples were most commonly located in the intermediate level. The mandibular canal appeared to remain static at the intermediate level in males irrespective of age-groups. In females, the mandibular canal was more commonly located in the bilateral single high position in the 20-29 years age-group, but for those aged 30 and above, the mandibular canal was noticed at the intermediate level.

Key words:
mandibular canal, location, age, dental panoramic radiograph.

INTRODUCTION

The mandibular canal is the canal within the mandible where the inferior alveolar (dental) nerve travels. Studies have shown that the buccal-lingual and superior-inferior positions of the mandibular canal are not consistent among mandibles. Moreover, the mandibular canal is not always observed between the mandibular and mental foramina. This canal frequently lacks definite walls, especially near the mental foramen. Bilateral symmetry (location of the canal in each half of the mandible) however, had been noted to be common, whereas duplications of the canal are rare.1,2

Cadaveric study indicated that the mandibular canals were located either at near to the middle or below near to the base of the mandible.2 It had also been found that the neurovascular bundle was located in contact with, or very close to, the lingual cortical plate until it reached the mental foramen. Gowgijal noted that in the body of the mandible, the neurovascular bundle was located about one centimeter above the mandibular inferior border.3 The distance from the lateral border of the neurovascular bundle to the external surface of the buccal plate was usually half a centimeter in the molar and premolar regions. A study has shown that the distance of the mandibular canal to the external lingual and buccal cortical layers did not change with increasing atrophy, but remained remarkably constant.3 The mandibular canal was found to be usually formed by a thin bony plate that, grossly, had more of an appearance of trabecular bone; there was a thin layer of cortical bone in only a few mandibles.3

The normal location and its variations in the mandible are of considerable importance to the oral and maxillofacial surgeon, especially during mandibular osteotomy to correct facial deformity.3 For example, it is advisable for surgeons to keep the level of sliding osteotomy of the mentum at least 4.5 mm below the mental foramen to spare the inferior alveolar nerve.6 With the increase popularity of dental endosseous implants, the location of the mandibular canal becomes one of the determining factors when placing posterior mandibular implants.7 Most often, dental surgeons and oral & maxillofacial surgeons depend highly on panoramic radiographs to identify the course of the mandibular canal in their patients.