

Abstract

Objective

The physiology of the mandibular nerve is an important factor relevant to successful implant planning and surgical procedures in the mandible. Variability among ethnicities may influence the particular safety guidelines for each population. In this study, we retrospectively examined the incidences of canal orientations and variations in Thais using cone-beam computed tomography (CBCT) radiography.

Methods

CBCT images of 441 mandibular sides of 248 patients aged 20 to 82 years (mean age, 43.7 years) were examined. The incidences of canal courses and variations were assessed by two calibrated observers (Cohen's kappa coefficient >0.8). Descriptive and bivariate statistics were analysed for categorical findings. A *p* value of <0.05 was considered statistically significant.

Results

Two common canal courses were identified: linear curve (Type 1, 39.9%) and elliptic-arc curve (Type 3, 48.1%). In addition, one-fifth of the patients had bifid canals (20.6%). There was a short supplemental canal extending to the second or third molar (Type 2, 53.8%) and a supplemental canal arising in the retromolar pad region (Type 4, 46.2%). An anterior loop was identified in 74.2% of the cases and was frequently bilateral (78.3%).

Conclusions

Effective examination of the canal anatomy should be considered prior to surgical procedures because of the shallow curve of the mandibular canal with a high incidence of an anterior loop. In addition, the position of bifid canals was associated with an increased risk of neurovascular alteration in implant placement, sagittal split ramus osteotomy, and retromolar bone harvesting.

Keywords

Cone-beam computed tomography Panoramic radiography Dental implant

Anatomic variation Mandibular nerve