MOORE, SAMUEL[1,2], JONATHAN CHU[1,2], RAHUL SHAH[1,2], SHADI EL-BASYUNI[1,2], VIJAY SANTHANAM[1,4] and CECILIA BRASSETT[1], [1]Human Anatomy Teaching Group, Department of Physiology, Development and Neuroscience, University of Cambridge, UK; [2]University of Cambridge School of Clinical Medicine, Cambridge, UK; [3]Consultant in Oral and Maxillofacial Surgery, Cambridge University Hospitals NHS Foundation Trust.

Sexual dimorphism and ethnic variation in the location of the mental foramen

Located on the anterolateral aspect of the mandible, the mental foramen (MF) transmits the mental nerve, a terminal branch of the inferior alveolar nerve, which innervates the lower lip and chin. Knowledge of its site is clinically important as paraesthesia or neuralgia may result from injury during mandibular operations. This study investigates sexual dimorphism and ethnic variation of MF location and morphology in 239 dry human mandibles from 7 ethnic groups in Europe, Africa, India, North America, South America, Australia and New Zealand. The 3D coordinates of 18 mandibular landmarks were scanned using the MicroScribe G2X digitiser. MF location was plotted relative to the mandibular teeth, alveolar crest, inferior border of the mandibular body, pogonion and gonion; and morphological features were recorded using objective criteria. Our findings showed that the MF had a greater horizontal (4.50±0.925mm) than vertical (3.60±0.736mm) diameter ($p<0.0001$), was mostly situated below the second premolar (53.5%) and displayed a posterosuperior emergence pattern for the nerve (57.3%). Along the vertical axis, the superior and inferior borders of the MF lay within the middle third of the mandibular body in 96.9% and 99.6% of cases respectively, regardless of mandibular size. Significant ethnic variation was found for all the above features ($p<0.0001$). Within the European cohort, the MF was closer to the alveolar crest in females (11.4±1.76mm) than males (14.1±2.21mm; $p<0.0001$). Accounting for size, the relative MF location was closer to the alveolar crest in females (0.430±0.0527) than males (0.467±0.0372; $p=0.0034$). This is the first study of ethnic variation in both MF location and morphology, comparing across more populations than has been done previously, with significant differences reported. While surgeons typically consider the MF as being inferior to the second premolar, our data indicate that it may be situated more posteriorly in particular ethnic groups, even to the first molar.

No ethical approval was required for this study.