

Abstract

We herein introduce horizontal vector analysis, a simple method for assessing cranial morphology based on measurement of the head's horizontal plane, and use this method to establish normal cranial morphology in Japanese children. Computed tomography scans taken in 2010-2019 in healthy Japanese children aged ≤ 6 years. The two measurement planes were parallel to the orbitomeatal plane: namely, a plane passing through the dorsum sellae (DS) and the plane superior to that with the maximal area (Max plane). A protractor was used to circumferentially measure the lengths from the central point to the outer surface of the skull. A total of 487 images were extracted. The distances between the DS and Max planes were consistently almost 30 mm for each age group, so we fixed the Max plane as the plane 30 mm superior to the DS plane. Finally, we established datasets of normal values for each age group and sex. Using these norms, perioperative evaluation of various cranial deformities could be performed more easily and circumstantially.