

Three-Dimensional Analysis of Occlusal Contact Area in Intercuspal Position in Normal Adults -Upper First Molar-

Masaki SATO *, Gang-Suk PARK, Takayoshi KAWAZOE,
Masahiro TANAKA, Manabu NISHIKAWA
(Osaka Dental University)

Purpose:

The purpose of this study was to analyze the three-dimensional occlusal contact area in intercuspal position and to determine the criteria of occlusal contacts in upper first molar.

Method:

The silicone occlusal registration was taken for each of five normal adults with no caries and no restoration at 30 % of maximum voluntary clenching in intercuspal position. The silicone occlusal registration was digitized by non-contact three-dimensional form measuring device. The 3-D data were analyzed by CAD software with a personal computer. The plane of reference was established using upper occlusal plane. The occlusal contact area was calculated for an intraocclusal distance of less than 60 μm . The occlusal surface of upper first molar was classified into six parts; mesial buccal cusp (MBC), distal buccal cusp (DBC), mesial lingual cusp (MLC), distal lingual cusp (DLC), mesial marginal ridge (MMR) and distal marginal ridge (DMR). The number, rate and inclination of occlusal contact area were analyzed.

Results:

The average number of occlusal contact area was 1.0 in MBC, 1.3 in DBC, 2.4 in MLC, 1.3 in DLC, 0.5 in MMR and 0.5 in DMR. In the frontal and sagittal plane, the mode of the occlusal contact area were 25 and -15° in MBC, 15 and 10° in DBC, -25 and -15° in MLC, -15 and 15° in DLC, 15 and 0° in MMR, 5 and -35° in DMR.

Conclusion:

The region and inclination of the most frequent occlusal contact area in upper first molar in normal adults were indicated.