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## Evaluation of two CAD software on the adaptation of digitally constructed maxillary complete denture

**Aim:** This study was conducted to evaluate the adaptation of maxillary complete denture designed by two different open computer-aided design software programs (3Shape and Exocad) using Geomagic surface matching software. Settings and Design: This was a nonrandomized crossover clinical trial.

**Materials and Methods:** Twenty completely edentulous patients were selected in this study. Forty complete dentures were designed using two different software programs: twenty dentures were designed by 3Shape software, and the other twenty dentures were designed by Exocad software. Maxillary dentures were evaluated regarding their adaptation by measuring the deviations that occurred between the fitting surface of the three-dimensional printed dentures, and the scanned master casts using Geomagic surface matching software. Statistical Analysis Used: An unpaired t-test was used for statistical analysis.

**Results:** According to the positive average deviation value that represented pressure areas, 3Shape-designed maxillary dentures showed significantly lower mean deviation values ( $0.041115 \pm 0.018165$  mm) than Exocad-designed maxillary dentures ( $0.500665 \pm 0.032619$  mm). Regarding the negative average deviation values that represented the gap areas, Exocad-designed maxillary dentures showed significantly lower mean deviation values ( $0.161555 \pm 0.007842$  mm) than 3Shape-designed maxillary dentures ( $0.231350 \pm 0.009146$  mm). The results of the total average deviation values showed significantly lower mean deviation values

( $0.096950 \pm 0.008868$  mm) of 3Shape-designed maxillary dentures than Exocad-designed maxillary dentures ( $0.250755 \pm 0.021154$  mm).

**Conclusion:** 3Shape and Exocad software programs produced acceptable maxillary dentures regarding denture adaptation. However, maxillary dentures designed by 3 Shape software showed better adaptation than maxillary dentures designed by Exocad software. **Keywords:** 3Shape software, computer-aided design, denture adaptation, digital complete dentures, Exocad software, Geomagic software.

### Biography

Prof. Fardos is working as a Vice Dean for Teaching and Learning, Faculty of Dentistry, The British University in Egypt, 2019-present. She is a Program Director and Head of Prosthodontics Department at Faculty of Dentistry, British University in Egypt, 2012-present. Professor of Prosthodontics at Faculty of Dentistry, British University in Egypt, 2017-present and also a Professor of Prosthodontics at Faculty of Dentistry, British University in Egypt, 2012-2017. She completed Ph.D. Prosthodontics, Faculty of Dentistry, Ain Shams University 2007 and M.Sc. Prosthodontics, Crown and Bridge and Dental Materials, Faculty of Dentistry, Cairo University, 2000 and B.D.S., Oral and Dental Medicine, Faculty of Dentistry, Cairo University 1994.

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