Removable complete denture using CAD/CAM: Clinical Case

BARRETO, M.J.*; ANTUNES CALEJO, A.**.; RUA, J.***.; LOPES FONSECA, H.****; DURÃO MAURÍCIO, P.*****

* Clinical Assistant of Oral Rehabilitation Clinic in IUEM Integrated Master in Dentistry
** Dentist part of the medical care team at the Egas Moniz Dental Clinic in voluntary training of Oral Rehabilitation in IUEM Integrated Master in Dentistry
*** Clinical Assistant of Oral Rehabilitation Clinic in IUEM Integrated Master in Dentistry and Sub Clinical Director of the Egas Moniz Dental Clinic
**** Dentist part of the medical care team at the Egas Moniz Dental Clinic
***** Regent of Oral Rehabilition Clinic in IUEM Integrated Master in Dentistry

CASE DESCRIPTION

A female patient, 63 years old, came on the Oral Rehabilitation consultation with non funcional complete removable upper and lower dentures. In the intraoral examination we observed an upper and lower alveolar ridge round shaped, irregular and with slight resorption. In the attempt to improve the retention and stability of the prosthesic elements, the creation of new prostheses using CAD/CAM technology, using the Dentca™system, was proposed. This system include 2 or 3 stages. In the first visit, we obtain intra and extraoral photographies, followed by the upper and lower definitive impressions, using the specific system trays, and ending with the intermaxillary recording by drawing a gothic arch on the outer base of the upper tray with an incisal pin attached to the bottom tray in correct vertical dimension of occlusion. Secondly, an optional try-in consultation is carried out, where the prostheses are placed in the mouth and allow to perform the tests necessary to verify function and phonetics, evaluating the occlusion of the prostheses in the mouth, and making the necessary adjustments. Finally, in the third consultation, the definitive prostheses are placed in the mouth.

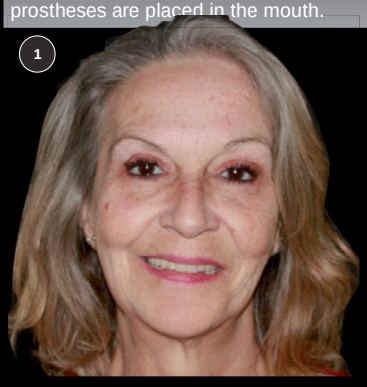

Fig. 1/2- Initial extraoral photographies with the old complete dentures on

Fig. 3- Initial intraoral photographies without dentures on

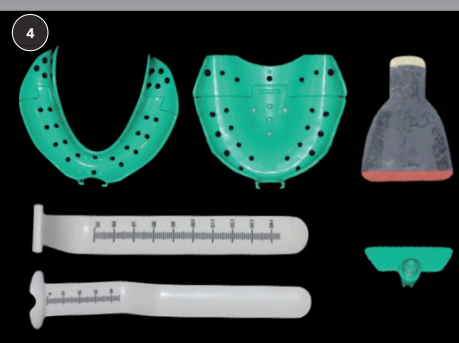

Fig. 4- Dentca Kit for complete upper and lowers removable dentures

Fig. 5/6- Upper and lower definitive impressions, respectively

Fig. 7- Attaching the incisal pin

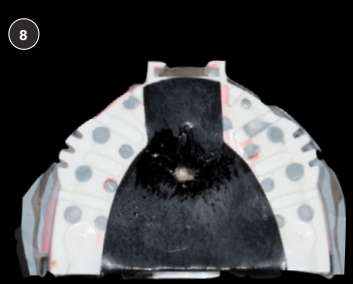

Fig. 8- Marking of the C.R. point in the Gothic arch

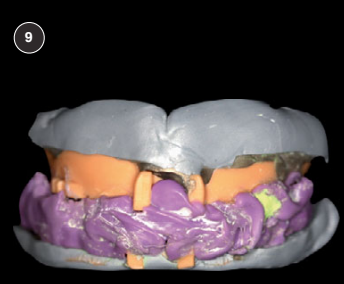

Fig. 9- Intermaxillary recording

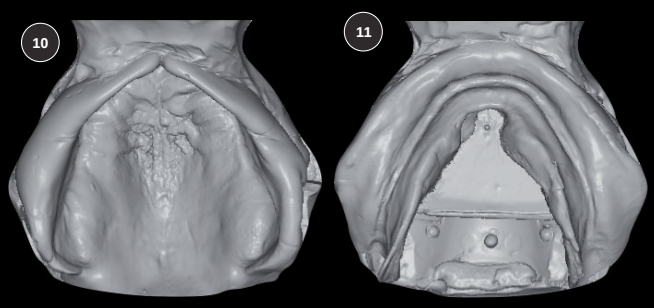

Fig. 10/11- Digital impression of the definitive impressions captured with a laboratory scanner

Fig. 9- Try-In placed in the mouth

Fig. 10- Try-In impression to improve the lower prothesis' accomodation to the lower alveolar ridge

DISCUSSION

The creation of complete dentures using CAD/CAM methods is currently a reality in the field of oral rehabilitation.[1] The integration of this technology in the design and manufacturing of these prothesis allows to improve the quality of the prosthetic elements and facilitates the communication with the prothesis technician.[2] The CAD/CAM method allows for a reduction in the number of appointments required until the prosthesis is delivered (a major advantage when rehabilitating elderly patients or whom take too long to get to the dental office); reducing the duration of treatment, reducing the overload and fatigue of the dental practitioner; reducing costs without compromising the quality of health care services; absence of polymerization contraction, resulting in increased accomodation of the prosthetic base to the alveolar ridge; ease of performing prosthetic repairs, replacement of severe fracture or loss of the prosthesis, using digitally stored data; and also reduction of the patient's adaptation time when in need to replace the dentures. [3,4]

Fig. 11- Final removable complete dentures using CAD/CAM

Fig. 12/13- Final extraoral photographies with the removable complete dentures using CAD/CAM on

CONCLUSION

The integration of CAD/CAM technology for manufacturing and design of complete dentures, besides contributing significantly to simplifying and facilitating the clinician's and laboratory's work, aims to contribute to improve the quality of the prosthetic element, in which case there was an increase in retention and stability of the prosthesis. Regarding the aesthetic component, despite the very satisfactory result when in the mouth, the characterization of the prosthesis was inferior compared to those made using the conventional method.

BIBLIOGRAPHIC REFERENCES

(1) Baba, N. Z., Goodacre, C. J., & Kattadiyil, M. T. (2015). CAD/CAM removable prosthodontics. Em R. Masri & C. F. Driscoll (Eds.), Clinical applications of digital dental technology (pp. 107–138). Iowa: Wiley Blackwell; (2) Kattadiyil, M. T., & AlHelal, A. (2017). An update on computer-engineered complete dentures: A systematic review on clinical outcomes. The Journal of Prosthetic Dentistry, 117(4), 478–485. https://doi.org/10.1016/j.prosdent.2016.08.017; (3) Goodacre, C. J., Garbacea, A., Naylor, W. P., Daher, T., Marchack, C. B., & Lowry, J. (2012). CAD/CAM fabricated complete dentures: Concepts and clinical methods of obtaining required morphological data. Journal of Prosthetic Dentistry, 107(1), 34–46. https://doi.org/10.1016/S0022-3913(12)60015-8; (4)Baba, N. Z. (2016). Materials and Processes for CAD / CAM Complete Denture Fabrication Materials and Processes for CAD / CAM Complete Denture Fabrication. Current Oral Health Reports, (July), 203–208. https://doi.org/10.1007/s40496-016-0101-3

NOTE: The Images presented here were published with an informed consent document signed by the patient.