Influence of clinical factors on the masticatory function of conventional complete dentures and mandibular overdentures after 1 year of function

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Background: Complaints regarding retention and stability are the main problems reported by individuals who have rehabilitated with conventional complete dentures (CCD). The masticatory function can also be directly affected by the atrophy, facial type and anteroposterior skeletal discrepancy of the individuals. In order to remedy these problems, implant-retained mandibular overdenture (IMO) was recommended as a minimum protocol to rehabilitate total edentulous individuals.

Aim/Hypothesis: Evaluate how retention, stability, atrophy, facial type, anteroposterior discrepancy and type of loading adopted in the transition from CCD to IMO, after one year, interfere with masticatory function (MF) of edentulous individuals. The hypothesis is that the factors do not interfere in the MF.

Material and Methods: This is a longitudinal clinical study of the one year follow up the transition from CCD to IMO. Forty patients with CCD who were later rehabilitated with IMO were evaluated for improvements in their masticatory performance (ST_X50 and ST), taking into consideration the following parameters- mandibular atrophy, retention and stability of the CCD, facial type, anteroposterior skeletal discrepancy and type of loading of the IMO. A logistic regression (crude and adjusted) was also performed to determine associated factors, and to control confounding variables. The forward stepwise method of variable selection was adopted, and only the variables with p values lower or similar to 0.20 were included in adjusted models. The final model variables with p values lower or similar to 0.05 were considered statistically significant, and odds ratios (OR) with 95% confidence intervals were included as measures of effect size.

Results: According logistic regression, in CCD carriers, the retention showed that it was associated with ST_X50, where CCD users with poor retention had an 86% (OR= 0.14, IC= 0.01–1.15) less chance of having a good ST_X50. Regarding STB, after adjusting, the stability, facial type and anteroposterior discrepancy were associated with the STB. The individuals who did not have stability in CCD had a 76% (OR= 0.24, IC= 0.05–1.09) less chance of achieving a good STB, whereas brachyfacial individuals were 1.3 times (OR= 1.30 CI= 0.21–7.93) more likely to have a good STB, and those classified as Class II had an 89% less chance (OR= 0.11, IC= 0.01–1.15), as CCD users. Post-transition to IMO, only the anteroposterior discrepancy maintained association with STB, where Class II individuals had a chance of properly homogenizing the particles during IMO mastication that was less than 89% (OR= 0.11, IC= 0.01–1.06).

Conclusions and Clinical Implications: IMO brings many benefits to individuals, because it eliminates the absence of retention and instability of the CCD. The use of IMO for 1 year was not able to improve the homogenization of foods only Class II individuals. In view of this, an adaptation to this limitation is observed, and they end up deglutting larger food particles, which may have a negative impact on the general health of these individuals.