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Clinical Performance of Mandibular Implant-Supported Overdentures on Novel Attachment System

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Objectives The study aimed to evaluate the clinical performance of mandibular overdentures retained by a novel stud attachment system Novaloc.
Methods A prospective randomized controlled study design was adopted to test the attachment system. Nineteen edentulous patients with mandibular overdentures retained by two implants were randomly allocated into one of two groups differing in the attachment type: Locator (n=9) or Novaloc (n=10). Peri-implant hygiene (Silnes and Loe plaque-index), soft tissue conditions (Gingiva-index, Sulcus bleeding-index, pocket probing depth), and patient satisfaction obtained with a standardized questionnaire were compared. Biological (implant loss, peri-implant inflammation) and technical complications (retention loss, replacement of nylon or PEEK matrices, acrylic tooth fracture, relining of the prosthesis) were assessed. Non-parametric tests were used to determine differences between both experimental groups ($P<0.05$). Survival rate was calculated at the annual follow-ups.
Results At a 2-year baseline, the implant and prosthesis survival rates were 100%. Both treatment options improved patient satisfaction, which was comparable in both groups. There was no significant difference in soft tissue and hygiene conditions. The need for matrix replacement was the most frequent technical complication observed in 50% of both groups, still, not exceeding the clinically acceptable maintenance rate. One case of attachment wear was observed in the Novaloc group, however, no signs of retention loss were observed. Acrylic teeth fracture and abutment loosening were observed in 5%.
Conclusions After 2-years of clinical service, implant-supported mandibular overdentures retained by Locator or Novolac attachment systems showed promising and comparable clinical results with improved patient satisfaction. The Novaloc attachment system can be regarded as a viable treatment option. However, more long-term clinical trials are needed.