

CAD/CAM removable dentures and soft tissue health: a review of the literature

Objectives: to analyze the scientific literature on the effects of digitally fabricated removable denture constructions, materials and their effect on soft tissue.

Materials and methods: literature search was performed electronically in databases: EBSCO, Science Direct, PubMed, Cochrane Library the period from 2013-2023 in English. Preference for clinical randomized trials, including prospective and retrospective studies. Keywords: CAD/CAM, 3Dprinting, clinical outcomes, adaptation, fit of restoration, denture, denture base, framework, soft tissue, biocompatibility, plaque accumulation, surface roughness in various combinations.

Results: a total of 97 articles were selected according to certain inclusion criteria. Removable constructions can be milled (in most cases) and printed (SLA, DLP, SLM). Commonly included materials are polymers and metals (PEEK, Cr-Co, Ti) for permanent, temporary or immediate purpose using teeth, implants and soft tissue as support. The articles addressing the clinical performance of materials (accuracy, surface roughness, hardness) and their effects on soft tissue were selected for review. Traditional manufacturing methods were found in comparative studies. The most frequent problems are related to traumatic ulcers, *Stomatitis* and the health of supporting teeth. Technical features mentioned as affecting soft tissue: surface roughness, denture base adaptation, accuracy, print orientation.

Conclusions: the porosity obtained using different techniques of the materials attracts plaque and can adversely affect soft tissues but is within clinical acceptability when the prosthesis is used as an intermediate structure. Arrival of new technologies does not eliminate hygiene habits, recall and follow-up visits. Post-processing can affect the exact fit – palatal /border seal. Printing technologies still have future potential for improve mechanical properties (including reduced surface roughness). Relining in a convenient way has to be developed.

Keywords: CAD/CAM, removable dentures, soft tissue