



Katarzyna KOLBUCH¹, Wojciech KAJZER¹

¹ *Silesian University of Technology, Faculty of Biomedical Engineering, Zabrze*

DESIGN AND 3D PRINTING OF AN OCCLUSAL SPLINT USED IN BRUXISM

Keywords: Occlusal Splint, Bruxism, Additive Technology

The issue of bruxism is an increasingly common dysfunction of the stomatognathic system associated with excessive clenching and grinding of the teeth. Until recently, the problem of bruxism was considered to be only a dental aspect: malocclusion, incorrectly fitting dentures, etc. However, the main factors contributing to the occurrence of bruxism episodes are increased susceptibility to stress, emotional disturbances, time pressure or disorders occurring in the temporomandibular joint. Its occurrence negatively affects the condition of the teeth, but also leads to headaches or reduced mobility of the spine. Once bruxism is correctly diagnosed, various treatment methods are applied, but the basic one is the use of occlusal splints. Their role is to protect the teeth, reduce pain and reduce muscle tension in the stomatognathic system. This article presents different types of occlusion splints and describes how they are manufactured. The process consists of several basic steps: taking dental impressions, creating a plaster model, fitting an acrylic splint and consulting the result with the patient. However, with the development of CAD/CAM and additive technologies, a new, much more comfortable and faster solution has emerged. This article describes the realization of the creation of a occlusal splint using laser scanning of a model of the patient's jaw and mandibular, the design of a prototype overlay in dedicated software and the selection of a model material for DLP printing. The realization of the project, taking into account different thicknesses and printing variants, made it possible to select the optimal variant of the occlusal splint prototype in terms of durability, aesthetics as well as comfort for the patient struggling with bruxism.