

Predictive Machine Learning Model for Assessing the Impact of Untreated Teeth Grinding on Gingival Recession and Jaw Pain

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Abstract : This paper proposes the development of a supervised machine learning system to predict the consequences of untreated bruxism (teeth grinding) on gingival (gum) recession and jaw pain (most often bilateral jaw pain with possible headaches and limited ability to open the mouth). As a general dentist in a multi-specialty practice, the author has encountered many patients suffering from these issues due to uncontrolled bruxism (teeth grinding) at night. The most effective treatment for managing this problem involves wearing a nightguard during sleep and receiving therapeutic Botox injections to relax the muscles (the masseter muscle) responsible for grinding. However, some patients choose to postpone these treatments, leading to potentially irreversible and costlier consequences in the future. The proposed machine learning model aims to track patients who forgo the recommended treatments and assess the percentage of individuals who will experience worsening jaw pain, gingival (gum) recession, or both within a 3-to-5-year timeframe. By accurately predicting these outcomes, the model seeks to motivate patients to address the root cause proactively, ultimately saving time and pain while improving quality of life and avoiding much costlier treatments such as full-mouth rehabilitation to help recover the loss of vertical dimension of occlusion due to shortened clinical crowns because of bruxism, gingival grafts, etc.

Keywords : artificial intelligence, machine learning, predictive insights, bruxism, teeth grinding, therapeutic botox, nightguard, gingival recession, gum recession, jaw pain

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