Bruxism: A Novel Diagnostic Approach

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Bruxism, the involuntary grinding and/or clenching of teeth, is a condition which often goes undiagnosed until irreversible damage occurs. Although research on this topic has been extensive, there is still no objective diagnostic method for bruxism. Current diagnostic methods, based on clinical examination and patient history, are frequently inaccurate. Previous research has identified masticatory muscles as the main generators of human bite force. With the aid of an original device (a novel bite force recorder) which I designed, this study aimed to explore the existence of a correlation between individuals' maximum bite force (MBF) values and bruxism. My results showed that MBF values recorded for bruxers (experimental group) were significantly higher than those for non-bruxers (control). Since occlusal guards help masticatory muscles relax and lose their hyperactive status, splint therapy is the standard procedure for treating bruxism. After four weeks of splint therapy, the MBF values recorded for bruxers displayed a significant decrease, while there was no statistically significant change for non-bruxers. These findings support my hypothesis that increased MBF values could be an indication of bruxism and could provide useful data for evaluation of jaw muscle function and activity. Measuring individuals' MBF values could be instrumental in diagnosing bruxism. With bruxism being on the rise, additional research is required to further develop more efficient and more cost-effective methods to diagnose this condition.

Awards Won:

Intel ISEF Best of Category Award of $5,000

First Award of $5,000