

## Université de Montréal

### LONG TERM EFFECT OF CONTINUOUS WEAR OF INVISALIGN® TRAYS ON THE TEMPOROMANDIBULAR JOINT AND THE MUSCLES OF THE FACIAL COMPLEX

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**Introduction:** The temporomandibular joint (TMJ) is a complex articulation and is often related to pain due to dysfunctions. About 50% of the population shows some signs of TMJ dysfunctions with a higher prevalence in females. The etiology of temporomandibular disorders (TMD) is still under investigation. Different potential factors, such as stress, occlusion, and degenerative joint problems may be involved. A well-accepted treatment for TMD is the occlusal splint. Previous studies have shown that disarticulation of the jaws helps improve TMJ symptoms and reduce bruxism/ clenching events at night. Based on these studies, it seems plausible to assume that an orthodontic treatment using Invisalign® trays should also benefit the patients with TMJ symptoms. Clinically, some patients observed a reduction of morning headaches and orofacial pain following the start of their Invisalign® treatment while others reported more clenching and muscle soreness. At the present time, there is no published study that objectively measured the effect of aligners regarding the TMJ and the orofacial muscles.

**Objective:** This prospective clinical study aims to evaluate the effect of continuous wear of Invisalign® trays on the TMJ and the orofacial muscles.

**Materials and Methods:** The effect over time of Invisalign® trays on the TMJ and the muscles of the orofacial complex was assessed using the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). The number of bruxism/ clenching events were measured using electromyograph (EMG) recordings during sleep and daily reported by the patients with self-administrated questionnaires. Repeated measurements were taken at specific moments: at baseline evaluation (T0), 2 weeks (T1), and 6 months (T2) after the start of the treatment. Repeated measures Friedman test for RDC/TMD data, analysis of variance for EMG variables, and chi-squared test for scorings will be used with the significance level set at 5%. Inter-rater and intra-rater reliability tests (Kappa) will also be performed.

**Results/Discussion/Conclusion:** All preliminary results will be conducted by the time and presented at the 66th Annual CAO Scientific Session.