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Synopsis

Dr. Phimon Atsawasuwan is a tenured Professor at the Department of Orthodontics, University of Illinois Chicago, USA, and Associate Director of Orthodontics Clinical and Translational Sciences Research. With the rise of additive manufacturing technology and the increasing popularity of clear aligner therapy, contemporary orthodontic treatment is witnessing a significant shift towards embracing the technology of three-dimensional (3D) printing for clear aligners. However, our understanding of the safety

and physical properties of these polymers remains limited.

A critical factor contributing to the appeal of clear aligners as a treatment modality is their transparent appearance, which must be preserved throughout the treatment. Despite this, there is a gap in our understanding regarding how these polymers respond to various cleaning methods and how such methods may impact their physical and biocompatible properties. As healthcare providers and orthodontists, it is our responsibility to prioritize patient safety and treatment efficacy by comprehensively investigating the recommended treatment options.

The primary objective of this proposal is to conduct a comparative analysis of the biocompatibility and physical behaviors between 3D printed aligner materials and thermoformed aligner materials following exposure to different cleaning methods. With the generous support of the American Association of Orthodontists Foundation, we aim to provide informed recommendations to the public regarding the efficacy and safety of clear aligner orthodontic treatments.

The insights from this study will not only contribute to the body of knowledge surrounding clear aligner therapy but will also serve to ensure the safety and effectiveness of orthodontic care. Furthermore, this research holds the promise of advancing orthodontic research practices, thereby benefiting both practitioners and patients.