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Principles and Biomechanics of Aligner Treatment

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Elsevier
3251 Riverport Lane
St. Louis, Missouri 63043

PRINCIPLES AND BIOMECHANICS OF ALIGNER TREATMENT, FIRST EDITION ISBN: 978-0-323-68382-1

ISBN: 978-0-323-68382-1

Content Strategist: Joslyn Dumas
Content Development Manager: Ellen Wurm-Cutter
Content Development Specialist: Rebecca Corradetti
Publishing Services Manager: Shereen Jameel
Project Manager: Nadhiya Sekar
Design Direction: Patrick Ferguson

Printed in India

Last digit is the print number: 9 8 7 6 5 4 3 2 1

Dedication

To Catherine, for her love, support, inspiration, and encouragement.

RN

To Katia, for showing me what love is and for keeping my feet on the ground. To Alessandro, Matilda, and Sveva, because you made the world a brighter place. To my friends, Francesco and Kenji, for your passion, enthusiasm, commitment, and support: you are always an example to follow. To Ravi, for your trust and friendship, for your guidance and leadership: you have translated a vision into reality. It was a wonderful journey with you; thanks for your time and for sharing your experience.

TC

I would like to dedicate this book to all my family with a special thought to my dad, mentor and a visionary, who shared with me a passion in aligner orthodontics for 20 years.

FG

My thanks to Francesco and Tommaso for sharing their friendship with me over so many years. The time I spent writing this book with Ravi was amazing, like a dream for me. I am truly grateful to my family for all of their support.

KO

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Foreword

Ravindra Nanda, Tommaso Castroflorio, Francesco Garino, Kenji Ojima

Aligners represent the new frontier in the art and science of orthodontics. This new frontier offers new opportunities and challenges, but also requires the need for additional knowledge. A rethinking of biomechanics and force delivery concepts is needed along with the role of materials used for aligners. There is a need for combining established concepts with new tools and technologies which aligner treatment requires.

When considering new methodologies, orthodontists should always remember that technology is a tool and not the goal. Diagnosis, treatment plan, and biomechanics are always the key elements of successful treatment, regardless of the treatment methodology. Aligner orthodontics is quite different than traditional methods with brackets and wires. Force delivery with aligners is through plastic materials. Thus, the knowledge of the aligner materials, physical properties, attachment design, and the sequentialization protocol is crucial for treatment of malocclusions. It is also imperative to understand limitations of aligner treatment and how to overcome them with the use of miniscrews and auxiliaries.

Aligner treatment requires new knowledge; the number of clinical and scientific reports about all the different aspects of aligner orthodontics is increasing year by year. This book represents an up-to-date summary of the available research in the field as well as a clinical atlas of treated patients based on the current evidence. We have made an attempt to provide benchmark for clinicians, researchers, and residents who want to improve their skills in aligner orthodontics.

We would like to express our great appreciation to all the friends and colleagues who have contributed to this book. It was a pleasure to work with all these talented orthodontists.

We would like to say thank you to the Elsevier team for their support, patience, and guidance during the challenging Covid pandemic.

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