

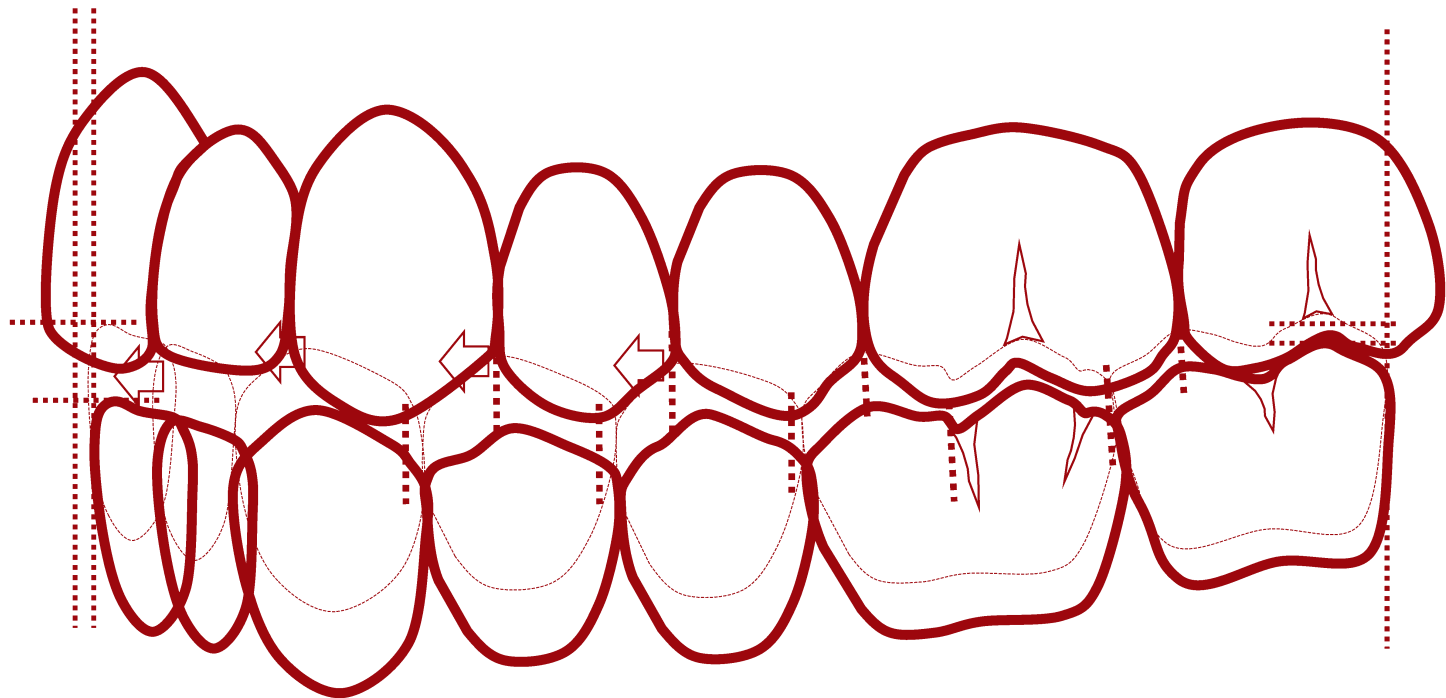
Didier DIETSCHI

Carlo Massimo SARATTI
Serge ERPEN

Interceptive treatment approach

TOOTH WEAR

with minimally invasive protocols



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TOOTH WEAR

Interceptive treatment approach with minimally invasive protocols

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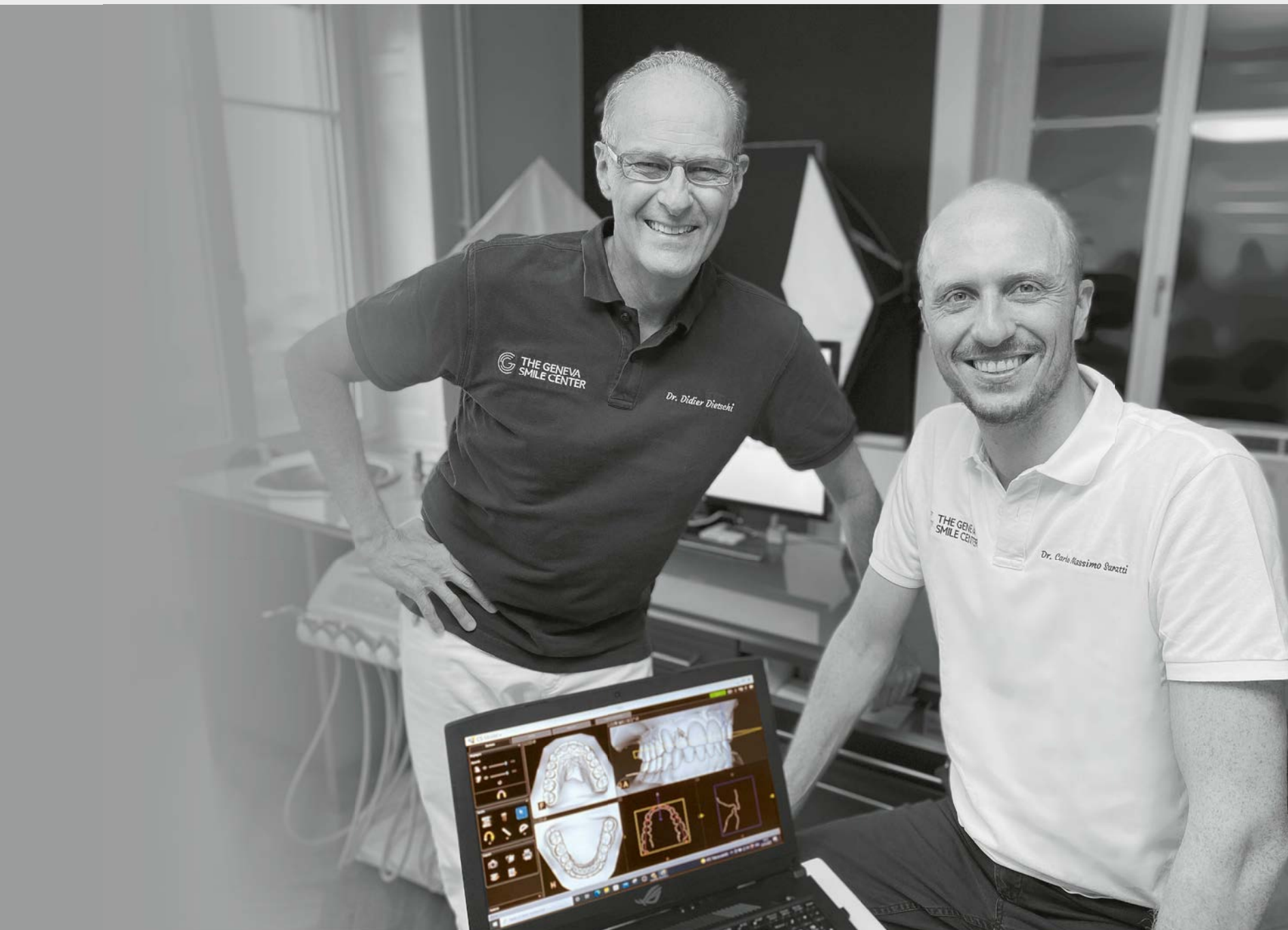
Dr Didier Dietschi graduated from the University of Geneva Dental School, Switzerland, in 1984, where he completed specialty training in periodontology and restorative dentistry. He held the positions of assistant, lecturer, and senior lecturer at the same university, where he received his doctoral title in 1988 under the supervision of Prof Jacques Holz and a Privat-Dozent degree in 2004. He earned his PhD in 2003 at the Academic Centre for Dentistry in Amsterdam, Netherlands, under the guidance of Prof Carel Davidson. In 1990, he started a part-time practice in a private clinic in Geneva limited to esthetic restorative dentistry with a focus on soft tissue management and implantology. Since 2005, he has held the position of adjunct professor at Case Western Reserve University (USA) and maintained his part-time senior lecturer position at the University of Geneva in the Department of Cariology and Endodontics headed by Prof Ivo Krejci.

Dr Dietschi has won numerous awards for his contributions to adhesive restorative dentistry. He is an active lecturer author, journal reviewer, and industry consultant and has contributed to significant improvements in the field of composite shading with the development of the so-called “Natural Layering Concept.” He coauthored the book **Adhesive Metal-Free Restorations**, edited in 1997 by Quintessence and translated into seven languages. Dr Dietschi is internationally acclaimed for his theoretical and practical teaching programs focused on adhesive and esthetic restorations with the integration of scientific evidence and implementation of new technologies in the field of minimally invasive esthetic dentistry applied to the restorations of anterior and posterior teeth.

My Coauthors

Dr Carlo Massimo SARATTI

There are encounters that make you feel like you met someone special in the very first instance ... Massimo SARATTI is such a person! When this happens, building a productive team is a spontaneous and natural process that eases cooperation, as it not imposed by the environment or hierarchy. I got to know him as a candidate of our Master on “Minimally Invasive Esthetic Dentistry”; he became a tutor and shortly thereafter the clinical head of the same program, demonstrating very early special clinical skills and capacities for teaching. Sharing the same professional values and aims, as well as being a hard worker and curious scientist with solid common sense, Massimo has been a great contributor and partner along the way to complete this book project; his special interest in function and occlusion in particular proved highly valuable to related sections as well as his contribution to clinical content thanks to his great technical skills and growing experience. Massimo, your friendly and constant support and relentless positive attitude have been a highlight in my career and I also look forward to continuing this collaboration toward more shared successes! ...





MDT Serge ERPEN

Among a few outstanding dental technicians, Serge Erpen has accompanied me along a great part of my investigations in tooth wear treatments, from diagnosis to realization. His technical competence has no equivalent but his passion and dedication to the profession. I found in Serge a true partner to share the many difficulties in treating sometimes complex cases and reaching the best possible results for any patient. Flexibility and availability are other virtues he has expressed in every aspect of our cooperation ... and every dentist understands how important it is to know we will respect deadlines, whatever the difficulty and the unexpected. Serge has also shown an extraordinary curiosity and interest in exploring new technologies to find the best balance between analog and digital solutions, which proved to be an incredible asset to embrace together, and for the best, with the evolution of dental technologies. Last but not least, we developed a mutual respect, which is the essence and condition of a successful teamwork; as it should, authority or professional position were never part of our friendly relationship. Thank you, Serge, for having been by my side for so many years; wishing us still to continue this fruitful cooperation much further ahead! ...

Why this book?...



One of my most desired projects was to create a place to share my experience as well as stories about successes and failures with my peers. This became a reality in 2006 when we had our first program at the Geneva Smile Center, where I built my own education center. The driving force behind this adventure was to offer an optimal environment dedicated to the learning and practice of adhesive dentistry. This is about being minimally invasive, even often with a no-prep approach ... what has become a lot more than a trend over the last two decades. An instrumental cooperation that made this dream become a complete reality was to have Prof Pascal Magne joining me as an Edudent International regular teacher. I am privileged to have Pascal as a close and dear friend and a contributor to our teaching center; he brings his invaluable scientific expertise and unique clinical talent to our visiting colleagues ... what a MUST for this place!

A repeated request from many visiting peers has been to have a comprehensive presentation of the concepts and procedures demonstrated in our courses ... this has now been completed, and its content is also dedicated to them in appreciation of their attention and trust.



A journey



A 35-year-long journey within both the academic and clinical dentistry worlds opened my horizons while it also turned many certainties into doubts, dogmas into more sensible considerations, and ultimately led me to consider that science without clinical experience, common sense, and strong ethics is a useless exercise. Let me then explain below to the reader which fundamentals other than those of a technical nature underlie the concepts developed in this book.

Freshly graduated, my first years as a full-time academic taught me the value of research both in fundamental biomaterials science and university-based clinical dentistry. It took me however a while to understand the frailty of many in vitro protocols and thus their limited clinical relevance. In regard to clinical studies conducted at universities, how could we interpret results after having eliminated many of the constraints prevailing in the other areas of our dental world? My daily work in the

in academic and clinical dentistry

private sector made me increasingly wonder why the reality of this environment was occasionally loosely fitting with so-called “evidence-based” treatment recommendations and outcomes. For example, I realized the impact of relatively young and often inexperienced university fellows (as I was at the time of my clinical doctoral thesis) performing treatments with somehow suboptimal results, seemingly inferior to those obtained in an ideal private practice; conversely, failure rates for treatment performed under social system guidelines proved factually superior, next to the issue of suboptimal treatment concepts. In brief, I progressively learned to weigh both the impact of “nonnatural and realistic” laboratory conditions and the many different treatment environments and to confront the results of academic research to the infinite confounding factors conditioning successes or failures in our daily activity. This long personal experience in academics and private dentistry ultimately led me to better contemplate the complexity of research data analysis and how to generate useful, clinically oriented information.

I have been privileged to travel extensively to share my experience but above all to receive generous feedback from many researchers as well as private and university clinicians. This altogether shaped my vision of dentistry and how I could, hopefully, bring a modest contribution to improve the way we treat and help patients to heal from certain pathologies, recover function, and improve esthetics and quality of

life as well. Like everyone, I have been tempted to listen to the siren songs, to take the easy path to overtreatment, using monotherapy applied to nearly every patient for the sake of productivity and simplicity ... and even “worse” the quest for impeccable iconography to impress congress crowds or social media followers. As a group of authors and contributors, dentists, scientists, and technicians, we aimed then to share here with the reader knowledge and clinical expertise to enhance the patient’s health as an absolute priority.

This journey also brought me to meet amazing professionals and human beings who all share the same passion for dentistry and show the utmost respect and compassion for patients; I realized over time how important those combined qualities are to drive our efforts toward just aims. The above sounds obvious but in fact it is not, and this is why we tried here to challenge the lasting trend of commercially driven dentistry and overtreatment. The latter consideration actually is of prime importance when we consider the infinite variations in the extent of tooth wear, localization, and interaction with preexisting individual biomechanical and functional conditions; how then could monotherapy applied to the whole mouth be the correct answer to such clinical variability? Ultimately, this challenge triggers our medical and technical creativity and makes this domain of dentistry a highly stimulating and motivating one. We truly hope you will have a stimulating, fruitful, and enriching reading experience.



Dedication

I dedicate this book first to my wife Manuela for having transformed my life into a sunny fairy tale and for her unconditional support in many of my professional projects. She provided the serene atmosphere needed to work so intensively on this manuscript and has been a critical reader and first reviewer to select its most appropriate graphic options and clinical content. Thank you, Manuela, for your patience and for being by my side with a smile, whatever the circumstances ...

I also dedicate this book to my brother Jean-Michel, my lifelong private dentistry partner, and his wife Beatrice, who have tirelessly headed our two clinics since their inception. Thank you both for all the love and support you have given me throughout the years, from the opening of our first dental office in our small hometown of Bernex to the bigger project of the Geneva Smile Center. Achieving many of my professional dreams happened thanks to your trust and efforts on my side; without you, my life journey wouldn't have been so beautiful! ...





In gratitude of



I would also like to dedicate this book to all the mentors, colleagues, and industry partners who gave me confidence to concretize my professional projects. Without colleagues reading our publications and following our teaching, all our efforts would be meaningless. Special thoughts are indeed addressed to my first academic mentor, Prof Jacques Holz, who sadly passed away very recently; he gave us an example of the utmost professional engagement and taught us something that has not been impacted by technologic changes, namely rigor, dedication, and respect for our patients with a desire to deliver the best treatment to them. In other words, he has given us a proper aim in everything we do. I am also profoundly grateful to Prof Carel Davidson for his scientific guidance and for having accepted to be my PhD thesis supervisor. He is one of the most visionary and ingenious researchers I have ever met; he brought to adhesive dentistry totally innovative thinking and concepts from his previous professional activity as an airline industry engineer. After all, it might be because he wasn't a dentist that he was so brilliant!... Thank you to both of these men who guided me along my professional and academic paths. I would also like to express my gratitude to Prof Ivo Krejci, head of the department of Cariology and Endodontics at the University of Geneva, who took over its direction after Prof Holz's retirement. He is not only an exceptional and recognized academic leader, but as a member of his team, I had the privilege to receive his continuous support and guidance in many of my scientific and educational projects. Last but not least, I want to express my sincere gratefulness to my Bis-GMA brother, Dr Roberto Spreafico, for having shared many dental dreams and for accompanying me on countless projects and courses around the globe. I was blessed to meet him.

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foreword

I met Didier in the early 1980s when both of us were young university assistants. He started his impressive career in the French part of Switzerland at the University of Geneva; I was at that time in the German part of Switzerland at the University of Zurich. Already, Didier was a highly charismatic person, and I was immediately fascinated by his extraordinary gift for the highest quality esthetic dentistry. We became friends and colleagues, and I have always admired Didier's outstanding clinical skills and his never-ending passion for our profession.

As time went by, Didier became a world-renowned leader and a highly competent and experienced teacher in the field of adhesive esthetic dentistry. When I was appointed at the University of Geneva, I was extremely happy that Didier agreed to continue to working in my division and to dedicate an important part of his time to university teaching and research. Since then, we have worked together side by side, and he has contributed in a very important way to the clinical

education of our pregraduate and postgraduate students, as well as to the rich research output of our division.

Didier is not only a gifted clinician. He is also a highly skilled author of several books and numerous scientific publications and clinically oriented articles, many of which quickly became essential references in the field. However, I consider the present book the culmination of his splendid professional career and a masterpiece of dental art and science. It features the highest quality clinical documentations and besides being esthetically overwhelming, it is a comprehensive source of the latest evidence-based procedures in the field of the restorative treatment of noncarious loss of hard dental tissue. It is a milestone in adhesive esthetic dentistry and I am sure that it will remain for many years an outstanding source of knowledge and inspiration for all colleagues who aim to provide the best and most modern treatments to their patients.

Prof Dr Ivo Krejci (Head of the Department of Cariology and Endodontics, University of Geneva)

Introduction

Already more than a decade ago, Bardsley (2008) concluded in his review that “tooth wear is considered an ever-increasing pathology.” One could argue it is nothing else than the consequence of a progressive decrease of the other main pathologies, namely carious and periodontal diseases; while this incidence drop is a fact in so-called “developed countries”, two theories affront each other in regard to a possible true increase in erosive and attrition pathologies. One suggests that our attention and actions were fully focused on pockets and decays, then “ignoring” tooth wear, while the other presents our modern “more stressful” lifestyle as the main trigger for this incidence outbreak. Sorting here the true from the false is a useless exercise, but it is a fact that no one can practice dentistry today without paying some attention to tooth wear, its diagnosis, its prognosis, and its many implications on the long-term dental health of our patients in all age categories. Tooth wear is a multifactorial pathology with various degrees of intensity, fluctuating over time. This multifaceted, complex pathology doesn’t make it easy to obtain a precise etiologic diagnosis and subsequently clear treatment plan in all cases. Complexity relates in particular to combined erosion and attrition phenomenon (probably the majority of cases), and it is therefore important to give us time to observe and analyze, one by one, the various conditions that did and do act synergistically to induce hard tissue loss. Unfortunately, too many clinicians with sizeable social media audiences have promoted a “monotherapy” for tooth wear with either full-mouth CAD/CAM or indirect high-strength ceramic restorations, in the absence of any

evidence-based treatment rationale. Rushing treatments (especially with an invasive and costly indirect approach) and simplifying the nature of tooth wear unfortunately is a sure way to fail globally to prevent progression and suitably treat tooth wear, following proper biomechanical and conservative principles.

Additionally, a common denominator behind the majority of severe tooth wear cases is likely a failure of the dental team to install early enough preventive or interceptive measures. Again, because the restorative approach based on indirect/CAD/CAM techniques was so frequently and wrongly proposed as the only option, a large number of patients renounced or delayed their treatment simply because of its cost, letting wear pathology evolve until no other solution became feasible. This is a very critical reality, and this publication aims to present the conservative, cost-effective, and evidence-based alternatives to “classical prosthodontics” to stabilize and treat tooth wear.

This publication will ignore dogmas and short-sighted statements or concepts that poorly fit with the individual nature of function/occlusion and the way each patient responds to various pathologies, risk factors, and our treatments. We’ll also try to apply wisely the concept of “evidence-based dentistry,” which in its early days strongly opposed the drive and motto of clinical opinion leaders, namely “I do it and it works”! In fact, common sense brought things into a much better perspective today!

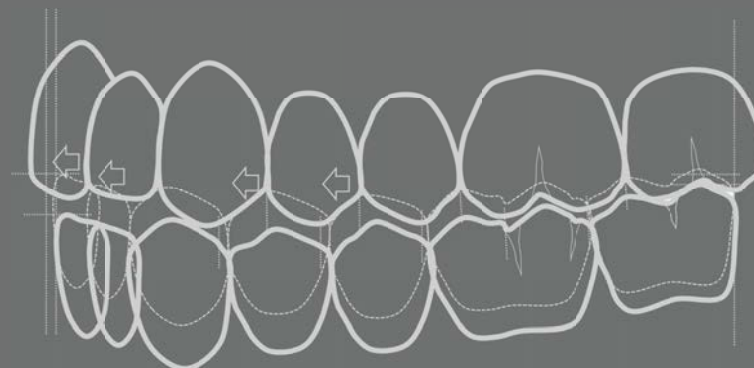
Would research be of quality (in vivo trials succeed in minimizing the effect of confounding factors and in vitro

studies apply protocols relevant enough to clinical reality), a practitioner's daily observations and treatment performance should largely be supported by research. If not, it simply means that for a given treatment, our specific environment (type of patient and the techniques/materials used) impacts its outcome differently; in other words, the "scientific evidence" is valid only for a given environment. In fact, results of clinical trials usually vary when reporting the performance of a treatment in different environments, such as private offices or social or university clinics. Then, the evidence-based dentistry has strict limits, and common sense and detailed observation have been the central thread of this work and the recommendations given thereafter.

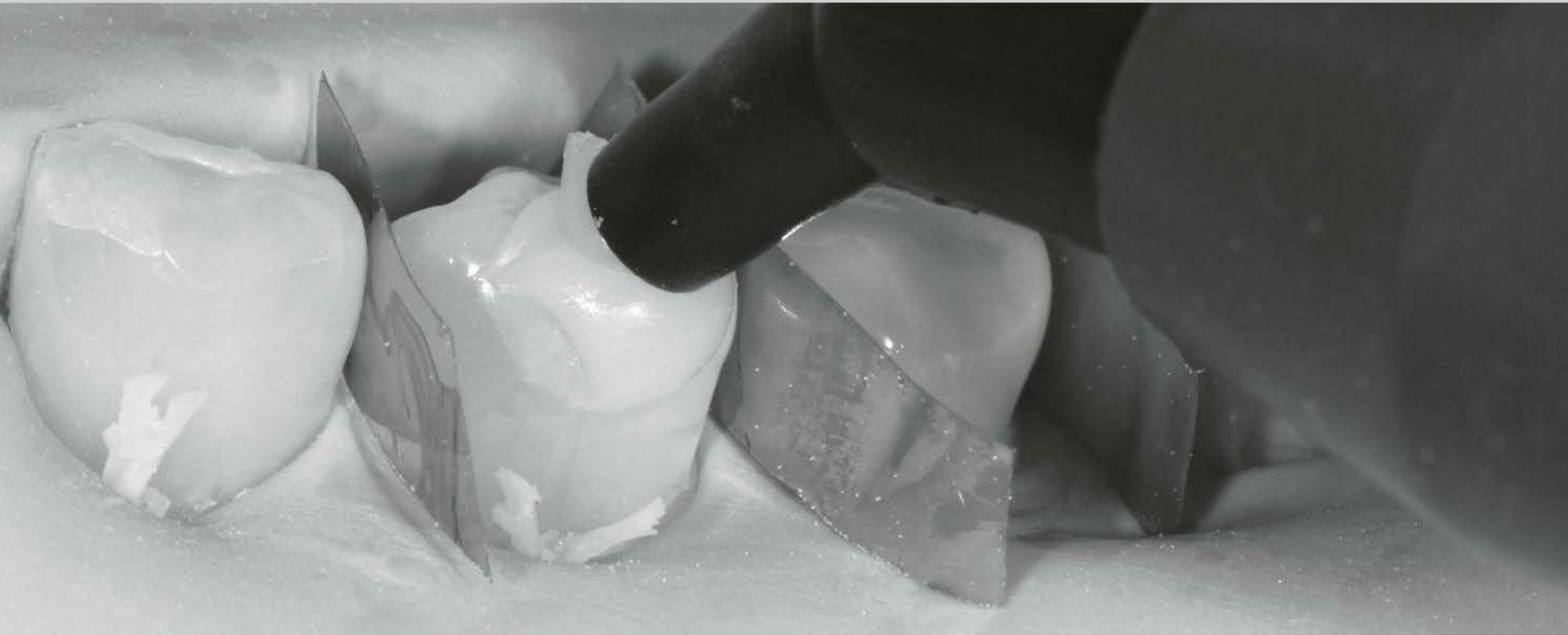
This publication doesn't pretend to be a textbook but rather a review of clinical procedures that can help the practitioner find a proper protocol and select a suitable material to more selectively treat the various forms of tooth wear. It is based on more than 20 years of interest in this (apparently) ever-increasing pathology. In a certain sense, it is a "cook-book" with a main focus on preventing tooth wear progression, using in proper time noninvasive and affordable procedures, keeping in mind that comprehending this pathology will be a lifelong endeavor. If we miss the opportunity to intervene early enough, you will also find the recipes to properly use indirect and CAD/CAM bonded restorations.

We wish you an informative and stimulating reading experience.

Didier Dietschi & the author's team



Cases directory of



Direct protocols for posterior restorations

Free-hand



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Chapter 4: pages 298–309



Chapter 8: 628–645



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Chapter 5: pages 386–401



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