

Tooth Whitening in Esthetic Dentistry

Principles and Techniques

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Foreword

The publication of the English translation of *Tooth Whitening in Esthetic Dentistry* by the esteemed authors, Drs. Seok-Hoon Ko and So-Ran Kwon, is a major contribution to the dental literature. I have been so proud of the great progress that we have seen in esthetic dentistry in Korea, and so much of it is due to this dynamic husband and wife duo. Dr. So-Ran Kwon has become one of the most knowledgeable authorities on tooth whitening, as she has both researched and lectured considerably on the topic.

In most every study that we have seen regarding patient requests for dental services, tooth whitening is at the top of the list. And of tooth whitening options, certainly bleaching is the most conservative and economical treatment available. Of course, when bleaching isn't effective, composite resin bonding, porcelain laminates, or all-ceramic crowns are excellent alternatives. But the first and most conservative approach to any treatment plan should always be to consider whether bleaching can serve as the ideal treatment option - or at least aid in the whitening of adjacent or opposing teeth when laminates, bonding or crowns are selected.

This book dissects the subject quite well and gives both young and seasoned dentists alike an excellent approach to the topic. It deals not only with various whitening techniques, but also with the occurrence of sensitivity in certain situations and the maintenance required to keep the teeth as light as possible. Overall, this is a particularly well thought-out and beautifully illustrated text.

Another valuable inclusion in the book is the "Tooth Whitening Communication Tool," which consists of before and after bleaching results. It is a great demonstration tool, and patients will welcome the realistic pictures showing accurate bleaching shade changes in response to different types of tooth stains.

I compliment Drs. Seok-Hoon Ko and So-Ran Kwon on their ongoing research and clinical efforts, as well as on the tremendous amount of time they took to complete this textbook.

The international profession is indebted to you.

Ronald E. Goldstein, DDS

Preface

'Esthetic dentistry starts with tooth whitening'.

Fulfilling the desire and demand to have a bright and white smile is the ultimate goal. A bright smile not only presents a healthy and beautiful impression, but also increases one's interest in oral hygiene care and health, allowing a person to have more social self-confidence. Being able to make contributions to such a smile is one of the most precious privileges of the dentist.

This book is intended as a guideline for future and practicing dentists as well as dental hygienists. It demonstrates the wide scope of tooth whitening procedures and the challenges they pose with a multitude of clinical photographs and illustrations, emphasizing the efficacy and limitations of whitening treatments in various clinical situations.

The first chapter starts with a systematic approach to proper diagnosis and treatment planning, both of which are essential for successful whitening treatment. Chapters 2, 3 and 4 describe the basic principles and step-by-step procedures of non-vital tooth whitening, home whitening and power whitening and propose new and specific solutions for more efficient treatment. Chapters 5, 6 and 7 demonstrate how to combine tooth whitening with other treatment modalities, such as microabrasion, gingival bleaching and esthetic bonded restorations, to achieve ultimate esthetics in our daily practice. Specific safety and sensitivity issues have been addressed to help dentists prevent and overcome problems that can be encountered in certain situations. Recommendations on how to maintain the whitened tooth color after completion of treatment to ensure long-lasting patient satisfaction are also made. The last chapter, a valuable contribution from Dr. Linda H. Greenwall on the history of tooth whitening, provides a concise timetable of important events that have contributed to the advancement of tooth whitening. Finally, the supplementary volume provides before and after pictures, arranged according to different clinical situations, that show the dentist and the patient what can be expected after the treatment. It is one of the highlights of this book!

Tooth whitening is indeed a very conservative and economical treatment that can benefit both the patient and the dentist. It is our hope that this book will encourage the readers to incorporate tooth whitening more actively in daily practice, giving more patients a whiter and brighter smile.

Acknowledgements

It was a pleasure to write as a husband and wife team. However, our book would not exist without support and encouragement from many individuals, to whom we would like to express our highest appreciation:

Sincere thanks to our co-author, Dr. Linda H. Greenwall, for contributing a precious chapter on the History of Tooth Whitening and for reviewing the English translation. Her constant advice and support was invaluable.

Thanks, also to Dr. Ronald Goldstein for laying the foundation for Tooth Whitening and Esthetic Dentistry for all of us to grow roots on. He is a true pioneer and will be our precious mentor eternally. We are grateful to him, in particular, for the foreword and for other contributions.

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We would also like to express our gratitude to:

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– Our colleagues, Dr. Dan Fischer, Mr. Dirk Jeffs, Dr. Ryuichi Kondo, Dr. Robert Dharma, Dr. Baldwin Marchack and Mr. Ken Beacham, who gave us their support and the chance to lecture in the field of Tooth Whitening and gave us insight into many other fields.

– The leaders of the International Federation of Esthetic Dentistry, whose friendship is of finest value to us: Drs. Takao Maruyama, Ronald Goldstein, Philippe Gallon, Peter Tay, Dan Nathanson, Jose Moura, Rafi Romano, Wynn Okuda and Akira Senda.

– Dr. Yoon Lee for performing the research on the sealed bleaching technique and for her support in initiating the book.

– Our dental staff, who quietly stood beside us all the way, giving us their unswerving assistance: Mr. Sang Woo Lee, Ms. Hae Sun Jung, Ms. Ji Young Oh.

– Our secretary, Ms. Yoo-Min Kim, without whom it would have been impossible to complete this book.

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Last but not least, our love to our parents, Yong Hyun Kwon & Che Sook Chang and Ahn-Soo Ko & Sun-Ok Na, who took us as we are and gave us their unconditional love and attention.

This book is dedicated to our precious children, Youngwon-Julia and Youngmin-Joseph. The best is for us to say that we thank God for them, the most beautiful gifts in our lives.

Finally, we sincerely thank God for His guidance and blessings in our life.

Dr. So-Ran Kwon (President, Korean Bleaching Society)

Dr. Seok-Hoon Ko (Past-President, International Federation of Esthetic Dentistry)

chapter

1

Diagnosis and treatment planning



Light-activated bleaching of non-vital teeth

CP irradiation method (contribution from Hisashi Hisamitsu)

A 10% carbamide peroxide gel is placed on the labial surface and into the access cavity of the non-vital tooth and light activated from the buccal and lingual side (Fig. 2-15). This technique is termed the “CP irradiation method” or “Hisamitsu method” after its developer. The advantage of this technique is that the discoloration of the non-vital tooth improves on the day of treatment, dispensing with the need for multiple visits (Figs. 2-16a and b). The mechanism of shade improvement through light activation is unclear. It has been suggested that the increase in temperature due to irradiation catalyzes the breakdown into hydrogen peroxide and permeation into the dentin.

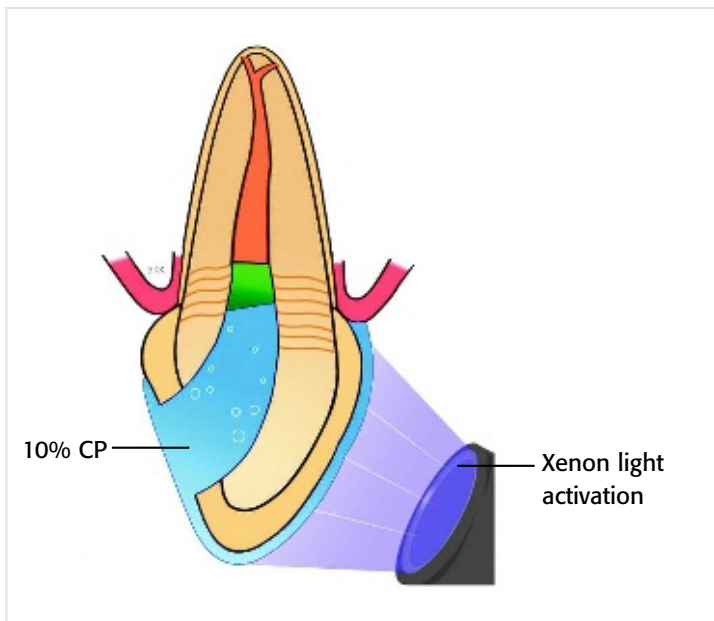


Fig. 2-15 CP irradiation method.

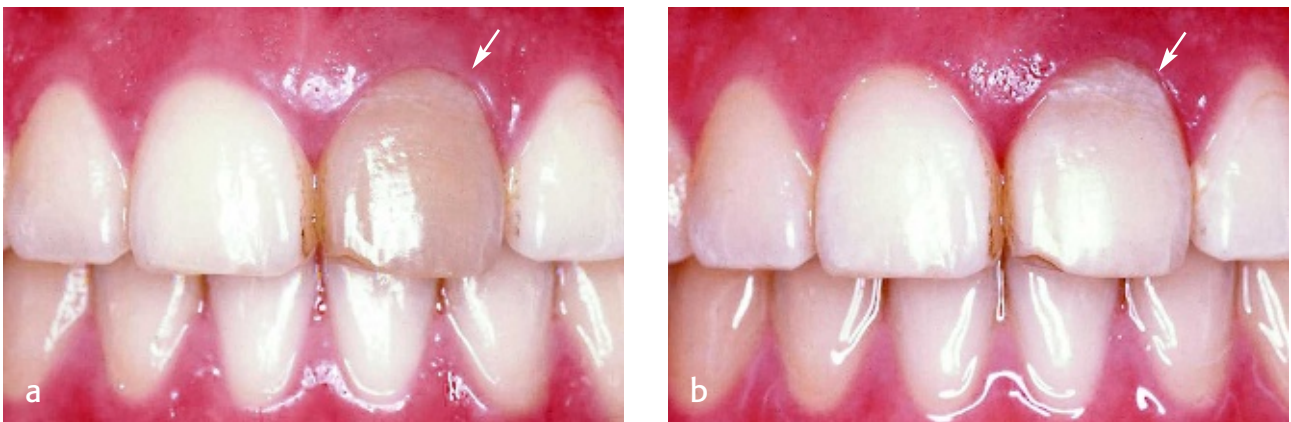


Fig. 2-16 Discoloration of the upper left central incisor.

- a. Before CP irradiation.
- b. After CP irradiation (same day).

Light activation with power whitening gels

Discolored abutment teeth or discolored roots can be a dilemma to the esthetic dentist. In these delicate situations, a resin barrier can be placed around the non-vital abutment tooth followed by application of a power whitening gel, which is then activated with a light source (Figs. 2-17 and 2-18).



Fig. 2-17 Power whitening gel with light activation.

- a. Power whitening gel is placed on the discolored abutment tooth after proper resin barrier placement.
- b. Palatal view.



Fig. 2-18 Discoloration of abutment tooth.

- a. Dark abutment tooth with a metal post and core.
- b. After proper isolation of the gingiva, a highly concentrated bleaching gel is placed onto the tooth and activated with a light source.

••• Non-vital bleaching techniques include the walking bleach technique, thermocatalytic bleaching, inside-outside bleaching, and light-activated bleaching methods. If the protocols are followed properly, all of these techniques provide safe and effective bleaching results with minimal tooth reduction.