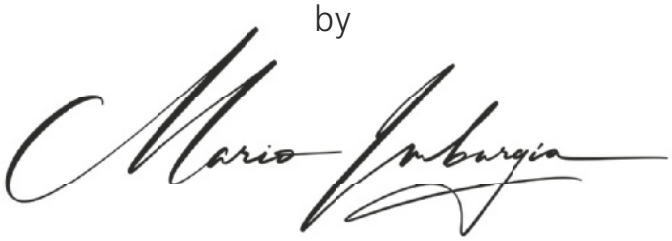
Resmiling

Restyling smiles with vertical veneers

by



MARIO IMBURGIA

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A CIP record for this book is available from the British Library.
ISBN 978-1-78698-148-6

QUINTESSENCE PUBLISHING DEUTSCHLAND

Quintessenz Verlags-GmbH
Ifenpfad 2–4, 12107 Berlin
Germany
www.quintessence-publishing.com

Quintessence Publishing Co Ltd
Grafton Road, New Malden, Surrey KT3 3AB
United Kingdom
www.quintessence-publishing.com

Editing, layout, and reproduction: Quintessence International, France

ISBN 978-1-78698-148-6
Printed and bound in Croatia

The master has failed more times
than the beginner has tried

Stephen McCranie

Dedicated to Laura, Giuseppe and Maria Laura

From the author

For me, this book represents both a guide and a summary of intense clinical and research activity carried out over the last few years. I have tried to condense the concepts into a few simple words with the reader's time a primary concern, just as I have always considered my own.

Many of the concepts expressed within this book might be revolutionary and in some cases even disruptive when compared to a traditionally accepted classical approach. However, the principles that have driven me to change some of the classical rules I consider the basic pillars of our profession can be condensed as 'for the good of the patient in an ethical and highly efficient clinical practice'.

This book is the result not only of my clinical work, but also of the encounters and relationships I have been fortunate enough to have over the years with extraordinary professionals and unique friends. Every one of them with their advice, their example, and the trust they placed in me have contributed significantly to my personal and professional development.

Gratitude is one of the noblest sentiments, especially when exercised among true friends, so I have asked each of them to write a short preface, both because of the opportunities they have given me and because they represent excellence, each in the various facets of our complex profession. Without having met them or knowing their work and field of research, I would never have been able to write this book.

I thank Prof Michele Cassetta for his important contribution to the chapter on the first visit; his teachings encapsulate the best in patient approach.

I thank Massimo Galletti and Federica Semplici for the extraordinary quality of orthodontic therapies; their contribution to the treatment of multidisciplinary cases was fundamental.

I thank the people with whom I still share my daily routine, that is, my assistants, Patrizia, Dina, Karina, Rosi, Isabella, Chiara, and Santi, who have shared with me endless hours of work without ever looking at the clock, always driven by the same curiosity to see the end result and the smile of our patients.

All this work would not have been possible without the enormous contribution of laboratory technicians Fabrizio and Nicola, who helped with some of the most beautiful cases I have ever done in my life, and the Dlab guys, in particular Pietro, Vlad, Lorenzo, Barbara, and Alessandro, with whom I have shared intense days and nights of work to try to improve the result obtainable with digital dentistry. Together we did a good job.

Giuseppe and Massimo, with whom I started this journey many years ago; together we rebuilt many smiles.

A special thank you goes to my friend and partner Dr Elio Marino. His behavior and example has made me a better clinician, always open to new things, in search of that 'quantum leap'.

Mario Imburgia

Foreword

Drs Andrea and Alessandro Agnini

Digital dentistry is all about traditional knowledge

This sentence best represents what my dear friend Mario Imburgia embodies today in the panorama of world dentistry and what he presents to us in this volume: the perfect combination of the knowledge of prosthetic fundamentals and the ability to exploit technological innovations and modern metal-free materials for the benefit of patients (through patient-centered protocols).

What we are experiencing is indeed a pivotal change, where the continuous improvement of intraoral scanning software is combined with high-performance materials. However, nothing would be possible without the know-how inherent in the knowledge of tradition and clinico-technical experience.

The main challenges we face when approaching modern dentistry are to implement technology in our daily routine, to prepare our staff for change, and to change our mindset.

It is very appealing to talk about digital dentistry, but optimizing a digital dental practice to make it more profitable is something quite different, the main objective being to offer better services and dental care to patients in an efficient and effective manner. This is what Mario succeeds in explaining to us in a precise, detailed, yet simple manner through the clinical and technical protocols presented in this volume, which, if exploited to the full, will raise the quality of care offered to our patients, who in turn will be able to better understand the real value of our services.

These are just some of the reasons why we believe that this book is a must-have for all practitioners looking for accurate and effective digital solutions in esthetic dentistry to the problems of daily clinical routine, for those who are eager to stay ahead of the game and differentiate themselves, and for those who want their patients to experience all the advantages that technology offers us today to their mutual satisfaction.

It is a great honor for us to write this preface as we follow Mario's work very closely. He is first and foremost a great friend, but also a talented clinician and passionate educator, who has made excellence and passion for his work his hallmarks.

Twelve years after the publication, and success, of his first volume *iPad in Dentistry: Digital Communication for the Patient and for the Team*, Mario Imburgia gives us another piece of the future for our profession that, if executed as he masterfully teaches us in this magnificent volume, will allow us, once again, to follow him toward the new horizons of esthetic digital dentistry.

Alessandro and Andrea Agnini

Foreword

Dr Christian Coachman

This book brings together two of the most relevant topics in restorative dentistry today: how to use technology smartly and how to prepare teeth properly.

Mario is an expert on both and that is the reason why it is an honor for me to write this preface. I have known Mario for many years and I has always been impressed by his drive and curiosity toward modern concepts in dentistry. He is definitely an early adopter and expert in digital dentistry, besides being a very skilled clinician focused on minimally invasive esthetic dentistry.

Conservative and biologic approaches, longevity and maintenance are key aspects of modern and successful dentistry; the concept of vertical preparations has all to do with these key principles.

Further understanding of how, why, and when to use this type of preparation is a very smart investment; knowing how to leverage technology to empower this approach is a very smart thing to do. For all these reasons, this book is a must-read.

Congratulations on acquiring it!

Enjoy the beautiful cases, scientifically based principles, pragmatic suggestions, and intelligent take-home messages.

Christian Coachman

Foreword

Prof Carlo Ercoli
Professor of Prosthodontics, Periodontics, and Implant Surgery.
He is Chairman of the Prosthodontic Department at the University of Rochester, Eastman Institute for Oral Health, where he also serves as the Director for the Center of Excellence for Digital Dentistry.

A picture is worth a thousand words!

This old saying must have been in Prof Mario Imburgia's mind as he conceived, designed, wrote, and illustrated this remarkable book. His bold departure from a classical book design, filled with never-ending text, often lacking contemporary and clinically relevant examples, is proof of his ability to innovate, not only as a dentist, but also as an author.

His work challenges all of us to recognize that the ultimate audience for our teaching is the practicing clinician. From this standpoint, this book is a must-read for those dentists, generalists and specialists alike, who want to deliver superior esthetic work to their patients.

The innovative design of this book is clearly displayed not only in its superior iconographic documentation, but also in the way that clinically relevant scenarios are identified, described, and addressed with the VertiCAD approach.

Demystifying the often-repeated but poorly evidenced fears of overcontouring in fixed restorations allows Prof Imburgia to create synergies among vertical tooth preparation designs, a judicious, yet bold use of technology, and the esthetic and functional performance of new all-ceramic materials. These synergies are evident and simply explained to the reader and are complemented with 'tips' or what I would most properly define as 'pearls of practice'.

These pearls are the fruits of years of preparatory work, incessant research for clinical excellence, unbiased evaluation of current techniques and materials, and early adoption of promising technology.

Prof Imburgia's hard work and visionary outlook permeates this book and is a gift to everyone who has had the fortune to meet him and call him a friend.

Carlo Ercoli

Foreword

Dr Stefen Koubi

Over the last 10 years, I have had the chance to meet Mario Imburgia, a phenomenon. During this period, I was able to spend time with him, discovered the person, always appreciated his lectures, and carefully read his articles.

It is possible to be a great dentist through hard work; however, being an appreciated, valued, and elegant person in the field of dentistry is a bit more complicated.

Mario is special in this regard. He is an outstanding clinician and very accessible. He is humble even if he practices dentistry at the highest level. He is an honest clinician, a pioneer in esthetic and digital dentistry, a recognized speaker worldwide, and has been invited to the most prestigious academies.

Having the honor to write these lines for this volume is special.

This book fits exactly within new trends, which are defined with much clinical content, associated text, and much practical information.

I am very impressed by the knowledge implemented here, using three mains pillars that underpin the basis of contemporary dentistry: a new era of preparation with an outstanding clinical outcome; a digital workflow with striking monolithic restorations that can compete with the best layered restorations; and adhesive restorations that can be used to ensure biocompatibility by reinforcing tooth integrity.

With this book, Mario shares an incredible number of tips so useful for the clinician.

Besides this, his dedication and contribution to esthetic dentistry has to be appreciated by the dental community.

Thanks to this, dentistry is ready to move forward and open a new chapter.

I feel blessed to know this incredible clinician.

BRAVO maestro!
Enjoy the book.

Dr Stefen Koubi

Foreword

Dr Elio Marino

Founder and CEO of ADCO Holding

I have known Mario since he was 10 and I have always had positive vibes when staying with him. Once I was at his father ranch in Sicily, in the stable, and Mario spoke to me with a genuine and strong enthusiasm about becoming a knight. I asked, a horseman?

He looked at me firmly and answered, 'No … a knight …'. I was touched by his child-like firm belief and determination in his vision for the future.

I still remember this strong belief in his vision … which was inspiring. Years passed by and Mario, as he predicted, became a 'knight' competing in very important riding contests.

I continued to meet Mario occasionally once he became a dentist. I met him lecturing and I was surprised to find the same committed vision for excellence and innovation in dentistry I saw when he was a child. I asked him to come with me to Milan to work together and a new journey started.

The past 10 years for Mario and I have been the most exciting times in the dental profession and an experience out of our comfort zone. We shared the same disruptive vision when chasing innovation, predictability, speed, and excellence in all dental procedures, in digital dentistry, laboratory work, and the art of ceramics, always driven and focused on people's dreams. From daily lessons, Mario brought his vision to reality.

Every day, new experiences widened our horizons and built a greater understanding in the art of veneering teeth; new discoveries only made Mario more curious to explore.

By doing this work, aided by passion and love for the work, Mario created a recipe for the most spectacular esthetic contemporary dentistry.

In this book, different and complimentary skills are blended to shape the road ahead and create a dentistry of beauty that takes inspiration from the art of ceramics and is digitally re-engineered to achieve predictable yet outstanding results.

The techniques and procedures are clearly described to create useful guidelines that dentists can use to shape teeth in a minimally invasive way with incomparable speed of treatment, where esthetics and function are always proven beforehand using mathematical predictability and repeatability.

The patient's motivation is enhanced using a shared approach, where they are the painter of their own portrait, thus being pleasantly surprised during treatment from beginning to end.

The large pages with beautiful images of patient's smiles are a narrow keyhole through which one can see the happiness caused by life-changing treatments and the feeling of joy raised in patients' hearts.

The outcome of Mario's tireless and never-ending work driven by passion and love for innovation and excellence in dentistry is this book.

I learned from him that this is about turning dreams into reality and vision into action.

Mario's vision is about changing people's lives by improving their vision to realize their dreams of how they would like to be.

I now strongly agree that 'All the experts … are experts on what was. There is no expert on what will be. To become an "expert" on the future, vision must replace experience (David Ben-Gurion).' With vision to guide our paths and with ambition that knows no limits, we can always build a brighter future for our patients.

We may not live for hundreds of years but the joy we create in people's hearts has a legacy that will last long after we are gone.

Elio Marino

Foreword

Marcelo Calamita

Feeling deeply happy and honored to write this foreword, I am faced with the challenge of briefly describing what makes this book unique.
First, let us look at the author: Mario Imburgia, an experienced clinician with a solid scientific foundation and extensive training across two pivotal and interrelated domains, that is, prosthodontics and periodontics. Driven by a restless and innovative spirit, Imburgia has produced a book with a comprehensive yet accessible perspective, offering solutions to the commonplace challenges encountered in our day-to-day clinical and laboratory endeavors. With every turn of the page, it is remarkable how the author meticulously shares the knowledge that has been acquired.

Second, the book: this is a didactic and abundantly illustrated text, full of practical hints for solving problems such as dental malposition, diastemas, conoid teeth, color incompatibilities, and mixed cases involving implants, among others. In addition, acknowledging the constant need to reassess and advance the scientific and clinical methodologies underpinning esthetic dentistry, this book stands out for being the first to cover vertical preparations in detail, clinically valuable procedures that are obscure among many dental practitioners.

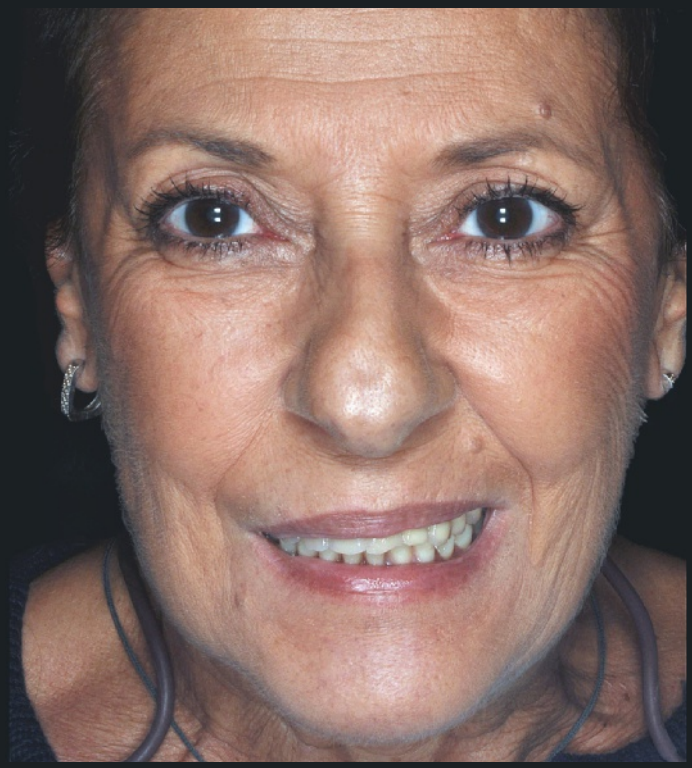
What are they? When should they be used? How are they executed? These questions, along with their advantages and drawbacks, are explored with the requisite depth, dispelling any lingering ambiguity surrounding the subject matter.

Following a practical approach permeated with auxiliary digital tools, the author guides the reader through the workflow, explaining each step in a lucid and accessible manner. Finally, showing concern for an aspect that is often neglected but crucial to the stability of cases—function—Imburgia divides treatments between conformative and reorganizing approaches.

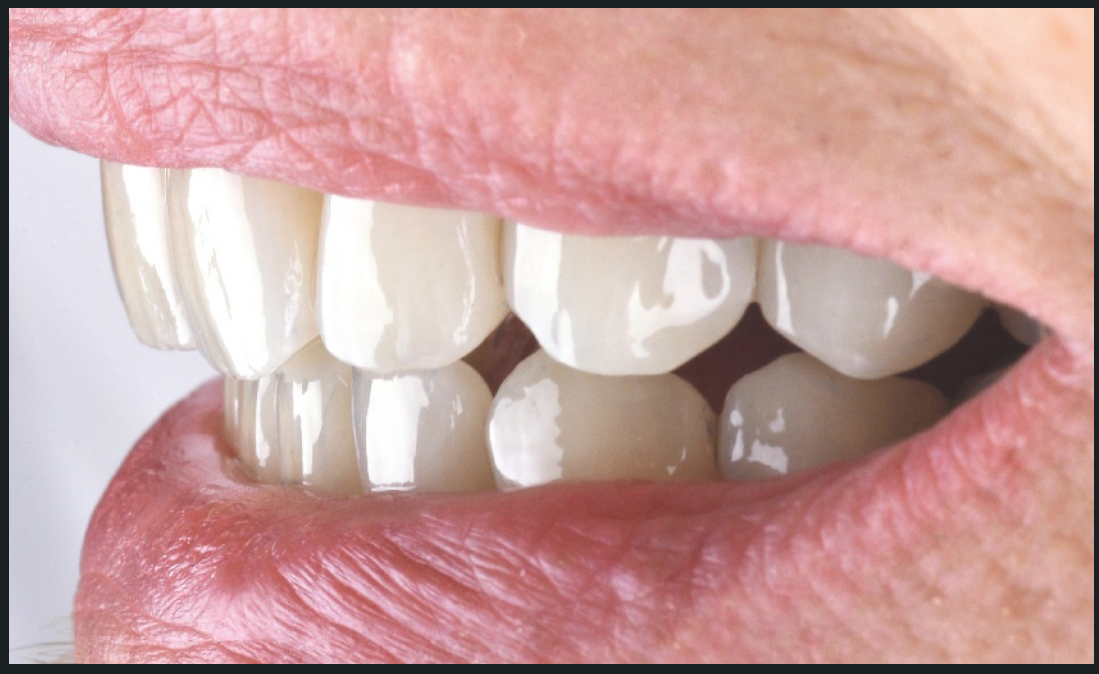
From the very first pages, Mario Imburgia challenges us with a thought-provoking question: why yet another book on veneers? After going through it in its entirety, I can say with conviction that this is not merely a book about veneers. It presents innovative and pragmatic perspectives that encourage us to get out of our comfort zone and pursue excellence in a concrete way, without trying to reinvent the wheel.

I wish you all an enriching and inspiring read.

Marcelo Calamita



A new smile makes people different, in this case we had restored the intra-oral situation only, but had a strong influence also on the posture and position of the lip.



Introduction

The evolution of esthetic dentistry

Esthetic dentistry does not represents a specialty in itself, but is like a 'fil rouge' or a common thread that links several dental specialties. Most of the decision-making in treatment planning is driven by esthetic evaluation and esthetic principles.

Our patients have progressively shifted toward a demand for esthetic and cosmetic dentistry, influenced by social factors and by stereotypes continuously presented by the media.

From a scientific point of view, there is strong evidence that the appearance of a person's face and their teeth has a profound impact on the perception and judgment by others; a beautiful smile is often associated with popularity, intelligence, or high social status, whereas a poor smile is associated with negative characteristics and can ultimately influence the well-being and health of our patients from a psychologic point of view.

Although there is evidence of the importance of an attractive smile, the need for esthetic and cosmetic treatments must be assessed extremely cautiously because of the ethical implications.

A smile with which the patient does not feel comfortable can lead to a lip deformation habit to hide it. On the other hand, esthetic and functional restorations have the power to restore the 'joy of smiling' and enjoying life.

Unnecessary or improper treatments that are excessively invasive can have devastating consequences on the oral health and general well-being of the patient. The clinician should always keep in mind that all retreatments will be more invasive compared with the first intervention, especially if the initial intervention was also invasive.

Moreover, retreatment is often more expensive and less predictable than the initial intervention.

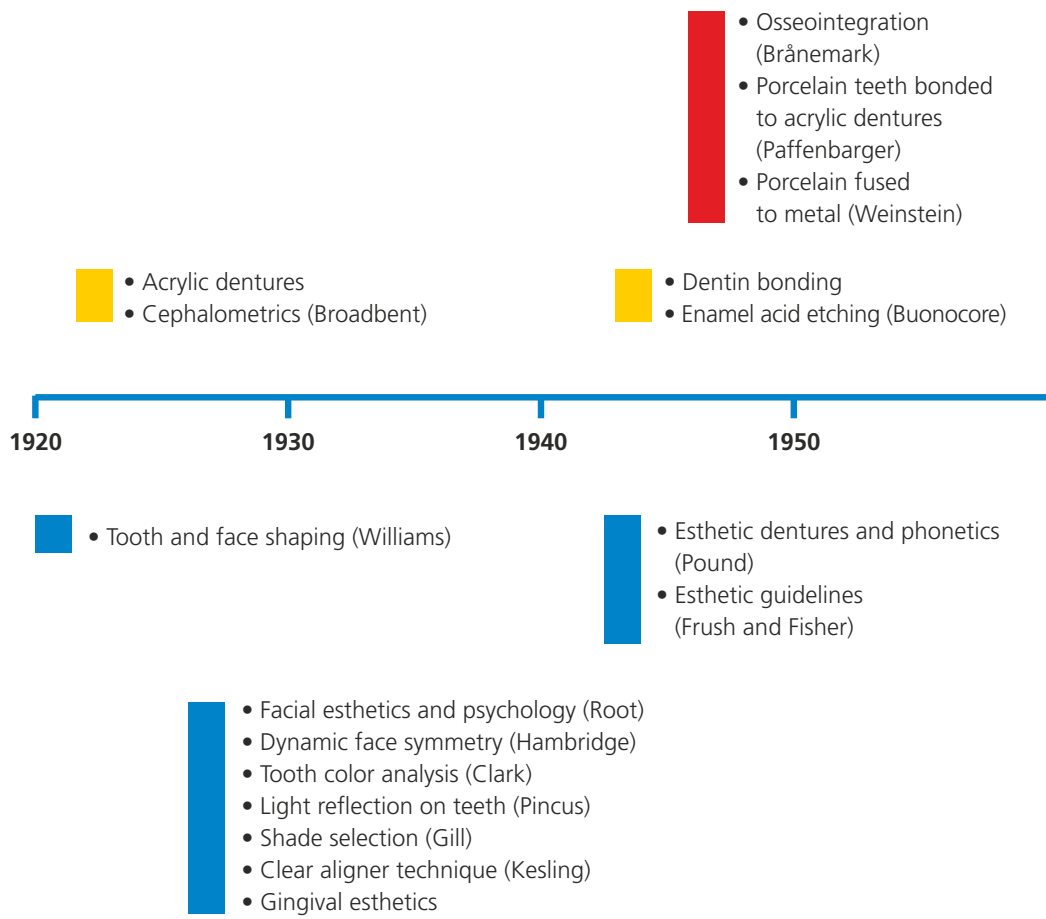
The evolution of the basic concepts of esthetic dentistry is followed by advancements in dental disciplines and the development of materials.

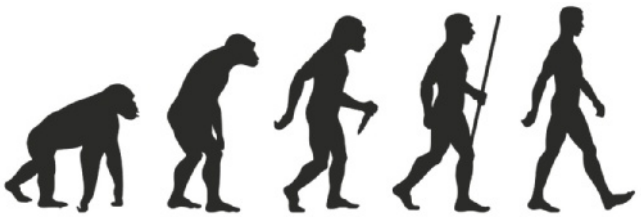
Contemporary dentistry hosts technologies that belongs to digital and esthetic dentistry:
- Yellow: materials
- Red: surgical procedures
- Blue: esthetic dentistry
- Pink: contemporary tools

The need to be less invasive and more predictable is fully satisfied by technologies and new workflows that perfectly integrate principles and knowledge.

Modern esthetic rehabilitation is based on the following assumptions: complete planning of the case using digital technologies; a new smile design according to the facial parameters; and finally, the possibility of esthetic rehabilitation through minimally invasive treatments.
So, mastering the principles and processes of contemporary dentistry (intraoral scanners, face scanners, digital smile design, three-dimensional (3D) esthetic analysis, computer-aided design (CAD), minimal preparation techniques) should be mandatory for the modern dentist.

The evolution of esthetic dentistry





- Laboratory CAD/CAM
- Aluminum oxide ceramics
- Zirconium dioxide ceramics
- Lithium silicate ceramics
- Ceramic implants
- 3D printing in dentistry
- Tooth whitening strips (Sagel)

- Chairside CAD/computer-assisted manufacture (CAM) (Duret)
- Intraoral scanning
- Commercial tooth whitening/home bleaching
- Ceramic acid etching
- Laminate veneers
- Resin-bonded fixed prostheses

- Aluminous porcelain jacket crown (McLean)
- Bisphenol A-glycidyl methacrylate resin (Bowen)

- Monolithic high-translucent zirconia

1960 1970 1980 1990 2000 2010 2020

- Surgically facilitated orthodontic treatment
- Cone-beam computer tomography

- Expansion in orthodontics (Haas)
- Soft tissue grafts
- Connective tissue grafts
- Guided tissue and bone regeneration

- Midline (Miller)
- Smile line (Tjan)
- Golden proportion (Levin)
- Soft and hard tissue esthetics (Abrams)

Contemporary dentistry

- Intraoral scanners
- Face scanners
- Digital smile design (Coachman)
- 3D esthetic analyses (Horvath)
- Esthetic design smartphone apps
- CAD design
- Minimal preparation techniques

- Spectrophotometry for teeth (Miyagawa)

- Digital smile analysis (Ackermann)

Why another book on veneers?

The protocols for ceramic veneers remain a challenge for the clinician.
What makes this treatment highly stressful is due to several factors.
This book is aimed at disrupting classical concepts and false myths in esthetic treatments using technology and new advances in digital dentistry.

False myths in esthetic treatment

1. *Projecting a smile properly is difficult and unpredictable.*

FALSE. Today we have all the knowledge and tools to analyze and correctly redesign a new smile with the full agreement of the patient.

2. *Making a great mock-up requires hours of work …*
   and I don't know if the patient will accept this.

FALSE. The workflow presented in this book explains how to get a complete documentation in just a few minutes, design a perfect patient-centered mock-up, and avoid intraoral adjustments. The flow is so clear and simple that the economic investment in the mock-up will no longer be significant.

3. *Veneers may have complications such as de-cementation or chipping …*
   I don't want to make my life more complicated.

FALSE. The Imburgia's method is the most predictable protocol ever published. The success rate is 99.99% and it was proved in scientific papers and observations (download the scientific paper-QR Code).

4. *My patients do not want to have their teeth filed for veneers.*

FALSE. The point is to adopt a technique that is really minimally invasive, which allows us to preserve most of the enamel, and does not require anesthesia … when communicated properly to patients, the result will be a significant increase of patients treated using veneers in your practice. The Imburgia's method presents an original technique to make this happen!

5. *It is necessary to work with a skilled technician for clinical success.*

FALSE. Do not get me wrong … we should work with a skilled technician for clinical success; however, today it is much easier to perform complex cases because of increasingly significant standards thanks to the digitalization of procedures.

These are just a few examples of false myths that the Imburgia's method disrupts for the mutual benefit of clinicians and patients.

Most of times a new smile is the start for a new life.

This book shows a workflow based on the integration of esthetic restoration in the context of the patient's face through the use of completely digital methods, but above all by using minimally invasive techniques that can preserve the dental substance.
This method is reproducible, teachable, innovative, scalable, and close to being a start-up! Like managing a small 'spin-off' of your practice, implementing these concepts provides a better quality and quantity of patient care!

What patients want

Every day, patients ask us to improve the esthetics of their smile, but often we are faced with doubts and uncertainties that can make this pathway a dead end:

- I want to improve the esthetics, but I don't know what I don't like...
- I don't want to have filed teeth because they weaken...
- Can I see the final result first?
- Can you assure me that it will end up like this?

If these are the questions you repeatedly hear from your patients, you will find the answers in this book!

- How to carefully plan esthetic rehabilitation.
- How to achieve simple, fast, but effective and complete data collection.
- Discover the patient's real expectations and integrate them into the treatment plan.
- How to rehabilitate the patient by preparing their teeth as low as possible.
- Adopt a predictable and repeatable workflow every day with a huge benefit for you and your clinic.

The first visit in dentistry and the proposal of esthetic treatments

Author: Prof Dr Michele Cassetta

Pleasures, joys, laughter, jokes, as well as pain and sorrow arise from the brain, only from the brain.
(Hippocrates)

During the first visit, in just a few minutes, the dentist and the patient assess each other on the basis of evaluation criteria that are often subconscious. This judgment will affect the entire relationship.
Communication is a real moment of care, during which the emotional and rational parts of the brain, automatic behaviors, recurring habits, memories of previous experiences, and personal beliefs come into play.
The interpersonal relationship is an extremely dynamic event, which changes according to the communicators and the context; it is important to know how to choose, from time to time, which is the most effective behavior, among the many possible ones.
Each dental treatment plan must be presented in a different way, according to its nature and the individual patient: proposing an esthetic treatment is not like proposing an implant–prosthetic or surgical one because it addresses different types of patients, who are motivated by different needs.
Therefore, it is essential to be able to collect quality information about the patient, understand their expectations, motivate them in a personalized way, explain things in a clear and easy-to-remember way, and check their level of understanding.
This competence can lead to an increase in the acceptance of treatment plans, a greater adherence to therapeutic paths, a decrease in medico-legal disputes, and lower tension related to dental services. These are all aspects that improve the relationship with the patient and the quality of the professional and personal life of each dentist.

Premises

The moment of communication is a real act of care

During the first visit, in the first few minutes of the clinician–patient relationship, the conditions are created for the birth of a healthy therapeutic alliance. The human brain has developed over hundreds of thousands of years with the aim of surviving; therefore, in some situations, such as those related to health, it is particularly receptive to grasping and judging every element needed to reach a quick judgment: the warmth of the welcome, the first words, the looks and smiles, the environment of the office, the feeling of authority transmitted by the dentist, are all aspects that are grasped and judged often at a subconscious level.
The dentist must be aware that communication is an act of care and must be managed with preparation and a sense of responsibility.

The communicator is responsible for the effect of the communication

Communication is not always the same and two communicators are not always on the same level. There are interactions that, by their nature, are symmetrical, that is, those placing people on the same level. Other interactions are complementary, that is, they place someone in the position to be able to take responsibility for the effects that the messages produce. Although a paternalistic model of relationship is abandoned in favor of greater reciprocity, the relationship between dentist and patient is by nature complementary and places the dentist in a position to act as a guide, taking responsibility for the effects of communication and acquiring the skills needed to allow him to create effective relationships with the patient. The clinician should help the patient make the best decision related to their entire treatment.

In communication, the result matters, not the intention

The dentist must always be presented with the result that his messages have produced and not only with the positive intention behind them. Indeed, if one feels loyal to one's patient, one might be disappointed that the patient has not understood the nature of the treatment or does not accept the treatment plan.
The moment the result of the message is verified is probably more important than the quality of the message itself; to evaluate it, is necessary to be able to understand the feedback, which is the real controlling factor of every communication.
There is no absolute winning communication modality; the most effective behavior is to carefully choose the modality that is most suitable for that patient and in that particular context. At that point, the results must be interpreted as quickly as possible: words, facial expressions, body gestures, intonations of the voice. If these are not aligned with expectations, change is necessary, putting in place flexibility, which is the indispensable resource of any effective communicator.

Prepare your first visit

There is no second chance to make a good first impression.
(Oscar Wilde)

Paul Watzlawick's first axiom of communication reminds us that 'it is not possible not to communicate.' Any behavior produces consequences and during the first visit the patient's brain receives many solicitations, mainly at a subconscious level, which influence their choice to rely on and follow the therapeutic path proposed by the dentist.
For communication to be effective, it is necessary to prepare oneself mentally, prepare and take care of the environment, and involve collaborators.

Practically:

- If possible, gather information about the patient before meeting them for the first time: who they are, what channels they are coming from, what the reason for their visit is, and what their expectations are.
- Welcome the patient by using their surname and greeting them cordially.
- They take notice of the clinic, the scene of the first meeting: order, cleanliness, lighting, temperature, and quietness are evaluated and judged by the patient, often subconsciously.
- If possible, exchange the first few words outside the chair, perhaps by positioning yourself seated in front of the patient. If there is a desk between you, remove any confusing items and leave your view clear.
- If the patient is accompanied, pay attention to the person accompanying them as they may have a decisive influence on the choices the patient makes.

- The patient's medical history should be completed and read before meeting the patient. It may be useful to be prepared on any pathologies, elements to be investigated, and the names and characteristics of drugs and their possible interactions with dental treatment. All this serves to increase the authority of the first meeting.

Communicate in a conscious way

Knowing how to listen means possessing, in addition to your own, also the brains of others.
(Leonardo da Vinci)

By communicating with each other, human beings use, mainly subconsciously, many channels through which they give an idea of themselves and their way of seeing reality.

During the first visit, it is essential to listen to and observe the patient. Their brain evaluates elements that are often underestimated: verbal content, use of the voice, facial expressions, body language, and movements in space. Everything contributes to defining the quality of the relationship and must be taken care of in the smallest details, with a sense of responsibility and competence.
The 10 key points for effective communication are:

1. Pay attention exclusively to what the patient says and how they use their body to express it.
2. Ask the patient to sit down and ask the first generic questions, which allow you to know something more about them (previous experiences, level of knowledge, fears, expectations).
3. Get to the clinical aspect and the treatment proposal only at a later time.

4. Do not get distracted and avoid distracting elements such as phone calls, unnecessary noise, and inappropriate interference from collaborators.
5. Choose the right words and ask open questions, which provide you with the greatest amount of information.
6. Respect any silences and pauses. Do not interrupt too often or too soon.
7. Correctly interpret the patient's body language and mind yours, that is, interpersonal distance, orientation, eye contact, expressions, gestures.
8. Observe and listen to yourself and judge your effectiveness in the relationship, as if you were seeing yourself from the outside.
9. Be flexible and change your communication strategy when the relationship between you and your patient is ineffective, or any communication barriers arise.
10. What we say before is science, what we say after are excuses.

Do not create barriers

The tendency to judge others is the greatest barrier to communication and understanding.

(Carl Rogers)

Over the last few years, the relationship between dentist and patient has profoundly changed, going from a paternalistic model, in which the dentist decided on the treatment pathways and the patient followed them passively, to a condition of reciprocity, which sees them interact in the choice of treatment pathways. The patient's tendency to collect information on treatments, often acquired online, sometimes displaces dentists who can react with ineffective behaviors. It is necessary to understand that an informed patient has generalized beliefs, which need to be considered and valued. The best attitude is to acknowledge their research efforts; only if the information in their possession is distorted or of poor quality, help them to understand better using the same tools.

Practically:

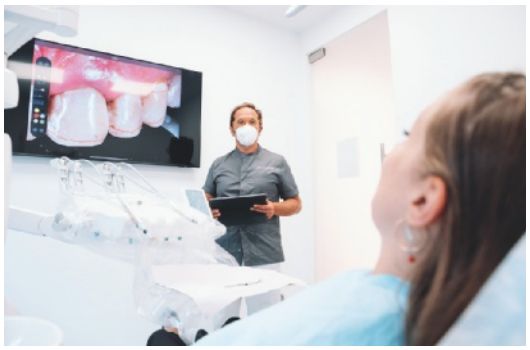
- Let the patient participate in the choices, if you understand that this is what they wish.
- If the patient is already informed, ask them where they found the information and reward their research effort.
- If the information is of poor quality, guide them toward the best research.
- Avoid being sarcastic, belittling, negatively judging, or too directive.
- Do not see the patient's objections as a personal attack but use them as a valuable tool to better understand their perplexities and to improve the relationship.
- If you feel that the communication with the patient is becoming conflictual, do not get carried away by instinct, rather take a moment to pause and talk quietly about your feelings. In these cases, it may be useful to have collaborators who are temperamentally inclined to mediation and calmness.
- Use visual communication; a picture really is worth a thousands words!

Explain and verify

If you can't explain it simply,
you don't understand it well enough

(Albert Einstein)

To get patients to accept the treatment plan and get them to adhere to treatment, it is important to make them understand the nature of treatment,



but, above all, to allow them to remember what has been explained. Sometimes the dentist underestimates that the patient is hearing new information for the first time and does not think how even the simplest things can be difficult to imagine and understand. The use of technical terms leads away from understanding; only by stimulating more senses, one can make people remember. To solidify the information, it is important to talk, show, and let people touch; however, the most useful way is to let people participate, be involved, asked to summarize, and encourage the expression of doubts and questions.

Sometimes, objections are seen as personal attacks, whereas they are precious opportunities to better define the nature of the message to be delivered to the patient.

It is useful to anticipate the most frequently raised objections and be prepared to manage new ones with the awareness that they are opportunities for clarification and invaluable experiences that are being created for future relationships.

Practically:

- Use simple terms at first and only add more complex ones if the patient is able to follow you.
- Stimulate all the patient's senses, but above all sight.
- Check that the patient has understood, involve them in the discussion, asking them what they understood, if they have any doubts requiring clarification, or if they have any questions.
- Reassure the patient about fears regarding pain and discomfort: stability of temporary restorations, chewing ability, esthetics.
- Anticipate observations and objections that other patients have previously made, and provide spontaneous clarifications.

Propose esthetic treatments and veneers

The patient who requires esthetic treatment is often motivated by the desire to achieve a positive and ameliorative result, rather than avoiding the negative consequences of not doing anything. This difference is important with regard to personal motivation. Starting from the assumption that it is not possible to have a recipe that is always appropriate, and that it is necessary to flexibly adapt the communication to the individual patient, a series of approaches can be used to encourage the creation of an empathic context and mutual understanding:

- Understand the patient's needs and expectations, so that you can personalize communication and motivate them effectively.
- Show the final result before starting treatment with the tools at your disposal (wax-ups, mock-ups, digital previews, photographs of other cases already successfully completed).
- Highlight the advantages of the chosen treatment over other techniques that can achieve similar results.
- Check the patient's level of knowledge and ask how they acquired it.
- Value the importance of periodic checks, empowering the patient.
- Talk about how other patients have enjoyed undergoing similar treatments.
- If you use them, enhance the digital workflow and technology as elements of authority and exclusivity within the realm of your professional activity.

If you want something you've never had,
you have to do something you've never done

Thomas Jefferson

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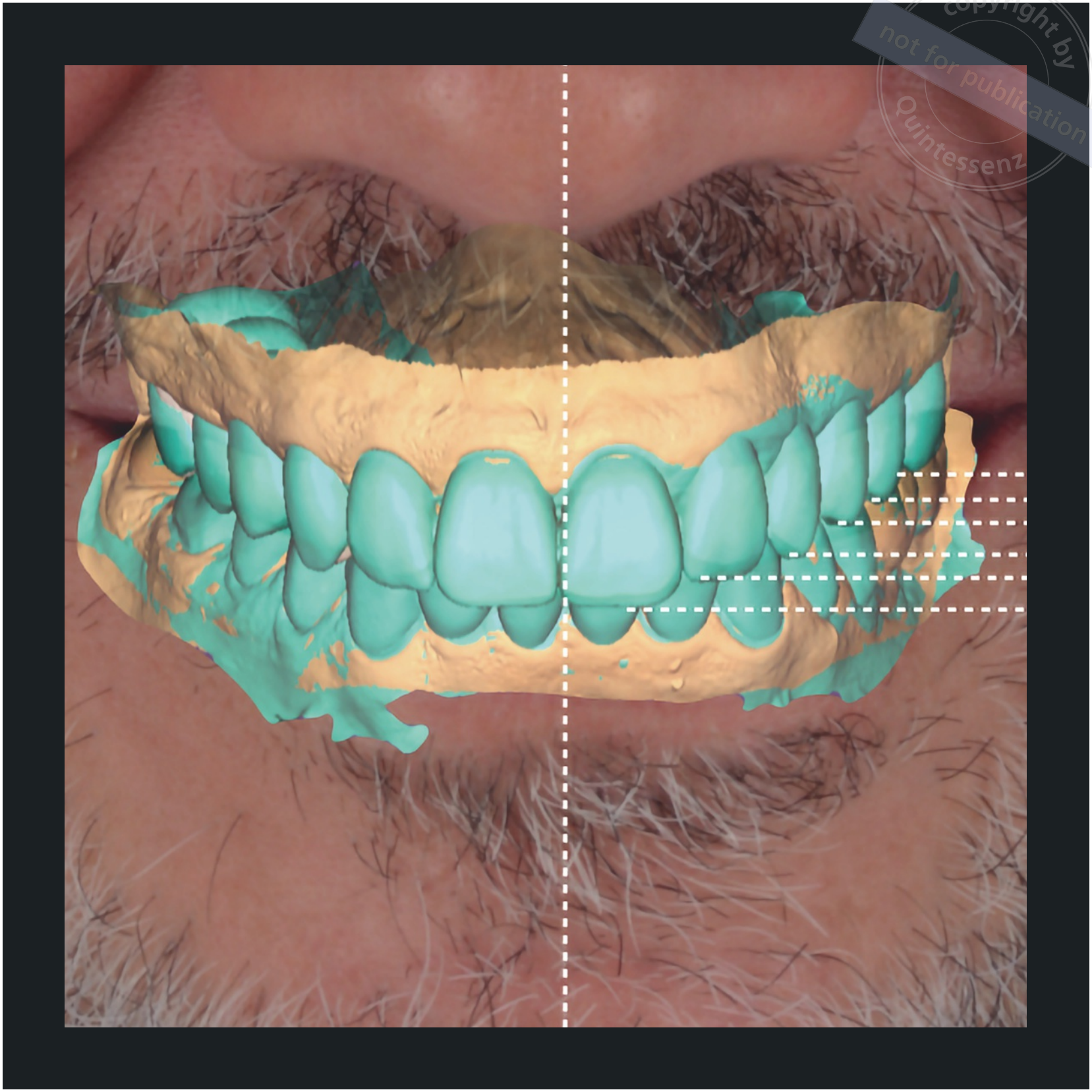
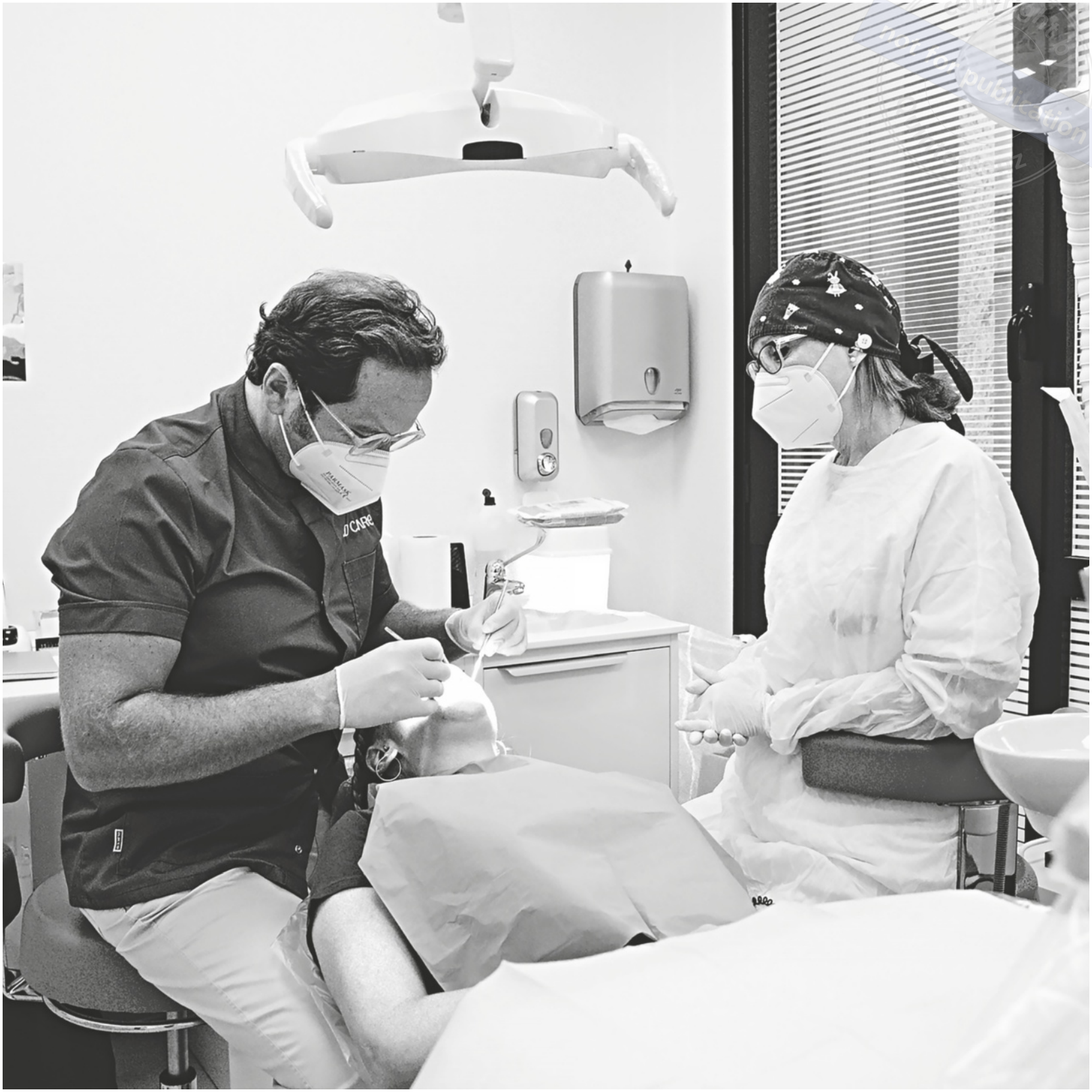
CONFORMATIVE APPROACH

REORGANIZED APPROACH



Vertical veneers: streamlining



Introduction

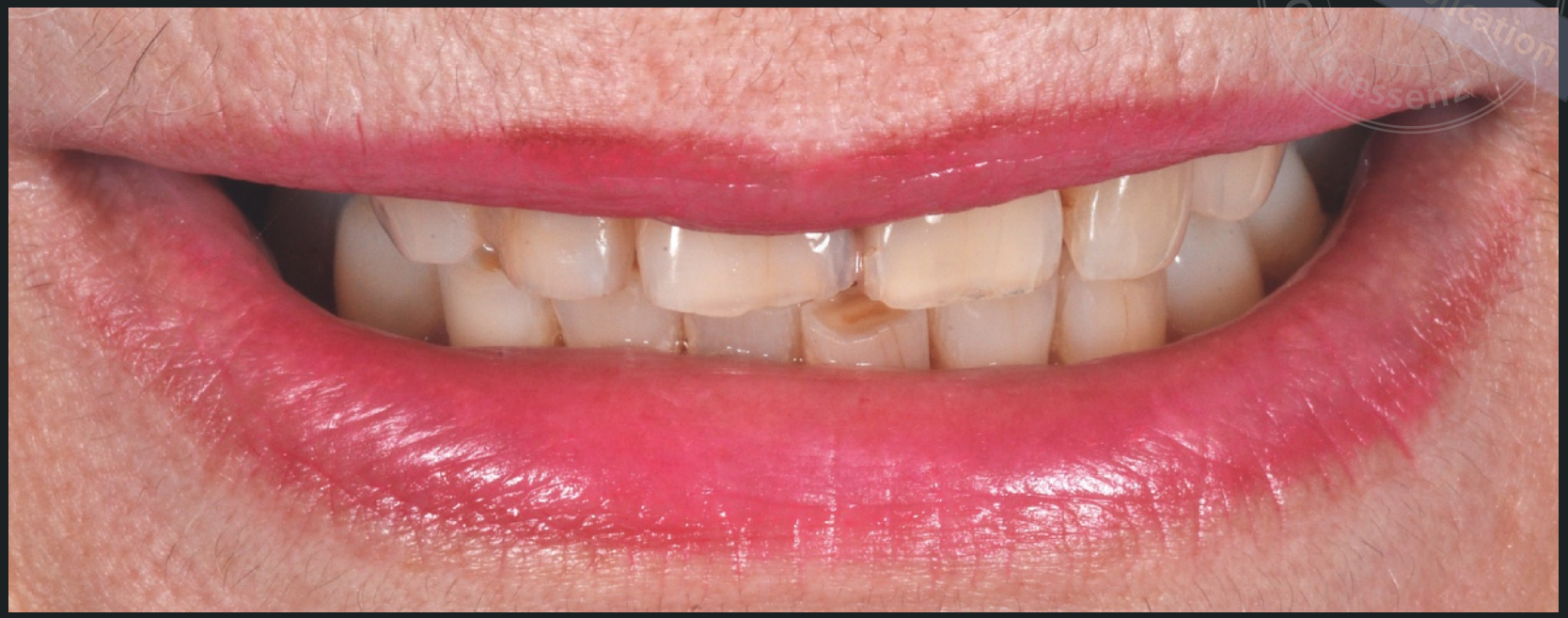
A smile makeover to increase the beauty and brightness of a smile is an increasingly requested procedure.

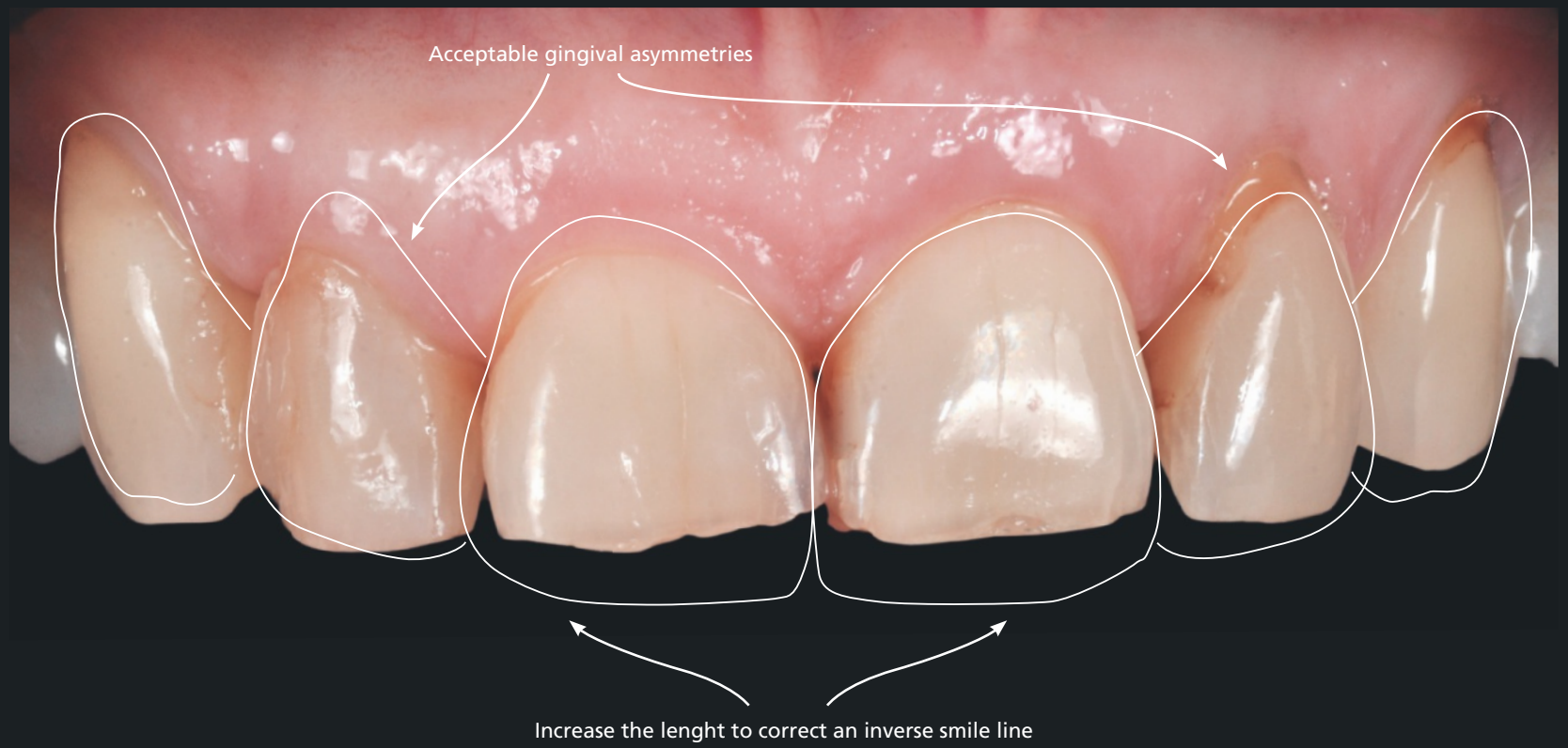
Often the patient complains about issues of color and poor brightness of the teeth, as well as malposition and incongruous prosthetic margins. One of the most challenging aspect in complex cases is to recognize the predictable point of reference.

'Re-smiling' stands for restyling smiles. Restyling means giving new style to something, in this case to our patients' smiles. Restyling should have a value not only esthetically but also functionally. This is a well-validated concept in dentistry as there can be no esthetics without function.

Re-smiling is based on three principles, that is, facially driven smile design, minimally invasive vertical preparation (mock-up-guided), and digital workflow for maximum design predictability (copy and paste dentistry).

Most of the concepts expressed in this chapter are directed toward maximizing predictability, preventing complications in complex cases. We work like all professionals involved in restyling (e.g. architects), where first a design is executed. This is then approved by the client (the patient), and finally it is reproduced thanks to advanced technologies for measuring and manufacturing.





CASE 1

STEP 1 Esthetic analysis

The process of restyling a smile begins with an esthetic analysis. The esthetic parameters we refer to in this chapter will be addressed and discussed in depth in Chapter 4. Knowledge of these parameters is essential from both a clinical and a technical point of view. However, it is also necessary to know the patient's perception of their smile. In fact, our intervention is aimed at solving not only objective esthetic problems, but also what the patient perceives every day by showing a smile that does not completely satisfy them.

What do we see?

- Reverse smile line
- Chipped incisal edges
- Different color
- Exposed roots
- Gingival asymmetry
- Overlapping two-dimensional (2D) outline properly positioned as it can highlight the defects to be corrected

What does the patient feel?

The patient should be the co-author of the new smile. A simple questionnaire should be provided to the patient; this is a key factor. It allows us to align the patient's point of view with the new smile project. There is a precise workflow to be followed; we will see how it works in the following chapters.

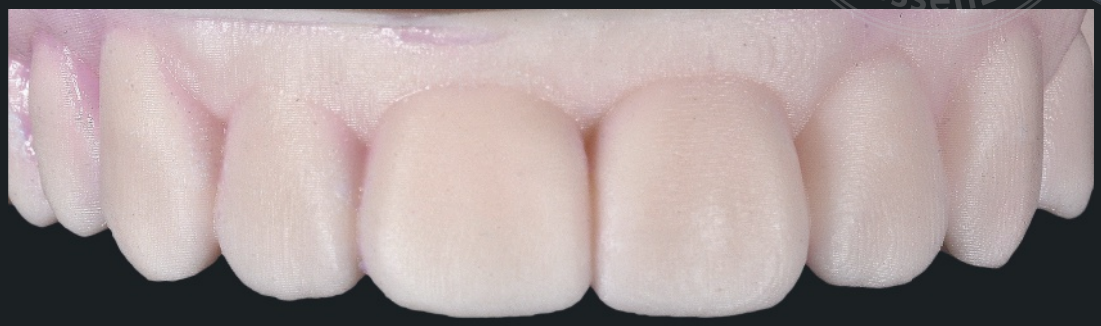
Patient questionnaire

1. **What is your main concern about your smile?** *I see the teeth are getting shorter and transparent.*
2. **Would you like to change the color?** *Yes, but I don't want a fake effect, and I want to involve the smallest number of teeth possible.*
3. **Are the teeth visible enough?** *Sometimes.*
4. **Is the lateral zone empty or properly filled?** *I don't know.*
5. **What is the tooth shape you prefer?** *Rounded, I had rounded teeth once I was young.*
6. **Do you like a perfect smile or a natural one?** *Natural.*
7. **Are you available for periodontal surgery?** *No.*
8. **Are you available for a pre-orthodontic treatment?** *No*.

STEP 2 Mock-up

The mock up is mandatory!

Approval from the patient should be obtained with a mock-up try-in. This is the most effective and safest technique if we strive to maintain what we had planned. Showing the patient the simulation should be done on the screen of a computer or iPad.



The printed file of the esthetic project.

Tips

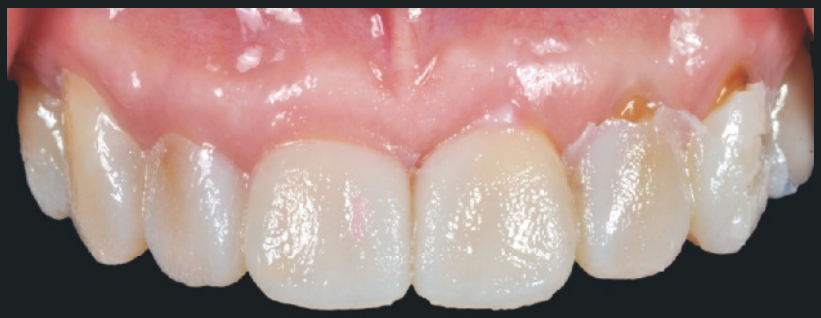
1. *Never show the try-in using a mirror … the patient should be focused on the imperfections of the resin rather than the final total effect. It is better and more realistic to do the evaluation using images.*

2. *Re-do the face image on the day of mock-up try-in … the patient will be focused on the only thing that has changed, that is, the smile (e.g. clothes and hair could interfere with the patient's perception).*

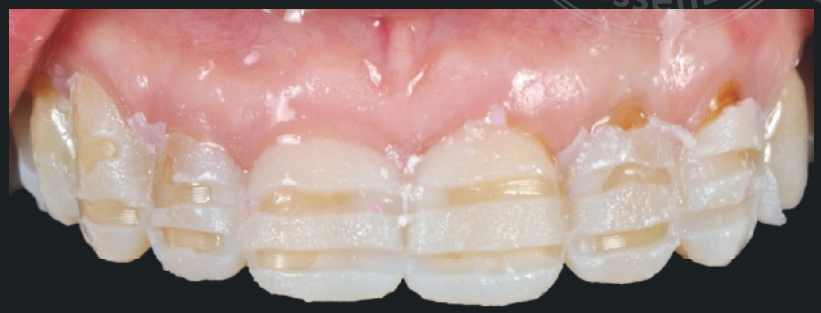
Preoperative view of the patient's face.

The try-in of the mock-up.

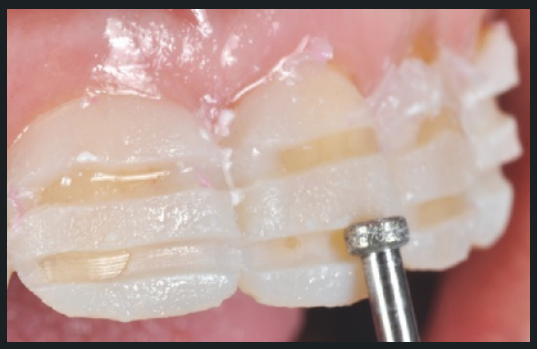
STEP 3 Preparation and impression-taking

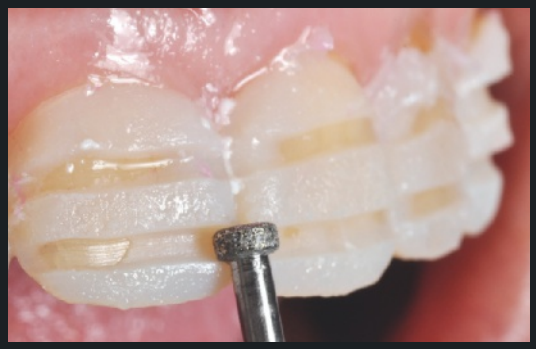


A calibrated preparation should be performed on the mock-up; the bur will work as a caliper, allowing the clinician to obtain the desired thickness.

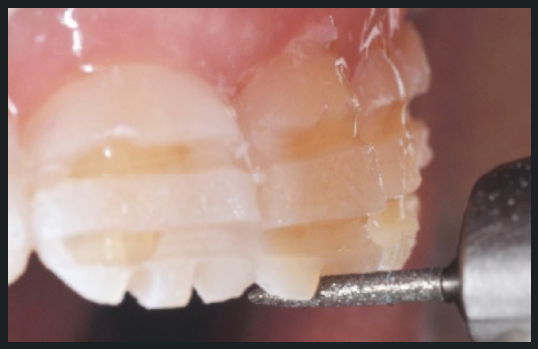


Depth cuts.

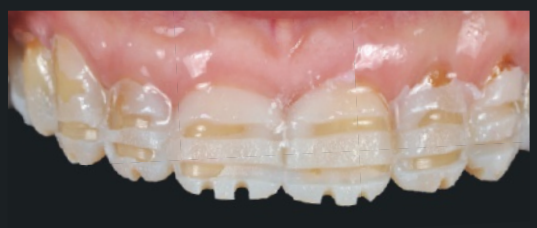




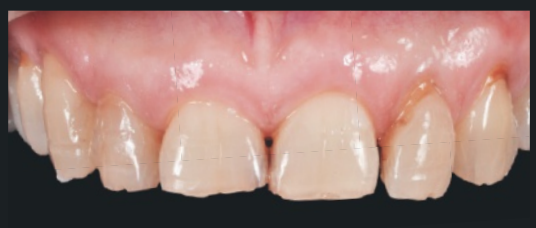
Depth cuts are performed; some areas of the teeth will be involved, while others will not.

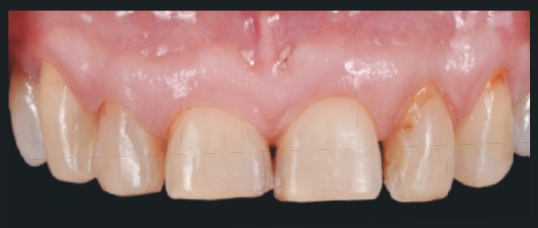


Incisal depth cuts.



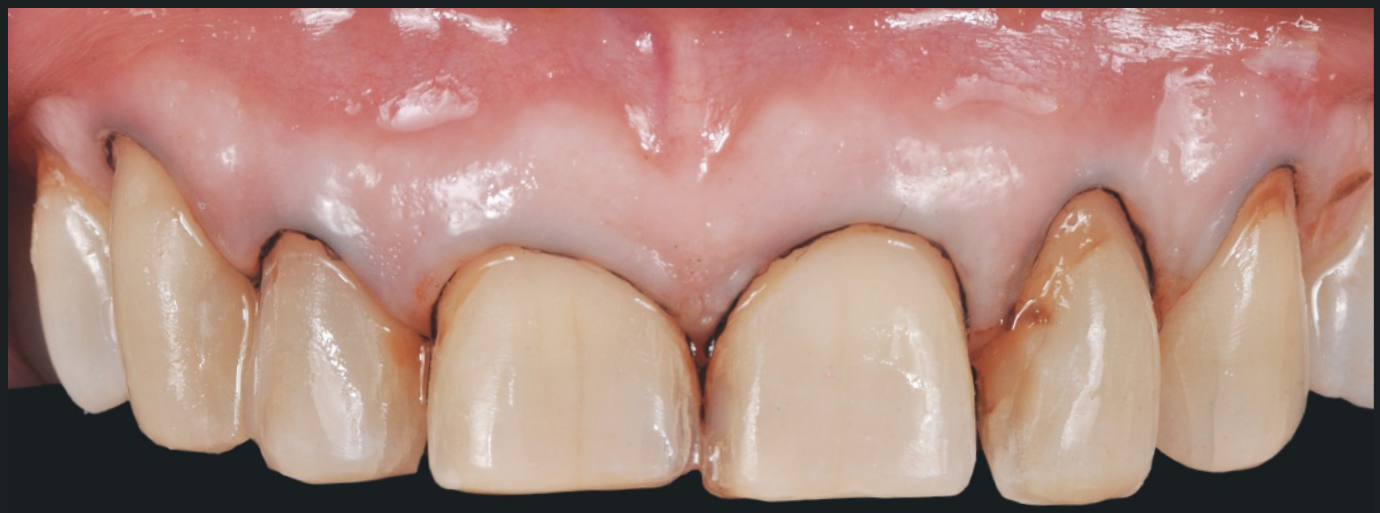
Incisal reduction is necessary only when a redesign of the incisal edge is needed. The thickness ranges from 0.2 to 1.0 mm.



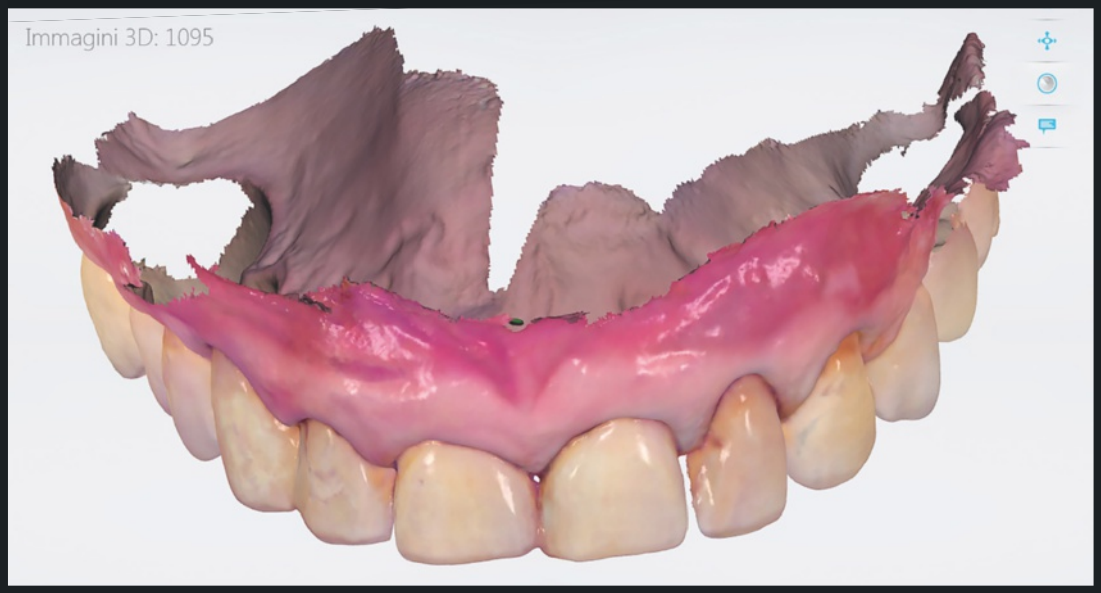


Comparison between preoperative and postoperative preparations.
Once the depth cuts are designed on the buccal surface and incisal edge, the mock-up should be removed; some, but not all, areas will be involved in the depth cuts.
The buccal preparation is aimed at deleting the depth cuts and round all sharp edges and angles.

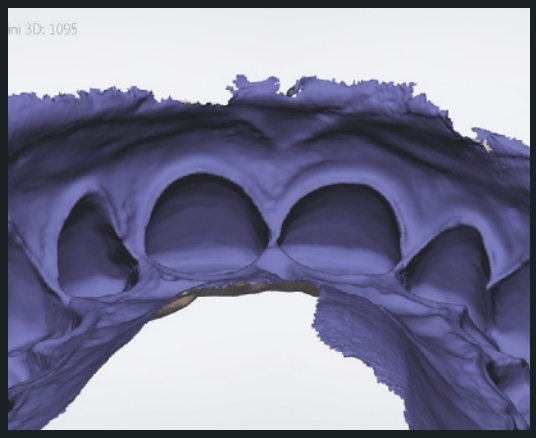
STEP 4 Impression-taking



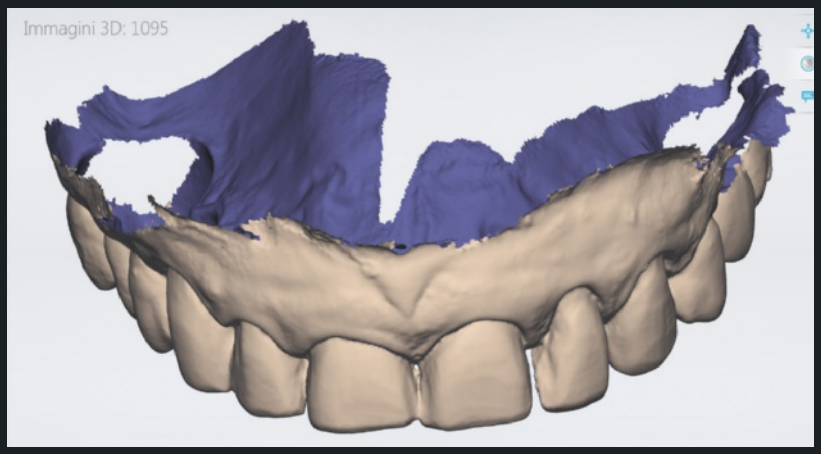
A single-cord (no. 000) impression is taken.



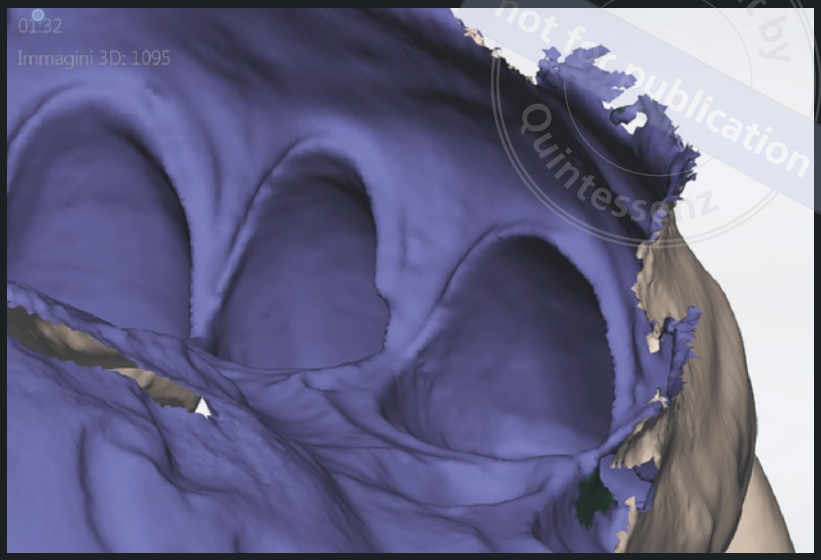
Digital impression-taking is an especially important step even if not strictly necessary. In fact, even if a scanner is not available, it is possible to follow this protocol using traditional materials. However, the enormous advantage in terms of speed of execution but especially in terms of predictability of the impression should be noted as no distortion due to tearing of the interdental septa will compromise the quality of the impression to be worked on. Thus, a digital impression is done.



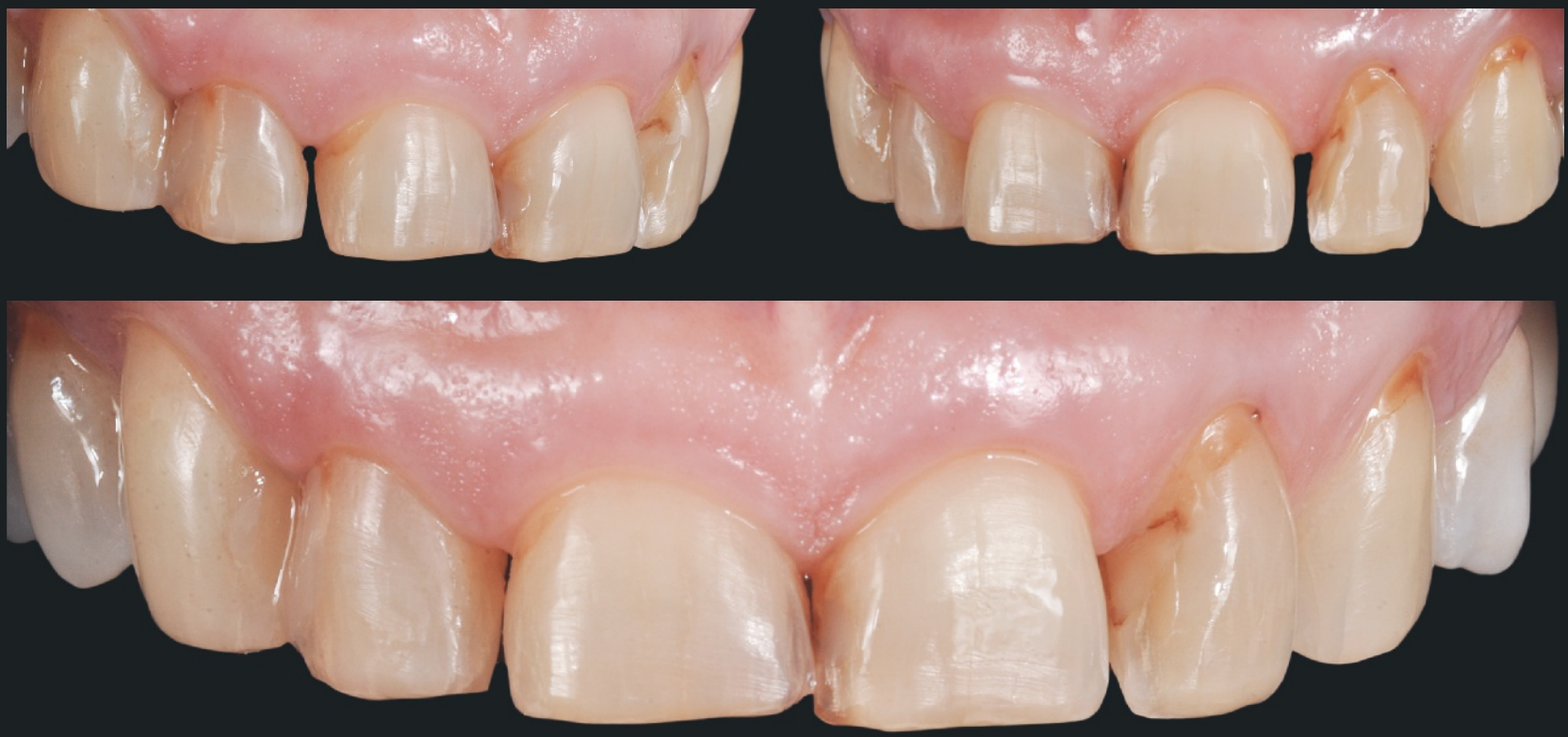
Even when an intraoral scan does not have the same 'tissue penetration' compared with traditional impression materials, the ability to record the subgingival area is enough to achieve restorations that are perfectly integrated with the surrounding tissues.



Looking at the monochromatic file can better highlight the quality of the preparation surface.

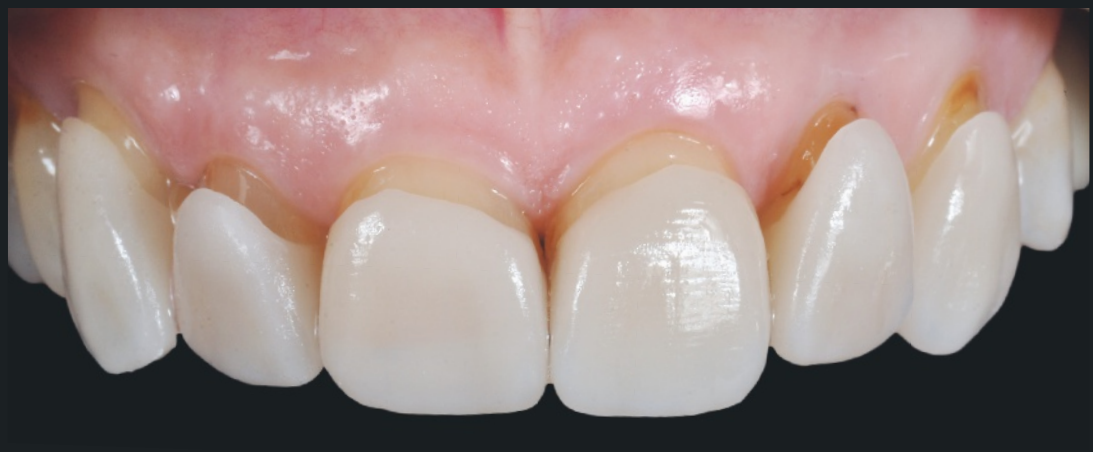


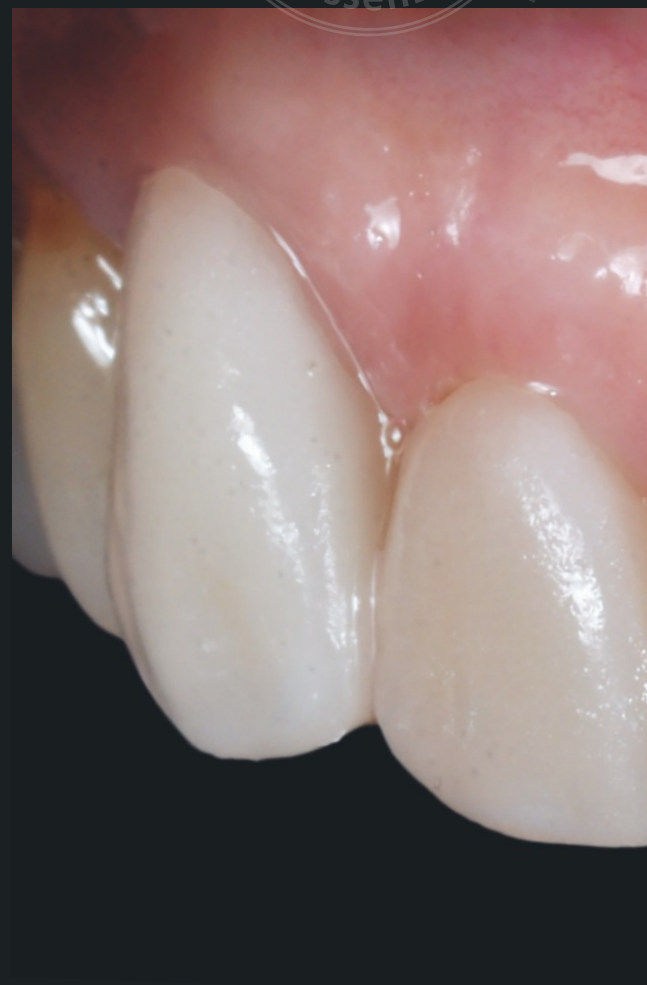
The clinician can easily check the quality of digital impression by examining the internal surface.



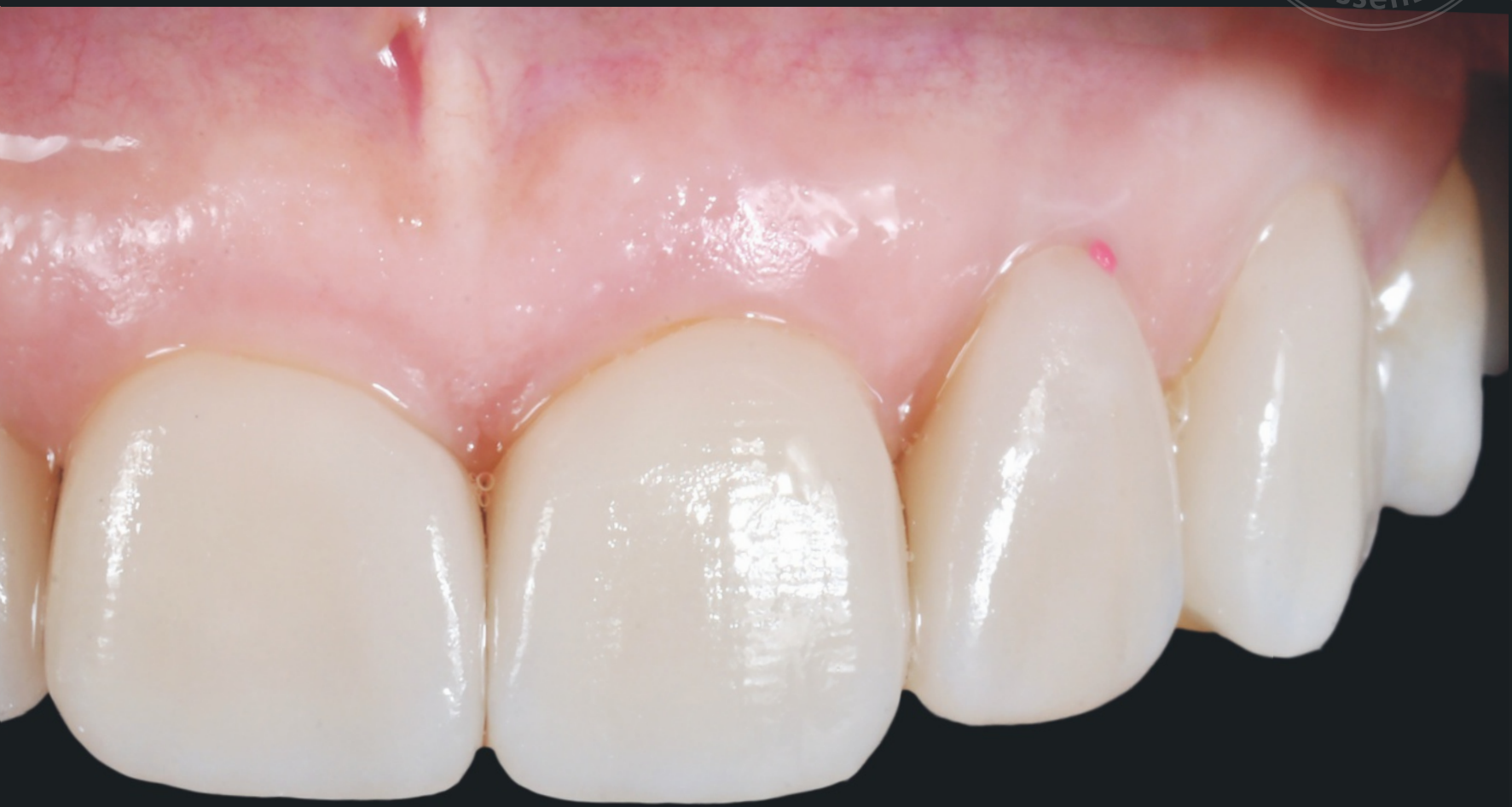
This type of patient can be easily managed without provisional restorations. The difference between preoperative and postoperative views is not significant or visible. The preparation is usually performed without anesthesia; sensitivity is not an issue after the preparation.

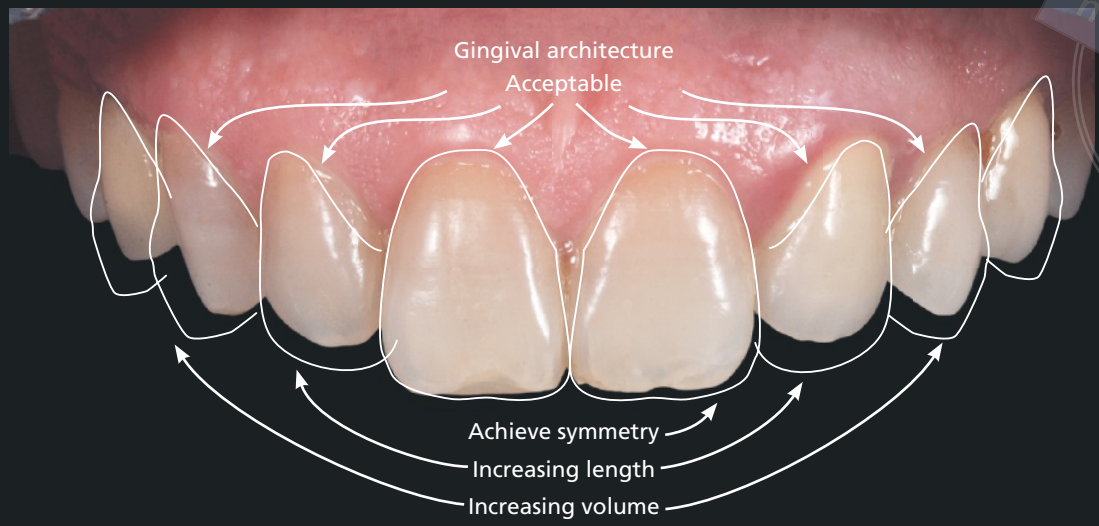
STEP 5 Delivery of restorations

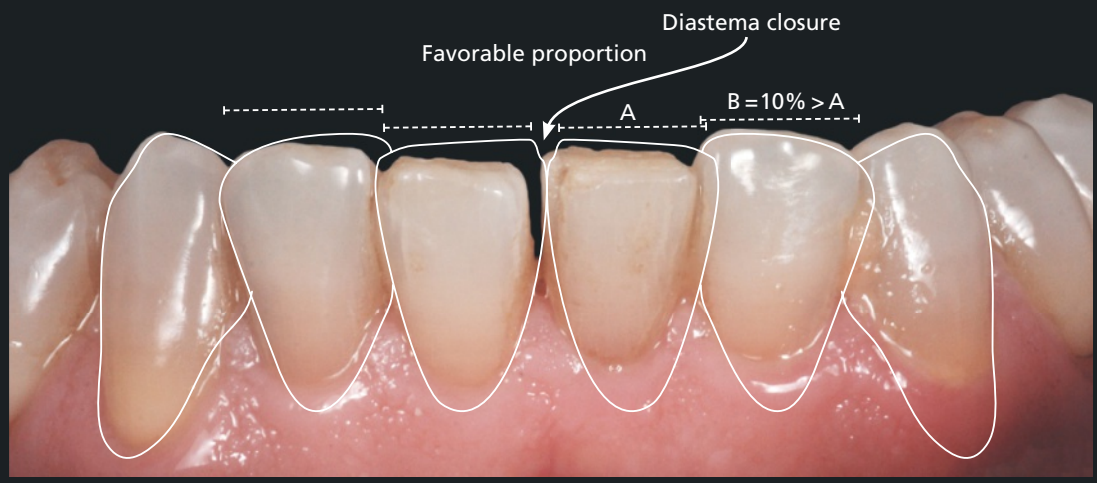


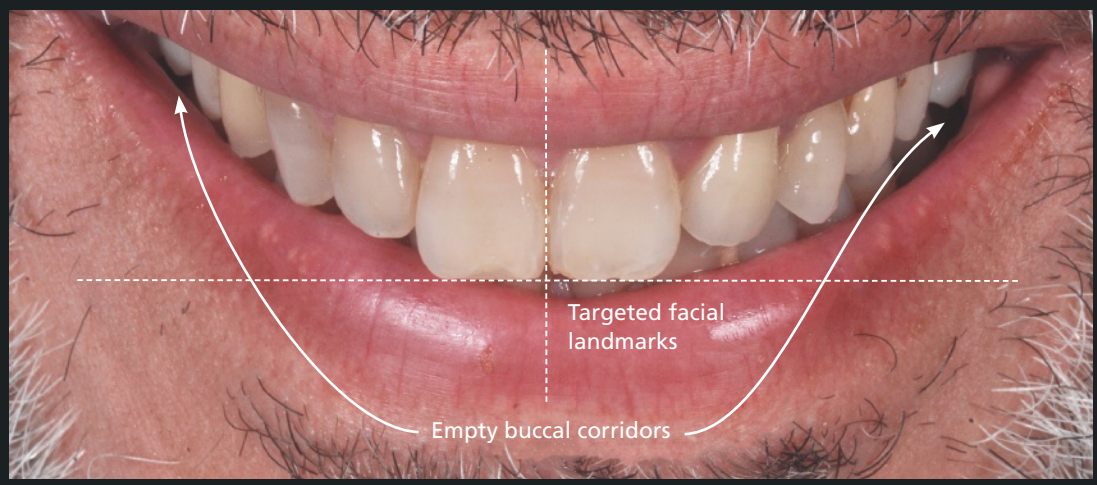


Milled veneers are manufactured according to the initial project.
Variables such as length and shape are not considered because we follow the principle of 'copy and paste' dentistry.
We are just coping and the connecting the prosthetic volumes studied at the beginning with the prosthetic margin.
Note the quality of the soft tissue when luting is applied.
This is the effect of the intrasulcular preparation and finishing.
The try-in is mostly aimed at evaluating the final color.
The veneers are then cemented using a simplified approach, and a final check is performed.









CASE 2

STEP 1 Esthetic analysis

Restoring a smile in complex cases requires extensive experience on the part of the clinician and technician. The all-digital workflow helps a great deal in performing a complete esthetic remodeling of the smile.

The complexity of the case is due to the change of so many morphological parameters. In addition, extension can make a case complex, which is decided based on the dental exposure when the patient smiles.

In fact, in cases of radical color and shape changes, it is important to extend to all visible areas to avoid 'half smiles.'

What do we see?

- Interincisal line matching with the facial midline
- Empty buccal corridors
- Acceptable gingival outline
- Teeth volume and length to be increased
- Lower incisors: diastema closure and restoration of proportion

What does the patient feel?

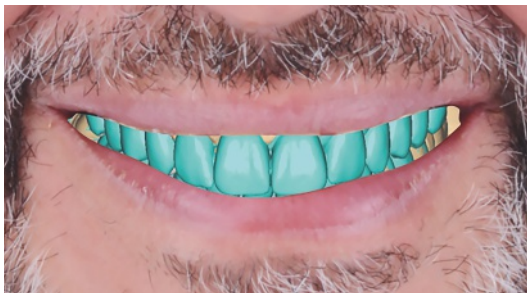
Patient questionnaire

1. **What is your main concern about the smile?** *Poor esthetic crowding and color.*
2. **Would you like to change the color?** *Yes!*
3. **Are the teeth visible enough?** *Yes.*
4. **Is the lateral zone empty or properly filled?** *I don't know.*
5. **What is your preferred tooth shape?** *I don't care about the shape. I would like to have beautiful smile.*
6. **Do you like a perfect smile or a natural one?** *Beautiful but not fake.*
7. **Are you available for periodontal surgery?** *No.*
8. **Are you available for pre-orthodontic treatment?** *No.*

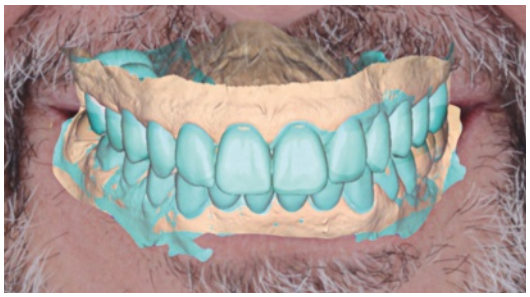
The virtual patient made easy

To identify most of these esthetic issues, we need landmarks. For many years we did this evaluation by overlaying a 2D outline on the preclinical situation; this comparison gave us all this information we required. Today dentistry is much more evolved, and the clinician can do a much more thorough three-dimensional (3D) evaluation.

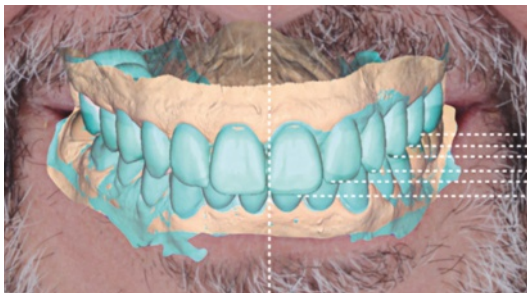
Taking a photograph with the patient's posed smile in a natural head position provides a lot of information related to the starting point.



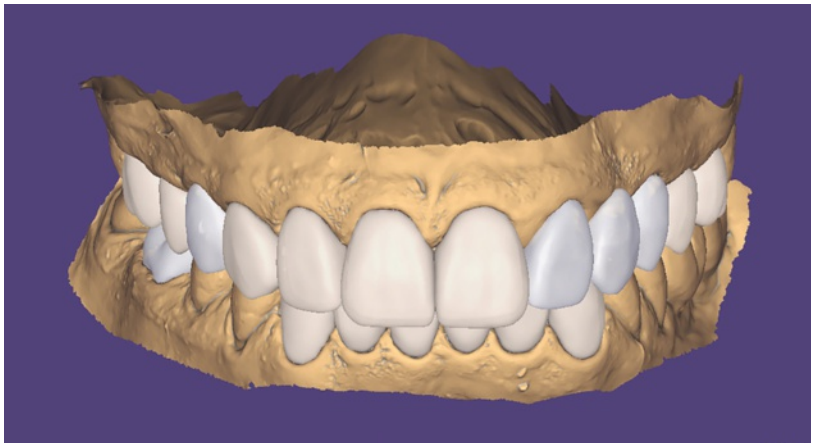
In fact, it is possible to align the intraoral scans with the photo of the patient's face, thus allowing the facial bow to be entirety replaced, the primary purpose of which is to transfer the correct position of the upper jaw to the technician in such a way that they can see it as we do in the patient's mouth.



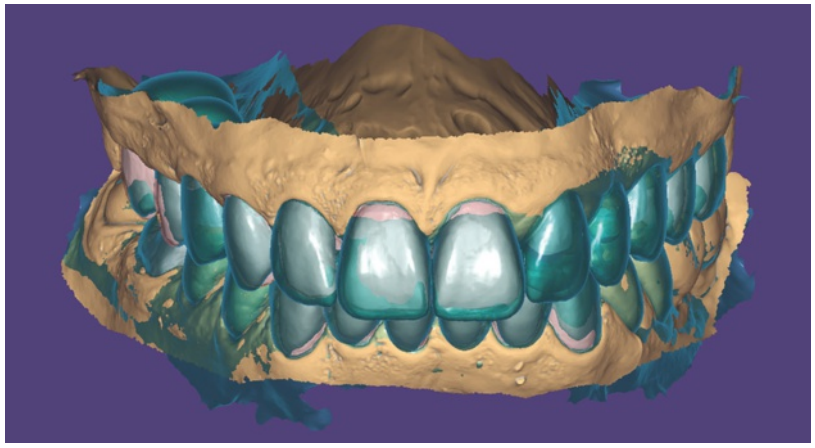
On the aligned scans, we can simulate the new smile contextualized within the patient's face.



The use of reference lines will guide the designer into the correct position of the new dental anatomy.



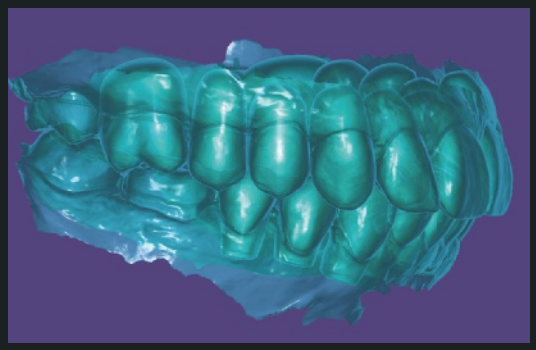
Using unambiguous facial landmarks, the design of a new digital smile should keep in mind the patient's needs and the clinician's and designer's objective assessments.

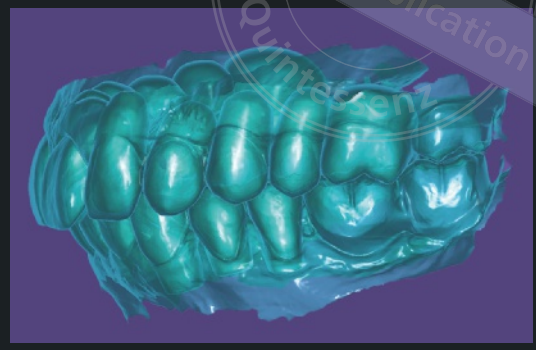


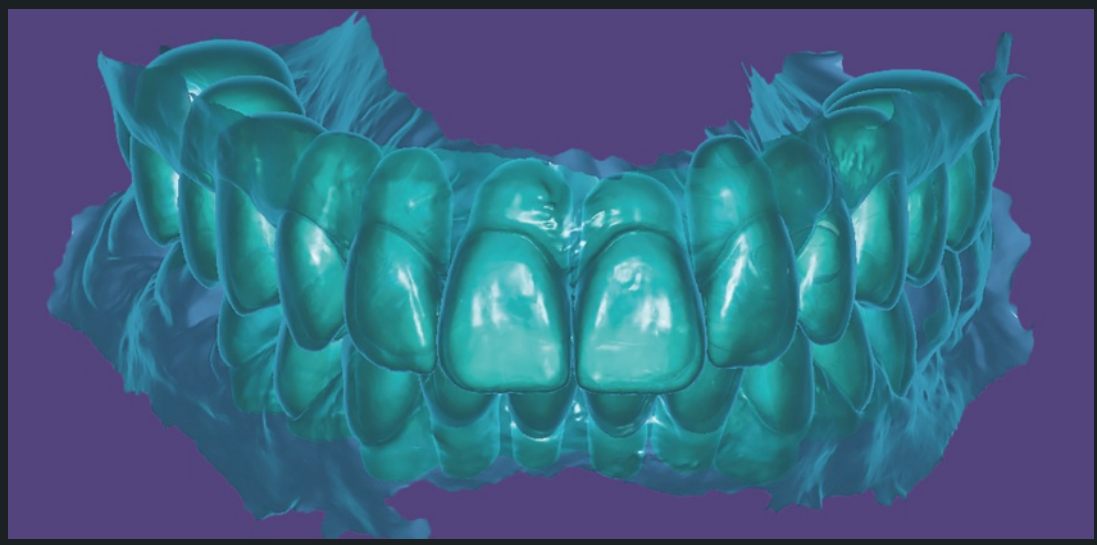
By reducing the opacity of the digital design, we can evaluate its relationship with the existing tooth positions; this step is critical to develop a correct treatment plan.

STEP 2 Mock-up

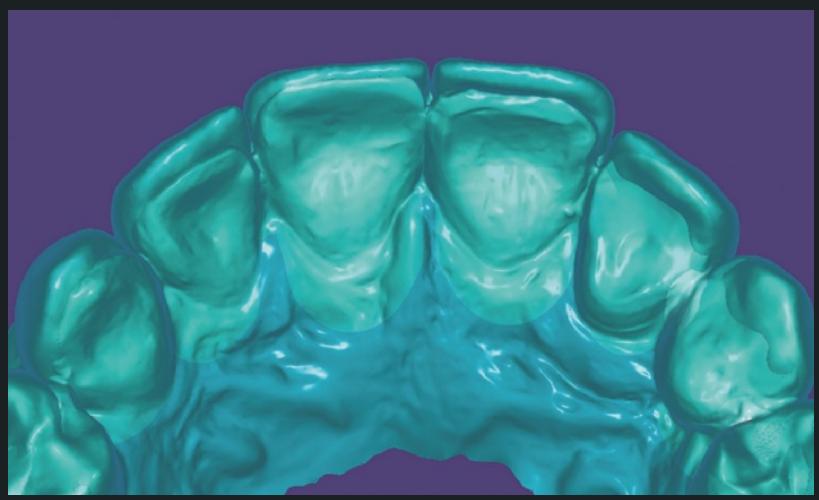
Following the patient's questionnaire, a rehabilitation of the complete upper arch and lower anterior group is planned, limiting this only to the dental elements visible during the natural smile and during speech. The length of the laterals is increased and the buccal corridors are filled. An enhanced incisal outline is created.

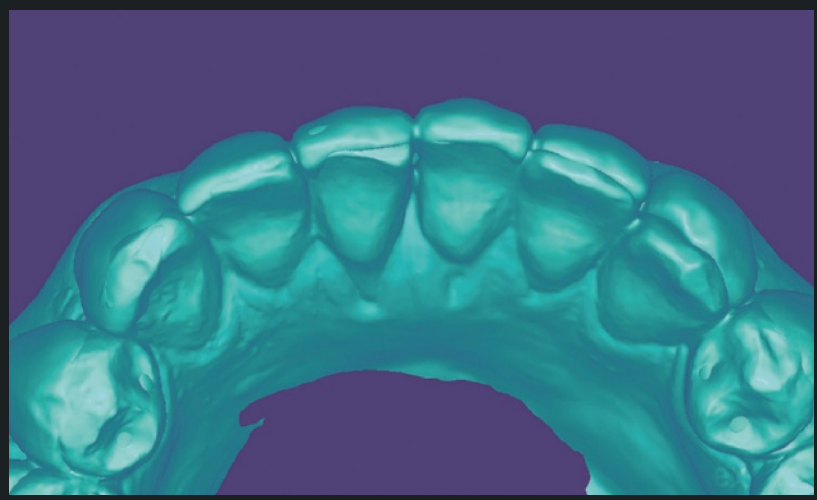




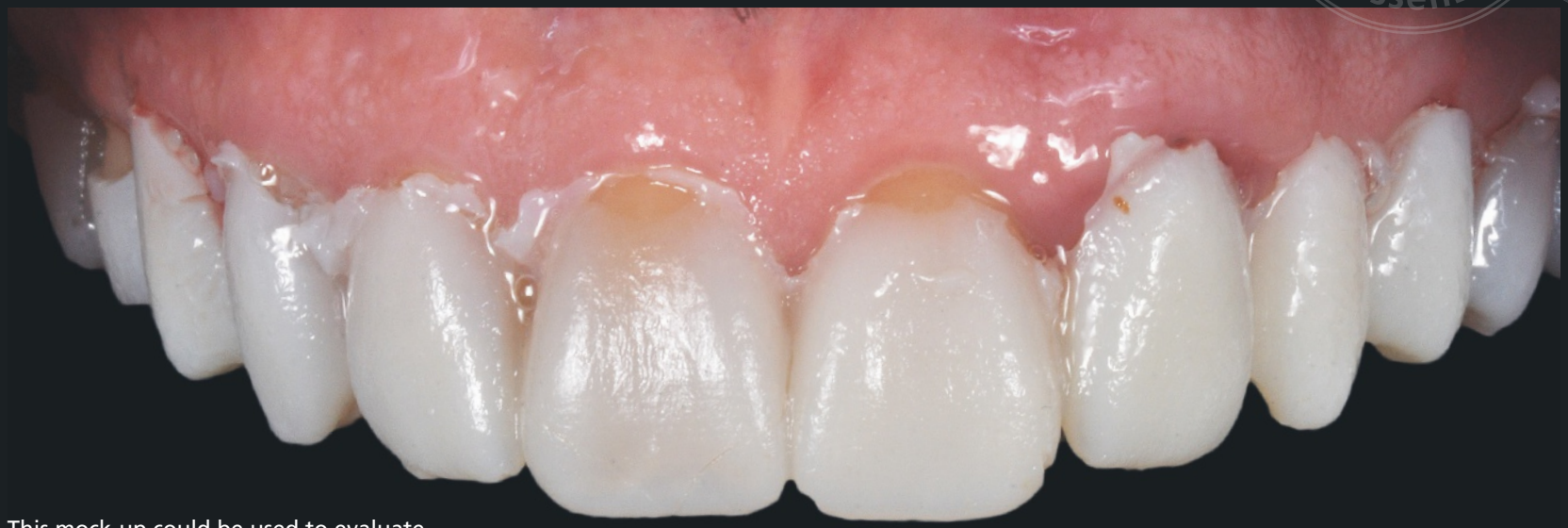


To develop the mock-up, the meshes are positioned outside the dental arch. The aim is to reach a position that allows the most complete coverage of the existing morphology with the minimum thickness possible.





What we say before is science,
what we say after are just excuses.



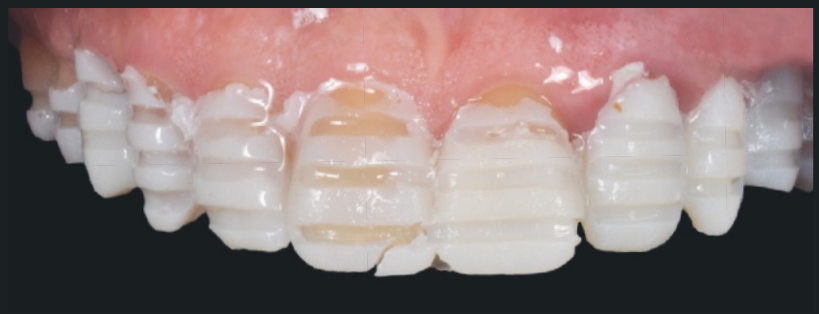
This mock-up could be used to evaluate the planned esthetic modifications, to motivate the patient, and to prepare the teeth through the mock-up.

Tip

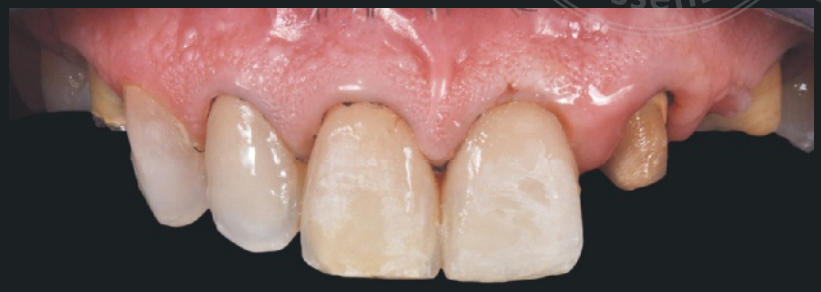
It is very important to realize that the mock-up is the ugly copy of the final restoration, which is slightly outside the arch. As we are designing a new smile, in the mock-up we are using a character size of 14; in the final restoration we will use the same character style but the size will be 12.

Approval of the esthetic design before the clinical procedures should be made on the photograph of the patient's face while wearing the mock-up.

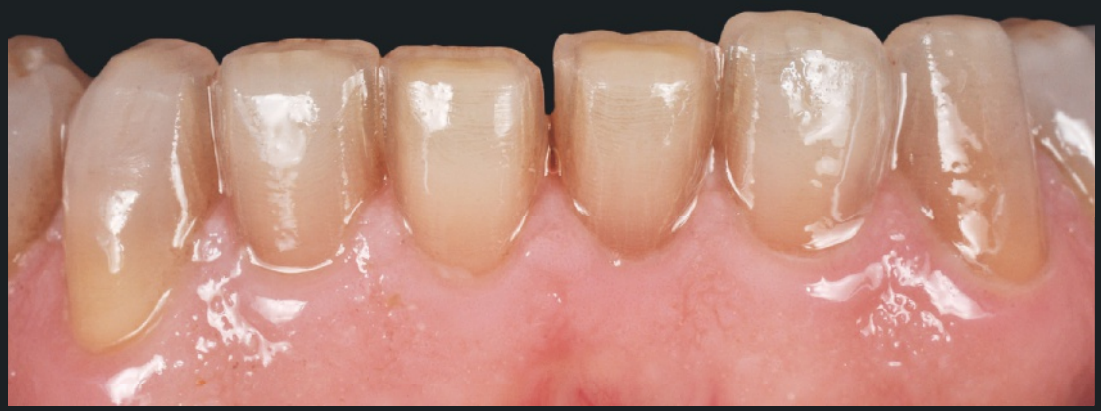
STEP 3 Preparation and impression-taking

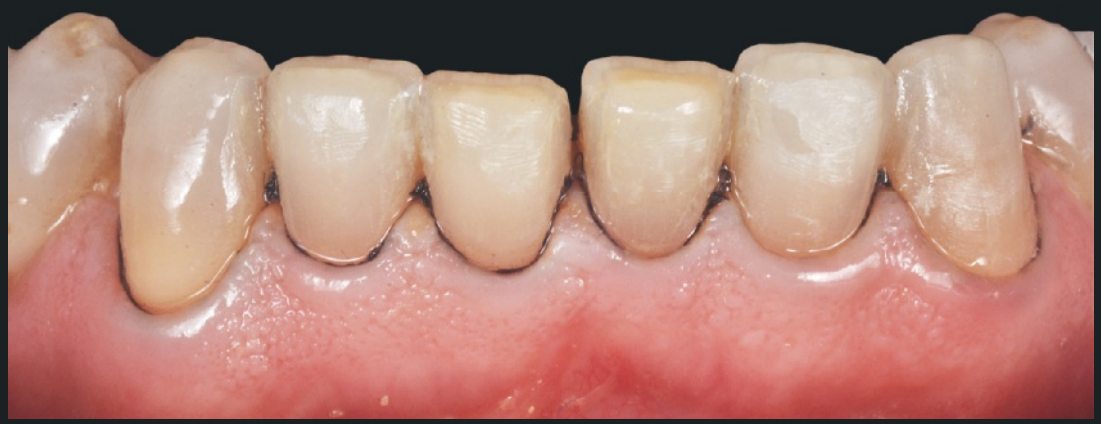


Preparation through the mock-up reduces the chairside time needed to deliver the preparation with the correct thickness.



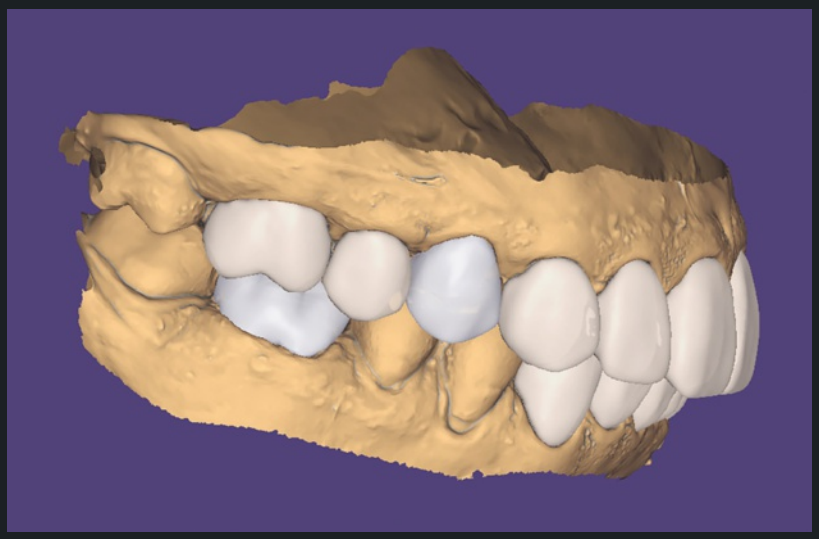
The preparation through the mock-up was performed by selecting a homogeneous thickness of 0.5 and 0.3 mm on the third cervical.

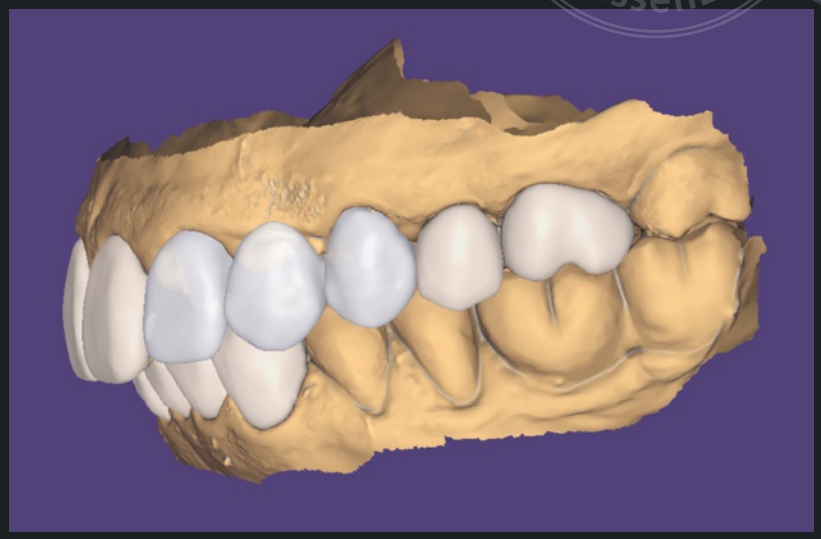




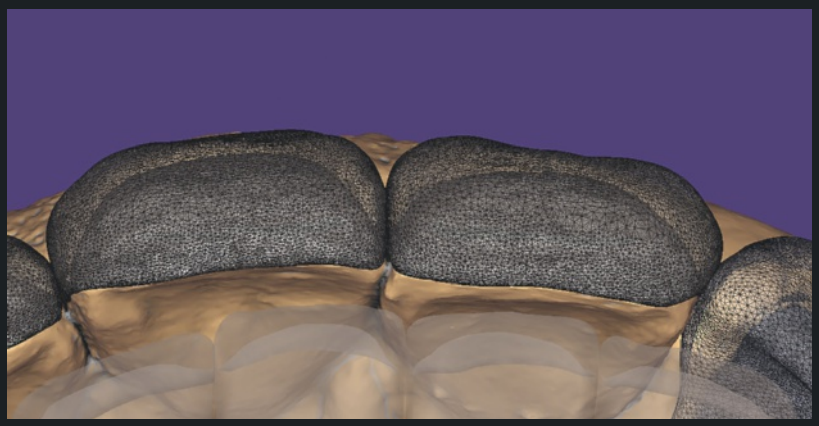
Regarding the lower incisors, the difference in terms of volume and shape between the initial situation and after the preparation is minimal. The final impression is taken immediately after the teeth are prepared.

STEP 4 Laboratory work

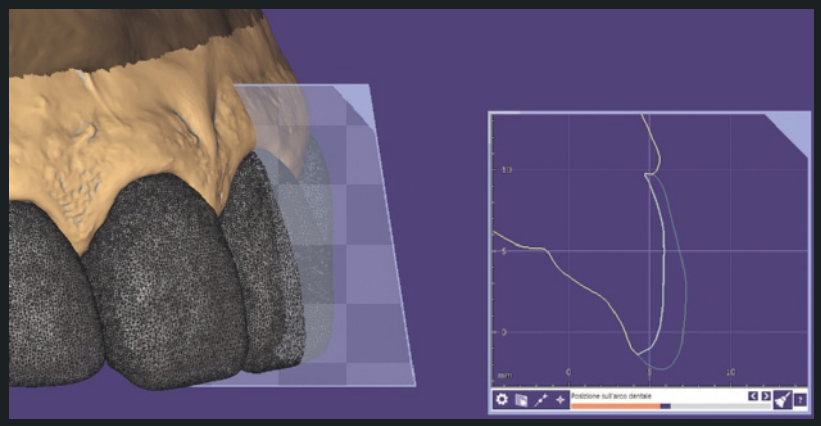




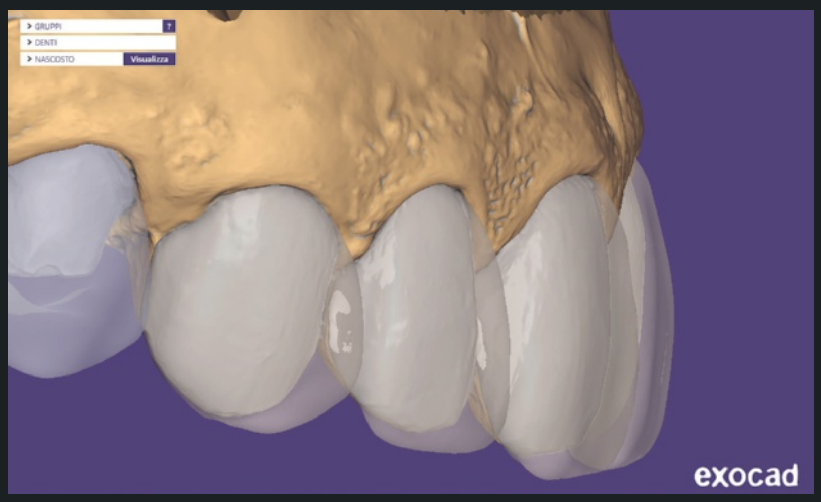
The final impression is aligned with the mock-up. We do not need to take a face bow or other image.



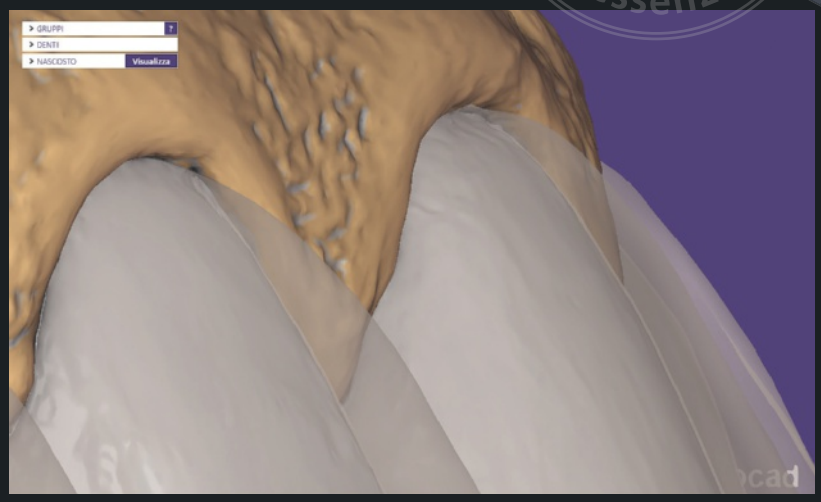
Even though the contact point was maintained, the two interproximal finishing lines are clearly visible. Achieving a rounded angle between the buccal and incisal surface is mandatory as all angles should be smoothened.



The apical margin is defined at the most apical point that is clearly visible in the impression. The 2D cut view is the most important view to check the design of the emergence profile.



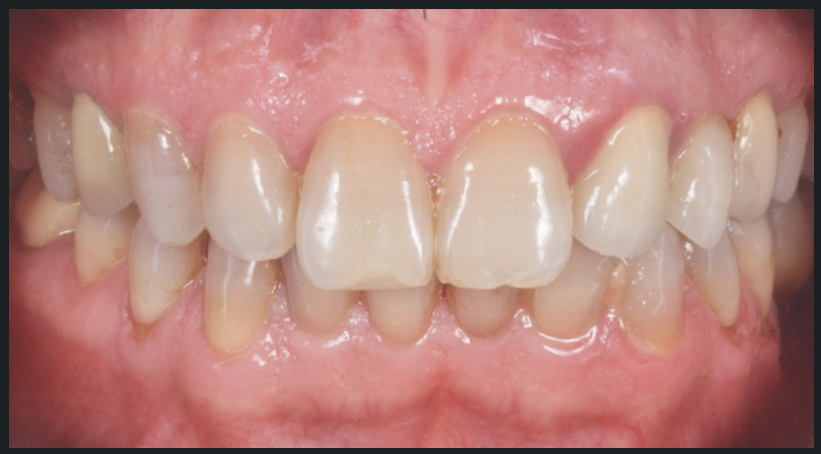
The perfect relationship between the volume of the final restorations and the guided preparations.



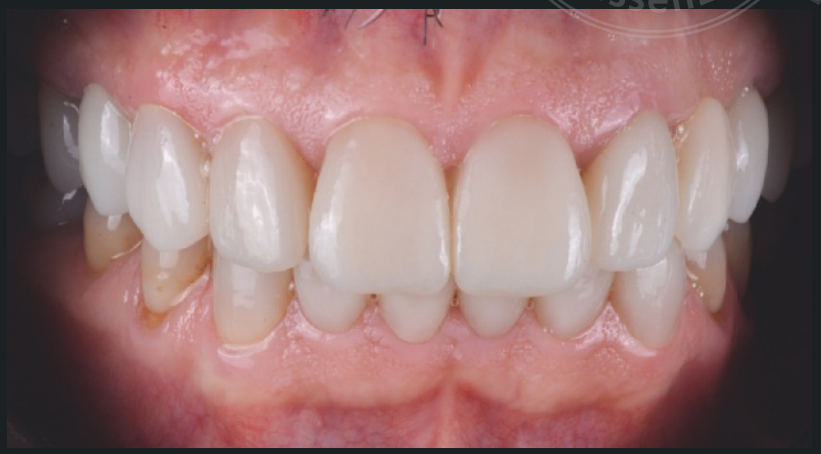
The emergence profile is developed digitally. It is mandatory to design an emergence profile for monolithic restorations; indeed, the profile that we see on the screen will be exactly the same in the ceramic restoration.

The monolithic restoration is finished.

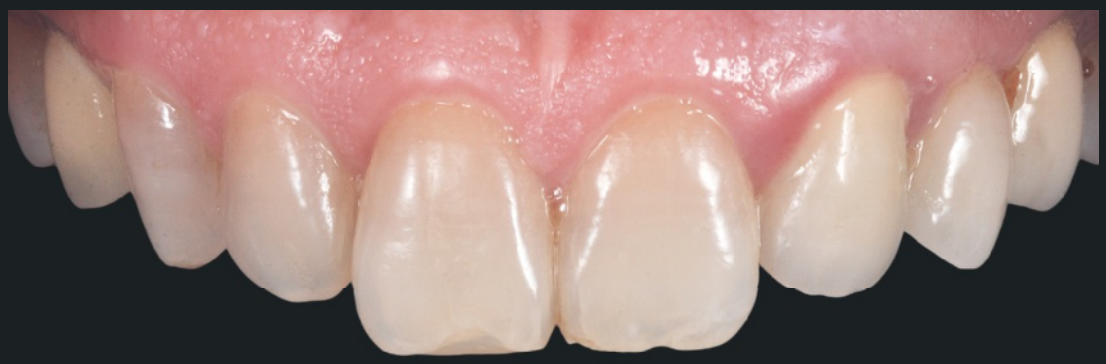
STEP 5 Delivery of restorations

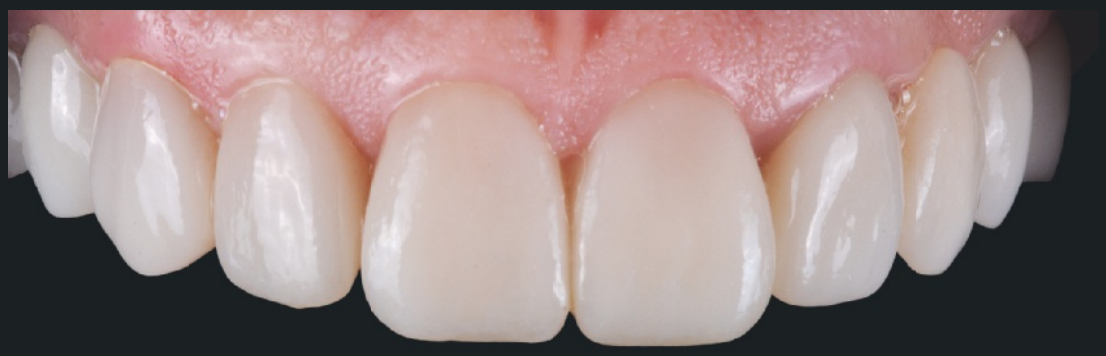


Preoperative view.

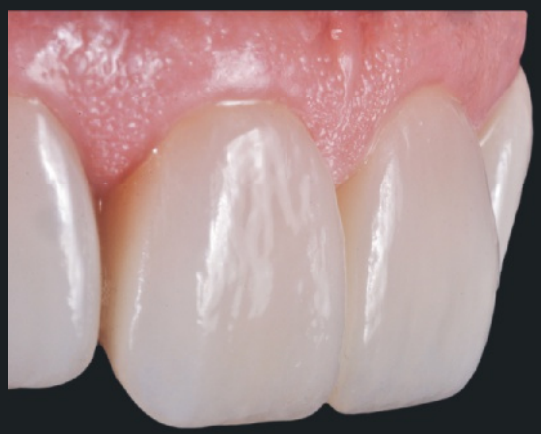


Postoperative view.

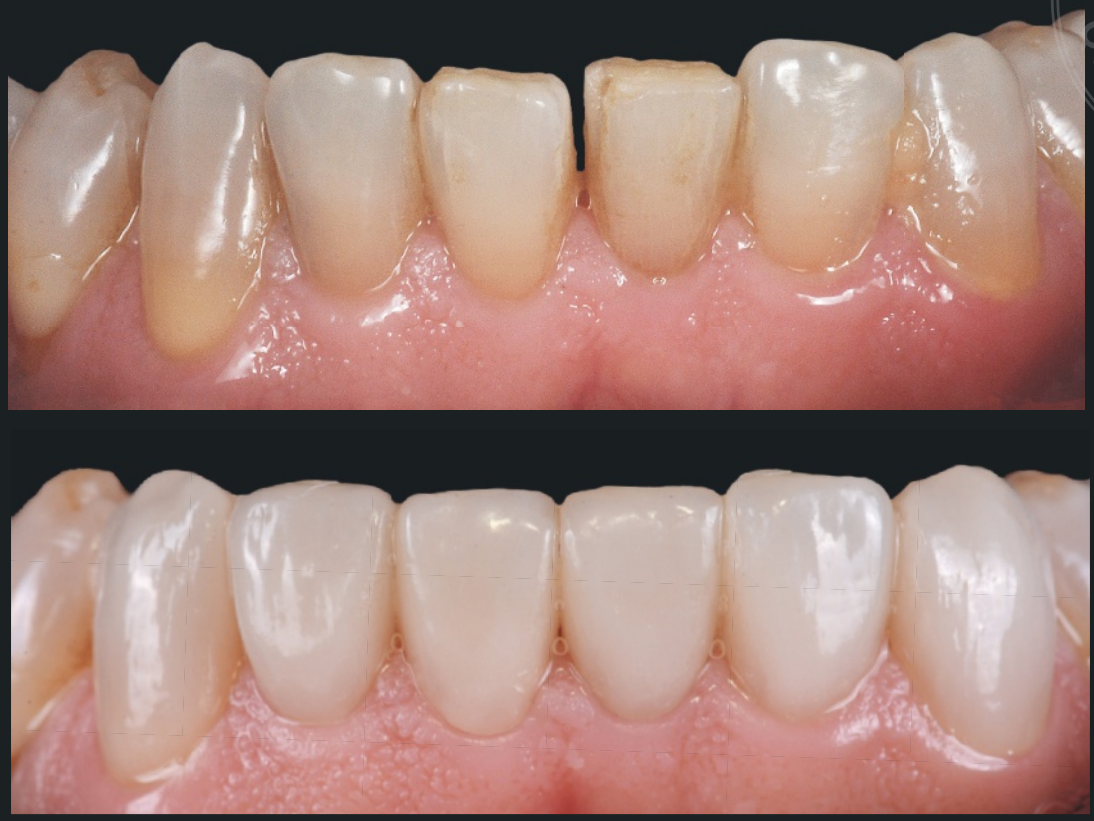




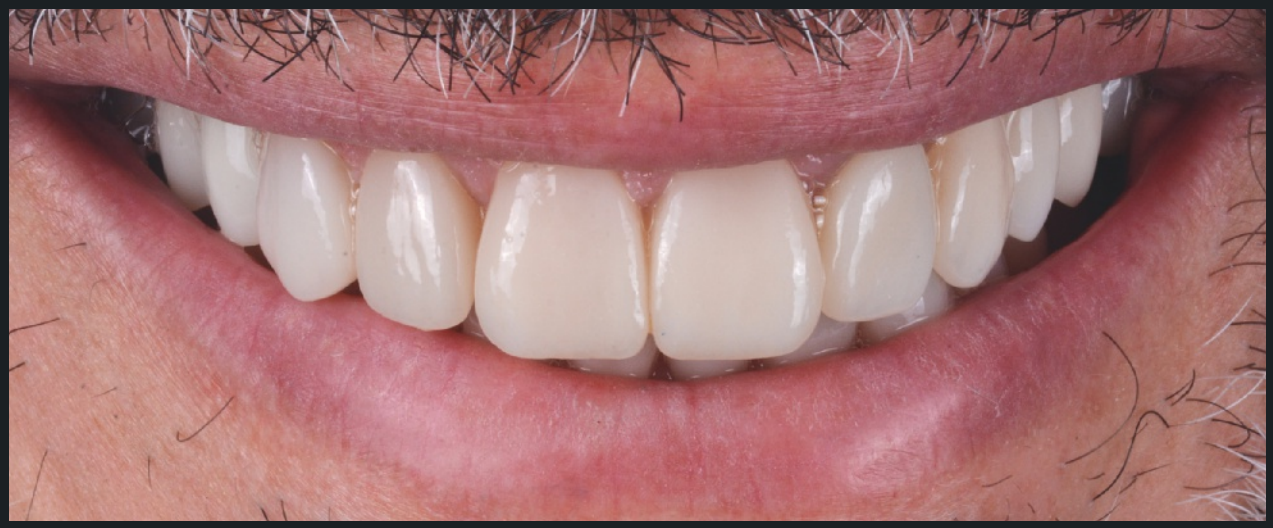
The significant change in the incisal outline can be appreciated, along with obvious improvement in the conditions of the gingiva.



Integration with the soft tissues is optimal already a few days after cementation. It is usual to observe a clinical improvement of the soft tissues around restorations with a vertical finishing line.

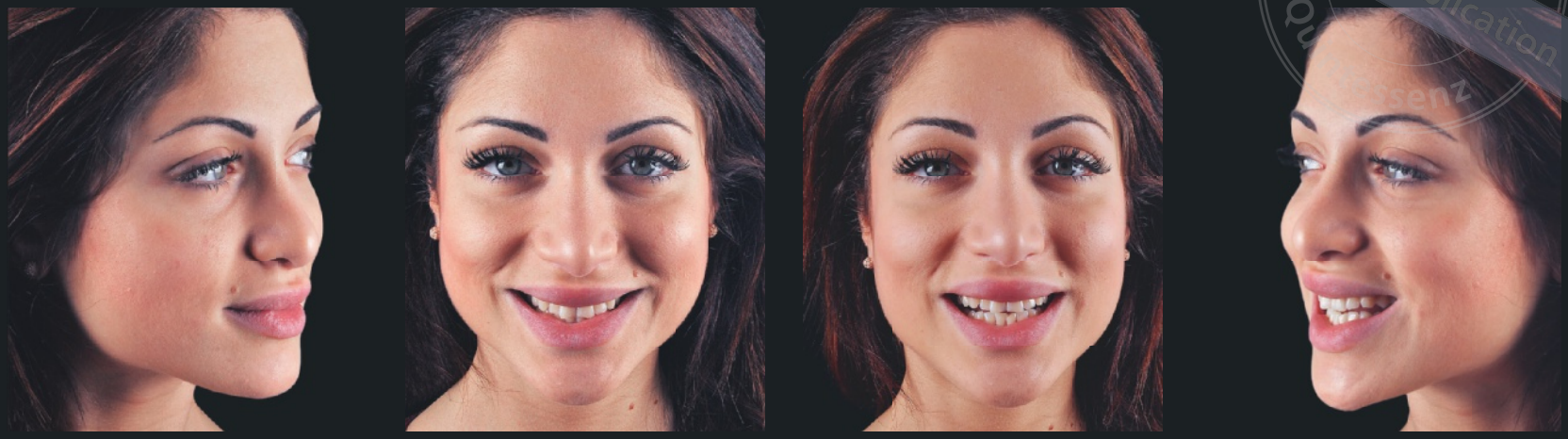


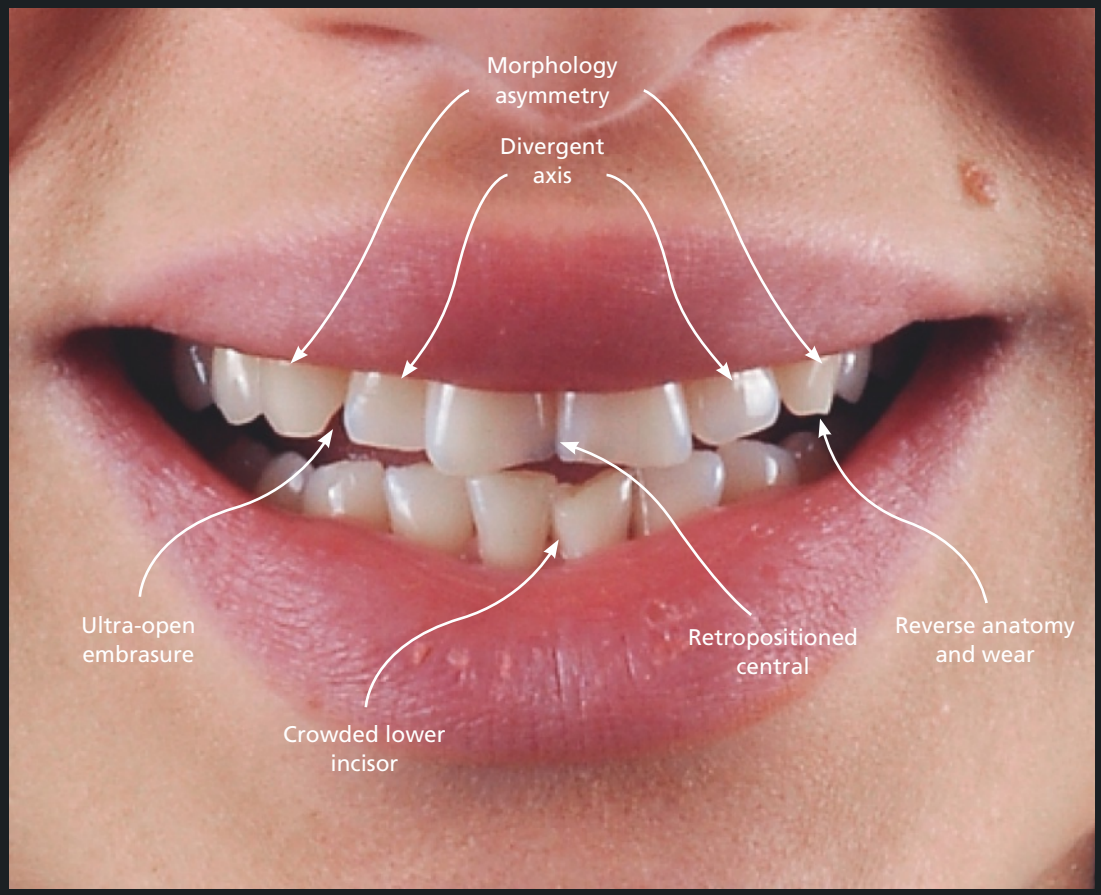
Details: integration with soft tissues and lips.

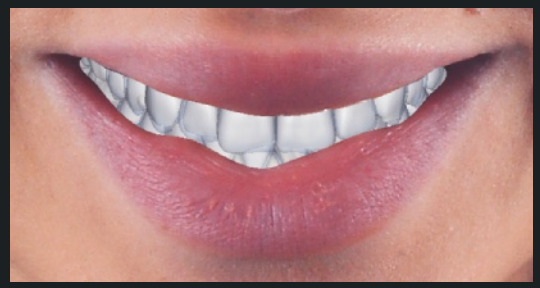


Preoperative and postoperative views of the lower incisors.

Immediate face integration.







CASE 3

STEP 1 Esthetic analysis

It is the details
that make the difference.

An incredibly stressful procedure for the clinician is a high esthetic demand from a patient not willing to undergo any other multidisciplinary treatment, which would simplify the approach in such a case.

Esthetic issues

Analysis of this patient's smile revealed the presence of mild crowding and a color with which the patient is not satisfied. The need is to have an alternative to orthodontic treatment albeit invisible. From the outset, in such a case, details are effective and needed to achieve success in such a patient.
Once the virtual patient has been generated, it is important for this type and alignment to understand the course of the incisal plane, which will have to be parallel to the bipupillary line and centered on the midline.
A closer view of the relationship between the new design and the lips allows us to assess the relationship between the incisal margin and the outline of the lower lip.

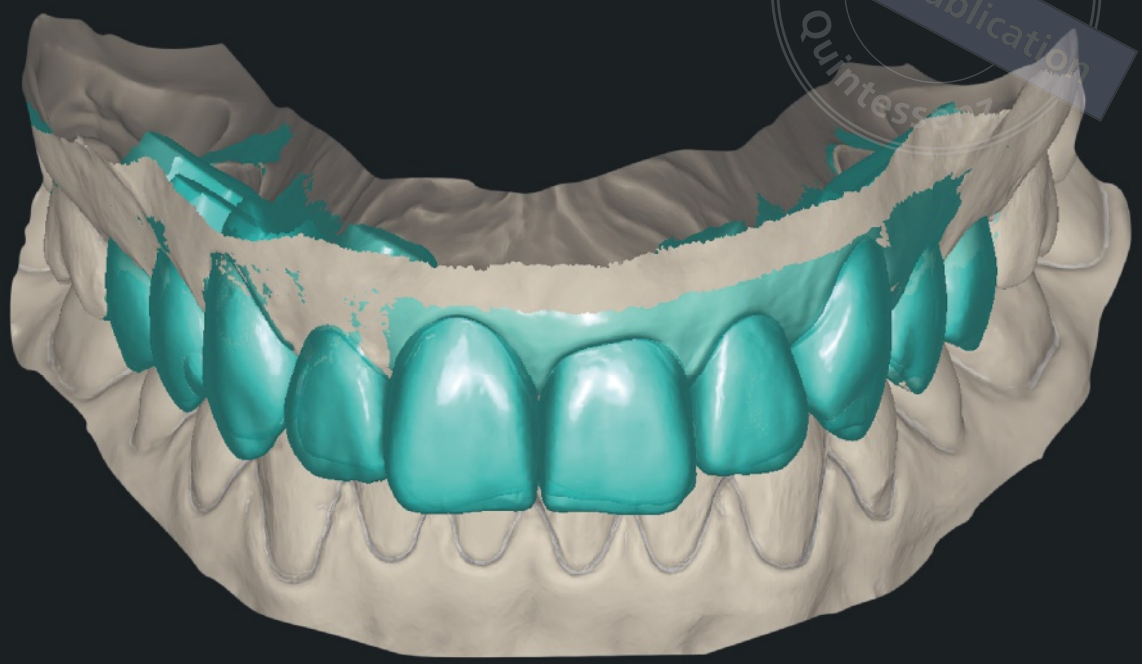
What does the patient feel?

Patient questionnaire

1. **What is your main concern about your smile?** *Poor esthetic crowding and color.*
2. **Would you like to change the color?** *Yes!*
3. **Are the teeth visible enough?** *Yes.*
4. **Is the lateral zone empty or properly filled?** *I don't know.*
5. **What is your preferred tooth shape?** *I don't care about the shape. I would like to have beautiful smile.*
6. **Would you like a perfect smile or a natural one?** *Natural.*
7. **Are you available for periodontal surgery?** *No.*
8. **Are you available for pre-orthodontic treatment?** *No, I would like to improve my smile without orthodontics. I am looking for a quick smile makeover.*

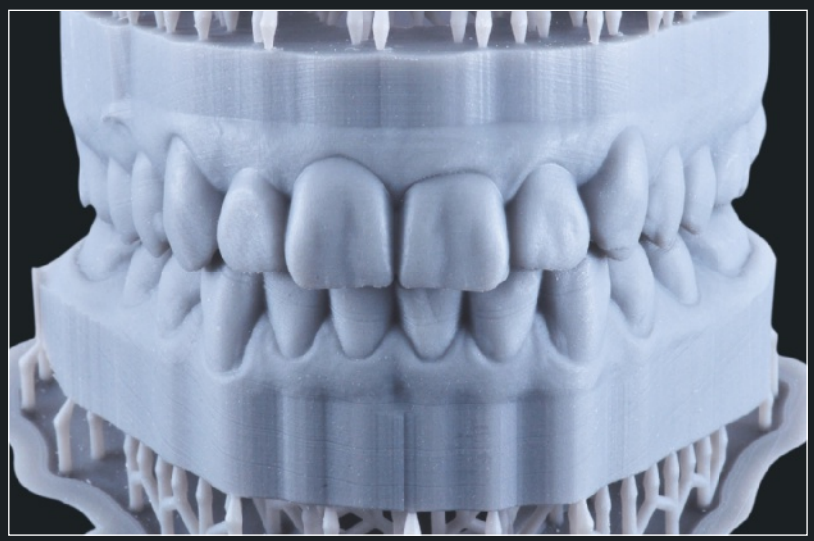
The digital project

The meshes arranged on the initial impression were placed with reference to the existing gingival outline. This situation can change the selected shape, shifting from a rectangular shape into a triangular one on laterals.



Tip

The resolution selected for the 3D printing of the mock-up model is 200 µm.
A greater resolution is not useful at this stage.
The resolution should be enough to clearly distinguish the gingival sulcus.



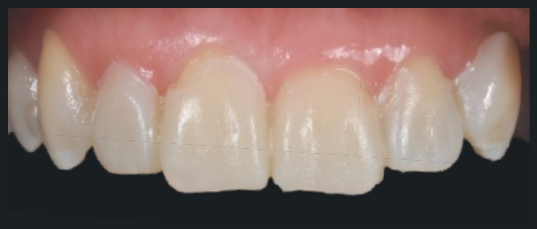
STEP 2 Mock-up

The verification of the mock-up must be done by taking new photographs of the face, in the same way as the initial photo.

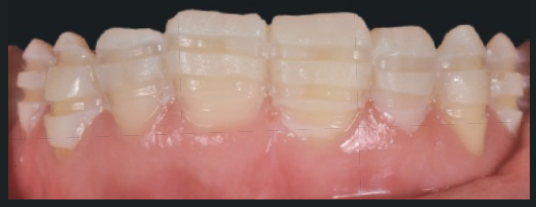
Tip

It is preferable not to have the patient evaluate the mock-up using a mirror; the risk is that the patient would concentrate on the small imperfections in the resin rather than the overall picture.

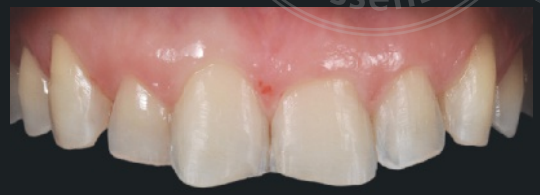
STEP 3 Preparation and impression-taking



The mock-up is in position.

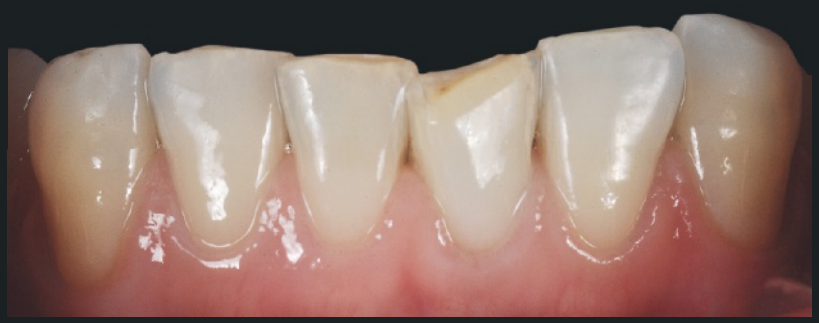


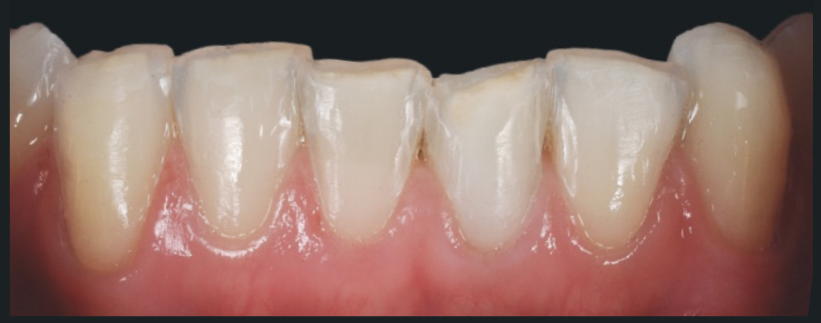
A reduction in height was not necessary because the space available was greater than 1 mm when compared with the final edge position.



A more aggressive preparation was performed on tooth 22 and on the distal transition line of tooth 11.

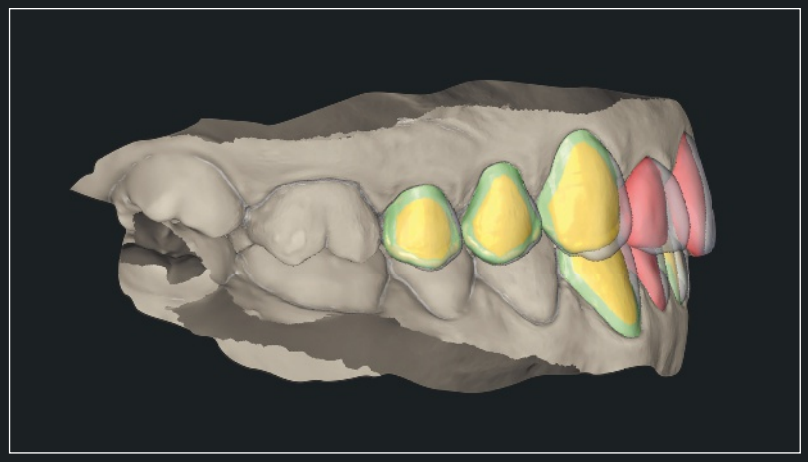
100% of the surface was enamel.



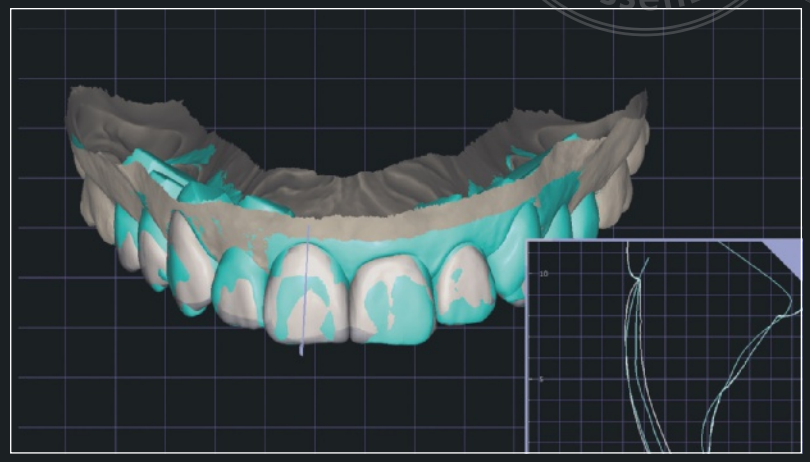


Regarding the lower incisors, a minimal lower incisal reduction can be achieved.
The preparation of the incisal–buccal angle should achieve a minimum thickness of 0.5 mm, with a rounded angle.

STEP 4 Laboratory work



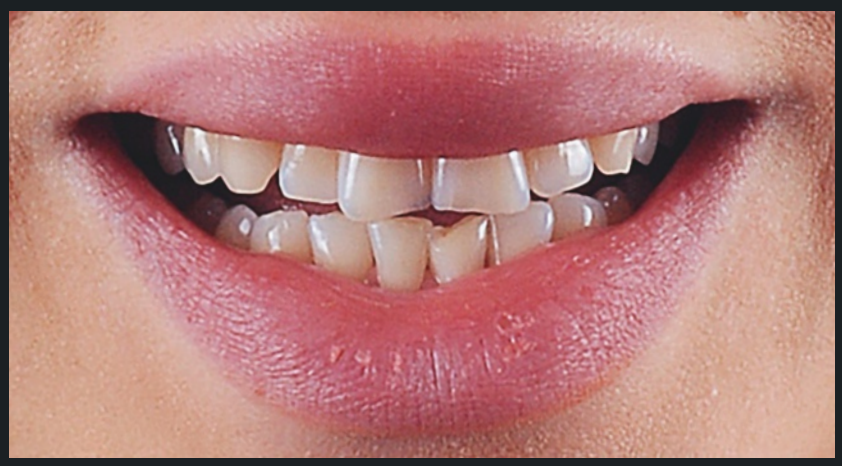
Volume of the mock-up linked with the finishing lines.

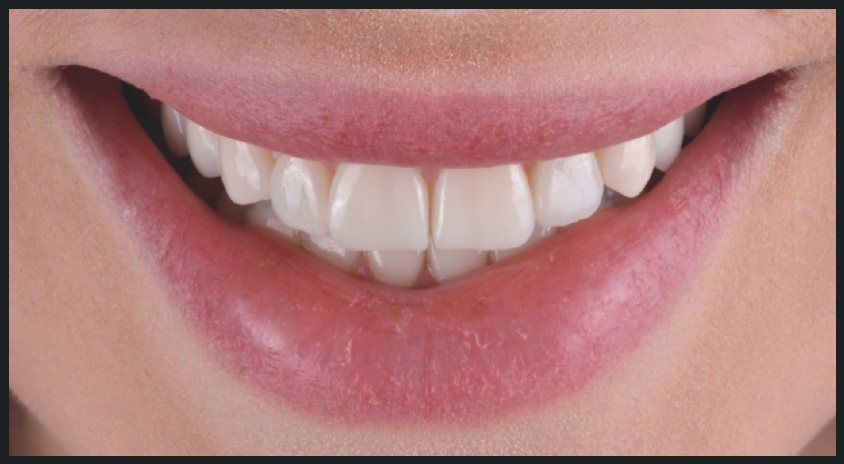


In the cut view, it is possible to see that the planned thickness was respected and reproduced. The emergence profile was settled on the thickness of the soft tissues.

Ultrathin milled veneers.

STEP 5 Delivery of restorations





First-time facial integration

The esthetic result was achieved without a try-in of the final restorations. Predictability is the result of the previous steps. More time and effort was put on designing and planning than on intraoral adjustments.