DR. RONALDO HIRATA

HIRATA'S TOOTH BONDING ART

ADHESIVE COMPOSITE RESTORATIONS: CONCEPTS AND TECHNIQUE



osteocom
The dental learning platform

Hirata's *tooth bonding art*

Adhesive composite restorations: concepts and technique

By Dr. ***Ronaldo Hirata***

About the Course:

Professor Ronaldo Hirata and osteocom are pleased to introduce **"Hirata's tooth bonding art",** a unique **theoretical + hands-on course** dedicated to adhesive composite restorations.

Composite restorations are versatile tooth coloured filling materials composed of plastic and glass particles that are used to **fill cavities**, **seal deep fissures**, and sometimes to **restore extensively damaged teeth**.

Due to their **versatiliy, reversibility, and repairability**, composites are widely indicated in daily practice, replacing traditional amalgam-based materials and providing improved esthetic outcome.

These restorations may be used as **less invasive alternatives** to more traditional crowns and inlays which require extensive tooth preparation, and can be used to make cosmetic changes.

It is mandatory for the conservative and restorative dentistry professional to recognize those clinical situations where the correct implementation of composited restoration strategies poses a concrete advantage over alternative techniques.

Among the techniques described in the literature, **the layering technique** is commonly claimed to reproduce the aspects of natural dentition and to allow a high level of control over the stress generated by polymerization shrinkage.

However, its correct application relies on a deep understanding of several key criteria, such as the **detailed application of the adhesive procedures**, **material handling** and **dental anatomy**, making it a complex and time-consuming technique.

To overcome such drawbacks, **innovations in polymer chemistry engineering** and **new layering techniques** have been proposed.

Low shrinkage composites have been developed for bulk filling of cavities, **eliminating the steps required in traditional layering techniques**, which results in a **substantial restoration procedure simplification**.

In addition, **bulk filling** allows the restoration to be built in either one or two layers, according to the type and features of the bulk-fill composite.

"Hirata's tooth bonding art" web series comprises lectures, clinical demonstrations and detailed hands-on training videos, with the aim of providing the learner with **the latest indications on composite restoration strategies**.

The program embraces the **fundamental techniques for composite layering** (dentin/chromatic/achromatic enamel), both for anterior and posterior restorations, as well as the **modified low shrinkage composite technique** using fewer layers and the use of **simplified esthetic composite systems**.

The didactic approach chosen by the Author - Professor Ronaldo Hirata - sees **a thorough step-by-step description of each technique** addressed, comprising an analysis of the rationale and the challenges posed by their application.

The **concepts behind adhesive restoration strategies** and **how to avoid post-operative sensitivity** are addressed in dedicated mono-thematic lectures.

Different anterior restoration strategies and techniques are carefully portrayed through clinical demonstrations and **hands-on training videos**, offering the learner the possibility to immediately replicate the approaches shown by Professor Hirata.

The **results of the research on conducted at the NYU** on polymers analysis, biomechanical behavior of restorative materials and dental adhesives analysis are also presented.

Format Description:

The course comprises **26 Lectures,** including **7 hands-on tutorial videos for immediate application** of the techniques described.

“Hirata’s tooth bonding art” divides into **3 modules**:

- Lectures 1 to 10 - **Principles of dental adhesion** - Theoretical and Hands-on.
- Lectures 11 to 17 - **Dentin Adhesion, adhesives, bulk-fill flowable resins and cosmetic contouring** - Theoretical and Hands On.
- Lectures 17 to 26 - **Self-etch and universal adhesives; post-operative sensitivity** - Theoretical and Hands On

Learning Objectives:

- Recognize those clinical situations where composites provide the best advantages in terms of low invasivity and estethics.
- Get a deeper understanding of the various approaches made available by adhesive systems and learn how to put them in action.
- Find out how to avoid post-operative sensitivity.
- Master traditional layering procedures.
- Comprehend the most innovative simplified composite techniques, involving the use of bulk fill composites, simplified bonding systems and new composites.

By enrolling in this training course, you’ll get the opportunity to understand, deepen and master different aspects:

- differences between the adhesive systems available on the market today - conventional, self-conditioning, and universal - and how to correctly choose

between them

- use of phosphoric acid on dental enamel
- matrix and wedge systems for class II restorations
- cosmetic conturing
- prophylaxis, modified isolation, waxing, silicone index, and layering protocols
- the leading causes of failure in restoration fractures
- enamel hypoplasia causes and solutions
- composite layering technique
- finishing, polishing, texturing
- incisal edge adjustment, midline and symmetry between central incisors
- staining technique for the anatomy of the cusps
- mirror areas edge and proximal contact fit
- causes for sensitivity, how to intercept them through the correct protocol, and how to treat it immediately after identifying the operative failure
- layering technique: opaque halo, effect resin, dentin, and enamel
- use of aluminum oxide sandblasting, acid etching, and adhesive systems
- how to exchange an unsatisfactory restoration with Bulk Fill Flow resin composites

Number of Lectures: ***26***

Duration: ***13h***

Language: Portuguese - ***Subtitled in English***

Video Lecture 1: Principles of Adhesion

The first lecture introduces current adhesive systems in terms of failures, indications and rationale of use.

The main objectives of this theoretical lecture are:

- understand the main differences between the types of bonding materials on the market today – the conventional, self-conditioning, and universal;
- learn why, when and how to use these materials;
- examine the advantages of reducing the number of operative steps.

Video Lecture 2: Principles of Adhesion in Enamel

In the second lecture Dr. Hirata reviews the fundamentals of adhesion: increasing retention and sealing of the interface, modifying the mechanical strength of the material through adhesive systems.

The objectives of this lecture are:

- learn the composition of enamel and dentin as they come together;
- know the use of phosphoric acid in the inorganic content of dental enamel;
- understand the main differences in adherence.

Video Lecture 3: Class IV Tooth 21 - Hands-on class

This hands-on video describes in full the restorative process of a fractured central (tooth 21), comprising the use of a silicone guide for the palatal index, layering with Ivoclar Vivadent Empress Direct system, with the presence of an opaque halo and area of effect.

Hands-on ref.

- Upper Jaw model + teeth 11, 21, 12, 22

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 4: Class II Tooth 17 - Hands-On Class

In this hands-on video Prof. Hirata performs the restoration of a Class II case.

This video allows the participant to get a deeper understanding of:

- what are the best matrix and wedge systems for class II restorations
- how to use these systems, and why opt for them
- chromatic/achromatic and use of dye for the naturalness of the restoration.

Hands-on ref.

- Upper Jaw model + teeth 16, 17

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 5: Clinical Demonstration Class II • Part I

This video opens a series of 2 videos portraying a case treated by Prof. Ronaldo Hirata.

The focus of the description offered by this first content involves the removal of the old amalgam-based restoration with a diamond bur, aluminum oxide sandblasting, and rubber dam isolation tricks.

Video Lecture 6: Clinical Demonstration Class II • Part II

This second part of the clinical case introduced in the previous video shows the finalization of the Class II restoration.

In particular, the learner will deepen:

- cavity prophylaxis and smear layer removal (smear on)
- selective enamel acid conditioning and self-etching adhesive usage
- relining procedure with flowable composite
- sito-specific anatomy of the element 36 (cusps).

Video Lecture 7: Cosmetic Contouring Clinical Demonstration • Part I

This video opens a series of 2 videos pertaining to the same clinical case.

The objective is to show cosmetic conturing best practices in a composite reconstruction case on teeth 11 and 21 with presence of a diastema.

Thanks to this first part of the case presentation the learner is given the possibility to deepen:

- prophylaxis protocol
- modified isolation technique
- waxing procedures
- step-by-step silicone index creation
- layering protocol.

Video Lecture 8: Cosmetic Contouring Clinical Demonstration • Part II

This video portrays the second part of the clinical case introduced in the previous content.

The focus switches from the use of silicone guide for palatal wall, opaque halo max. 0.4 mm, to the analysis of the incisal effects, enamel, and contact points with the click technique.

A new technique for pulling the polyester strip is also introduced.

Video Lecture 9: Fracture repair - Clinical Demonstration

This lecture focuses on metal-free implant installation in simple cases. We will dive into This clinical video portrays a case of incisal edge repair on teeth 11 and 21.

The leading causes of failure in fracture restoration are addressed, and the the protocol presented involve:

- aluminum oxide sandblasting
- modified isolation
- selective enamel acid, and silane
- pure adhesive (due to no dentin exposure), finishing and polishing with discs, rubber tips
- occlusal adjustments.

Video Lecture 10: Dental Hypoplasia - Clinical Demonstration

Understanding the causes of enamel hypoplasia and how to fix it, this is the main objective of this clinical demonstration by Prof. Ronaldo Hirata.

Hypoplasia removal and beveling procedure, rubber dam isolation, total acid etching and universal adhesive system application are discussed.

The protocol presented involves:

- composite layering technique
- finishing and polishing with texturing.

Video Lecture 11: Dentin Adhesion

In this theoretical class on dentin adhesion, Prof. Hirata describes the dentin composition, its characteristics and behavior in contact with acid etching.

Objectives of this class:

- understand the negative and positive aspects of the smear layer
- know the essential components of adhesives and their indications.

Video Lecture 12: Symmetry Case 1 - Hands-On Class

This Hands-On class covers all the steps involved in incisal edge adjustment on two central incisors.

Furthermore, tips concerning mirror areas, edge and fit at proximal contact are shared with the learner.

Hands-on ref.

- Upper Jaw model + teeth 11, 21

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 13: Bulk Flow Part 1 - Hands-On Class

This hands-on lecture covers the first part of the section dedicated to Class I restoration with bulk flowalble composite resin.

While a single layer of composite fills the first 4 mm, the last 2 to 3 mm are subject to the final two steps: chromatic and achromatic enamel shading.

Staining technique when approaching cusps is also covered.

Hands-on ref.

- Upper Jaw model + teeth 14, 15, 16, 17

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 14: Bulk Flow Part 2 - Hands-On Class

This second section of the section dedicated to Class I restoration hands-on training closes the description of the procols involved in bulk flowalble composite restoration.

Hands-on ref.

- Upper Jaw model + Teeth 14, 15, 16, 17

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 15: Symmetry Case 2 - Clinical Case

This video depicts a clinical case where Professor Hirata puts into practice the adjustments learned in the previous hands-on class on the subject (video #12).

The lecture addresses:

- incisal edge adjustment, midline and symmetry criteria between the two central incisors

- mirror areas edge and fit at proximal contact.

Video Lecture 16: Class I Bulk Fill Flowable - Clinical Case

In this clinical case the learner is given the possibility to watch Prof. Hirata as he puts in action the approaches shown in the hands-on video on bulk fill flowable resin application (lecture #13 and #14).

This clinical case allows to deepen:

- Step by step description of isolation and preparation procedures, acid etching and adhesive system application,
- Bulk Fill flowable application leaving 1.3mm for the final step - enamel chromatic shading.
- Occlusal adjustment, finishing and polishing.

Video Lecture 17: Dental Hypoplasia - Clinical Case

This clinical video offers the learner:

- a step by step description of the removal of hypoplasia on a lower incisor caused by trauma where microabrasion is not enough to solve the problem;
- indications towards the ideal preparation and how to deal with deep stains without necessarily removing them completely.

Video Lecture 18: Self-etch and universal adhesives

In this class Prof. Hirata discusses the biggest issues in the use and handling of total and self-etching bonding materials.

The composition and the differences between adhesive systems and the characteristics of universal adhesives are presented and thoroughly illustrated.

The objective of this class are:

- self-etching and universal adhedives case selection
- the ideal protocol to minimize the risk of future failure.

Video Lecture 19: Post-operative sensitivity to cold

This video lecture examines post-operative sensitivity related to margins and enamel.

The learner is brought to examine and understand the causes of sensitivity, how to avoid them running the correct operative protocol, and how to treat it immediately after recognizing the operative failure.

A specific focus is dedicated to long term success rate optimization in adhesive restorations.

Video Lecture 20: Post-operative sensitivity to chewing (Bite sensitivity)

In this lesson Prof. Hirata focuses on masticatory sensitivity.

Adhesive failures and its happening in interfacial areas are analysed, as well as treatment options, techniques and concepts to avoid this problem.

Video Lecture 21: Class I using regular bulk-fill composite - Hands-On Class

This tutorial hands-on video shows a Class I restoration with Bulk Fill Restorative A2 resin on premolars.

The main objectives of this practical lecture are:

- understanding the advantages of using a single increment of this resin in medium cavities

depth, compared to two different bulk composites brands

- understand the anatomy of lower premolars from the perspective of the conservative and restorative dentistry specialist.

Hands-on ref.

- Lower Jaw model + Teeth 34, 35, 36, 37

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 22: Peg lateral tooth 12 - Hands-On Class

Thanks to this detailed step by step hands-on video lecture the learner will get a deeper, practical understanding of:

- use of aluminum oxide blasting, acid etching, and adhesive systems conoid lateral incisor treatment;
- use of the palatal index (guide of silicone);
- layering technique application, opaque halo, effect resin, dentin and enamel;
- interproximal contact with the "click" technique.

Hands-on ref.

- Upper Jaw model + Teeth 11, 12

Replicate this hands-on tutorial on the model quoted above and replicate immediately what you are learning from Professor Ronaldo Hirata.

Video Lecture 23: Peg Lateral - Clinical Case

In this video lecture Prof. Hirata shows the clinical application of the protocol outlined in the previous hands-on training lecture.

The following topics will be widely discussed:

- the use of aluminum oxide sandblasting, acid etching, and adhesive system;
- resin system technique using KERR premise composite;
- use of the palatal index (silicone guide);
- layering, opaque halo, resin effect, dentin, and enamel.

- click technique for contact point analysis.

Video Lecture 24: Central diastema - Clinical Case

This video lecture portrays the treatment of a diastema on upper central incisors.

The learner will deepen:

- Use of waxing and absolute isolation.
- Enamel surface sandblasting before acid etching and adhesive system application.

Video Lecture 25: Exchange of unsatisfactory restoration with bulk fill flowable composite - Clinical Case

This lecture describes thoroughly how to exchange an unsatisfactory restoration with bulk fill flowable composite.

The main learning objectives are:

- how to exchange of unsatisfactory restoration with bulk fill flow resin composites
- acid selective etching of enamel and self-etching adhesive system application
- learning the advantages and disadvantages of the technique portrayed
- occlusal adjustment and polishing.

Video Lecture 26: Posterior teeth regular bulk-fill technique - Clinical Case

This lecture describes thoroughly how to correct two unsatisfactory restorations on teeth 46 and 47.

The focus of the video covers:

- rubber dam isolation, prophylaxis, selective enamel conditioning, universal adhesive system application
- use of regular Bulk fills consistency on both teeth
- occlusal adjustment and polishing.

Dr. Ronaldo Hirata

Professor Hirata is an Assistant Professor in the Department of Biomaterials and Biomimetics at the NYU College of Dentistry. Professor Hirata also has a private dental clinic in Curitiba, Brazil, which focuses on Esthetic Dentistry. He is the coordinator of several post-grad programs with a focus on Esthetic and Restorative Dentistry in Brazil and lectures extensively on Esthetic Restorations in the US, in Europe and in the Latin American countries.

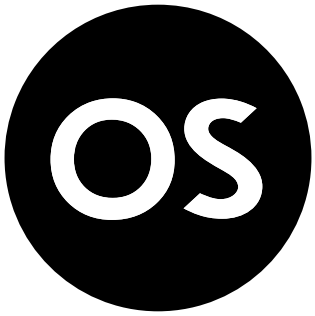
Professor Hirata's research interests are in Polymers analysis (Shrinkage, gap formation, volumetric analysis); Biomechanical behavior of restorative materials (Fatigue test); Dental adhesives analysis; Mechanical evaluation of dental implant components and in Evaluation of impression materials behavior.

Professor Hirata has published papers and articles in worldwide renowned scientific journals, and he is the author of 3 books.

His first textbook “TIPS in esthetic dentistry” was launched in 2011 and translated in 3 languages. The second book “SHORTCUTS in Esthetic Dentistry,” was published by Quintessence and is available in 3 languages.

In 2021 professor Hirata presents his new book published by Quintessence Publishing “RECIPES for composite restorations”.




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