

THE
2026-27

Dental UPDATE

*A 20-hour Survey of Pressing Clinical, Practice Management,
Legal and Risk Management Issues in the Practice of Dentistry*



AMERICAN EDUCATIONAL INSTITUTE, INC.

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David R. Victor, JD
CEO

Dear Registrant:

You practice in a dynamic and challenging environment. While keeping clinically current is imperative, it isn't enough. You must also acquire the knowledge necessary to successfully manage your practice, avoid legal pitfalls and minimize myriad liabilities exposures. ***The 2026-27 Dental Update*** is designed to assist you in that endeavor.

In one course, you will receive 20 hours of practical instruction from nationally recognized experts in dentistry, practice management, healthcare technology, law, and clinical innovation. Presentations cover a diverse range of topics including artificial intelligence in dentistry, implant site development and immediate implant placement, restorative-driven orthodontics, endodontic access and irrigation techniques, laser-assisted periodontal therapy, photobiomodulation, leadership and practice growth, dental business structures, and insurance claims management. Together, these sessions provide valuable clinical, operational, and strategic insights to help practitioners enhance patient care, improve practice performance, and prepare for the future of dentistry.

To help you assess your level of comprehension we offer brief self-evaluations that may be taken either before or after the presentations concerned. These tests are included in this syllabus and are identified by the black edges of the pages on which they are featured.

As always, I am very interested in your reaction to this year's presentation. Please do me the favor of taking the time to complete the evaluation questions presented on screen for each presentation. In addition, I encourage you to contact any of our faculty members directly with questions or comments.

Finally, I urge you to take advantage of the experience and expertise of your colleagues taking the course via our real-time and interactive chat feature. Should you have any technical or other questions about the program's operation just ask them at our help desk and AEI's experienced staff will respond promptly.

Thank you for your participation and please accept my best wishes for a safe, enjoyable and enlightening visit.

Cordially,

AMERICAN EDUCATIONAL INSTITUTE, INC

David R. Victor, Esq.
CEO

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COURSE OBJECTIVES



After completing *The 2026-27 Dental Update* you should have acquired the knowledge that will better enable you to better:

- Understand **relationship-based diagnostic process** to improve patient engagement, case acceptance, and long-term oral health outcomes.
- Explain how **artificial intelligence models** are developed and applied to radiographic interpretation.
- Develop effective strategies for **implant site preservation** and apply surgical techniques to optimize outcomes in implant dentistry.
- Understand the principles and clinical implementation of the **LANAP protocol** for the treatment of moderate to severe periodontal disease.
- Apply advanced principles of **access cavity design** to improve canal location, debridement, and long-term endodontic success.
- Assess how **artificial intelligence** can improve diagnostic accuracy, workflow efficiency, and patient communication.
- Understand how **orthodontic diagnosis and smile analysis** can be integrated into general practice to enhance restorative treatment planning and esthetic outcomes.
- Understand the therapeutic mechanisms and clinical benefits of **photobiomodulation (PBM)** in dental procedures, including tongue-tie release.
- Apply evidence-based **irrigation strategies** to improve canal disinfection, safety, and endodontic treatment outcomes.
- Integrate **artificial intelligence** tools into clinical workflows while addressing operational, financial, and ethical considerations.
- Understand the legal and economic implications of **emerging trends** in practice opportunities and structures.
- Understand **orthodontic and restorative strategies** for managing anterior tooth wear and optimizing implant outcomes in the esthetic zone.
- Apply **mission-centered leadership principles** to guide teams, build trust, and navigate the evolving challenges facing the dental profession.
- Implement protocols for **immediate implant placement and provisionalization in the esthetic zone** while applying clinical criteria for stability and esthetic outcomes.
- Understand **fundamental shaping principles** and rotary instrumentation techniques to achieve safe, efficient, and predictable root canal preparation.
- Apply **advanced shaping concepts and modern instrumentation strategies** to preserve dentin, improve efficiency, and reduce procedural risk during root canal preparation.
- Understand the evolving role of **oral health in primary care** and apply strategies that strengthen medical–dental integration, improve access, and advance whole-health outcomes.
- Apply **immediate implant placement protocols in posterior sites** while accounting for bone quality, socket morphology, and load considerations.
- Understand techniques and strategies for effective **claims denial management**.

All learning objectives above address IOM/ACGME core competencies.

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FACULTY DISCLOSURES



The individuals listed below have control over the content of *The 2026-27 Dental Update*. None of them have a financial relationship with an ineligible company.

David R. Victor, Esq., CEO, American Educational Institute

Billy J. Allen, president, American Educational Institute

Perry Perzov, DDS, advisory committee member

Eric J. Ploumis, DMD, JD, faculty member

Robert Convissar, DDS, faculty member

Gary Glassman, DDS, faculty member

Brett H. Kessler, DDS, faculty member

Brian J. Jackson, DDS, faculty member

Ericka Aguilar, faculty member

The following faculty members of *The 2026-27 Dental Update* have a financial relationship with an ineligible company:

Chris Balaban, DMD, MSc, FACD, faculty member, advisor for Overjet

Brian J. Jackson, DDS, faculty member, key opinion leader for Implantdirect and Adin

Sal Lotardo, DDS, FAACD, faculty member, key opinion leader for Ortho Arch

All lectures presented by speaker with relevant financial relationships have been peer reviewed. All speakers with finance relationships have attested that clinical recommendations they make are evidence-based and free of commercial bias.

FACULTY

Brett H. Kessler, DDS

Brett H. Kessler, DDS is the recent past president of the American Dental Association and has practiced esthetic, functional, and reconstructive dentistry since 1995. A nationally recognized leader, he has served as president of the Colorado Dental Association and as a Trustee of the ADA, where he chaired multiple committees including the Science and Research Institute and Audit Committee. Dr. Kessler is a frequent national and international speaker on well-being and leadership, and a Fellow of the American College of Dentists, International College of Dentists, and Pierre Fauchard Academy. He has also been consistently recognized as a “Top Dentist” and honored for his contributions to health and wellness.

You may contact Dr. Kessler with your questions or comments at bikodds@gmail.com.

A Comprehensive Approach to Dentistry: Co-Discovery, Value, and the Complete Exam

Brett H. Kessler, DDS



A Comprehensive Approach to Dentistry: Co-Discovery, Value, and the Complete Exam

Brett H. Kessler, DDS
Private Practice, Denver, CO
President, American Dental Association
Former Clinical Associate Professor, University of Colorado, School of Dentistry



TOWNCENTER
DENTISTRY AND
ORTHODONTICS

Established December, 2003



Practice Philosophy

- Relationship based practice with a comprehensive approach towards optimal dentistry
 - Relationship based vs. Commodity based



Perception of Value



Sales 101

- People will purchase a product or service if they value that product or service.
 - Flat screen TV's (\$18 Billion 2022)
 - Bottled Water (\$40 Billion 2022)
- Wants vs. Needs (change of perception)



Wants vs. Needs

- Want – willing to buy at a cost that is reasonable/rational to the buyer
- Need – Feel a sense of entitlement (i.e. someone else should pay)
 - Medical and dental insurance (many uninsured)
 - Dentistry – entitlement?

Wants....




Needs....



Sales 101

- When cost comparison is the only variable, people will choose the cheapest
- If other information that provides value to the consumer is entered into the equation, cost becomes secondary

The best part of waking up...



\$12/can (100 cups/can)=
\$0.12/cup



\$4.50/cup

Sales 101

Logic vs. Emotion

- Decisions to purchase a commodity are *based on*....
- Decisions to purchase a commodity are *justified by*....



Q: How Does This Apply to Dentistry???

A: We must provide value to create a desire for our services from our patients. (want vs. need)



Invest in the Experience



Starbucks spends more \$ on employee benefits than on coffee beans....

The Starbucks "Baristas" create an experience that is 5400 times better than Folgers (\$4.50 vs. \$.12)



Occlusal Therapy:

How do we provide a solution to a problem that most of our patients do not know they have?

We must invest in the experience!



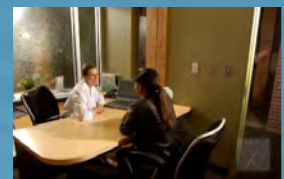
Co-discovery

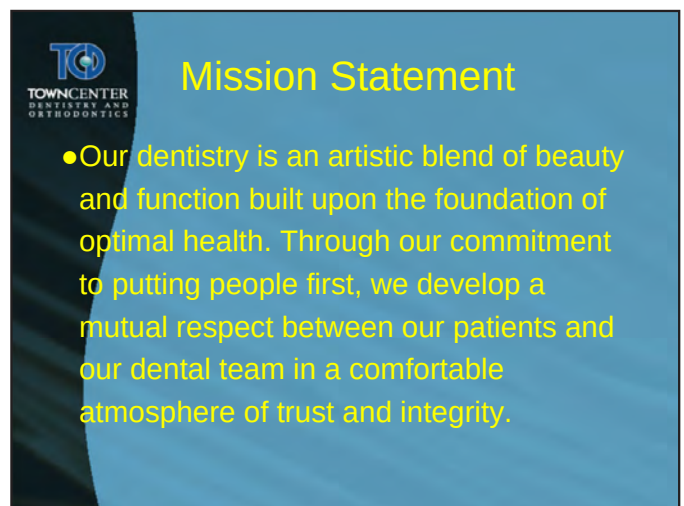
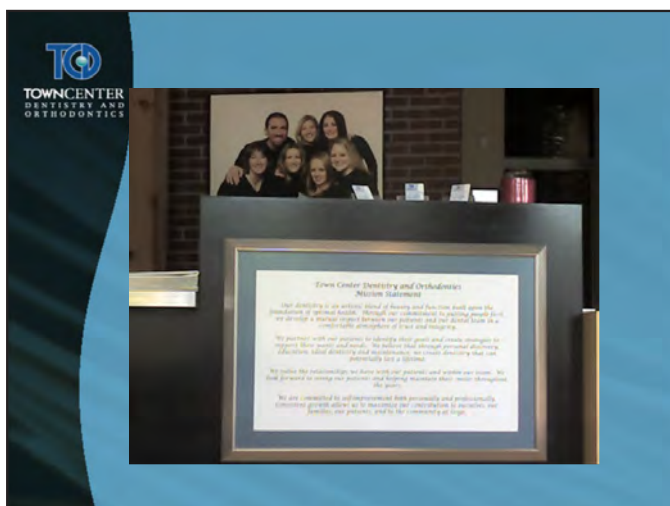
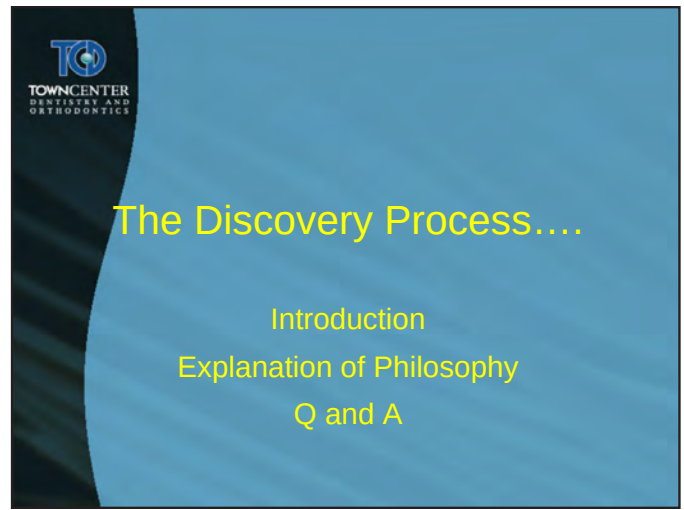
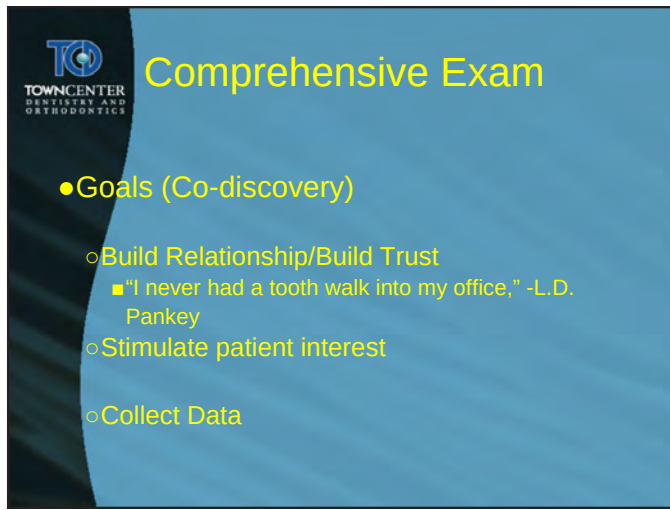
Creating a desirable experience for the patient



Co-Discovery Process

- A process designed for both the Doctor and patient to discover the condition of their oral health.
- The patient chooses what fits for them
- Quality is the constant, time is variable







Mission Statement

- We partner with our patients to identify their goals and create strategies to support their wants and needs. We believe that through personal discovery, education, ideal dentistry and maintenance, we create dentistry that can potentially last a lifetime.



Mission Statement

- We value the relationships we have with our patients and within our team. We look forward to seeing our patients and helping maintain their smiles throughout the years.



Mission Statement

- We are committed to self improvement both personally and professionally. Consistent growth allows us to maximize our contribution to ourselves and our families, our patients, and to the community at large.



Co-discovery Process

- Consultative Approach
 - Questions are designed to help the patient think about the three aspects of focus in our approach.
 - Determine initial short term and long term goals.
 - Q and A (Discovery questions)



Discovery

Practice active listening!

- Establish Relationship
- Share Practice Philosophy
- Chief Concern



Discovery

- Health History
- Dental History
- Maintenance



Discovery

- Health Q's
- Function Q's
- Esthetics Q's



Q and A (Discovery questions)

Volunteer



Discovery

- Goals
 - Short term
 - Long term
- Anything else to complete the picture?



Comprehensive Exam

- Study Models
- Necessary Radiographs
- Digital Photographs



Comprehensive Exam

- Extra-oral exam
 - TMJ – Click, Pop, Crepitus, Range of motion
 - CR Manipulation, IPC, Slide (direction and magnitude), Loading of Joints
 - Muscle Palpation
 - Oral Cancer



Comprehensive Exam

- Intra-oral Exam
 - Operative Exam
 - Restorations
 - Integrity
 - Fractures
 - Caries

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Comprehensive Exam

- Intra-oral Exam
 - o Occlusal Exam
 - Wear Facets
 - Abfractions
 - Occlusion Type
 - Fremitus
 - IPC, Interferences, Grinding Patterns

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Comprehensive Exam

- Intra-oral Exam
 - o Perio Charting
 - Probing
 - Recession
 - Attachment
 - Mobilities
 - Furcations

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Comprehensive Exam

- Oral Tissues (Completion of Oral Cancer Exam)
- Intra-Oral Camera Tour of Mouth
- Highlighting Areas of Focus (Co-discovery)

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Comprehensive Exam

- Minimal solutions are presented in detail
- Short-term Goals/Chief Complaint are briefly addressed
- Emergency Treatment Addressed
- Pt ensured that there is a predictable solution

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Comprehensive Exam

- Patient is sent home with some things to think about or notice about the health of their teeth, gums and/or bite.

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Review of Findings

- Question:
What do we as dentists provide for our patients?
Latin definition of Doctor – “teacher”



Review of Findings

- A continuation of the Co-Discovery Process, usually scheduled one week later
- Key Question:
 - "Based on what we discovered at your last visit, how do you feel about the health of your mouth"
 - Answer will dictate how the review of findings will go

Review of Findings

- Goal: A different paradigm
 - Review pertinent findings so the patient discovers the problems. (Primary Goal)

Review of Findings

Case Study #1

- Summary of Discovery Session
 - 52 y.o. healthy male, smoker.
 - Chief Concern
 - Get established with a new dentist closer to home
 - 8 months since last visit to DDS
 - Goals (initial)
 - Healthy teeth and gums
 - Whiter smile



Review of Findings
(from discovery interview)

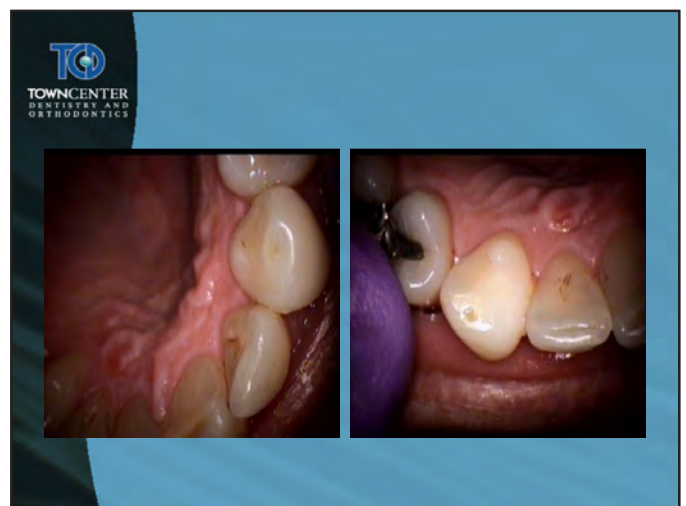
- No pain or sensitivity to H, C, S or Ch
- No Pain in Gums. Brushes 2x/day, rarely flosses, uses Listerine occasionally
- Doesn't notice clenching or grinding, Temporal HA's a few times a week – "stress related"
- Happy with smile, "could be a little whiter"

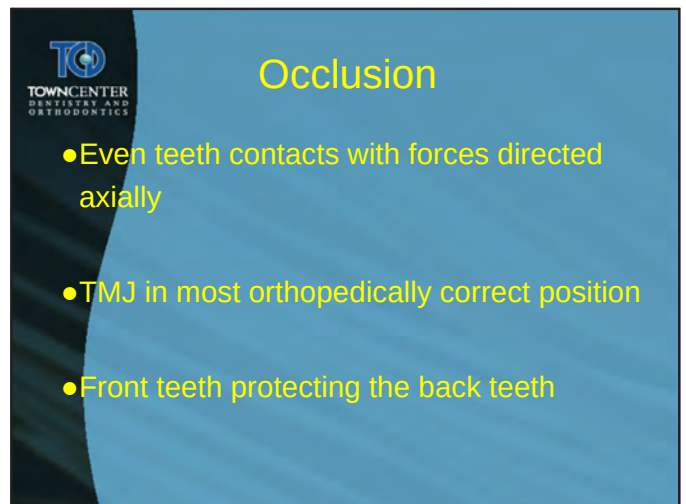
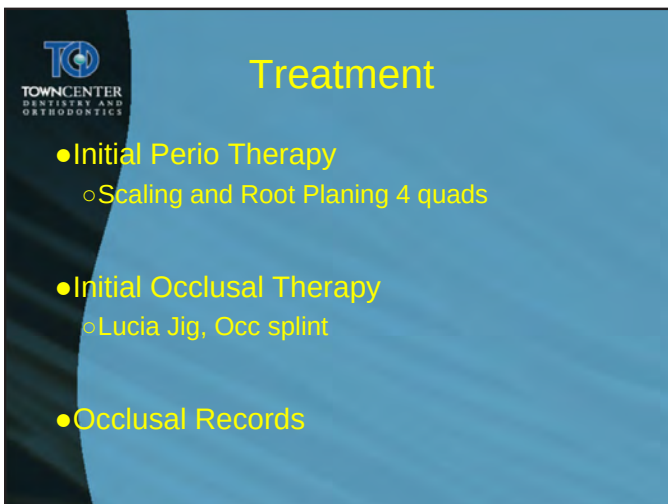
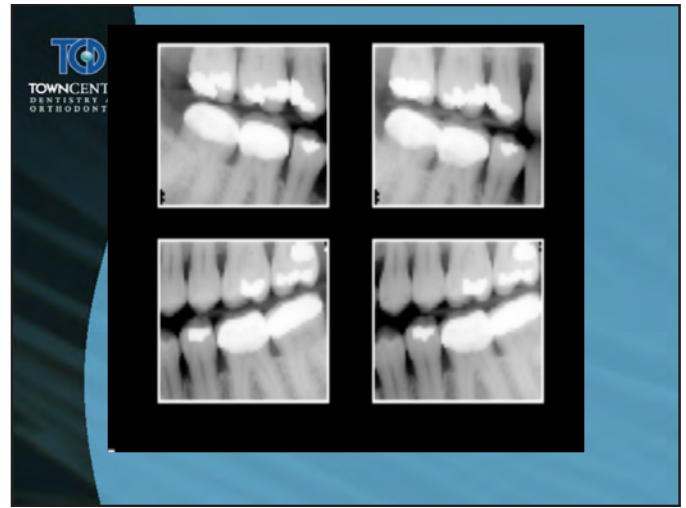
Review of Findings
(from comprehensive exam)

- Pocket depths ≥ 5 mm w/BOP in all 4 posterior quads
- Fracture lines in posterior teeth
- Wear on incisal edges 6-11
- IPC in CR #2/#31 with 2 mm anterior slide, canine guidance in both directions
- Decay/leaking margins (amalgam fillings) #2, #4
- Stained teeth, uneven smile, lower crowding

Review of Findings







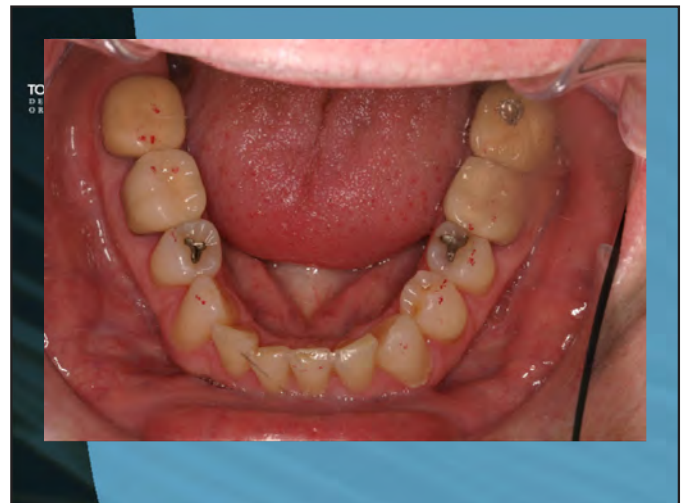
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Treatment Plan

- Occlusal Analysis
 - Model equilibration
 - Wax up
- Treatment Consultation
 - Address Functional and Esthetic Concerns

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Diagnostic Wax-up/Equilibration





How do you handle the question....

Does my insurance cover this?

(insurance companies are brilliant marketers)

Discussion

- How did I come to practice this way?
- Do I make mistakes?
- Do I practice this way for everyone?
 - "Everyone deserves to hear what ideal dentistry sounds like for them".
- Is my practice philosophy for everyone?
 - Dentists
 - Patients

Discussion

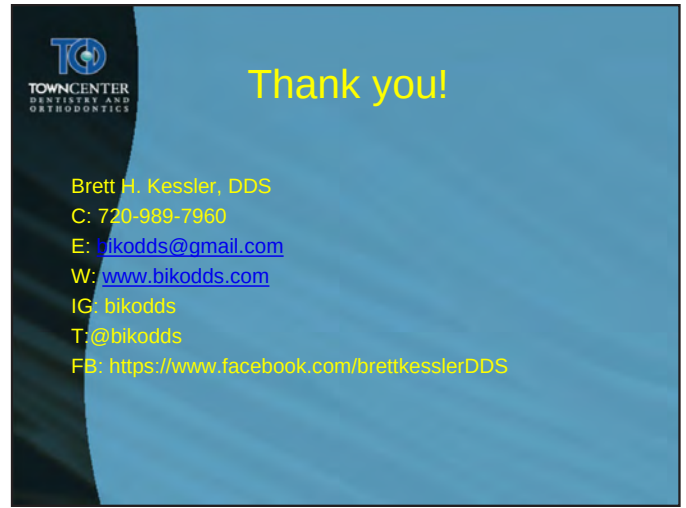
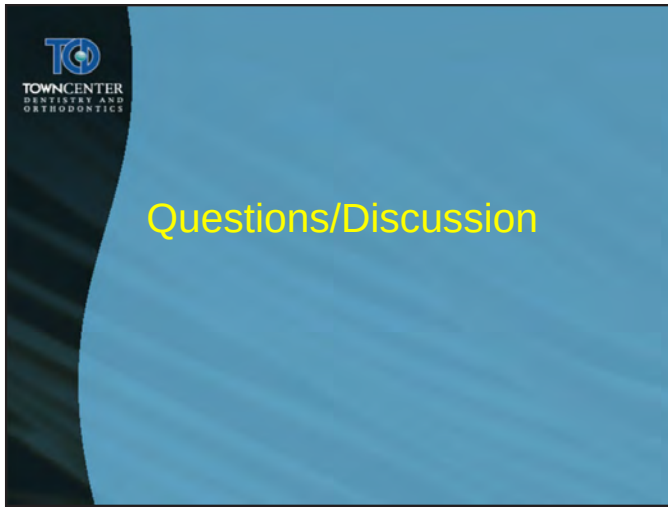
How do I incorporate this into my practice if it is a higher volume practice?

Resources

- [A Philosophy of the Practice of Dentistry](http://www.pankey.org) – L. D. Pankey
www.pankey.org
- [The Art of the Exam](http://www.drbarrypolansky.com) – Dr. Barry Polansky
www.drbarrypolansky.com
- [Evaluation, Diagnosis and Treatment of Occlusal Disorders](#), Peter Dawson
- Dr. Bob Barclay – videotape from 1976
- Dr. Robert Frazer – "Proven Strategies for and Exceptionally Successful Practice in Challenging Times" (2009)

Resources

- [Emotional Intelligence, Primal Leadership](#)
Daniel Goleman
- [Selling the Invisible, The Invisible Touch](#),
Harry Beckwith
- [Seven Habits of Highly Effective People](#),
Stephen Covey



SELF EVALUATION

A Comprehensive Approach to Dentistry: Co-Discovery, Value, and the Complete Exam

1. According to the lecture, the comprehensive practice philosophy focuses on which three areas?
 - a. Prevention, Insurance, and Technology
 - b. Health, Function, and Aesthetics
 - c. Diagnosis, Treatment, and Maintenance
 - d. Restorative, Surgical, and Orthodontic Care
2. T/F - The co-discovery process is designed for both the dentist and the patient to discover the patient's oral health condition together.
3. According to the lecture, what is the primary goal of the Review of Findings appointment?
 - a. Present financial arrangements
 - b. Schedule treatment immediately
 - c. Review findings so the patient discovers the problems
 - d. Obtain insurance preauthorization
4. The lecture states that when cost comparison is the only variable, people will generally choose the cheapest option.
5. Which of the following is listed as a component of the comprehensive examination?
 - a. Genetic testing
 - b. Oral cancer examination
 - c. Sleep study analysis
 - d. Nutritional laboratory testing

Answer Key: 1. B, 2. T, 3. C, 4. T, 5. B

FACULTY

Chris Balaban, DMD, MSc, FACD

Chris Balaban, DMD, MSc, FACD is a practicing dentist in Fort Myers, Florida and former Vice President of Clinical Affairs at Overjet, a leader in dental artificial intelligence. He earned his dental degree summa cum laude from Boston University and holds a master's in Biomedical Science. He is a Fellow of the American College of Dentists. Blending clinical expertise with a passion for technology, Dr. Balaban has been instrumental in advancing the use of AI in dentistry, helping drive Overjet's growth and FDA-cleared innovations. He has authored numerous publications on dental AI, contributed to the ADA's whitepaper on augmented intelligence, and collaborates with leading dental organizations to integrate AI into clinical practice.

You may contact Dr. Balaban with your questions and comments by email at marvard@bu.edu.

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How AI Works in Dentistry

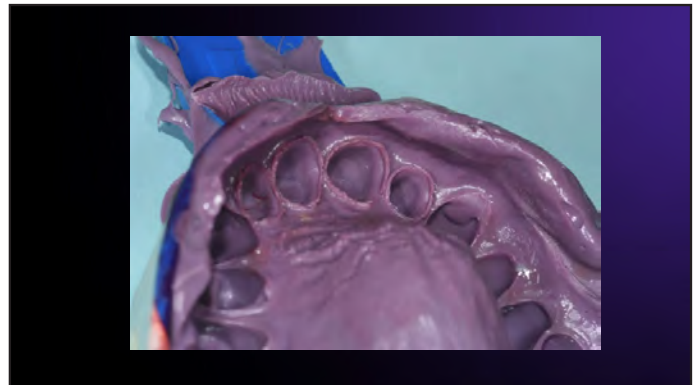
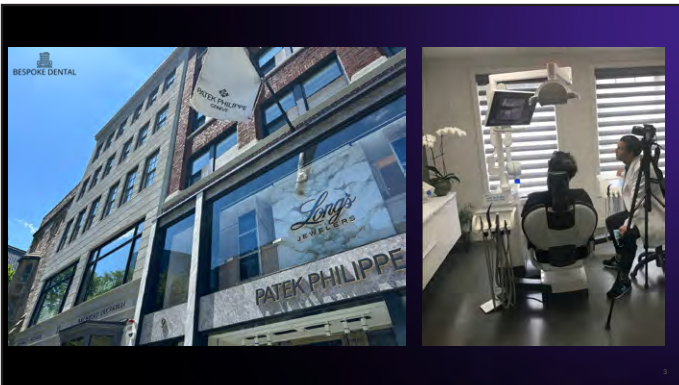
Chris Balaban, DMD, MSc, FACD

The Revolutionary Impact Artificial Intelligence is having on Dentistry

A three part continuum providing in depth look at the what, why ,and how to implement AI with patients and team members

Part 1

How radiographic AI is built and why do we need it?



February 2018



Objectives of the 3 Part AI Continuum

- Learn how dental artificial intelligence models are trained and developed
- Explain the current and the future potential use of AI to improve oral health and overall health
- Understand opportunities within clinical processes in which AI-assisted care can improve clinical consistency in diagnosis and improving the standard of care by which patients receive treatment
- Discuss the current realities and near-future possibilities of AI-assisted care within private practice
- Walk through in-vivo cases that illustrate the accuracy and true-positivity of AI based models, with clinical examples to support
- Learn about how clinicians can leverage the power of AI to better improve communication with patients and enhance patient experience and are drastically increasing case acceptance
- How Payors are adopting AI into their workflows
- How AI is augmenting the 3D workflow and Documentation

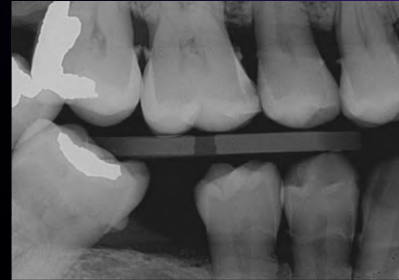
WHY DOES AI LITERACY MATTER TO YOU IN 2026?

- AI tools becoming standard of care
- Insurance companies increasingly using AI
- Patient expectations evolving
- Practice efficiency and profitability impact
- Legal and ethical considerations

Trip down memory lane...



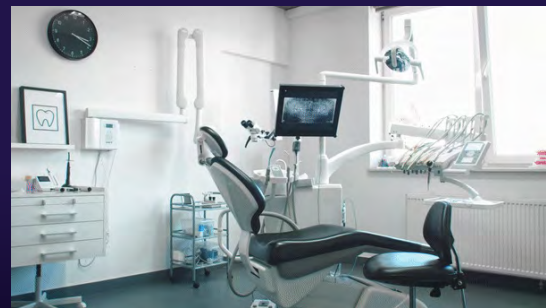
Question: Does this patient exhibit radiographic sign of bone loss? Caries? Calculus?



What are some of our problems in dentistry:

- Time pressure in diagnosis
- Lack of standardization in diagnosis
- Case acceptance/trust

How can AI help solve these challenges?



How do you think
time pressure impacts
diagnostic performance?

When faced with time pressure, clinicians diagnose:

40% less radiographic caries*

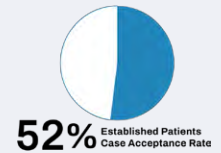
*Plescia, A. et al. (2018). Impact of Time Pressure on Dentists' Diagnostic Performance. Journal of Dentistry.

When faced with time pressure, clinicians diagnose:

67% less Periodontal caries*

*Plescia, A. et al. (2019) Impact of Time Pressure on Dentists' Diagnostic Performance. Journal of Dentistry.

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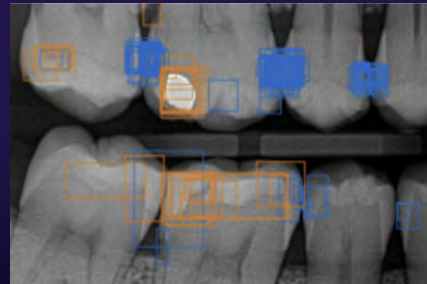
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Opportunities for standardization?



17

Is there a need/opportunity for standardization?



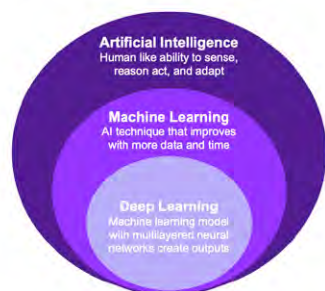
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Overview of AI in Dentistry -
How AI can help solve these challenges

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Key Terms

Key Terms in Artificial Intelligence (AI)



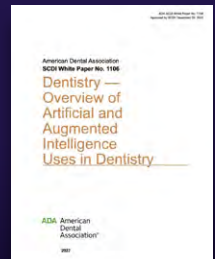
- **Artificial Intelligence (AI):** Computer systems able to perform tasks that normally require human intelligence.
- **Machine Learning (ML):** Able to learn and adapt using algorithms and statistical models to draw inferences from patterns in data.
- **Deep Learning:** Imitates the workings of the human brain in processing data and creating patterns for use in decision making.

AI as Clinical Decision Support

AI is **not** a replacement for professionals. Rather a tool to **enhance the skills** and ability of the clinician.

"**Augmented intelligence** is a subsection of AI machine learning developed to enhance human intelligence rather than operate independently of or outright replace it."

Thusly, the ADA has proposed: SCDI White Paper No. 1106 "Dentistry — Overview of Artificial and Augmented Intelligence Uses in Dentistry"



Other Dental AI Applications

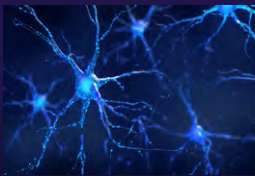
- CAD-CAM digital dentistry workflow
 - Scanning
 - Generated Crown Design
 - Milling
- CBCT Segmentation of the airway
- Orthodontic Aligner Treatment Planning
- Smile Design Applications
- Voice Supported Periodontal Charting
- Patient Management and Scheduling



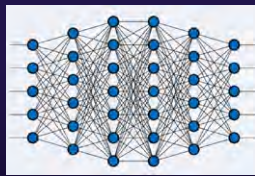
How AI Models Are Trained

Deep learning mimics the human brain in how it learns from data

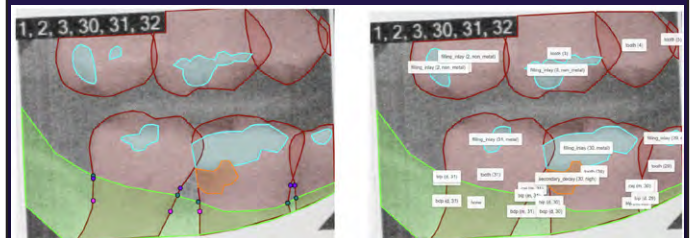
Neural network in the brain



Deep Learning Model

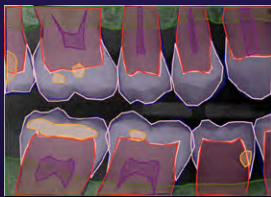


Millions annotated clinical data points are used to encode a dentist-level understanding into the AI models

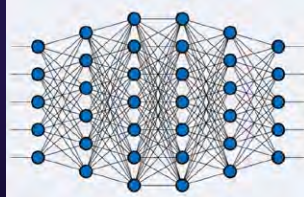


Dentists annotate X-rays to accurately train the models

Annotated Radiograph



Deep Learning Model

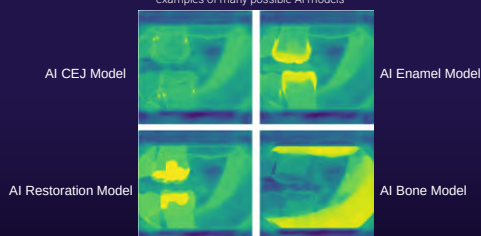


AI learns from millions of clinical data points



How do AI algorithms "see" radiographs?

Similar to how certain tools can look at the world in infrared, UV, heat-mapping, AI algorithms have the ability to look at images in ways we as humans are unable to. These are only 4 examples of many possible AI models

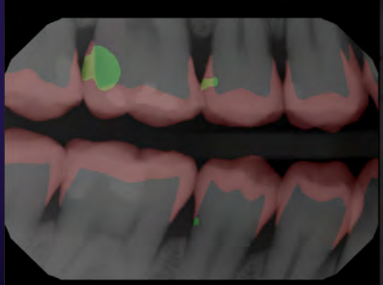


Foundations

- Without being able to identify teeth to extremely high degrees of accuracy limits the efficacy of any dental AI. Think about premolars.
- Tooth # recognition is needed for assigning findings such as caries, Periapical radiolucencies, bone levels, and more
- The higher level of tooth # recognition accuracy, the more powerful of a tool AI can be in the operator and beyond



AI Enhanced Caries Identification and Quantification



- The ability to Quantify caries has never before been possible in such a precise, automated and efficient manner
- The ability to assign levels of severity based on where predicted carious findings 'live' in the tooth is a fundamental change in our daily operations
- The ability to communicate "watches" vs those which we would recommend intervention is leveraged by this technology

31

AI Identification and Assessment of RCT, Obturation Quality, and PARLs



- Quality of Obturation?
- Instantaneous working length?
- Quality of treatment over time?
- Broken File Identification?

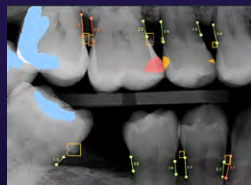
32

These models can take a never-before-seen radiograph and predict clinical attributes similar to how a dentist would label the radiograph

Raw Input



Output with Findings



33

Diagnosis Time

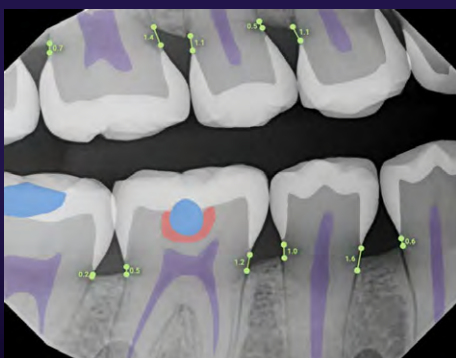


Dentistry by Parag Kachala, DDS

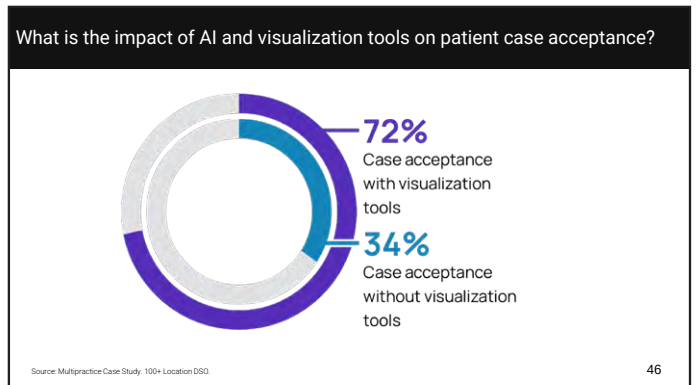
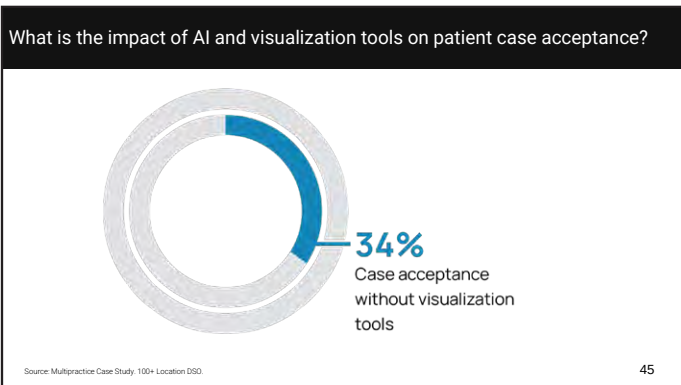
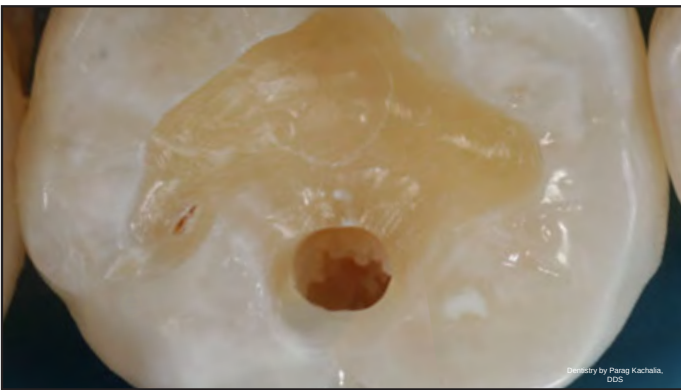
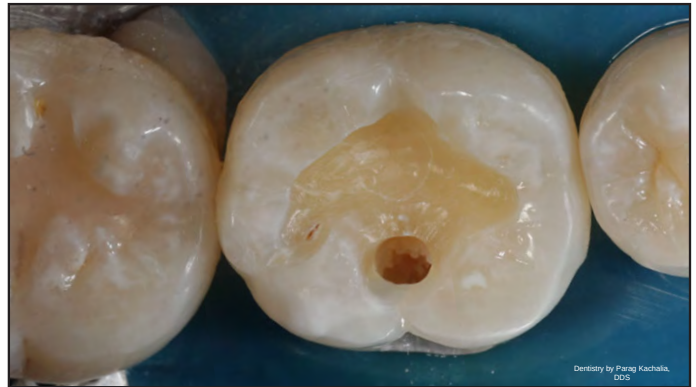


Dentistry by Parag Kachala, DDS

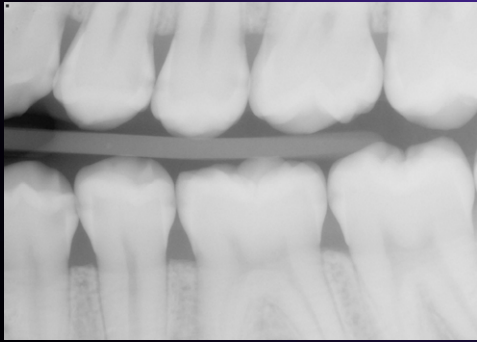
Diagnosis Time



Dentistry by Parag Kachala, DDS

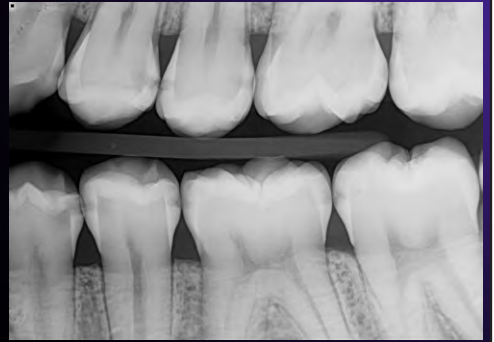


Raw



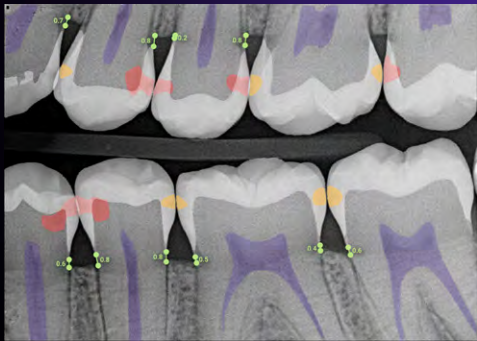
ALL IMAGES ARE NOT IDEAL

AI Powered Radiograph Enhancement



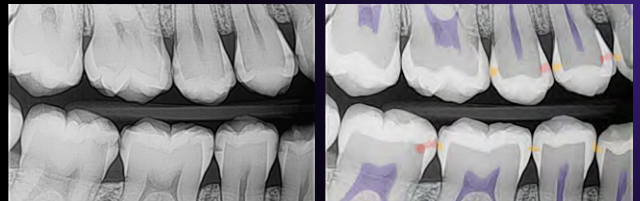
USING SCIENCE TO IMPROVE QUALITY WHILE REDUCING EXPOSURE

Patient Empowerment



BUILDING TRUST VIA PATIENT EDUCATION

Why AI, Why Now?



"The goal is not more work — it's less uncertainty and faster clarity. An educated patient is an empowered patient."

SELF EVALUATION

How AI Works in Dentistry

1. According to the lecture, what percentage fewer radiographic caries were diagnosed by dentists working under time pressure compared with those without time pressure?
 - a. 20% fewer
 - b. 30% fewer
 - c. 40% fewer
 - d. 67% fewer
2. T/F - The lecture describes AI as a replacement for dental professionals in diagnosing and treatment planning.
3. Which form of AI is described as imitating the workings of the human brain in processing data and creating patterns for decision-making?
 - a. Machine Learning
 - b. Deep Learning
 - c. Natural Language Processing
 - d. Robotics
4. T/F - Dentists annotate radiographs to help train dental AI models.
5. Which of the following is listed as a current application of AI in dentistry?
 - a. Voice-supported periodontal charting
 - b. Automatic tooth extraction
 - c. Autonomous treatment planning without clinician input
 - d. Independent diagnosis without radiographs

Answer Key: 1. C, 2. F, 3. B, 4. T, 5. A

FACULTY

Brian J. Jackson, DDS

Brian J. Jackson, DDS is an implant surgeon and reconstructive dentist with more than 20 years of experience placing and restoring dental implants. He earned his Doctor of Dental Surgery degree from SUNY Buffalo and completed advanced training in oral implantology at New York University. A board-certified implant dentist, Dr. Jackson is a Diplomate of the American Board of Oral Implantology and an Honored Fellow of the American Academy of Implant Dentistry. He is a past president of the AAID and remains deeply involved in education, serving as Director of the Boston MaxiCourse and Co-Director of the Nashville MaxiCourse, as well as leading international surgical training programs.

You may contact Dr. Jackson with your questions and comments by email at bjjddsimplant@aol.com.

THE
2026-27

Dental
UPDATE

Implant Site Development and Preservation

Brian J. Jackson, DDS

Implant Site Development and Preservation

Brian J. Jackson, DDS
Diplomate-ABOI/ID **Board Certified**
Fellow-AAID
 Reconstructive Dentistry &
 Implant Surgery



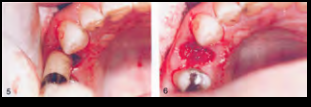
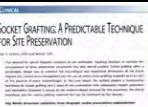
Director: Brian J. Jackson, DDS



Dr. Jackson is a Board-certified implant surgeon and reconstructive. He received his Doctor of Dental Surgery degree at SUNY/Buffalo, School of Dental Medicine and completed post-graduate training at St. Luke's Memorial Hospital Centers General Practice Residency Program. Dr. Jackson completed his formal oral implantology training at New York University, College of Dentistry.

Dr. Jackson is a Diplomate of the American Board of Oral Implantology/Implant Dentistry (ABOI/ID) and an Honored Fellow of the American Academy of Implant Dentistry (AAID). AAID Past President

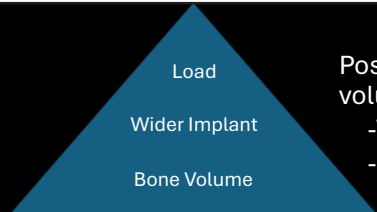
Brian J Jackson DDS-Publications and Courses
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www.aaidnashvillemaxicourse.com
 instagram-bostonmaxicourse_bic
www.eastcoastimplantinst.com
 315-922-2176

BJ Jackson, I Morcos. Socket Grafting: A Predictable Technique for Site Preservation. J Oral Implantol. 2007;69:353-364.

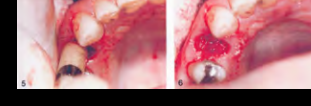
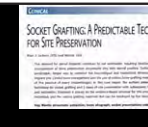


Clinical Relevance:
 Esthetic Zone: Bone support & Soft tissue:
 - Black triangles
 - Recession
 - Metal Shine thru



Clinical Relevance:
 Posterior Zone: Bone volume
 -Wider implants
 -Biomechanical load

IMPLANT SITE DEVELOPMENT: TECHNIQUE

Jackson BJ, Morcos I. Socket Grafting: A Predictable Technique for Site Preservation. J Oral Implantol. 2007;69:353-364.

Patient Medical History

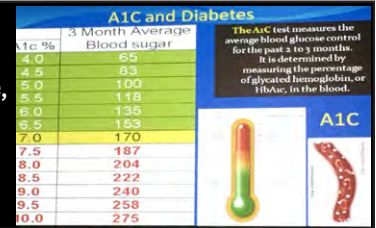
Consent: Discuss type/risks of material

Chanavaz M. Patient screening and medical evaluation for implant and preprosthetic surgery. *J Oral Implantology*. 1998;24:222-229

Medical Hx of Interest:

Medical Hx: Smoking, Diabetes, Bisphosphates, Anti coagulate therapy, SSRI, Cox 2 inhibitors, PPI, Vitamin D

Diabetic A1C <6:
Metformin (Glucophage, Riomet, Glumetza, Glucophage XR, Fortament)



Nicotine or THC
Higher risks of immune disfunction, bleeding, infection
lower bone quality

Smoking:
Scientific research demonstrates increased failure rates with less than ideal outcomes

> 5 cigarettes per day-Dramatic increase

Bisphosphonates:
Fosamax (Alendronate), Actonel (Risedronate)
Prolia, XGEVA (Denosumab), Aredia
Pamidronate Disodium, Zometa (Zoledronic Acid)

COX2 Selective Inhibitors:
Meloxicam (Mobic, Vivlodex, Comfort Pac
Meloxicam) Celebrex (celecoxib), Indomethacin
(Tivorbex)

Proton Pump Inhibitors:
Omeprazole (Prilosec), Esomeprazole
(Nexium), Lansoprazole (Prevacid)

Vitamin D deficiency
Multi vitamin

Serotonin Selective Reuptake Inhibitors:
Prozac (Fluoxetine), Lexapro (Escitalopram),
Paxil (Paroxetine), Zoloft (Sertraline), Celexa
(Citalopram)

RESEARCH REPORTS
Chen et al.

Selective Serotonin Reuptake Inhibitors and the Risk of Osseointegrated Implant Failure: A Cohort Study

X. Wu, E. Al-Akhras, R. Kulkarni, S. Al-Hadi, N. G. Durrani, R. Nishida, and J. S. J. J. J.

INTRODUCTION

Depression is a state of low mood that affects a person's thoughts, feelings, and actions, and is a leading cause of disability. It is a complex condition that can be caused by a variety of factors, including genetics, environment, and life events. Selective serotonin reuptake inhibitors (SSRIs) are a class of antidepressants that are commonly used to treat depression. However, there is growing concern that SSRIs may increase the risk of implant failure.

Selective serotonin reuptake inhibitors and the risk of osseointegrated implant failure. A cohort study.

X. Wu et al. J Dent Research 2014 Nov. 93(11) 1054 - 1061

JDR-Wu et al
Increase Risk for Implant Failure rate
4.6 % non users
10% users

Selective Serotonin Reuptake Inhibitors and the Risk of Osseointegrated Implant Failure: A Cohort Study

INTRODUCTION

Depression is a state of low mood that affects a person's thoughts, feelings, and actions, and is a leading cause of disability. It is a complex condition that can be caused by a variety of factors, including genetics, environment, and life events. Selective serotonin reuptake inhibitors (SSRIs) are a class of antidepressants that are commonly used to treat depression. However, there is growing concern that SSRIs may increase the risk of implant failure.

MCGILL UNIVERSITY-SSRI Study
490 Pts 916 Implants 48 Failures – 4 – 14 mos
4.6 % non SSRI users
10.6% SSRI users

- Primary stability N/cm-excellent
- Failures – Biological aspect of bone remodeling, Not mechanical load

Anticoagulants-

Plavix (Clopidogrel), Aspirin (Ecotrin), Enteric Coated Aspirin, Xalerto (Rivaroxaban), Boniva (Ibandronic Acid) Eliquis (Apixaban)



Local Anesthesia:

- Maxilla-Infiltration
- Mandible-INFILTRATION
- 3% Mepivacaine no epi-M/M
- 2% lidocaine/1:100,000 epi-M
- 4% Septocaine/1:100,000 epi-M

Technique: General Principles

- No mucoperiosteal flap
- Expansion of bone
- Support buccal plate
- Time & Patience



Intrasulcular Incision
Transeptal Fibrotomy



EZ- OUT PERIOTOME
KIT

Grafting Extraction Sites — Procedure

- Forceps removal: Atraumatic
- Support facial plate



Grafting Extraction Sites — Procedure

Debride socket of granulation tissue!!!!!!!
Inspection/palpation of buccal plate of bone for height of alveolus

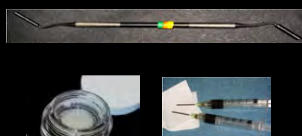


Socket Management:

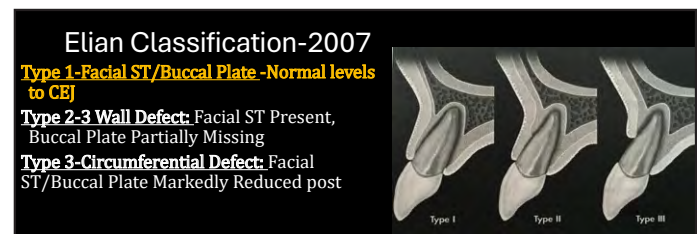
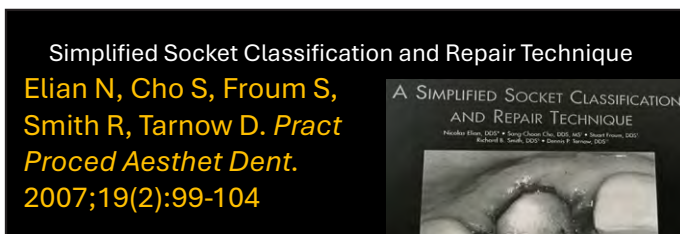
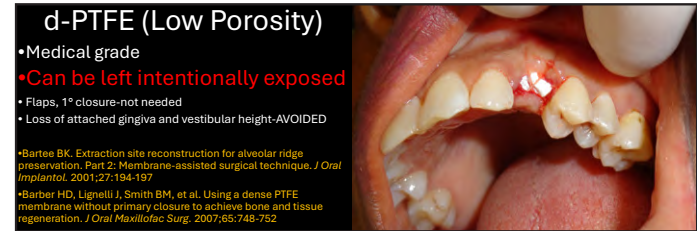
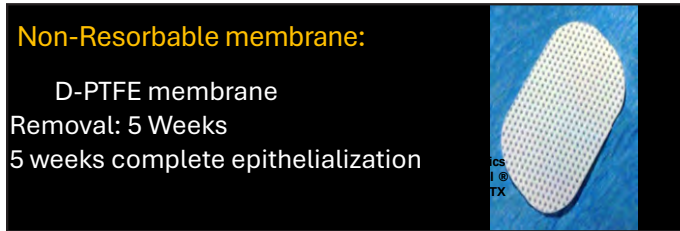
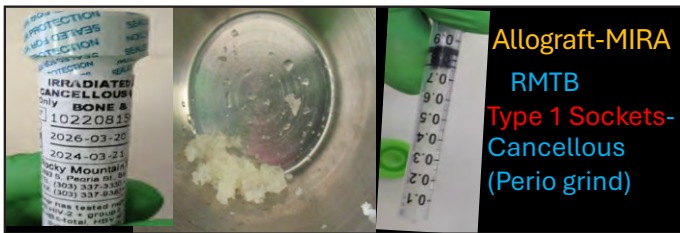
- Debride socket of granulation tissue-VERY CRITICAL!
- Clean bony walls essential for bone growth

Grafting Extraction Sites — Procedure

- Mix grafting material with sterile saline or water (or Platelet Rich Plasma PRP, PRF)
- Fill socket with appropriate grafting material
 - long shank, blunt ended instrument
 - disposable syringe



WHAT MATERIALS ARE AVAILABLE TO ENHANCE BONE GROWTH?

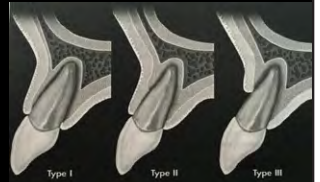




Implant surgery -3 months

Socket Graft:
Facial Bone Deficiency
Type 2 Socket

Elia Classification-2007
Type 1-Facial ST/Buccal Plate -Normal levels to CEJ
Type 2-3 Wall Defect: Facial ST Present, Buccal Plate Partially Missing
Type 3-Circumferential Defect: Facial ST/Buccal Plate Markedly Reduced post



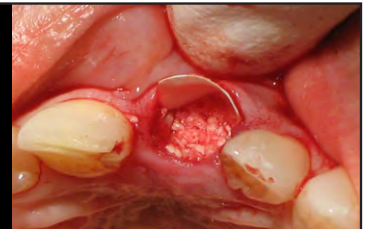
52 year old, female, Suzanne

CC: My front tooth is loose and is painful when I bite on it"



Collagen resorbable membrane

MIRB Allograph-Cortical/Cancellous

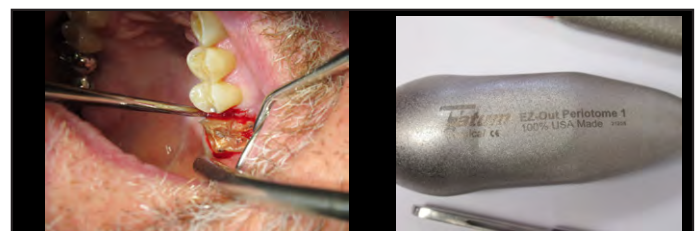
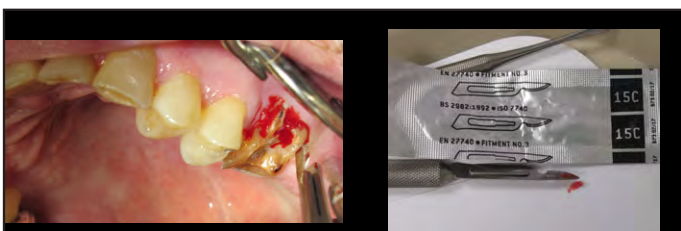
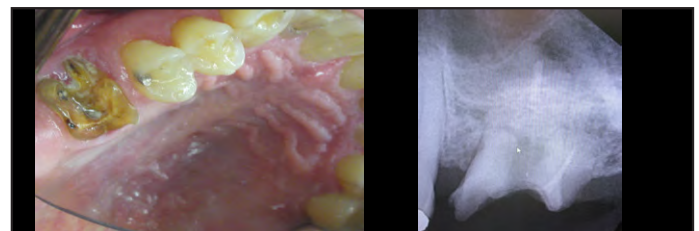


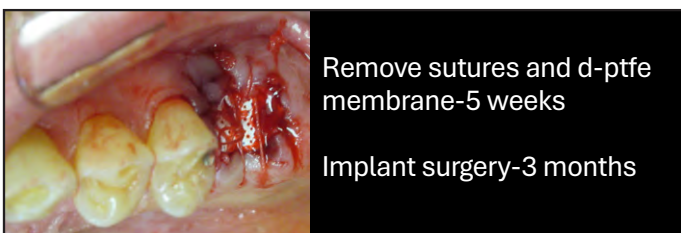
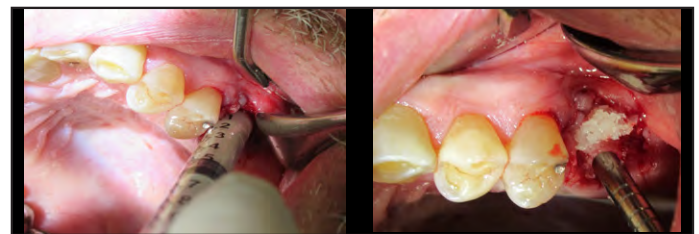
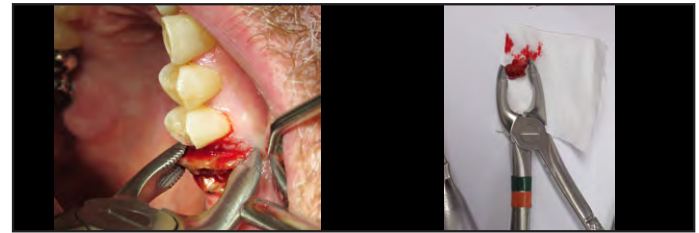
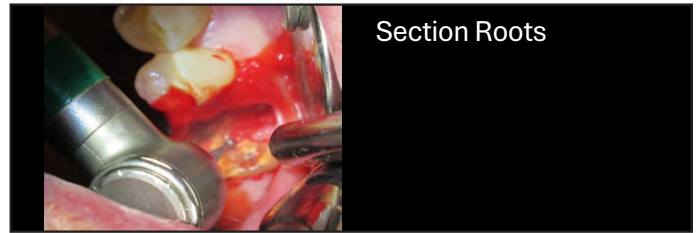


Case Report-Maxillary Molar

Surgical Protocol and Materials:

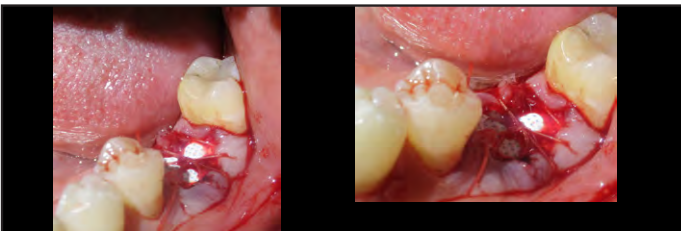
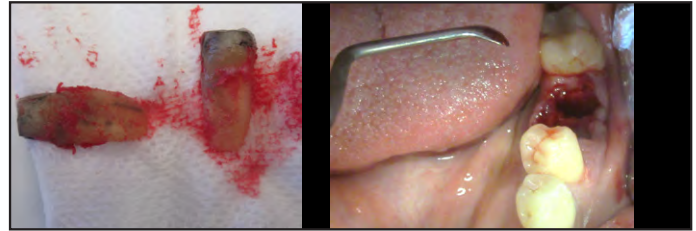
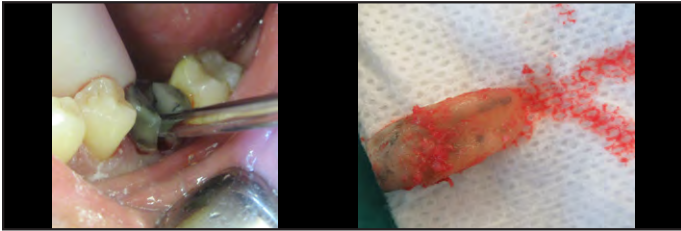
15c, Elevation (Peri tomes)
Section #4, 701 bur
Confirm separation –peri tome, elevate
Forceps removal individual roots





Tx Plan: **Staged**

1. Extraction/grafting-3 mos
2. Implant surgery-3 mos
3. Restoration-cement retained crown



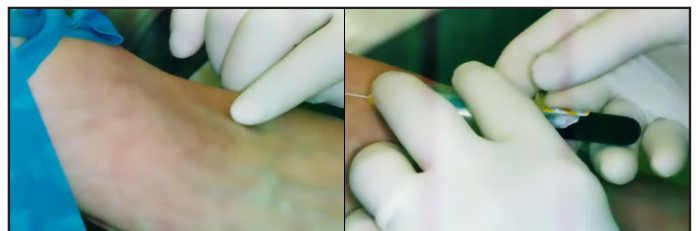
Pt presents and declines Allograft

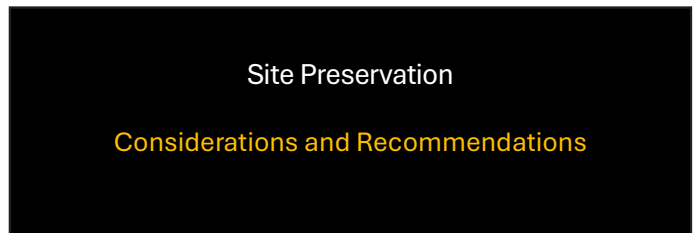
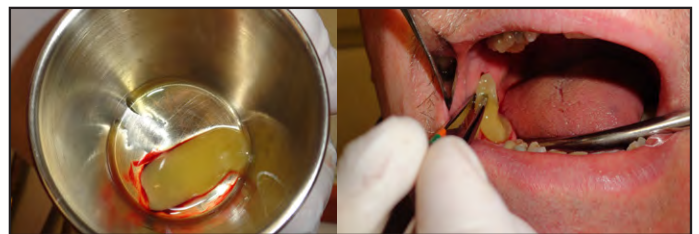
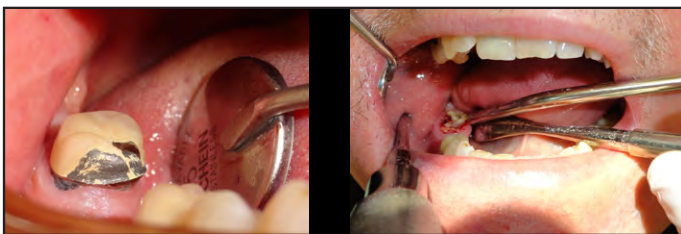
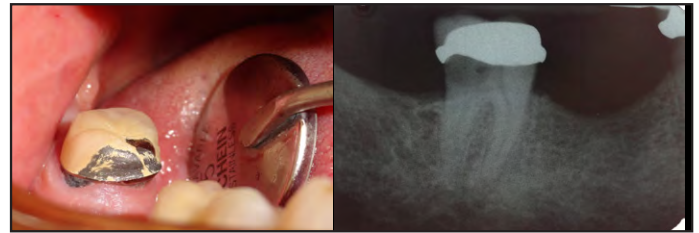
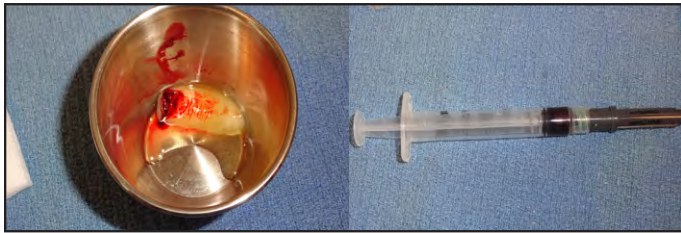
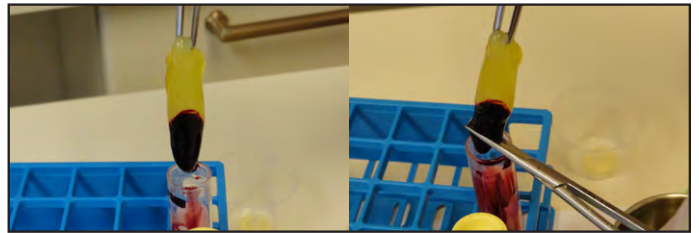
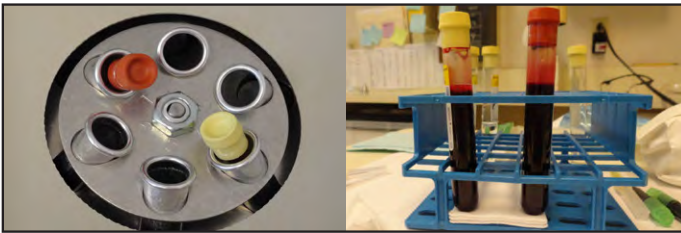
What is the alternative recommendation?

Pt presents and declines Allograft

What is the alternative recommendation?

PRF





EXTRACTION AND NORMAL HEALING

- 1.No implant in future (2nd/3rd molars)
- 2.Cost prohibited

EXTRACTION AND PRP/PRF/COLLAGEN PLUG

- 1.Anatomical concerns
- 2.Patient decision against Allografts, Xenografts or Alloplasts

EXTRACTION AND ALLOPLAST

- 1.SAFE – Inflammatory/ Infective sockets
- 2.Cost

EXTRACTION AND ALLOGRAFT

- 1.IIPP
 - 2.Site preservation – Implant placement
 - Type I – Cancellous
 - Type II – Cortico-cancellous
- MFDB (70)/ DMFDB (30) Mixture – Fastest reentry for Implant Placement (8 weeks)

Ideal Recommendation:

- Allograph
- Cancellous
- 70 DMFB/30 MFDB
- PRP/PRF
- Small Particle size
- Wait 3-4 months



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www.eastcoastimplantinst.com

SELF EVALUATION

Implant Site Development and Preservation

1. T/F - The lecture states that smoking more than five cigarettes per day is associated with a dramatic increase in implant-related complications and failures.
2. According to the Elian Classification (2007), a Type 2 socket is defined as:
 - a. Normal facial soft tissue and buccal plate levels to the CEJ
 - b. Facial soft tissue present with a partially missing buccal plate
 - c. Complete circumferential bone loss
 - d. Missing facial soft tissue with an intact buccal plate
3. Which step is identified as “VERY CRITICAL” during socket management following tooth extraction?
 - a. Primary flap closure
 - b. Immediate implant placement
 - c. Debridement of granulation tissue from the socket
 - d. Placement of a temporary restoration
4. T/F - Dense PTFE (d-PTFE) membranes can be intentionally left exposed and do not require primary closure.
5. According to the SSRI study presented in the lecture, what was the implant failure rate among SSRI users?
 - a. 2.3%
 - b. 4.6%
 - c. 7.5%
 - d. 10%

Answer Key: 1. T, 2. B, 3. C, 4. T, 5. D

FACULTY

Robert Convissar, DDS

Robert Convissar, DDS, of New York, New York, is a pioneer in the field of laser dentistry. One of the first dentists in the world to incorporate lasers into general practice he has close to 4 decades of experience with CO2, Diode, Erbium, Nd.YAG and PBM wavelengths. He has authored over twenty peer-reviewed papers and 7 laser textbooks. As an international lecturer, he has delivered close to 400 Laser Certification and Laser Tongue Tie Certification courses worldwide. He practices laser-assisted dentistry in New York City. He is the only dentist in the world to have the triad of awards: Diplomate of the American Board of Laser Surgery, Fellow of the American Society of Laser Medicine and Surgery, Master of the Academy of Laser Dentistry, as well as being a Fellow of the Academy of General Dentistry. His seminal textbook *Principles and Practice of Laser Dentistry*, now in its 3rd edition, has been the standard textbook on laser dentistry for over a decade. He practices laser dentistry in New York City, where he also serves as Director of Laser Dentistry at New York Presbyterian Hospital of Queens.

You may contact Dr. Convissar with your questions or comments at laserbobdds@gmail.com.

Laser-Assisted Periodontal Therapy: LANAP Protocol and Clinical Application
Robert A. Convissar, DDS, FAGD

Laser-Assisted Periodontal
Therapy:
LANAP Protocol and Clinical
Application

OR

From Class III Mobility to Rock
Solid in 12 Easy Steps

DISCLOSURE:
SINCE 1989, DR. CONVISSAR
HAS RECEIVED HONORARIA
IN THE FORM OF CASH,
FREE/DISCOUNTED GOODS,
SUPPLIES, EQUIPMENT,
MATERIALS AND DEVICES
FROM THE FOLLOWING
COMPANIES:

AMERICAN DENTAL TECHNOLOGIES
AMD LASERS
BIOLASE
BIOLITEC
CAO GROUP
CONVERGENT TECHNOLOGIES
DEKA
DENMAT
DENTAL PHOTONICS
ELEXION
DIAMOND DENTAL
GPT DENTAL LASERS
HELIOS
HOYA/CONBIO
IVOCLAR/VIVADENT
KING DENTAL LASERS/BEAMER STL 980
LARES RESEARCH
LASOTRONIX
LUXAR/LUXARCARE/LIGHTSCALPEL
MEDICLASE
MILLENNIUM LASERS
OPUS DENT
PREMIER LASER SYSTEMS
SIRONA
SPECTRALASE
ULTRADENT
UNION MEDICAL LASERS
YOSHIDA
ZAP LASERS
ZOLARTEK

WARNING!
This course is based 100% on the PEER-
REVIEWED LITERATURE. This course is
NOT based on manufacturer's exaggerations or
claims. This course is NOT based on what people
have written in free non-peer-reviewed magazines.
There will be NO OPINIONS expressed in this
course – there WILL BE a discussion of the
MOST RECENT peer-reviewed literature.

PLEASE DO NOT return to your offices and speak to your colleagues/partners (or in the case of hygienists, your bosses) and say that Dr. Convissar SAID X, Y or Z.....because the ONLY THING that I will be saying is what is **PROVEN** in the peer-reviewed literature.

If you have a problem or a disagreement with anything I say, please DO NOT take it up with me – do not blame me for what the peer-reviewed literature says.

I am NOT an employee of any laser company.

I DO NOT have any financial/fiduciary responsibility to any laser company. I DO NOT sit on any advisory board of any laser company.

I AM NOT a consultant for any laser company.

I OWN NO STOCK or other financial instruments of any laser company.

Whenever you take a laser course anywhere- from anyone – DEMAND this information.

This protocol ASSUMES that you have:

A)

Hit your patient over the head 100x with home care instructions

If home care is lousy, your results will be LOUSY!

B)

Done your 4 Q of **Conventional** SC/RP

C) Done your laser pocket debridement THE CORRECT WAY!!!!

Corollary 1:
with the right wavelength

Corollary 2:
At the correct time

That's Another Presentation For Another Day!!

CRITICAL POINT:

This is NOT A PANACEA.
NEVER believe a laser lecturer that says their protocol always guarantees success...

if they had such a protocol, EVERYONE would be doing it!

This is a protocol that will NOT
work as well as you would hope
on:

A) Patients with poor home care

The Laser is NOT a magic wand!!!

B) Diabetics - ESPECIALLY
poorly controlled diabetics

C) Smokers!!!!!!!!!!

D) Immunocompromised Patients

You may get some improvement in
these patients.....
You will NOT get
111-111-111
probing depths
Sorry!

Patient selection is critical!
Anyone who would be a less-than-ideal candidate for implant surgery would not be a good candidate for this protocol.
Once again, lasers are NOT Magic Wands!!!

Make sure you temper your enthusiasm about the facts presented here with a dose of reality: do not over-promise results to your patients!
NEVER Over-Hype and Then Under-Deliver!

SAYS WHO???

Location-Location-Location
TRAINING-TRAINING-
TRAINING

I Could Give You The BEST Laser
In The World...With NO Training
- Your Results Will Be Terrible

OR

I Could Give You The WORST
Laser in The World... But Supply
You With Comprehensive
Training And You Might Get
Some Passable Results - ONLY
Under One Condition!

ONLY If The Peer-Reviewed
Literature Shows That Wavelength
Can ACTUALLY Accomplish
What You Want To Do!

More On This In A Minute

The next few slides are either:
a) from the peer-reviewed literature
OR
b) totally made up
by me

Which is which?

Lasers have shown the ability
to obtain ***clinical new
attachment with bone fill***
in previously diseased sites.
This technique has shown
significantly better results
than those obtained through
conventional osseous grafting
alone

Israel, M
Rossmann, J
An Epithelial exclusion technique
using ***the CO2 laser*** for the
treatment of periodontal defects
Comp. Cont. Educ. Dentistry
1988:19:86-95

In laser treated sites,
connective tissue and repair
cementum formed. This
compared to a long junctional
epithelial adhesion in all of the
control teeth

Israel, M
Rossmann, J
Froum, S.
Use of the ***carbon dioxide laser***
in retarding epithelial migration: a
pilot ***histological human study***
utilizing case reports.
J. Perio
1995:66:197-204

CO2 laser treatment combined with mechanical instrumentation constitutes a useful tool to condition root surfaces and ***increase fibroblast attachment to root surfaces***

Crespi, R
Barone, A
Covanin U
et. al.
Effects of CO2 Laser treatment on fibroblast attachment to root surfaces: a SEM analysis
J. Perio 2002:73:1308-1312

CO2 laser can be used to delay the apical downgrowth of epithelium and this technique is ***less technically demanding and more time efficient*** than other currently known methods of epithelial retardation

Rossmann, J
McQuade, M
Turunen, D
et. al.
Retardation of epithelial migration in monkeys using a carbon dioxide laser: an animal study
J. Perio 1992:63:902-907

The CO2 laser has a high absorption coefficient in water (*why is this important? To be discussed in a few seconds*) and consequently is well suited for soft tissue surgery....for many intraoral soft tissue surgical procedures, the laser is a ***viable alternative*** to the scalpel

AAP Commissioned Review:
Lasers in Periodontics: A review of the literature
Cobb, C
J. Perio
2006:77:545-564

CRITICAL POINT:

Oral Mucosa is 75%-90% Water

TBD Later

The CO2 laser has been shown to ***enhance periodontal therapy*** through an epithelial exclusion technique in conjunction with traditional flap procedures, and ***when CO2 lasers are used*** to de-epithelialize the mucoperiosteal flap during surgery, ***it has enhanced reduction in periodontal probing depths***

Blue Ribbon Report on Lasers in
Periodontology
Research, Science and Therapy
Committee of the American
Academy of Periodontology
J. Perio 73:1231-1239, 2002
J. Rossmann

CO2 laser irradiation renders
significantly more new bone formation especially 5-8 weeks
postoperatively than conventional
decontamination of implants
affected by peri-implantitis

Bone regeneration after peri-
implant care with the CO2 laser:
A fluorescence microscopy study
Stubinger, Henke, Deppe
Int. J. Oral Max Fac Implants
2005 March April 20 (2) 203-210

Is There Any Peer-Reviewed
Literature Showing Similar Results
Using DIODES?

NOPE!
WHY NOT?

Because Diodes ARE NOT
LASERS!!!!!!

HUH? REALLY?

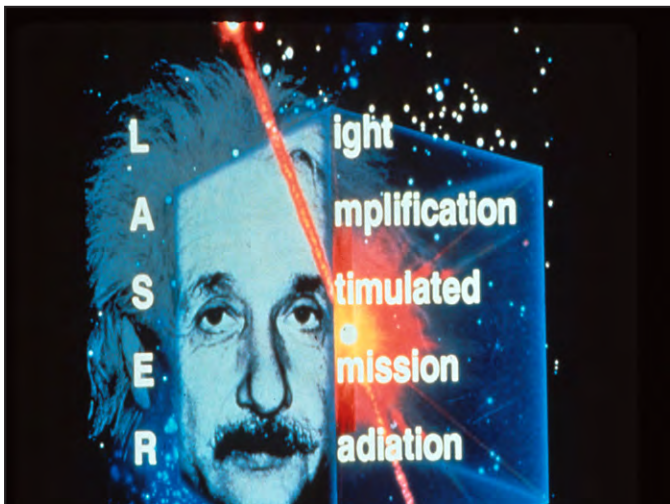
YUP!

This Next Series Of Slides Shows
WHY CO2 AND ERBIUM
Wavelengths Are True Lasers...

And Why Diode Devices ARE
NOT REALLY LASERS!

We Need To Answer The
Following Question:
WHAT IS A LASER?

There Are Plenty Of Definitions



A Laser is just an amplified
(more powerful)
beam of *light energy*

What is light?

Light is a form of electromagnetic energy

The basic unit of light energy is called a Photon

Hold onto that thought for a second

How about a
WORKING
definition?

Definition # 1

Lasers are devices that
produce beams of
*monochromatic, coherent,
collimated light*

Definition # 2

Lasers are devices that emit
beams of *monochromatic,
coherent, collimated light*

Lasers are photon emitting devices. It's how those photons interact with the target tissue that gives you a therapeutic effect

Do diode lasers produce
beams of collimated
coherent
monochromatic
light energy in the form of
photons?

Yes, they do

Do diode lasers emit beams of
collimated
coherent
monochromatic
light energy in the form of
photons that interact with the
target tissue?

ABSOLUTELY NOT!!!

So- True Lasers
devices that work as real Lasers...
emit photons.
True lasers are photon-emitting
devices

When a laser device is turned on, it
produces a stream of photons.
When that stream is emitted from
the handpiece, it is how that stream
of photons interacts with the
chromophores of the target tissue
that determines what will happen to
the target tissue

Chromophores? TBD In A Minute

Unfortunately some lasers
do not permit the
photons to exit the laser
hand piece and perform
treatment

True Lasers:
Allow the photons to work
Never touch the target
tissue

Cut tissue **OPTICALLY**
(also known as
Photothermally)

Diodes Are **NOT OPTICAL**
DEVICES!

Diodes **DO NOT PERMIT** The
Photons To Leave The Handpiece -
You Initiate The Handpiece To Turn
The Diode Tip Into A
HOT GLASS TIP
Diodes Work **THERMALLY**, NOT
OPTICALLY

Why do we initiate diode lasers?

Before we answer that question
I have another question:
Why do we wear light colors in the summer and dark colors in the winter?

We Wear Light Colors In The Summer To **Reflect** The Heat/Light Energy From The Sun

We Wear DARK Colors In The Winter To **Absorb** As Much Feeble Sunlight As Possible To Keep Us Warm

EVERYTHING In Laser Dentistry Involves **ABSORPTION** Of *Light Energy*

The Light Energy MUST BE ABSORBED By Your Target Tissue To Give You A Therapeutic Effect!

Specifically, The Laser Energy Must Be Absorbed By The **CHROMOPHORES** Of The Target Tissue

From The Greek:
Chromo = Color
Phore = Bearer Of
Chromophore is the Bearer Of Color

Chromophore is what gives the tissue its specific color or its specific OPTICAL characteristic

KEY WORD OF THE DAY:
CHROMOPHORE

Everything We Do In Laser Dentistry Is Based On 3 Things:

- 1) Chromophore
- 2) Chromophore
- 3) Chromophore

Without A **Complete Understanding** of Tissue Chromophores, You Will **NEVER** Get The Most Out Of Your Laser
WHATEVER Wavelength You Own

CHROMOPHORE:
A Light Absorbing Compound or Molecule Normally Occurring in Tissues That Attracts **Specific Wavelengths** of Laser Energy

Diode lasers are classified as lasers because they **produce** beams of monochromatic, collimated, coherent light

Diode lasers, however are
NOT used as lasers.....the
laser energy – the photons - are
NOT permitted to exit the
handpiece

When we initiate, we put a
BLACK substance (NOT
articulating paper or cork,
please!!) on the laser tip to
**prevent the photons from
being emitted**

The BLACK substance
prevents the photons from
being emitted –resulting in the
laser tip becoming superhot.

What's the average tip
temperature of a diode laser?

This is Something YOU
NEED TO KNOW!
You Are Putting A Hot Tip
Into A Patient's Mouth – How
Hot Is It???

700° to 1500° Celsius

Diode Laser Soft-Tissue Surgery:
Advancements Aimed at Consistent
Cutting, Improved Clinical Outcomes

Georgios E. Romanos, DDS, PhD
Compendium of Continuing Education in
Dentistry
November/December 2013

Weiss, R

Comparison of endovenous radiofrequency versus 810
nm diode laser occlusion of large veins in an animal
model Dermatologic Surg 2002 28 (1) 56-61

Romanos G, Belikov A, Skrypnik A, et. al. Uncovering
dental implants using a new thermo-optically powered
(top) technology with tissue air coolong Lasers Surg
Med 2015 47:411-420

The **CHROMOPHORE** Of CO₂s
and Erbiums Is Water.

What's The B.P. of Water?

Are diode lasers
really lasers? Let's
ask Dr. Gordon
Christensen

So....diode lasers are merely
hot glass tips

Electrosurgery/Radiosurgery
Create Electric Burns If Used
Improperly

Diode Lasers Create **Thermal
Damage** If Used Improperly

NEXT POINT!
True Lasers Are
NON-CONTACT DEVICES!

If You Have To Touch The Tissue With A
Laser, ITS NOT BEING USED AS A
LASER!!

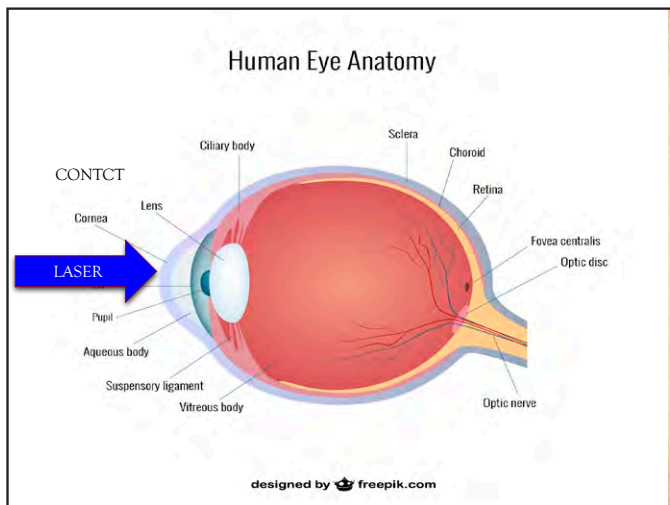
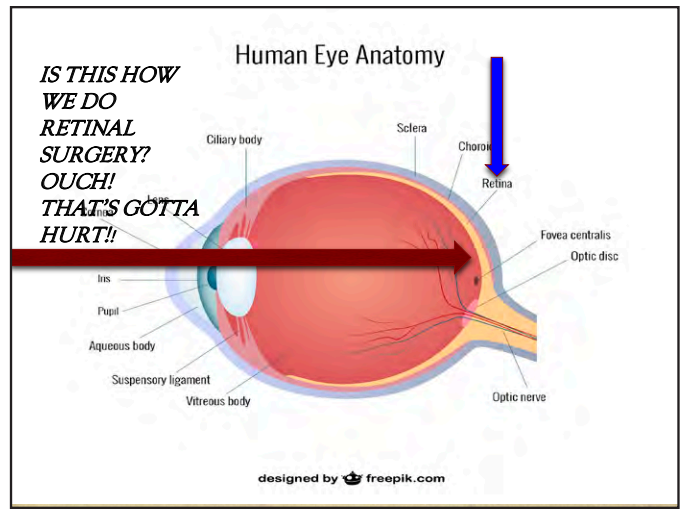
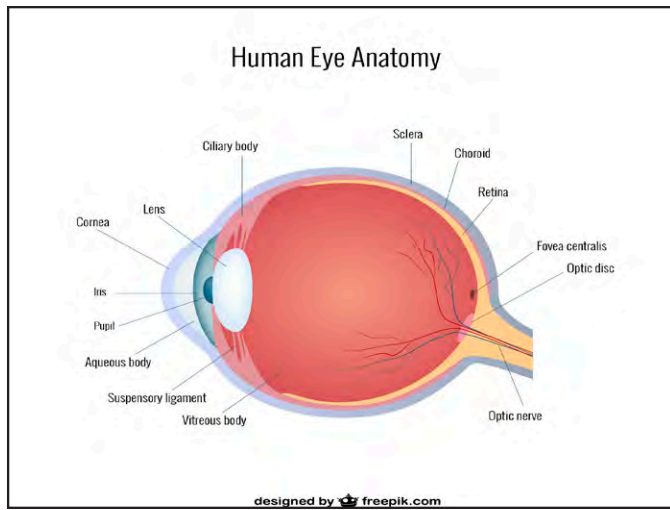
When Physicians Use Lasers In Contact
With Tissue, They Are
Cauterizing/Coagulating/Melting Tissue -
NOT VAPORIZING TISSUE!

Today, We Are Ophthalmologists
Performing Retinal Surgery

Do We Shove The Laser Through The
Eyeball And Touch The Retina With
The Laser?

Of Course Not!!

LASERS ARE **NON CONTACT
DEVICES!**



Summary So Far:

- Lasers are NON CONTACT DEVICES
- Lasers are NEVER INITIATED
- Lasers work OPTICALLY via interaction between the PHOTONS and the CHROMOPHORES of the Target Tissue
- Examples of Lasers: CO2 and Erbium
- Diodes are CONTACT DEVICES
- Diodes ARE ALMOST ALWAYS INITIATED
- Diodes work THERMALLY via an INITIATED TIP that is nothing more than a HOT POKER

So are diodes really lasers?
 Yes and No
 They ***produce*** beams of C-C-M light
 BUT
 they do ***not emit*** beams of C-C-M light
 They ***are*** lasers, but ***are not used*** as lasers
 They are simply ***hot glass tips***

Does That Mean You Should NOT Use Diodes?

NO!! It Means You Need To Be Trained on How To Use Them!!

This is why TRAINING IS PARAMOUNT!

Now We Know How Lasers Work:
They Emit Photons – and the
Photons Are Absorbed By The
Chromophores of the Target
Tissue

Without A ***Complete
Understanding*** of Tissue
Chromophores, You Will
NEVER Get The Most Out Of
Your Laser

SO:
What does this mean?
How do we go from Class III
mobility to rock solid?
How do we ***grow bone*** in
periodontitis AND peri-implantitis
patients?

Step One:
RECORDS!!

- 1) FMX
- 2) FM Perio Charting
- 3) Occlusal Evaluation

Occlusal Evaluation???

Really???

WHY???

To be discussed in a minute

You can also do DNA testing of
the crevicular fluid with paper
points for antibiotic sensitivity...up
to you. That just adds to the fee
you will need to charge the patient
– and for this protocol, you should
have a HIGH FEE!!

ALSO-I am not 100% certain it will add to your ability to perform this therapy...the peer-reviewed literature on this is equivocal

Occlusion – one of the most important factors in periodontal AND implant surgery HEALING

Critical factor in implant failure – overloading of implants!!

Occlusal prematurities will PREVENT the osseous defect (*periodontal OR peri-implant*) from healing properly. You MUST perform a thorough Occlusal Evaluation and Equilibration PRIOR to surgery

Step One: Records

Step Two Occlusal Equilibration

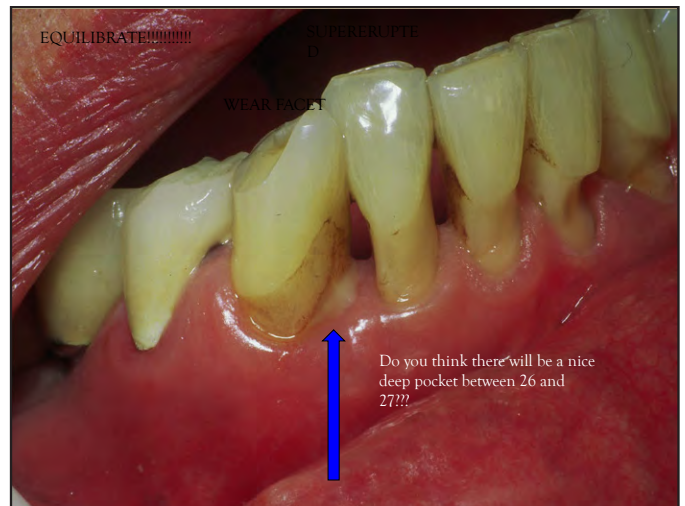
- “Occlusion does in fact serve as a risk factor for periodontal breakdown and that as such, occlusal treatment ...needs to be considered as a part of the comprehensive treatment of periodontal disease....
- Fundamentals of Periodontics by Wilson and Kornman, 2nd Edition, 2003 Quintessence

Step Two Occlusal Equilibration

- “Trauma from occlusion...constitutes an additional risk factor for the progression and severity of periodontal disease. An understanding of the effect of trauma from occlusion on the periodontium is useful in the clinical management of periodontal problems.
- Carranza's Clinical Periodontology 2nd Edition, published in 2002 Saunders

Step Two Occlusal Equilibration

- Learn how to perform occlusal equilibration. Use a T-Scan....Use Articulating Paper....Use Thin Gauge Wax....
- Unless you perform Occlusal Equilibration, your osseous fill-in will NEVER BE COMPLETELY SUCCESSFUL!



Got a question for you:
There is one reason...and ONLY
one reason...to open up a flap.

What is it?

TO GAIN ACCESS TO THE
DISEASE!!!!!!

How do we gain access?
Flap?
Envelope?

If you can gain access to the
disease with an envelope incision
rather than a flap with releasing
incisions, some people believe you
might preserve more bone and
have a better outcome

But, if you need to flap with releasing incisions, you do so.

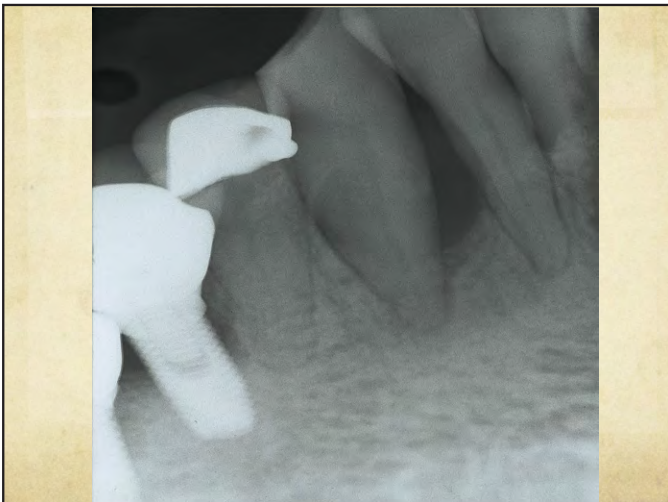
When in doubt, release!!

Just Gain Access to the Disease!

Step Three- Gain Access To The Diseased Tissue – Flap? Envelope? How?

- #15 Blade?
- Laser?
- You choose. Whatever technique works more comfortably in your hands is fine. This is NOT the step that will ultimately determine the success or the failure of the procedure.

Just remember to keep the base of the flap wider than the apex to keep the flap well vascularized



What is the most important step?
Which step will determine the
● ultimate success or the failure of
● the surgical procedure?

● Suturing a flap?

No. Most dentists can suture flaps. Its not imperative to learn the difference between simple interrupted sutures and mattress sutures and other suture techniques. The important thing to do is simply to suture the wound closed....any way you know how

Step Four Remove Diseased Tissue

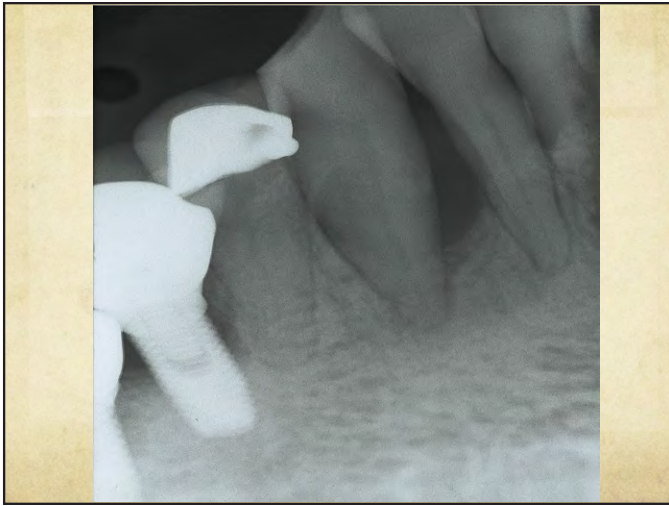
- You MUST clean out all of the diseased tissue. If diseased, bacteria-laden granulomatous tissue is left at the surgical site, the surgical procedure will fail.
- How do we do this? How do we insure that the diseased tissue is removed? How do we insure that the area is bacteria-free (Do I dare say "sterile")?

PLEASE
Don't Say Sterile
Say:
Decontaminated
Disinfected
Detoxified
Decreased Bacterial Count

Use Your Laser **AND** !!!

- Lasers can ablate tissue more effectively than hand instruments.
- Lasers are proven bactericidal instruments
- Always check the completeness of your ablation with an extremely tactile hand instrument - a nice, new, sharp curette. Make certain that there are no tissue tags left anywhere and that there is no char on the root surface

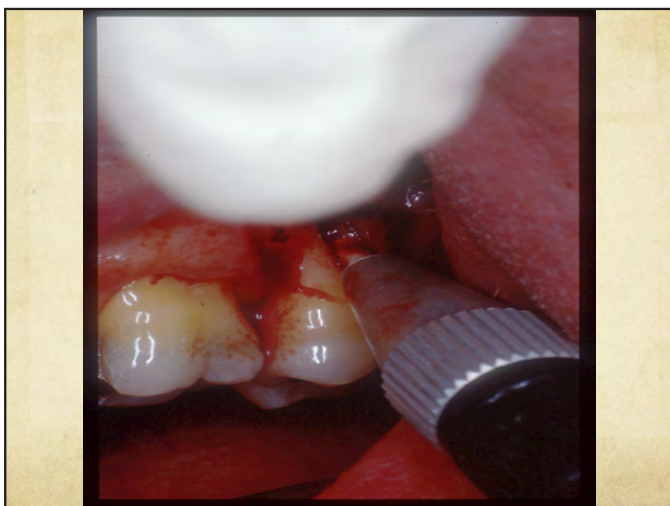
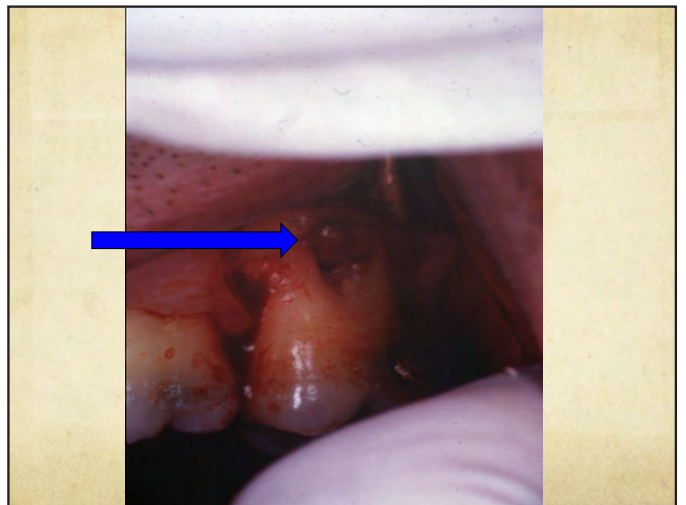
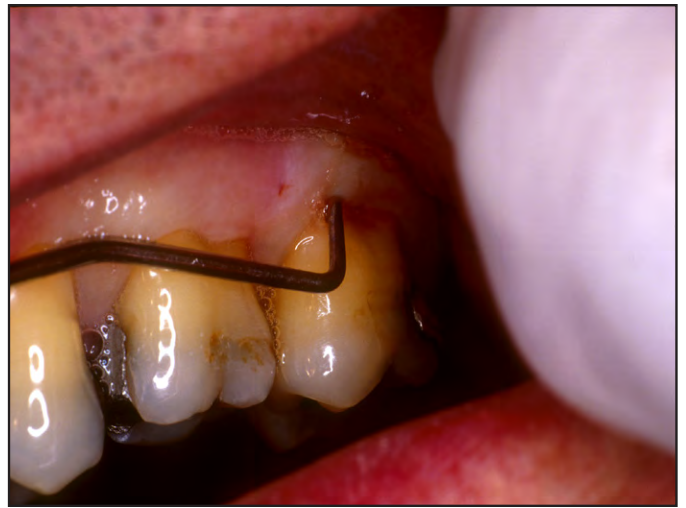
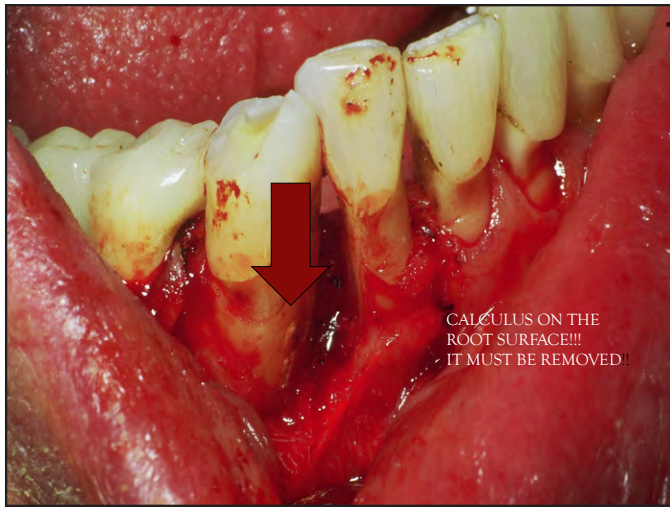
Remember!
The laser is another tool to
add to your armamentarium....
Its always:
Laser AND...
not Laser INSTEAD OF



We are NOT DONE
There is a CRITICALLY
important step we MUST
complete before we augment the
area with bone or the procedure
will fail!

Its staring you right in the face...
Do you see it?
That's one of the reasons
MAGNIFICATION IS
CRITICAL in procedures like this.
Please buy some loupes if you
don't already have them!!





REMEMBER the 4 D's of
Periodontal Surgery:

- 1) Degranulate
- 2) Detoxify
- 3) Decorticate
- AND # 4.....

Degranulate:
Remove the diseased granulation
tissue...

How?
LASER AND HAND
INSTRUMENTS!

Detoxification: the removal of
toxic substances
from the surgical site

Please don't say "sterilization"

Decorticate:

The perforation of cortical **bone** to induce
bleeding and the release of **bone forming cells**
from the underlying marrow. It is routinely used
in combination with onlay block grafts or
guided **bone** regeneration (GBR) procedures

(ICOI Dictionary)

You decorticate just before you
place your bone graft

Step Five (The 4th D) De-epithelialization

- De-epithelialization????? What's that??
- Why do we need to do this?
- How do Gore-Tex and other membrane barriers work?

De-epithelialization

- What's the rationale for the use of Gore-Tex and other membrane barrier techniques?

De-epithelialization

- You have two types of tissue staring at you when you have an open flap:
 - Epithelium.....ECTODERM
 - Connective Tissue.....MESODERM
- Which grows faster? Any by the way, while we're on the subject of connective tissue and epithelium, what's a long junctional epithelium?

De-epithelialization

- Epithelium grows much more quickly than connective tissue. When you close a flap, you want new connective tissue to grow...you want a new connection between the bone and the root or implant surface...you want new periodontal fibers
- If you do not somehow prevent the epithelium from growing, you will not get a new soft tissue connection...you will get a long junctional epithelium

So, What's This Got To Do With Gore-tex?

- Gore-tex and other membranes are epithelial exclusion devices – they prevent the ingrowth of epithelium into the surgical site so that the connective tissue has time to grow and establish a new connective tissue attachment....the Critical Step of Regenerative Periodontal Therapy

Can We Prevent The Epithelium From Growing Without Using a Membrane?

- Of Course.....Use a Laser

Question For You: Which Laser Can Do This?

Lets Be More Specific...Which Laser Is The Only Wavelength That Has Definitive Proof in Three Animal Models (Beagles...Monkeys...Homo Sapiens) to Delay Epithelial Growth?

Nd.YAG?
Diode 450?
Diode 810?
Diode 980?
Diode 940?
Diode 1064?
Er.YAG?
Er.Cr.YSGG?
CO2 10.6
CO2 9.3??
PBM?

Answer:
CO2 10.6

○ Says Who?

Use of the CO2 Laser in
Retarding Epithelial Migration:
A Pilot Histological Human
Study Utilizing Case Reports
Israel, Rossmann, Froum
J. Perio 1995:66:197-204

A human histological study of laser
deepithelialization. Patients were
divided into 2 groups. One group
had conventional periodontal
surgery. The second group had
laser deepithelialization. Notches
were placed in the teeth at the
heights of the alveolar crests.

At 90 days, block sections of tissue
were removed from the patients for
histological analysis. Their results
showed that in the control teeth,
junctional epithelium extended the
length of the root to the base of
the notch. On the CO2 laser
treated side, the notch was filled
with connective tissue and repair
cementum. This finding was not
seen in any control teeth

An Epithelial Exclusion
Technique Using the CO2 Laser
for the Treatment of
Periodontal Defects
Israel and Rossmann
Compendium of Continuing
Education in Dentistry
Vol. 19, No. 1, 1998

“These case reports have shown the ability to obtain clinical new attachment with bone fill in previously diseased sites...this technique has shown significantly better results than those obtained through conventional osseous grafting alone”

Rossmann used monkeys to deepithelialize flaps – conclusion: epithelialization was delayed by at least 14 days – allowing for new connective tissue to grow

Rossmann-Conclusion

- This technique is LESS technically demanding AND more time efficient than other currently known methods of epithelial retardation
- Rossmann J; McQuade M; Turunen D. Retardation of Epithelial Migration in Monkeys using a Carbon Dioxide Laser: An animal study J Periodontol 1992 63:902-907

Rossmann – Beagle Study

- Artificially created furcation involvements in dogs bilaterally
- One side – conventional surgery using membranes
- Opposite side – used laser in addition
- Remember...its always Laser AND...not Laser instead of

Rossmann - Results

- The most notable histological observation of the study was on the laser treated side, where there was an abundant formation of new cementum, several layers thick. This finding was consistent across all of the laser treated sites, when compared to the control sites

Rossmann J, Parlar A, Ghaffar K, et. al

Use of the carbon dioxide laser in guided tissue regeneration wound healing in the beagle dog
Proceedings SPIE 2672:52, 1996

SPIE:

Society of Photo-Optical Instrumentation Engineers
(formerly the Society of Photographic Instrumentation Engineers) is an international not-for-profit professional society for optics and ***photonics technology***, founded in 1955.

Centty – Human Study

- Took patients with bilateral periodontal defects, performed conventional (blade) surgery on one side, and laser deepithelialization on the other side. This human, in-vivo study found that the CO2 laser eliminated sulcular and gingival epithelium without disturbing underlying connective tissue.

Centty - Conclusion

- CO2 lasers have little to no effect on tissues beyond the target, and CO2 lasers appear to effectively remove epithelium ***more completely than conventional scalpels***
- Centty, I; Blank, L; Levy, B., et. al Carbon Dioxide Laser for De-Epithelialization of Periodontal Flaps J. Perio 1997: 68: 763-769

Lasers used to de-epithelialize flaps may lead to a ***more predictable and desirable bone and soft tissue result***, and that the use of surgical membranes may be eliminated
Pick, R. The Use of Lasers for treatment of Gingival Disease
Oral Max Fac Clinics of N. America 9: 1; 1-19, 1997

Research, Science and Therapy
Committee of the American
Academy of Periodontology
Blue Ribbon Report on Lasers in
Periodontology
Rossmann, J. Lasers in Periodontics
J. Perio 73:1231-1239, 2002

The CO2 laser has been shown to ***enhance periodontal therapy*** through an epithelial exclusion technique in conjunction with traditional flap procedures, ***and when CO2 lasers are used*** to de-epithelialize the mucoperiosteal flap during surgery, ***it has enhanced reduction in periodontal probing depths***

Want More?

- Laser De-epithelialization for Enhanced Guided Tissue Regeneration: A Paradigm Shift? Dental Clin. N. America 44 (4) October 2000 pgs793-811
- Carbon Dioxide Laser for De-epithelialization of Periodontal Flaps J Perio 68:763-769, 1997
- There is still more

J. Perio Vol 63 pg 902, 1992
J. Perio Vol 65 pg 978, 1994
Dental Clin N. America Vol 48
No. 4 pg 937, 2004

How Do We De-epithelialize?

- While the flap is open, run the laser over the inside of the flap with low power.....the object is NOT to cut tissue.....the object is to gently peel away the surface epithelium, leaving the connective tissue exposed so that it may establish new connections to the root surface

Step Six

- Prepare the root surface
- How do we do this?

Crespi, Barone, Covani, et. al.
Effects of CO2 Laser Treatment on
Fibroblast Attachment to Root
Surfaces: A SEM Analysis
J. Perio 73:1308-1312, 2002

- 60 teeth were assigned to 3 groups:
- A) Control (untreated)
 - B) Hand scaling/r.p.
 - C) CO2 laser and ultrasonic scaling

Results: The ***laser group showed the highest number of attached fibroblasts***, with the tightly attached fibroblasts prevailing. ***The laser treated group did not show any damage*** or morphologic alteration of the root surface

Crespi Conclusion

- Not only did the ***laser group show the highest number of fibroblasts attached to the root surfaces, but the quality of the attachment of the fibroblasts to the root surfaces was superior.*** They concluded that the CO2 laser, combined with mechanical instrumentation constitutes a useful tool to condition the root surfaces and ***increase fibroblast attachment to root surfaces***

Pant

- Compared tetracycline, hydrogen peroxide, citric acid, EDTA, and CO2 laser energy to condition root surfaces, with the goal of increasing attachment of periodontal ligament fibroblasts to periodontally involved root surfaces. A total of 84 teeth were studied, using scanning electron microscopy.

Pant Conclusion

- ***CO2 laser irradiation was the most efficient***, showing consistently good cell attachment, ***with the highest mean values of attachment***
- Pant V; Dixit J, Agrawal AK, et. Al
Behavior of human periodontal ligament cells on CO2 laser irradiated dental root surfaces: An in vitro study J. Perio Res 2004; 39: 373-379

Crespi, Covani

- Induced 36 Class III periodontal furcations in beagles. The mean depth of the defects was 6.8 mm immediately prior to surgery. The beagles were divided into three groups: Periodontal surgery including CO2 laser treatment of the root surfaces; Periodontal surgery including Gore-Tex membrane placement; and scaling and root planning

At 6 months post-surgery the animals were sacrificed and histologically evaluated. The results showed a mean new attachment formation of ***0.2 mm +/- 0.4 mm*** in the Gore-Tex group; ***0.2 mm +/- 0.5 mm*** in the Scaling/Root planning group; and ***1.9 mm +/- 0.5 mm*** of new attachment in the CO2 laser group.

Conclusion

- They concluded that ***CO2 laser treatment of Class III furcations induced formation of new periodontal ligament, cementum, and bone***
- Crespi, R; Covani, U.; Margarone J.; et. al
Periodontal Tissue Regeneration in Beagle Dogs After Laser Therapy Lasers in Surgery & Medicine 21 (4) 395-402, 1997

Crespi Human Studies

- Pocket depths of 6-9 mm and bleeding upon probing. ***All patients in the study had their pocket depths reduced by 4 mm, and clinical attachment gains of 3-5 mm***
- Crespi R.; Covani U.; Romanos G.; et. al. CO2 Laser Effects on Root Surfaces in Periodontal Treatment: Case Reports J. Oral Laser Applications 4:109-117, 2004

Barone

- Divided 30 teeth into three groups: CO2 laser treatment using 8 Watts CW focused; CO2 laser treatment using 2 Watts non-focused, pulsed at 4 Hertz (Hz); and controls cleaned with ultrasonics but without laser energy.

Barone - Results

- Cracks in the CW group,
- Pulsed group showed no damages to the root surfaces.
- The control teeth showed residual bacterial cells on the root surfaces
- The pulsed group showed an absence of residual bacterial cells on all lased specimens

Conclusion:

CO2 laser treatment in defocused pulsed mode with a low power of 2W combined with mechanical instrumentation constitutes a useful tool to condition root surfaces and ***increase fibroblast attachment to root surfaces***

Barone, A; Covani, U.; Crespi, R.; et. al. Root Surface Morphological Changes After Focused Versus Defocused CO2 Laser Irradiation: A Scanning Electron Microscopy Analysis J. Periodontol 73: 370-373, 2002

Step Seven Fill in the defect with bone

- Which kind of bone is best?
- Whatever you feel comfortable using. I do not know that the type of bone or brand of material makes a significant difference

I am the laser guy...not the bone
guy...
ask your friendly neighborhood
periodontist (not OMS)



Step Eight Suture The Flap Closed

- Gut? Silk? Vicryl?
- Whatever you feel comfortable with...whatever will give you the best closure

Step Nine De-epithelialize

- Didn't we just do this?
- Yes we did...we did the INSIDE of the flap. Now we must do the marginal gingiva and the outside of the flap
- SUTURE...THEN de-epithelialize the outside...if you de-epithelialize before you suture the flap might shrink – harder to suture



Step TEN Post-Operative Instructions

- You know the rules.....soft diet, keep it clean, gentle warm mouth rinses, whatever you want
- Do you use Coe-Pak? Up to you.

What's Next?
Suture Removal in One Week
AND.....

Step Eleven

De-epithelialize once again
Have the patient return in another 10 days or so



Step Twelve

- De-epithelialize once again
- SO...there are 3 de-epithelializations
- A) Day of surgery
- B) Day of suture removal
- C) one week after suture removal

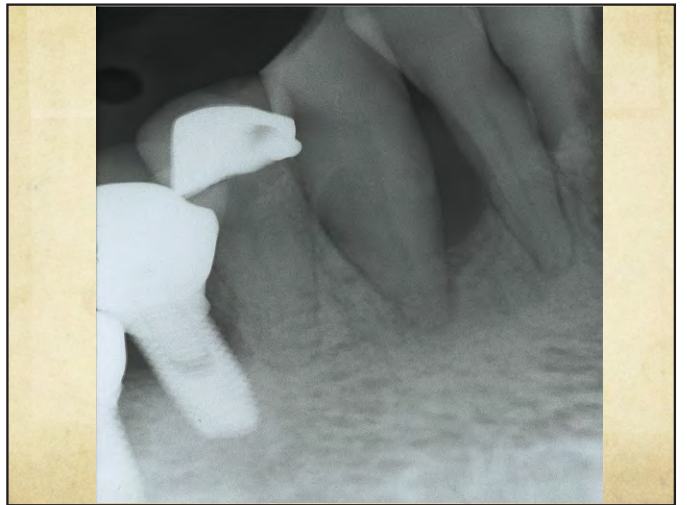
Recall the patient p.r.n....One month? Six weeks? Whatever you are comfortable with.

Lets talk about recall for a minute

Lets talk about VERBAL skills

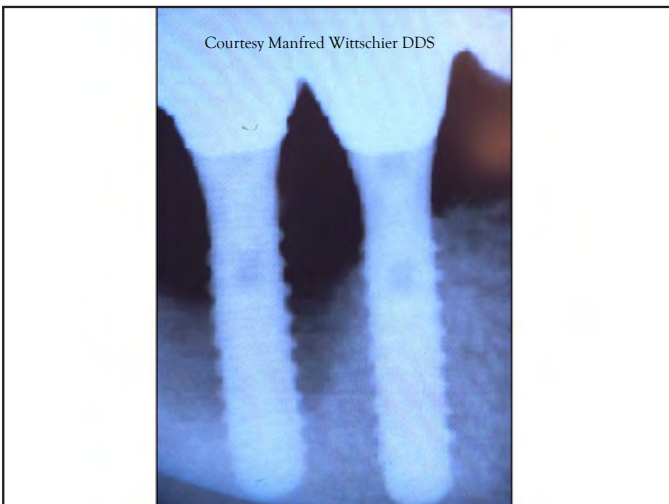
Lets talk about D1110

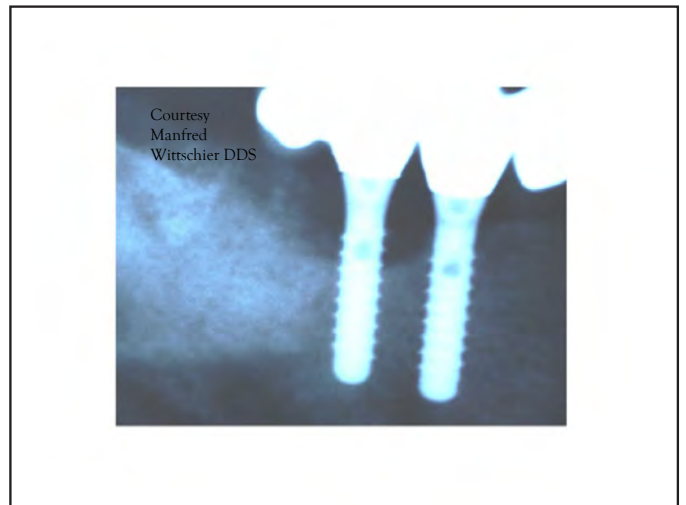
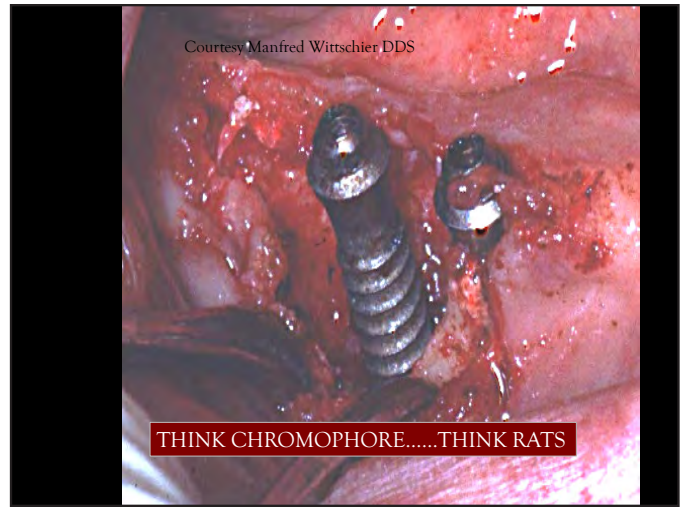
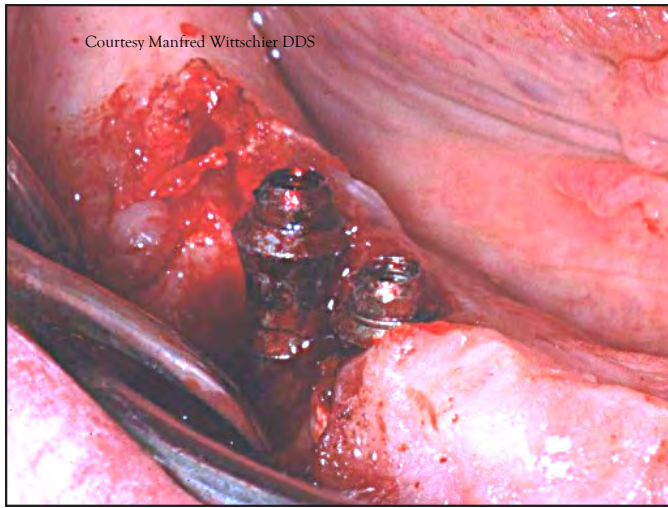
Lets talk about D4910





I have an idea:
How about trying this in
periimplantitis cases, instead of
periodontitis cases?
Think it will work?



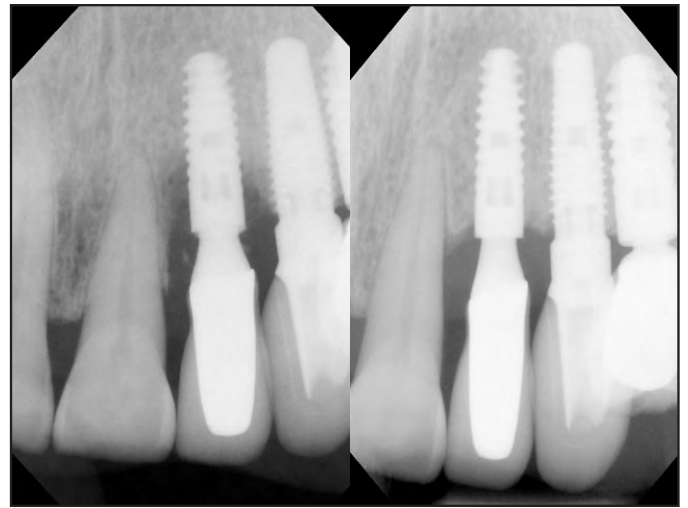


The next case is:

- 1) No flap
- 2) No graft

From pre-op to post-op is 10 months





TECHNIQUE:
Follow the 12-step program and
use what's applicable!

12 Steps

1) Records... DONE!

2) Occlusal Equilibration
CRITICALLY IMPORTANT -
DONE!

3) Gain Access to the Disease-
In This Case NO Flap or Envelope

4) Removal of diseased tissue -
Hand Instruments - Done!

5) De-epithelialization
OUTSIDE AND INSIDE of
Pocket With Laser - Done

(ALWAYS DO OUTSIDE FIRST!)

When Doing A Closed Technique:

When
De-epithelializing,
ALWAYS DO OUTSIDE FIRST!

6) Prepare implant surface
According to Deppe, et. al. Micro-
ultrasonics/Laser - Done
(More On This In A Minute!)

7) Fill defect with bone
NOT in this case

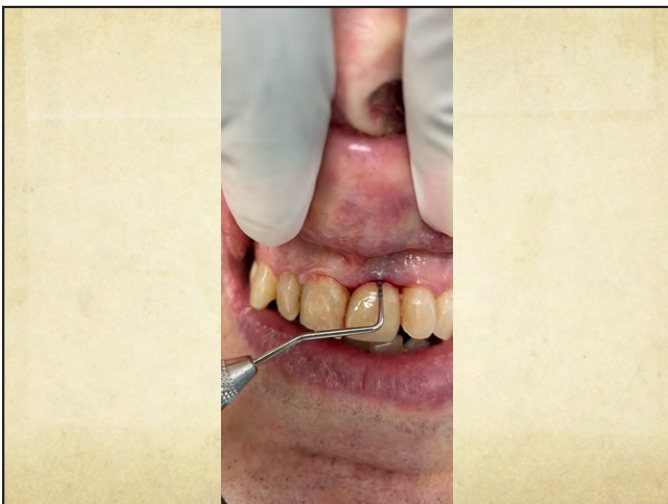
8) Suture - Not in This Case

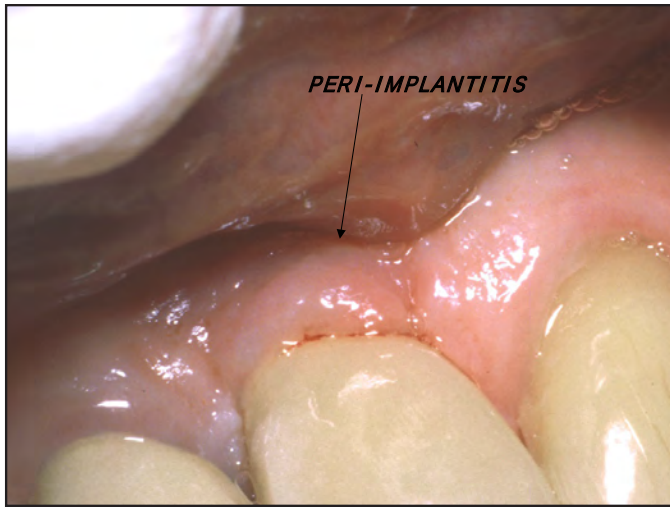
9) De-epithelialization of THE
OUTSIDE - Done

10) Post-op Instructions

11) One Week Post-Op...No
Suture Removal..Just Another De-
epithelialization

12) Two Weeks Post-Op
De-epithelialization





Bone regeneration after peri-implant care with the CO2 laser: A fluorescence microscopy study
Stubinger, Henke, Deppe
Int. J. Oral Max Fac Implants
2005 March April 20 (2) 203-210

Total of 60 Implants treated in Dogs
1) Air Abrasion
2) CO2 Laser
3) CO2 And Air Abrasion

4 Months Later - Sacrificed Dogs
Fluorescence Microscopy Eval.
Groups 2 and 3 (Laser Alone and Laser + A.A.) Showed Statistically
SIGNIFICANT More Bone
Regeneration - **WITHOUT GRAFTING!**

Conclusion: **CO2 laser** irradiation renders **significantly more new bone formation** especially 5-8 weeks postoperatively than conventional decontamination

Periimplant care of ailing implants with the CO2 laser
Deppe, Horsch, Henke, Donath
Int. J. Oral Max Fac Implants
2001 (16) 659-667

Question To Be Answered With This Paper: Can New Bone Formation Occur On Previously Contaminated Implants

60 Implants In Dogs
Peri-implantitis Due to Plaque Accumulation
1) A.A
2) CO2 Laser
3) Both

Histologic Exam 4 Months Post-Op:

New Direct Bone to Implant Contact – Even Better When Membranes Were Used (BUT NO BONE GRAFT)

Conclusion: Periimplant defects can be treated successfully by laser decontamination without damaging the surrounding tissues.

George Romanos, Stuart
Froum, Dennis Tarnow, et. al.
PhotoMedicine and Laser
Surgery
Vol. 27 Number 3, 2009

Medline Lit. Search
71 Peer Reviewed Papers

Conclusion:
The use of the *CO2 laser* in
the treatment of periimplantitis
deserves consideration as an
efficacious treatment
modality

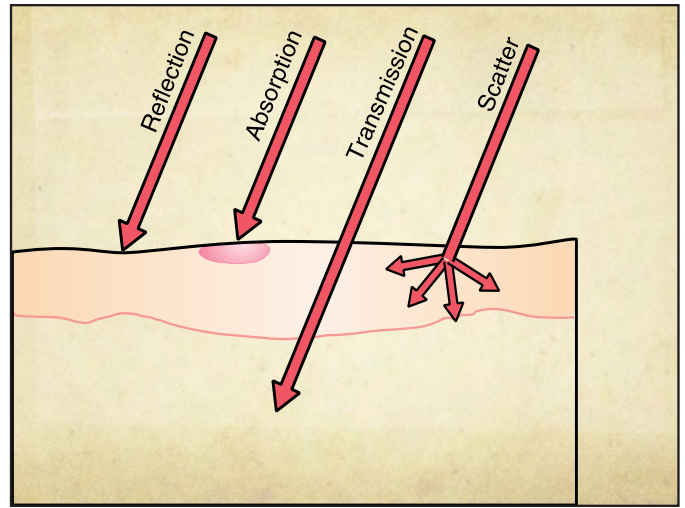
Why is CO2 so effective for
periimplantitis?

REMEMBER CHROMOPHORE!

REMEMBER RATS!!!

(TBD In A Minute)

You CANNOT Fudge the Science!

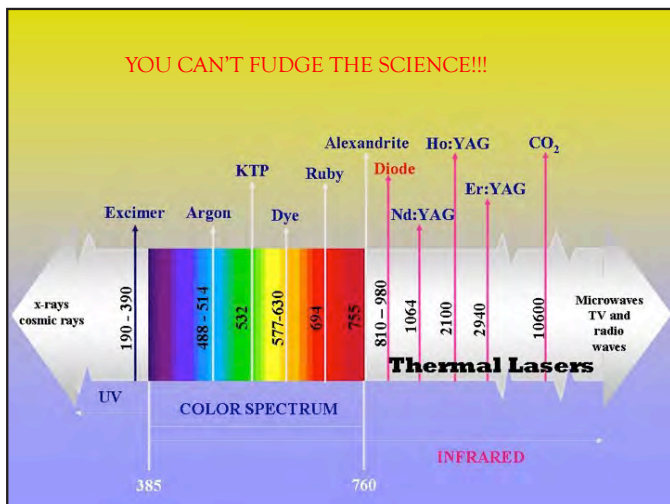


Why Do We Place A Lead Shield
On a Patient Before We Take an X-
Ray???

RATS!!

Rechmann, Sadegh, Goldin, et. al.
Surface Changes of Implants After
Laser Irradiation

Proc. SPIE 3593, Lasers in
Dentistry V (19 May 1999)



SUMMARY:

12 Steps:

1) Records

2) Occlusal

Evaluation/Equilibration

3) Gain Access to the Disease

- 4) Removal of diseased tissue
- 5) De-epithelialization
- 6) Prepare root/implant surface
- 7) Fill defect with bone
- 8) Suture
- 9) De-epithelilization

- 10) Post-op Instructions
- 11) Suture removal/De-epith
- 12) De-epithelialization

Remember the 4 D's of surgery:

- 1) Degranulate
- 2) Detoxify
- 3) Decorticate
- 4) De-epithelilize

ME & AL THANK YOU FOR LISTENING!!!!



SELF EVALUATION

Laser-Assisted Periodontal Therapy: LANAP Protocol and Clinical Application

1. Initiation of diodes works best with
 - a. Articulating paper
 - b. Black ink
 - c. Cork
 - d. All of the above are equally effective
2. Hand speed
 - a. If of little concern when performing laser periodontal pocket therapy
 - b. Should always be relatively fast so that the tissue does not become charred
 - c. Should always be relatively slow in order to allow time for the laser energy to be absorbed by the target tissue
 - d. None of the above
3. The most critical target tissue for diode laser energy is the:
 - a. Crevicular fluid
 - b. Pocket lining
 - c. Root surface
 - d. All are equally critical
4. Which of the following is CORRECT?
 - a. There is no need to continually reinitiate a fiber tip
 - b. When the diode tip becomes less effective, increase pressure on the tissue
 - c. Both are correct
 - d. Neither are correct
5. Which of the following is CORRECT:
 - a. Presets are the best parameters for all patients
 - b. Tissue biotype is of no concern when using a laser for periodontal pocket treatment
 - c. Removing the debris from the fiber tip between passes is an unnecessary waste of time
 - d. None of the above
6. Prostaglandins and Interleukins are:
 - a. Lipids
 - b. Disaccharides
 - c. Proteins
 - d. Mucopolysaccharides
7. Hydrogen bonds can be broken at:
 - a. 65 degrees C
 - b. 100 degrees C
 - c. Too high a temperature than can be produced with a diode laser
 - d. Just above normal body temperature – 45 degrees C
8. T/F - All patients will see success from laser periodontal pocket therapy, regardless of their home care -or lack of home care
9. Tips for using a diode correctly include all of the following EXCEPT:
 - a. Initiate properly
 - b. Keep the tissue cool
 - c. Use moderate pressure on the tip
 - d. Keep hand speed slow and steady

Answer Key: 1. B, 2. C, 3. B, 4. D, 5. D, 6. C, 7. A, 8. F, 9. C

FACULTY

Gary Glassman, DDS

Gary Glassman, DDS, of Toronto, Ontario, is a board certified endodontist and national recognized speaker. The author of numerous publications, Dr. Glassman lectures globally on endodontics, is on staff at the University of Toronto, Faculty of Dentistry in the graduate department of endodontics, and was an Adjunct Professor of Dentistry and Director of Endodontic Programming for the University of Technology, Kingston, Jamaica from 2010 to 2017. Gary has presented at major dental conferences around the world including the annual conference for the European Society of Endodontology, The Canadian Dental Association, The Ontario Dental Association, The California Dental Association, The Texas Dental Association, The Greater New York Dental Meeting, The Pacific Dental Conference, Washington's Nation's Capitol Dental Meeting, The Chicago Mid Winter Dental Meeting and the Irish Dental Association. A Fellow of the Royal College of Dentists of Canada, Fellow of the American College of Dentists, Fellow of the Academy of Dentistry International, Fellow of the Pierre Fauchard Academy, and Fellow of the Academy of Dental-Facial Aesthetics, Gary is the endodontic editor for *Oral Health* dental journal and *Inside Dentistry*.

You may contact Dr. Glassman with your questions or comments at gary@rootcanals.ca

THE
2026-27

Dental
UPDATE

Mastering Endodontic Access Cavity Preparation

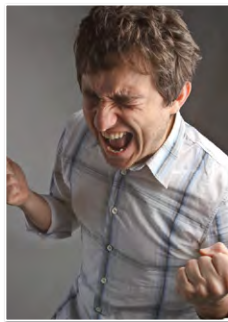
Gary Glassman, DDS

Mastering Endodontic Access Cavity Preparation

Gary Glassman, DDS, FRCD(C)
gary@rootcanals.ca
www.rootcanals.ca

ACCESS FOR SUCCESS

ACCESS CAVITY PREPARATION

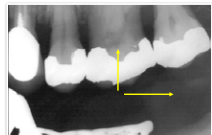


ACCESS CAVITY PREPARATION

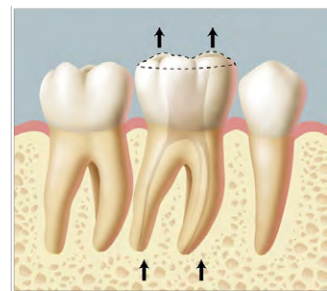
- ✓ Remove All Unsupported Restorations And Decay!!!
- ✓ Eliminate Areas Of Marginal Leakage, Isolate Sites Of Perforation, Isolate And Visualize Fracture Lines

STRAIGHT LINE ACCESS

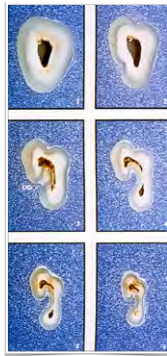
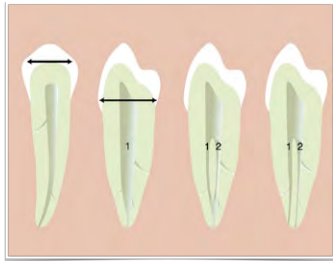
- ✓ Recognize impact of aging and attrition.
- ✓ Use bitewing x-rays to orient in occlusal-apical and mesial-distal dimensions.



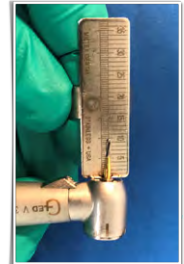
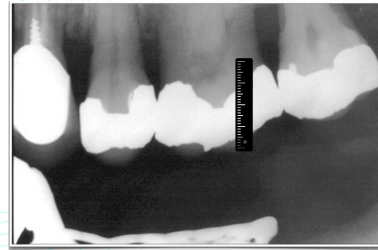
REDUCE OCCLUSION



THREE DIMENSIONS X,Y,Z



TIPS AND TRICKS



AXIOMS

CLASS I INLAY



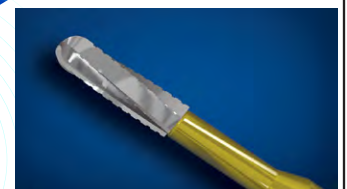
ACCESS KIT MIE BUR KIT



#2 AND #4 ROUND DIAMOND BURS



#557 TRANSMETAL CROSS-CUT FISSURE BUR



LAWS OF ACCESS PREPARATION

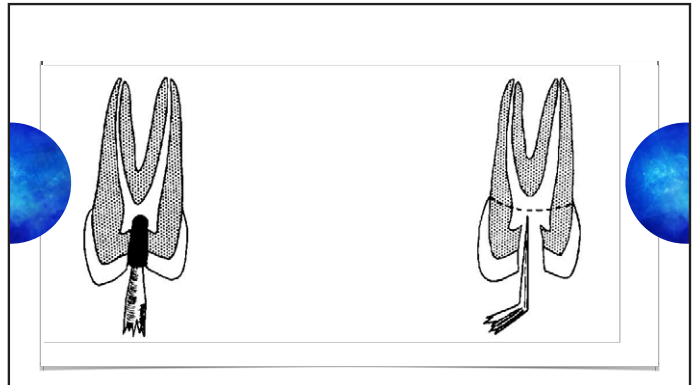
Journal of Endodontics
Copyright © 2003 by The American Association of Endodontists

Printed in U.S.A.
Vol. 30, No. 1, January 2004

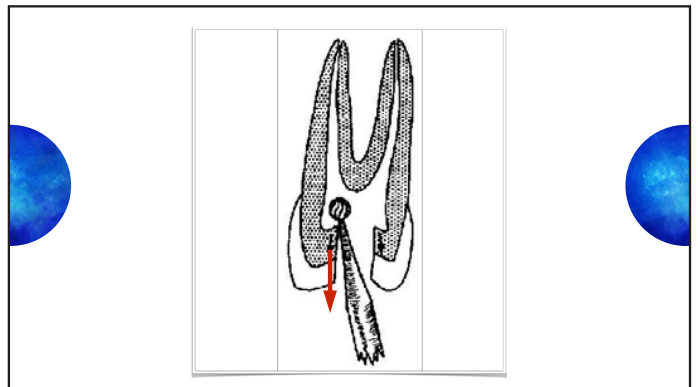
Anatomy of the Pulp-Chamber Floor

Paul Krasner, DDS, and Henry J. Rankow, DDS

LAW OF CENTRALITY



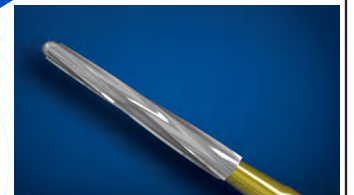
SURGICAL LENGTH
HIGH SPEED #2 AND #4
ROUND CARBIDE BURS



LA ACCESS BUR



TAPERED AND SAFE ENDED
CARBIDE ENDO Z BUR

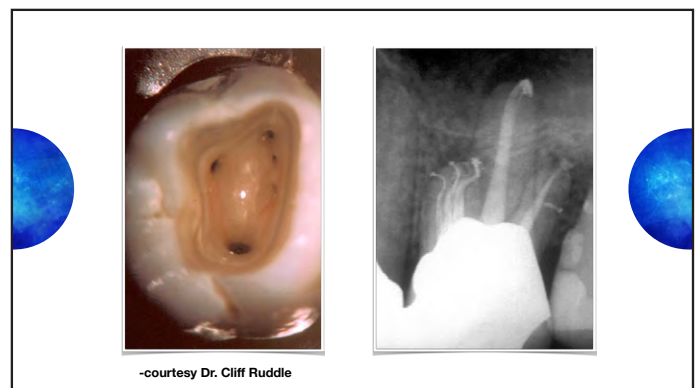
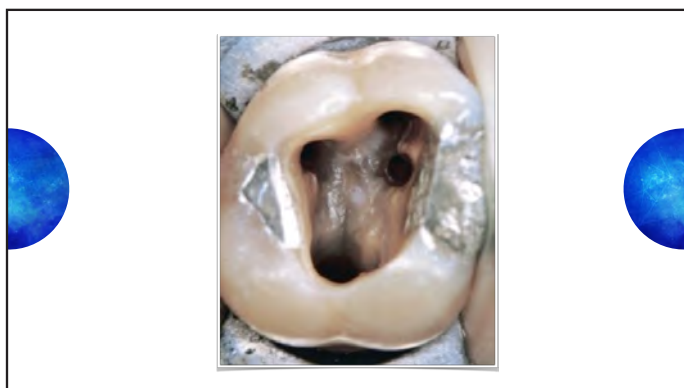
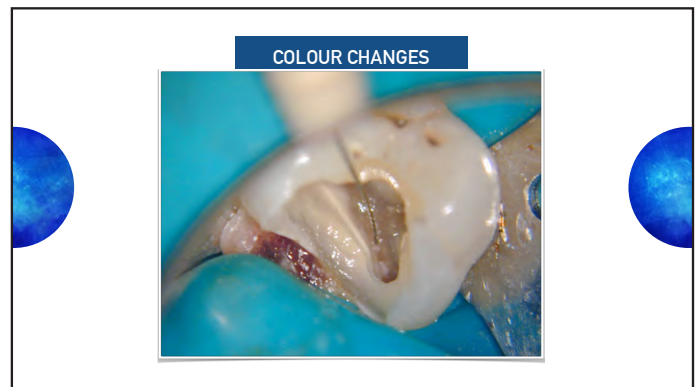
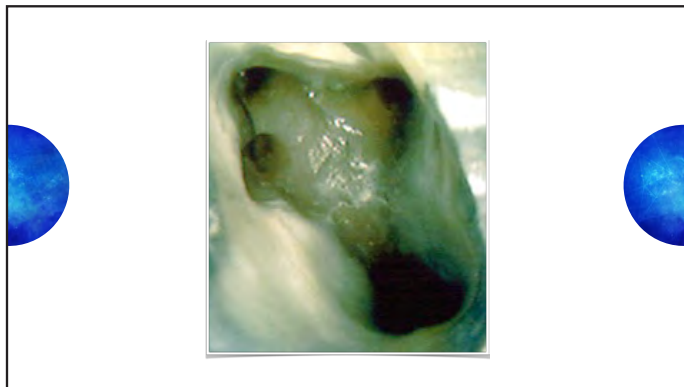
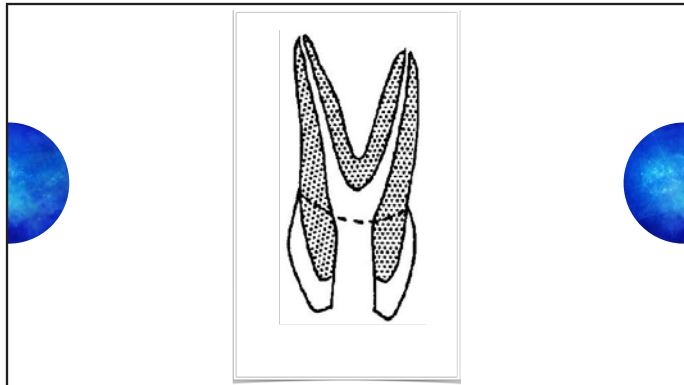


PRO ULTRA ULTRASONIC

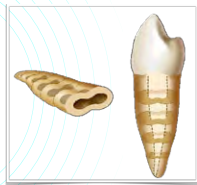


ULTRASONIC TIPS

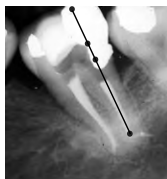




MECHANICAL OBJECTIVES



GRADUALLY TAPERING FUNNEL



MB2

MB2

MB2



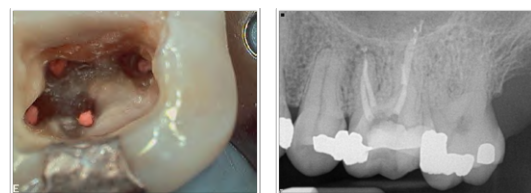
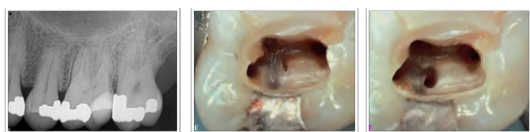
MB2

MB2

MB2



-courtesy Dr. Arnaldo Castellucci

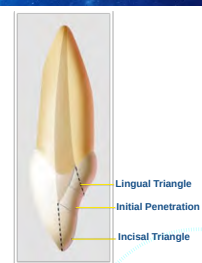


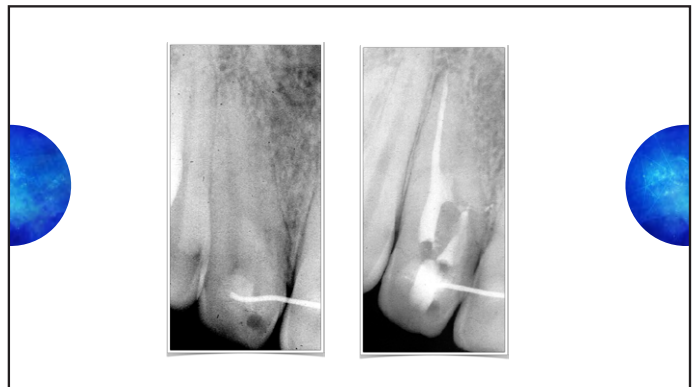
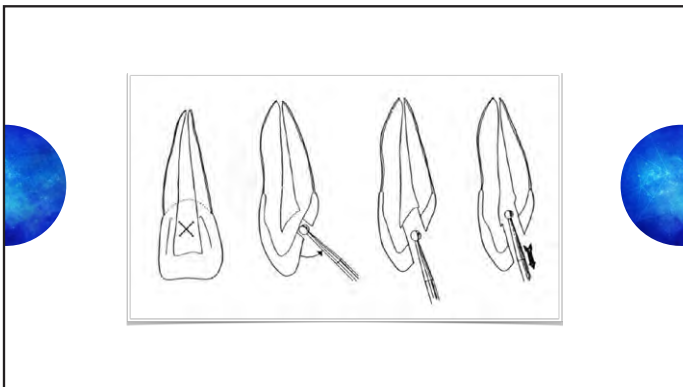
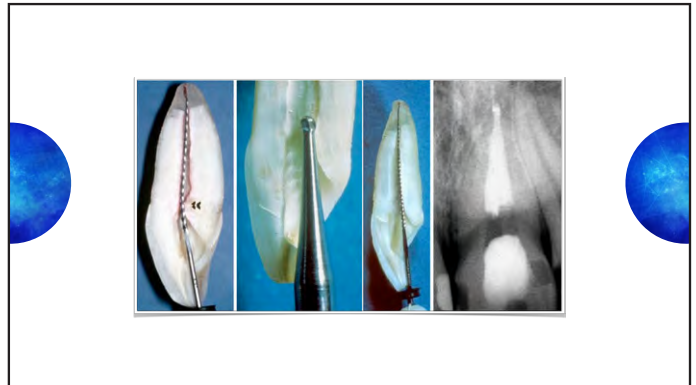
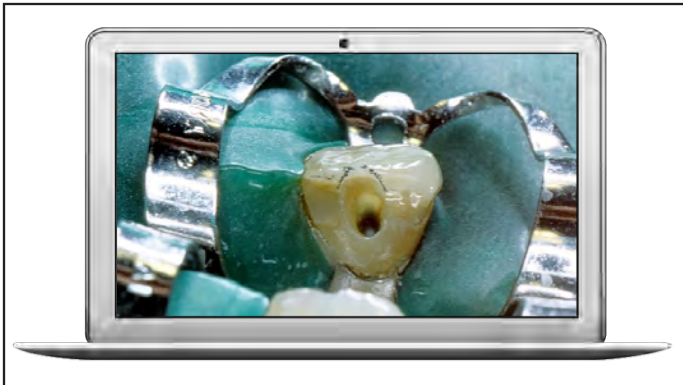
MAXILLARY ANTERIORS

- ✓ Extend to incline of incisal edge
- ✓ Prepare pulp horns
- ✓ Narrow mesial-distal
- ✓ Extend deep into cingulum (remove lingual dental triangle)

MAXILLARY ANTERIORS

- ✓ Extension slightly into incisal edge minimizes apical misadventure and maximizes debridement to prevent the proverbial discoloured tooth





MANDIBULAR ANTERIORS

- ✓ Bisect based on crown angulation
- ✓ centrals - 40% to 50% have 2 canals
- ✓ laterals - 45% to 55% two canals
- ✓ arborizations, fins, deltas and plexus evident in Z axis
- ✓ include incisal edge - straight line axis



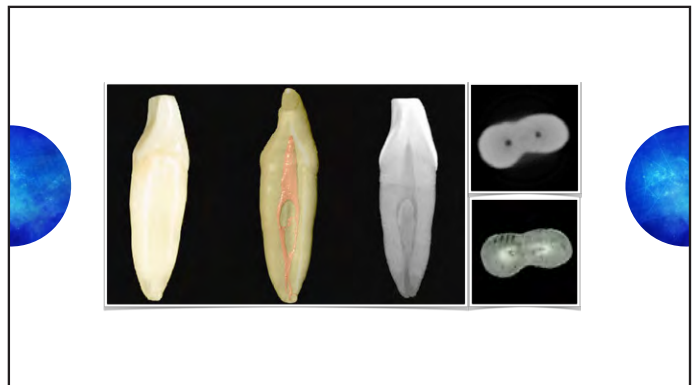
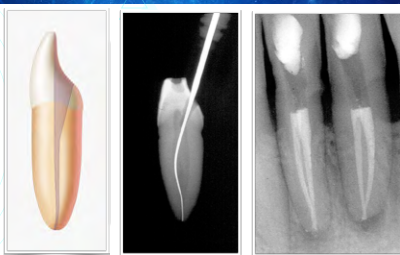
The prevalence of the lingual canal in mandibular central and lateral incisors varied from 2.3% (0.06%–4.0%; Nigeria) to 45.3% (39.7%–51.0%; Syria) and from 2.3% (0.06%–4.0%; Nigeria) to 55.0% (49.4%–60.6%; India), respectively.

Ethnicity had a significant impact on the prevalence of the lingual canal, with African, Asian, and Hispanic groups having the lowest proportions ($P < .05$), while Caucasians, Indians, and Arabs showed the highest ($P < .05$) for both incisor groups.

Additionally, males had a significantly higher odds ratio for both the central (1.334) and lateral (1.178) incisors, while older patients had a lower prevalence for both tooth groups ($P < .05$). The side and tooth group did not influence on the outcomes.

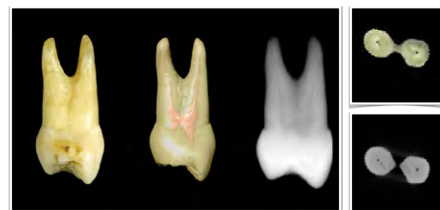
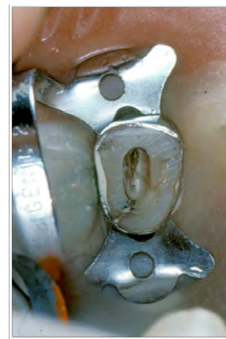
JOE Volume 49, Number 7, July 2023

STRAIGHT LINE ACCESS



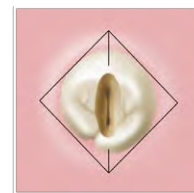
MAXILLARY PREMOLARS

- ✓ Bisect on crown orientation
- ✓ radiate with divergence from central fossa to cusp tips
- ✓ no chamber space exists between mesial and distal fossae
- ✓ orient parallelogram with longest palatal cuspal incline
- ✓ note mesial furcation and 7% possibility of 3rd canal



MANDIBULAR PREMOLARS

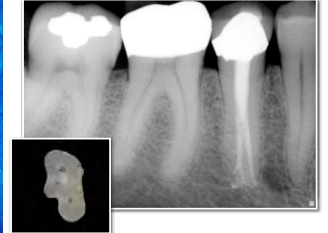
- ✓ Crown/root long axis differs by as much as 45 degrees.
- ✓ buccal cusp is prominent
- ✓ lingual cusp is rudimentary.
- ✓ 2 distinct canals are evident in 25% of teeth.
- ✓ apical deflection in last 2 mm is characteristic.



BEWARE OF MULTIPLE ROOT CANALS!!!



MANDIBULAR PREMOLAR TEETH



MAXILLARY MOLAR TEETH

- ✓ Adhere to G.V. Black - DO NOT extend beyond oblique ridge
- ✓ connect mesial buccal, distal buccal and palatal cusp tips
- ✓ 4th canal in almost 100% of cases
- ✓ identified by prominence of facial aspect of mesial buccal cusp

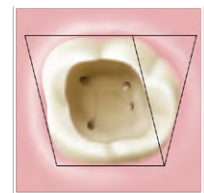


MAXILLARY SECOND MOLAR

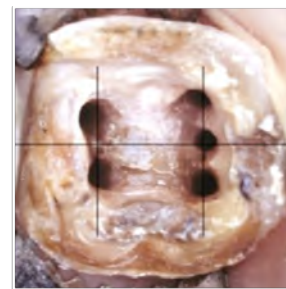


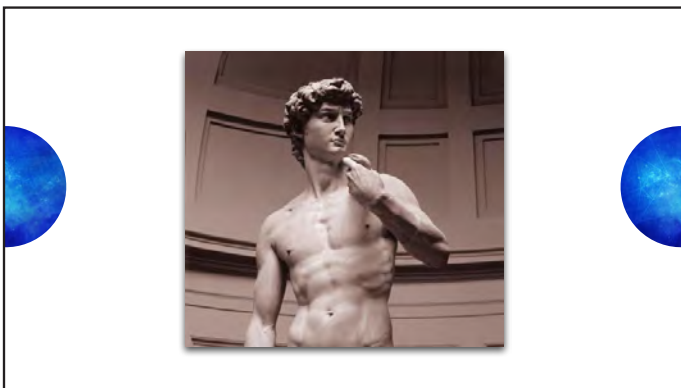
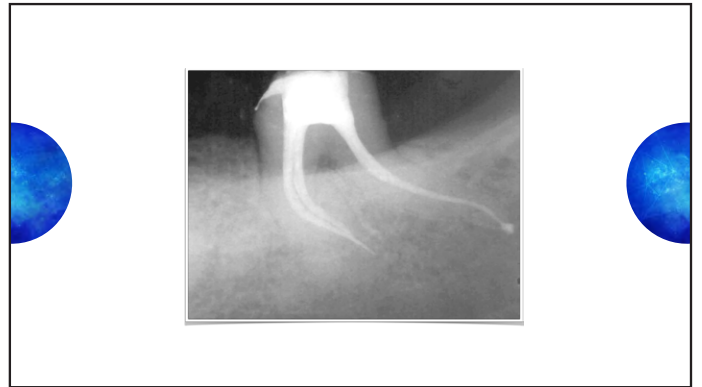
MANDIBULAR MOLAR TEETH

- ✓ Connect mesio-buccal, disto-buccal, mesio-lingual and disto-lingual cusp tips
- ✓ extend into body of cusp tip to create divergent Class I inlay preparation
- ✓ 4th canal in over 50% of cases
- ✓ occlusal reduction helpful in cases of steep cuspal incline



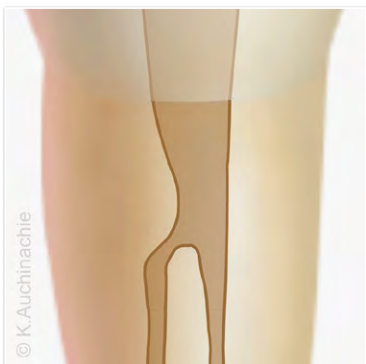
LAW OF SYMMETRY



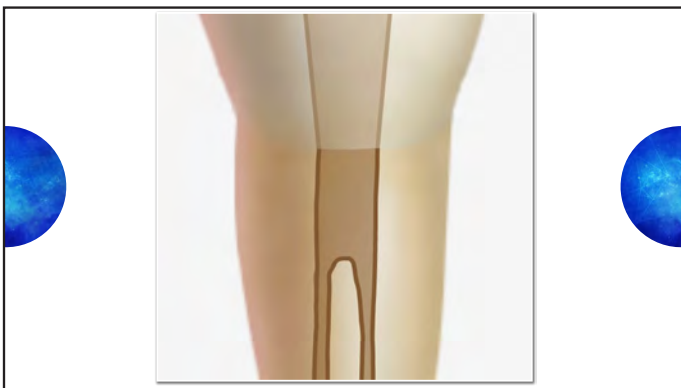
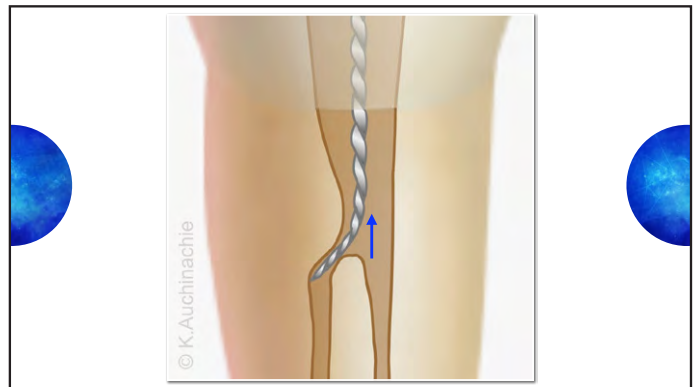
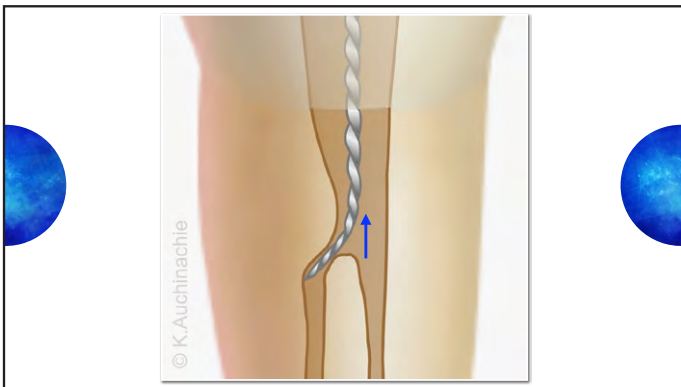


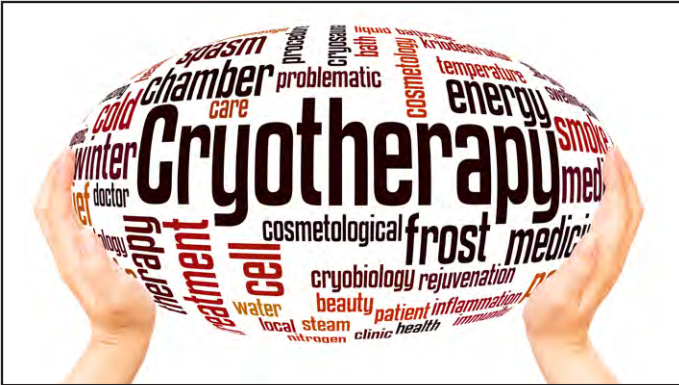


TIPS AND TRICKS TIME!



MY SECRET WEAPON





SELF EVALUATION

Mastering Endodontic Access Cavity Preparation

True/False

1. Irreversible pulpitis is considered an endodontic emergency and typically presents with lingering pain to hot or cold stimuli.
2. A tooth with symptomatic apical periodontitis will always present with swelling.
3. Avulsed permanent teeth should ideally be replanted immediately at the site of injury or stored in a suitable medium like milk if delayed.
4. A fractured tooth that is not causing pain and has no mobility does not require urgent evaluation.
5. In endodontic emergencies, achieving drainage through the canal or soft tissue incision can significantly reduce pain and pressure.
6. Intrusive luxation is when a tooth is displaced laterally from its socket, usually due to trauma.
7. Pulp testing may be unreliable immediately after a traumatic dental injury and should be repeated over time to assess vitality.

Answer Key: 1. T, 2. F, 3. T, 4. F, 5. T, 6. F, 7. T

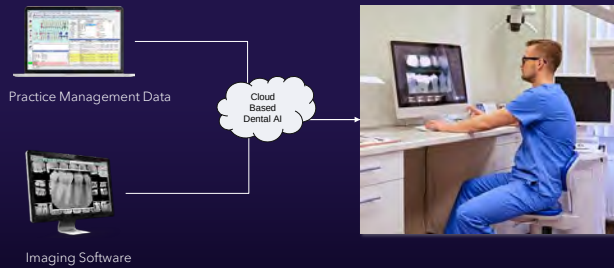
AI in Diagnosis and Patient Care

Chris Balaban, DMD, MSc, FACD

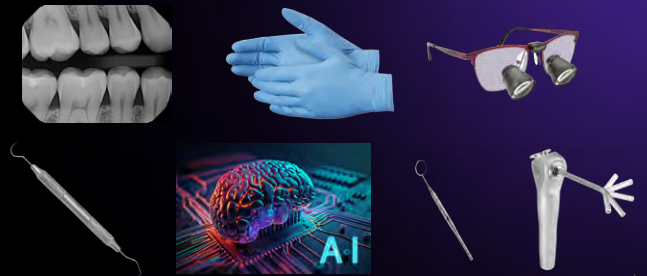
AI in Diagnosis and Patient Care

How is AI being implemented in Clinical Practice?

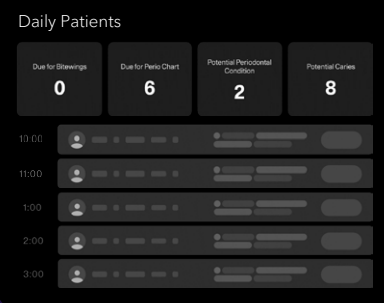
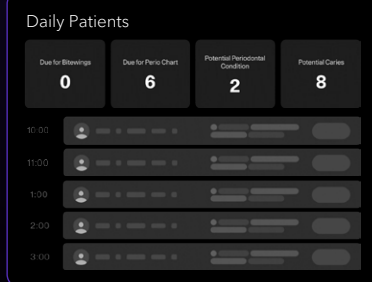
A New Tool in the Operatory



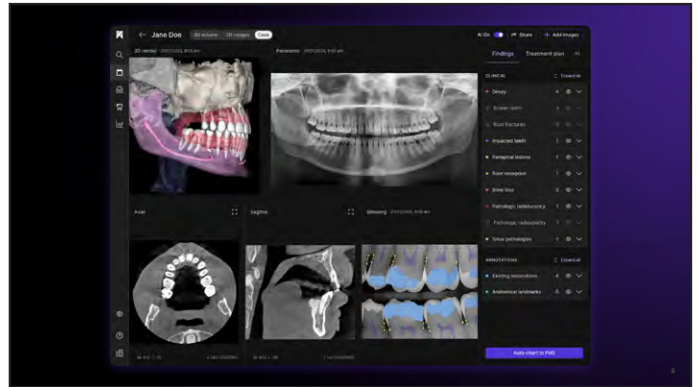
DISEASE DETECTION TEAM



Organizing patient data: The perfect problem for artificial intelligence.



Every chart of every patient pre-screened each day:



**Analyzing
radiographs
with dental AI.**

Case studies: Caries

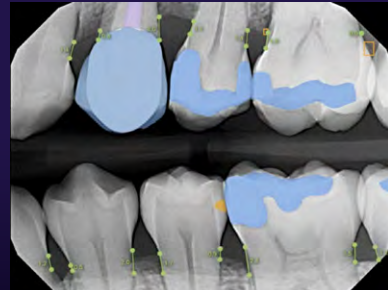
Caries case #1

11



Caries case #1

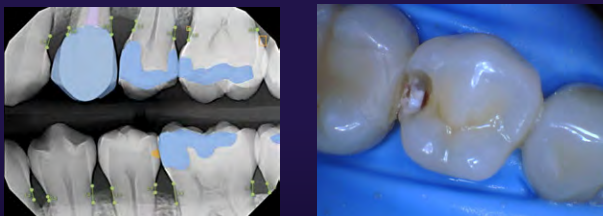
12



Caries case #1

Source: Keith Baines, DMD

13



Caries case #1

Source: Keith Baines, DMD

Source: Keith Baines, DMD

14



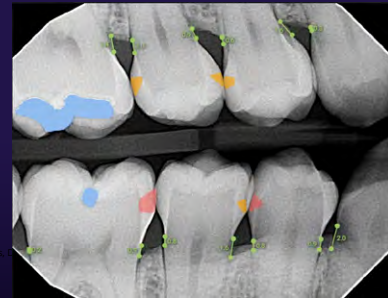
Caries case #2



Source: Keith Barnes, DMD

15

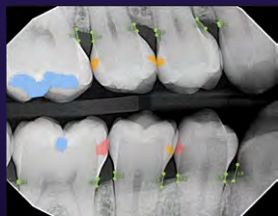
Caries case #2



Source: Keith Barnes, DMD

16

Caries case #2



Source: Keith Barnes, DMD



17

Caries case #2



Source: Keith Barnes, DMD

18

Incipient Caries

- Changing paradigm of caries disease management
- Caries as an infectious disease
- CRA
- Interventional strategies

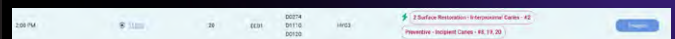
If early intervention is our desired outcome, it all starts with detection.....

Buts thats easier said than done.....

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21

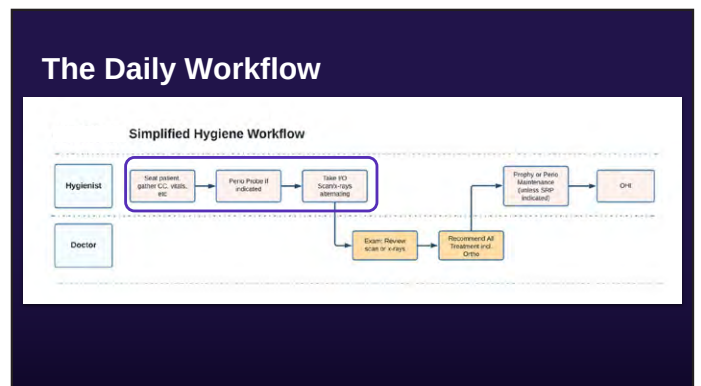
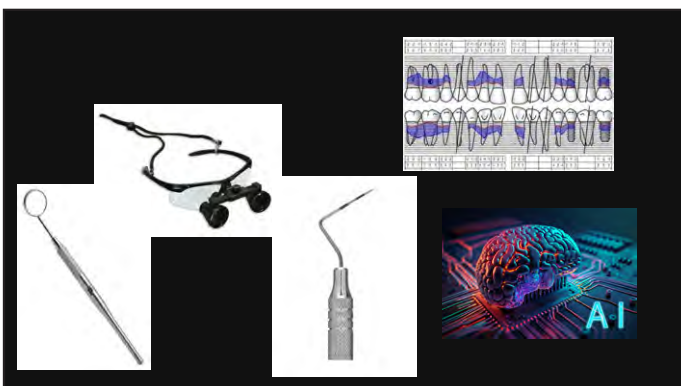
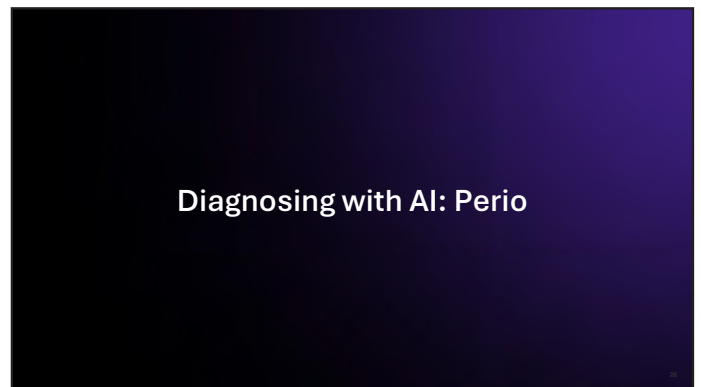
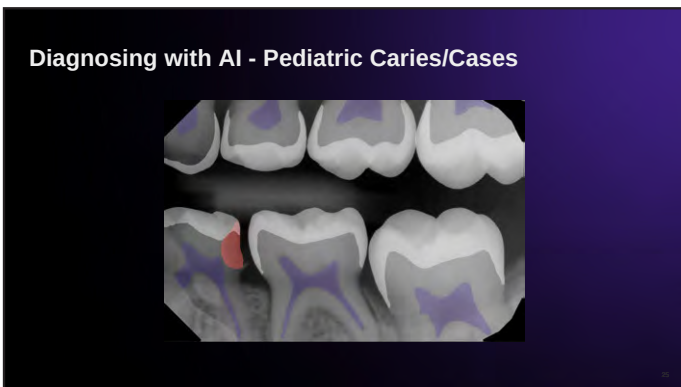
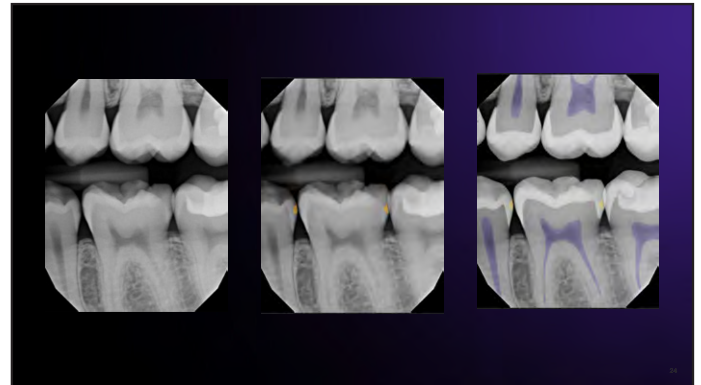
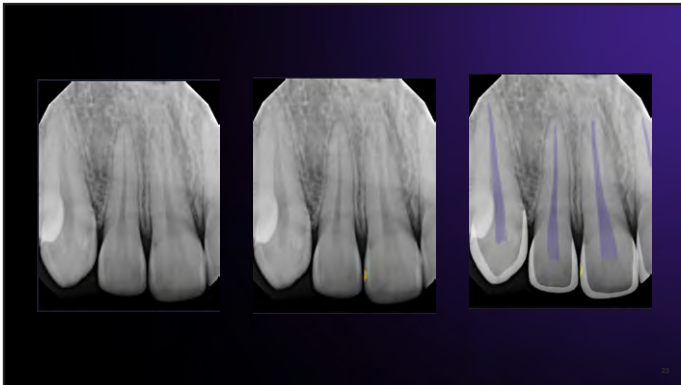
Daily Patients page incipient caries findings

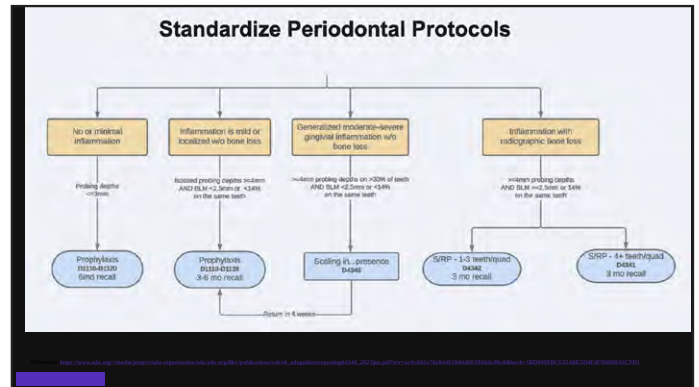
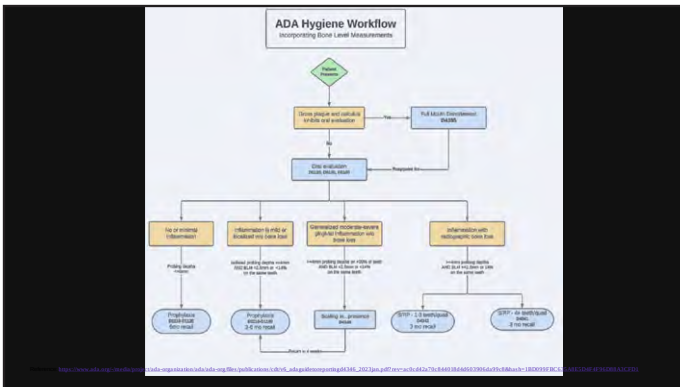


2 Surface Restoration - Interproximal Caries - #2

Preventive - Incipient Caries - #8, 19, 20

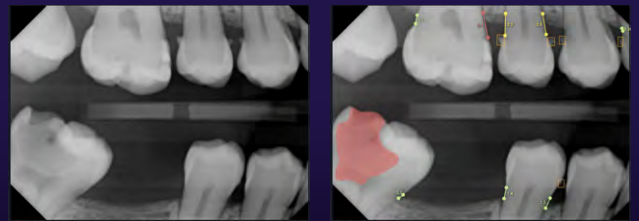
22





Case Study: periodontics

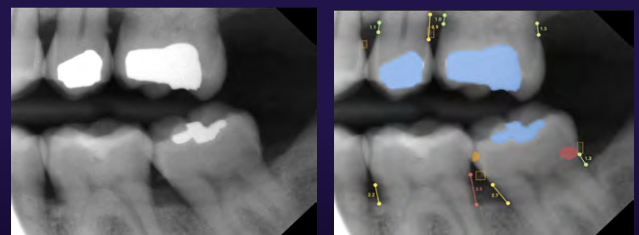
Perio Diagnosis



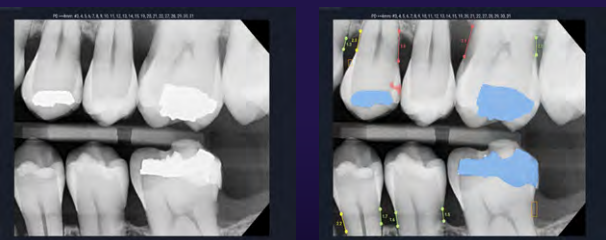
Bone level measurement color gradients

BWXR	PAXR
0-2mm	0-15% GREEN
GREEN	16-33% YELLOW
2.1mm-2.9mm	>33% RED
YELLOW	

Perio Diagnosis



Perio Diagnosis

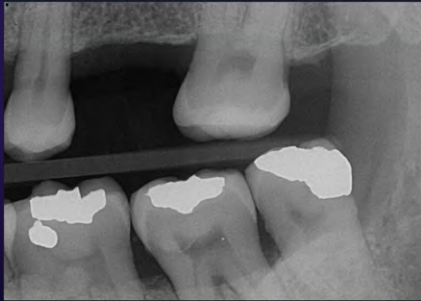


Perio Diagnosis Augmentation

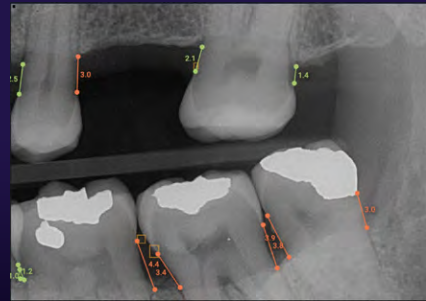


- Quantitatively detect the presence of periodontal disease
- Elevate patient-provider communication and case acceptance with AI visualizations
- Increase confidence in your insurance claim submissions

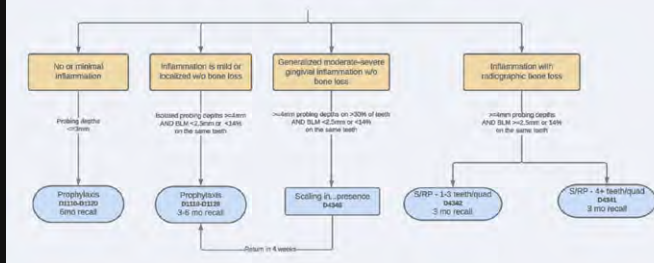
Case Study: Periodontal Treatment



Case Study: Periodontal Treatment



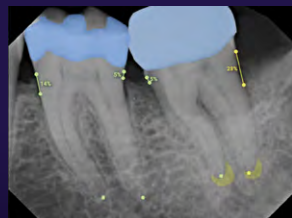
Standardize Periodontal Protocols



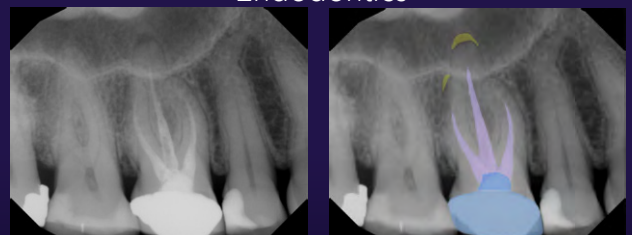
Case study: PARLs

Endodontic diagnostic workflow after PARL detection

- Percussion and bite testing
- Apical palpation
- Pulp vitality testing
- Periodontal examination
- Ancillary imaging

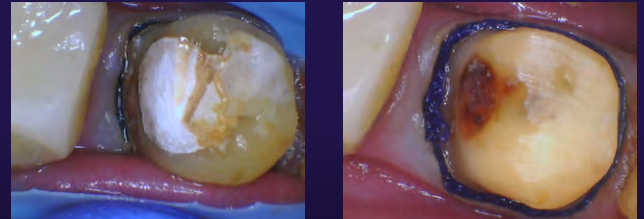
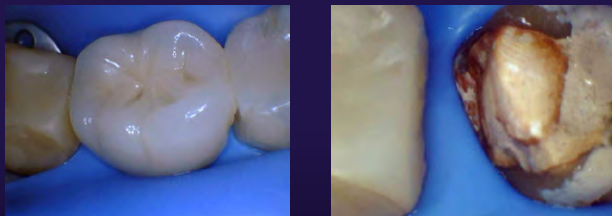
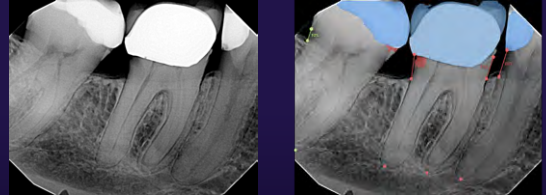


Endodontics



Failed endo? Root fx? Additional canal?

Case studies: Defective Restorations

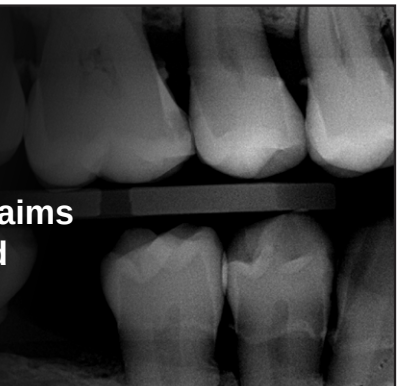


The Inherent Clinical Benefits

- AI fully processes and annotates and enhances the FMX/BW series or any combination of radiographs acquired before the doctor enters the operator
- It happens in real time
- AI never gets “tired”, never calls in sick, or has a “bad day”.
- AI is an objective, non biased **teammate** and brings automation and efficiency to many dental practice workflows

The Insurance Revolution:

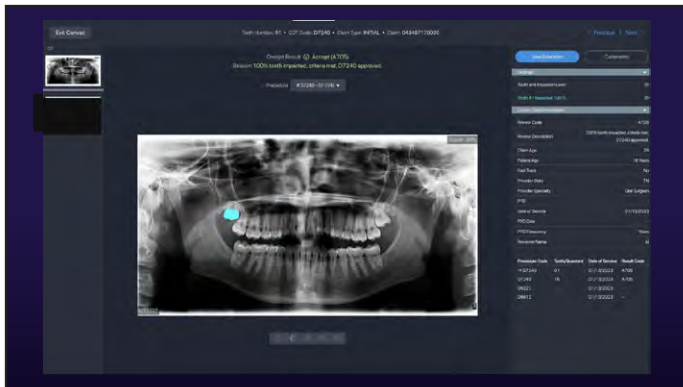
AI automated claims assessment and approval



The ability to automate approvals for submitting providers

- Transparent, **EVIDENCE BASED** criteria
- Identify missing claim documentation information immediately
- Improve speed of pre-auths
- Improve speed of claim payment
- Point of care adjudication...





Multi-Modal AI Data Analysis

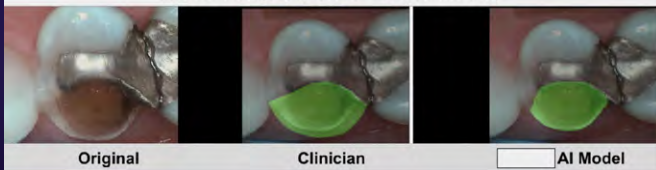
Narrative and Chart Note Interpretation V2

- The ability to intelligently interpret narratives beyond key-word recognition, by providing contextual reference to what potential pathological condition is being described
 - Applicable to decay and fracture
 - Currently training models for cracked tooth syndrome with presence of testing, history of endo, osseous removal.
- Coupling narrative data points with image data points to assign confidence of authenticity and identify potential FWA

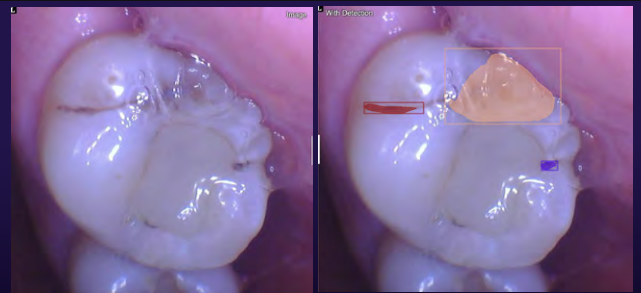


Going beyond Radiography and Chart Note Interpretation

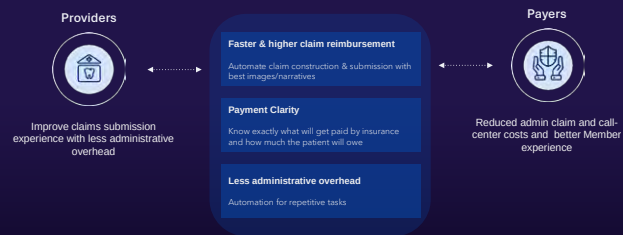
Intraoral Image (Broken tooth identification)



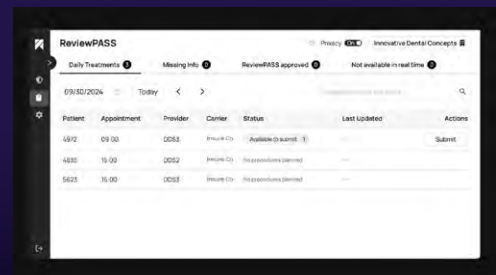
Going beyond Radiography and Chart Note Interpretation



We can improve transparency, speed, and consistency using AI across the claim submission process



AI Enables Instant Decisions For Payers, Providers & Patients



SELF EVALUATION

AI in Diagnosis and Patient Care

1. According to the lecture, what percentage of adults aged 30 years and older have some form of periodontal disease?
 - a. 30.1%
 - b. 47.2%
 - c. 56.8%
 - d. 71.1%
2. T/F - AI can pre-screen every patient chart and analyze radiographs before the clinician enters the operator.
3. According to the periodontal bone-level measurement system presented, a bitewing bone level measurement of 3 mm or greater is displayed as which color?
 - a. Green
 - b. Blue
 - c. Yellow
 - d. Red
4. T/F - The lecture states that periapical radiolucency is the radiographic sign of inflammatory bone lesions around the apex of a tooth.
5. Which of the following benefits of AI-assisted insurance workflows is specifically mentioned in the lecture?
 - a. Elimination of all insurance claims
 - b. Faster claim payment and pre-authorization processing
 - c. Automatic treatment planning without clinician involvement
 - d. Guaranteed insurance approval for all procedures

Answer Key: 1. B, 2. T, 3. D, 4. T, 5. B

FACULTY

Sal Lotardo, DDS, FAACD

Sal Lotardo, DDS, FAACD is an Accredited Fellow and past President of the American Academy of Cosmetic Dentistry. He is the current Accreditation Chair for the American Board of Cosmetic Dentistry. After obtaining his degree at The Stony Brook School of Dental Medicine he founded Bella Smiles of Long Island, a multi-location group practice focused on Comprehensive Cosmetic and Implant Dentistry. Dr. Lotardo has published multiple articles and lectures internationally on Smile Design, Cosmetic Dentistry and Restorative Driven Orthodontics.

You may contact Dr. Lotardo with your questions and comments by email at drl@bellasmilesnow.com.

THE
2026-27

Dental
UPDATE

Restorative Driven Orthodontics: Optimizing Implants in the Esthetic Zone
Sal Lotardo, DDS, FAACD



**Optimizing Implants in the
Esthetic Zone**



**Part 1: Intro to GP Orthodontics
and Smile Analysis and Design**



?



I want Lumineers!

I need to learn Ortho!





I need to learn cosmetic dentistry!



I need to learn Implants!



Why learn orthodontics?



Diagnosis

Treatment Planning

Diagnosis

You only see what you know to look for.

Diagnosis

You only see what you know to look for.

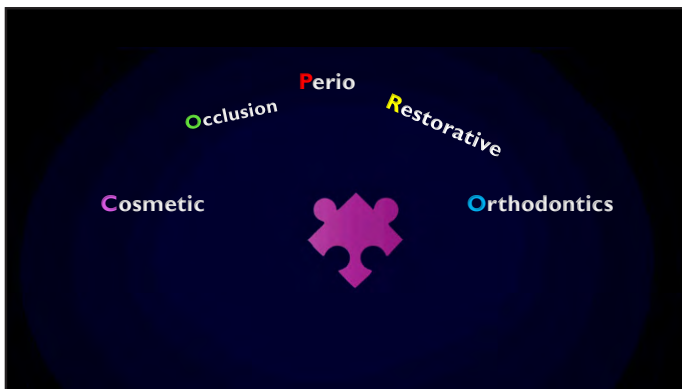
Treatment Planning

Diagnosis

You only see what you know to look for.

Treatment Planning

You only plan for what you think needs treating.



GP Ortho

Why, What and How
Diagnosis and Treatment Planning
You see what you know

Execution
Monitoring
Case Control
Restorative Driven Process

Case Acceptance
Under one roof
Bundled fees

Branding, Marketing and Revenue
Excellence
Internal referrals
Rewarding



Communication



Goals

Esthetics
Improve Esthetic and Restorative Outcomes

Minimally Invasive Dentistry
Preserve tooth Structure
Adhesion

Surgical and Prosthetic Adjunct
Hard and Soft Tissue Management

Occlusal Issues
Long term Predictability and stability

Periodontal Health
Contacts, recession, black triangles



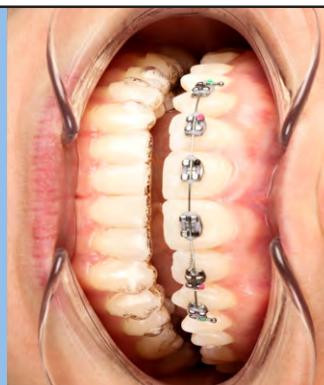
Modalities

Aligner Therapy
Removable Appliance therapy

Limited
Level and Alignment
Minor Tooth Movement

Interceptive
Growth Modification
Early Correction

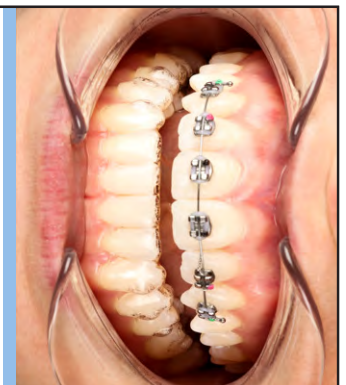
Comprehensive
Full Arch
Orthopaedic
Orthognathic Surgery

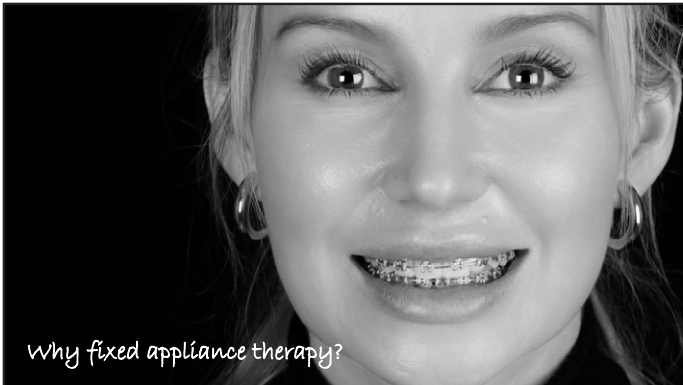


Modalities

**Limited Fixed
Appliance Therapy**

Level and Alignment
Minor Tooth Movement







Case Types

Pre-restorative Set up • Level and Alignment • Gingival Margin Correction • Intrusion of super-erupted teeth	Implant Optimization • Extrusion (forced eruption) improve soft and hard tissue • Root Alignment	Missing and Peg Laterals • Canine Substitution and Revision • Opening space • Interceptive and alternative treatments
Space Management • Closing • Opening	Occlusal issues • Wear • Restricted Envelope	Invisalign • Rescue • Practice Management



“The Holy Grail”

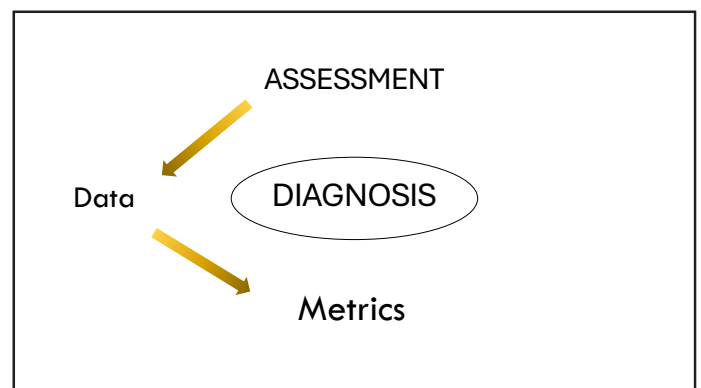
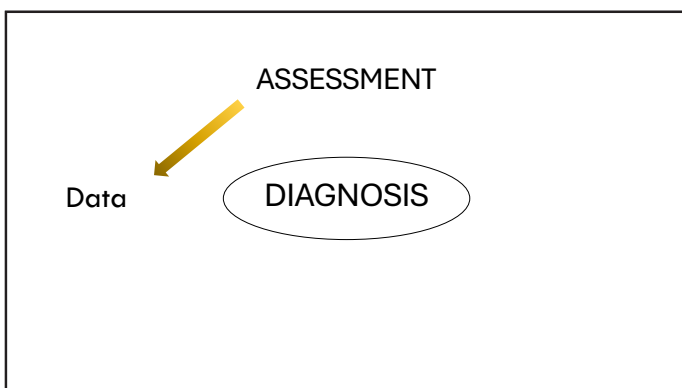
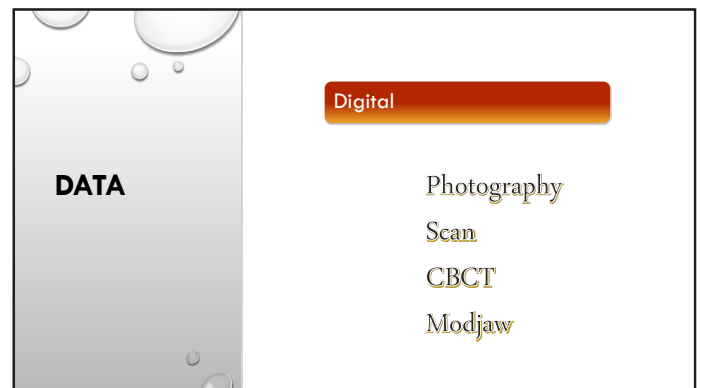
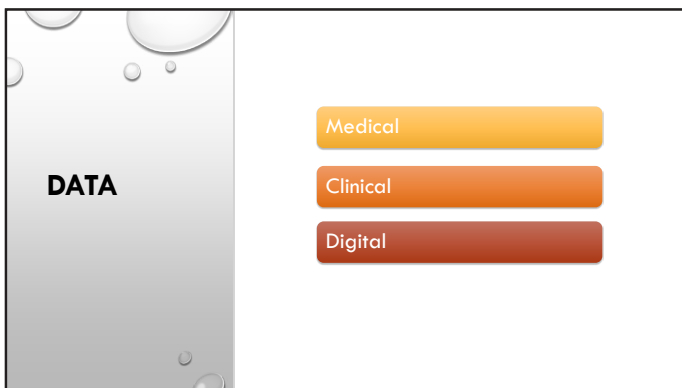
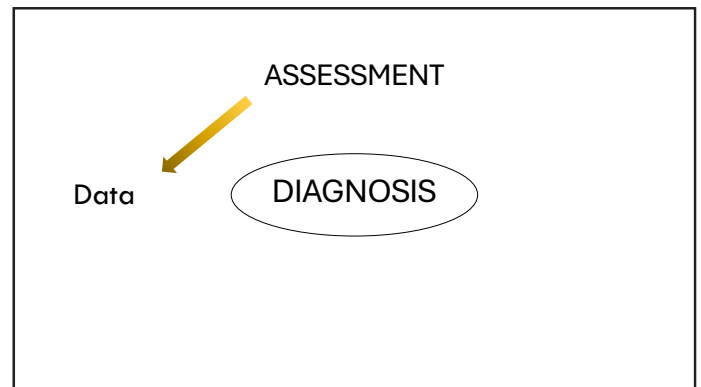
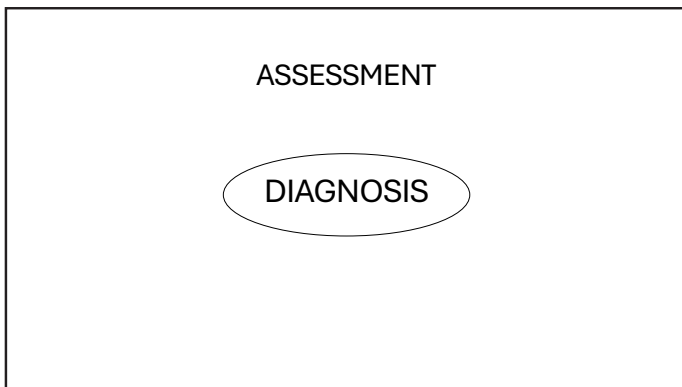
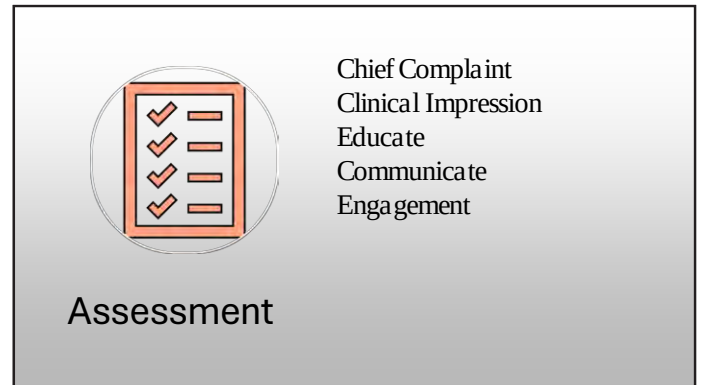
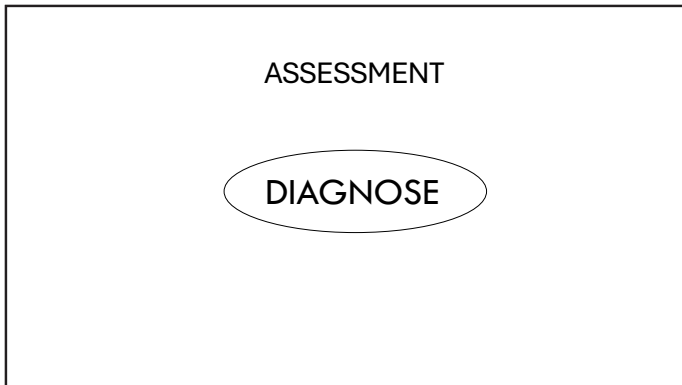
- Is there a **perfect system** for diagnosis, design and treatment planning, incorporating all aspects and disciplines of dentistry?

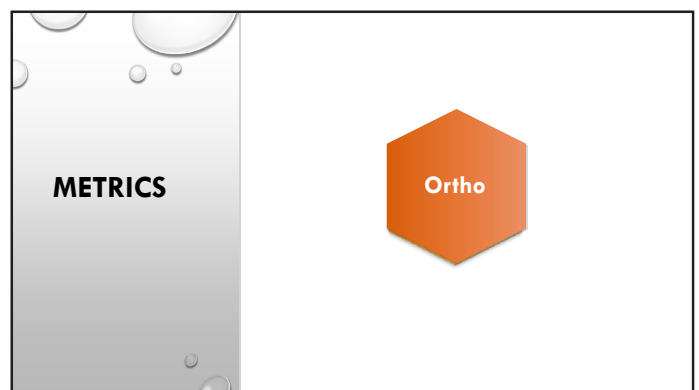
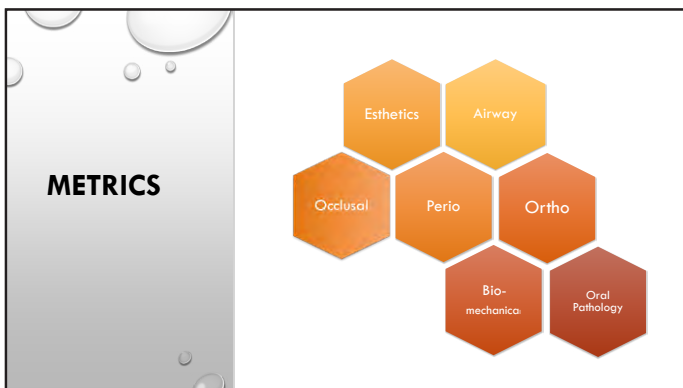
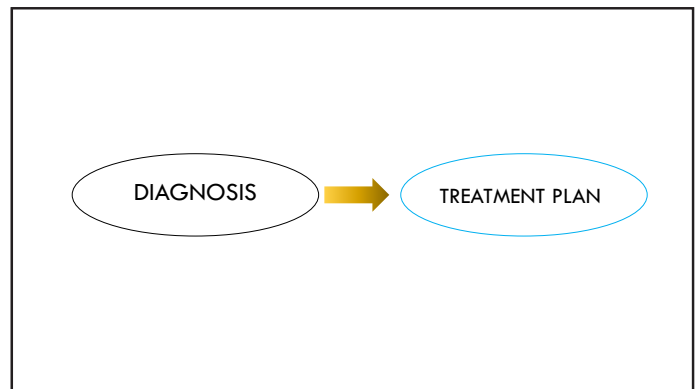
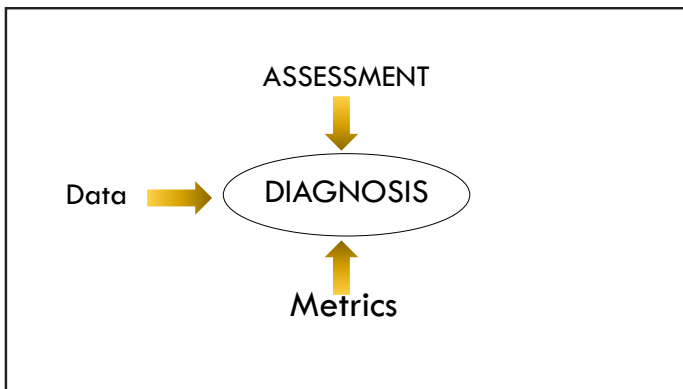
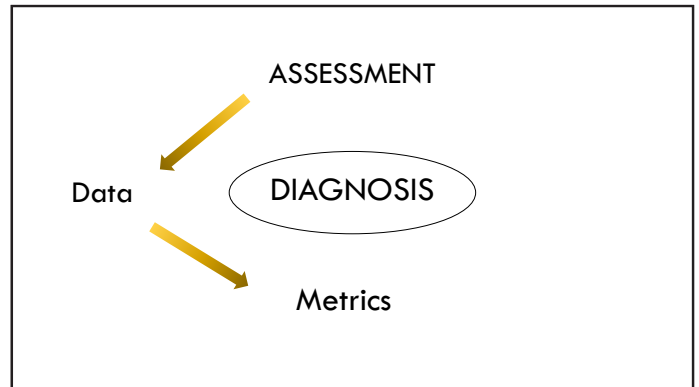
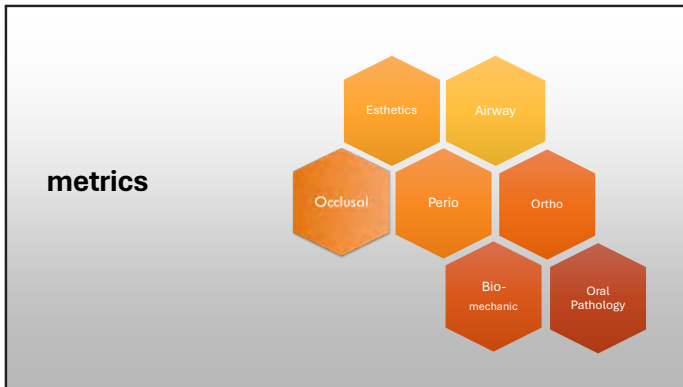
- Diagnostic Systems tend to be perspective based.
 - The Occlusionists
 - Dawson, Pankey, LVI
 - The Perio-Prosthodontists
 - Kois, Spear
 - Implant Centric
 - Misch, Malo
 - Esthetic
 - AACD
 - Biomimetic, Bioesthetic, Core
 - DSD - Coachman
 - Orthodontic
 - Angle, Rickets, Steiner, Andrews
 - Functional, The Edge, Pegg
 - Airway, Sleep Dentistry

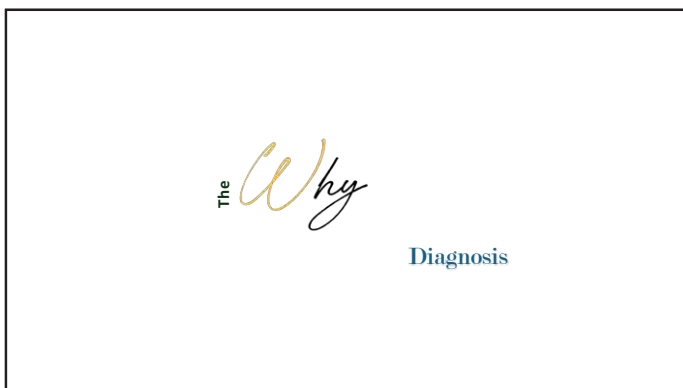
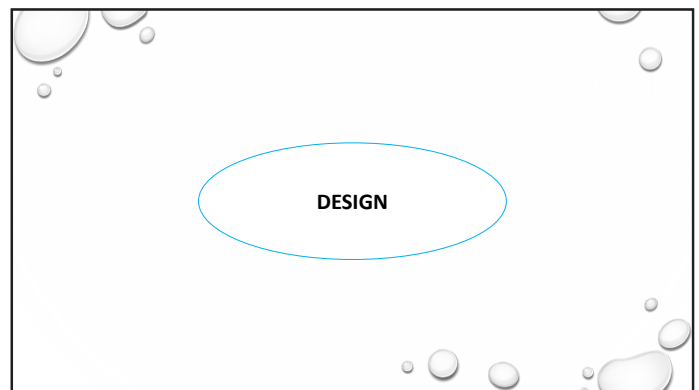
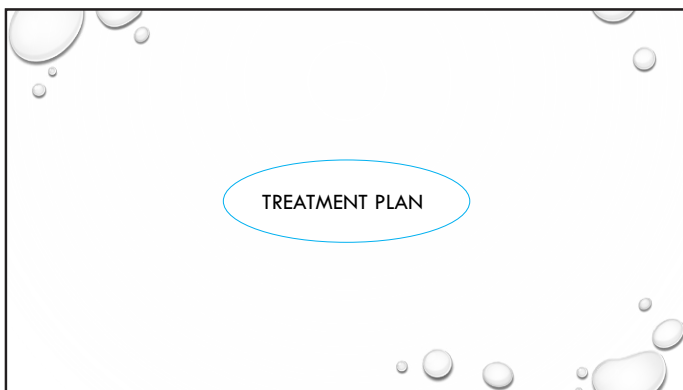
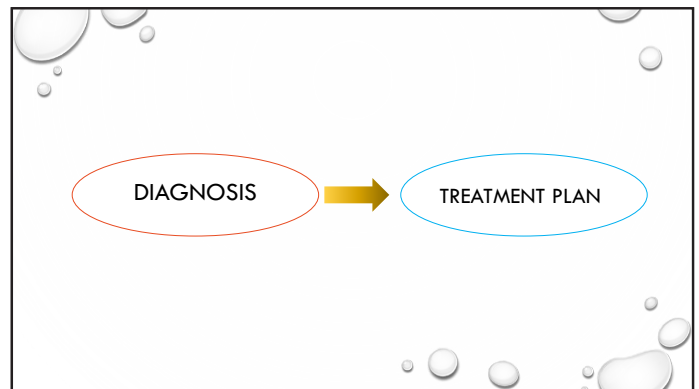
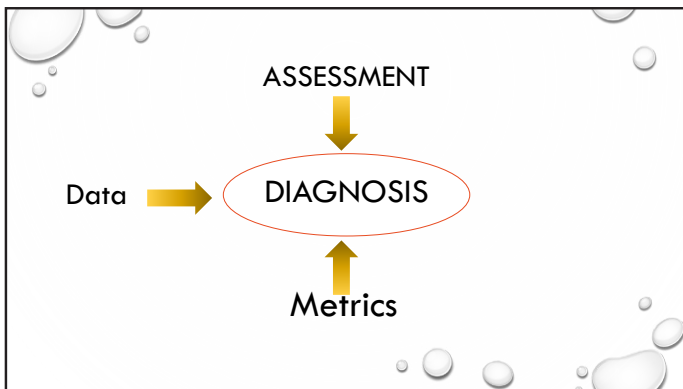
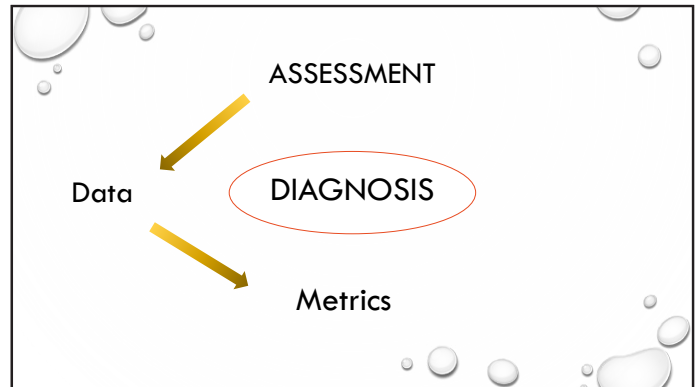
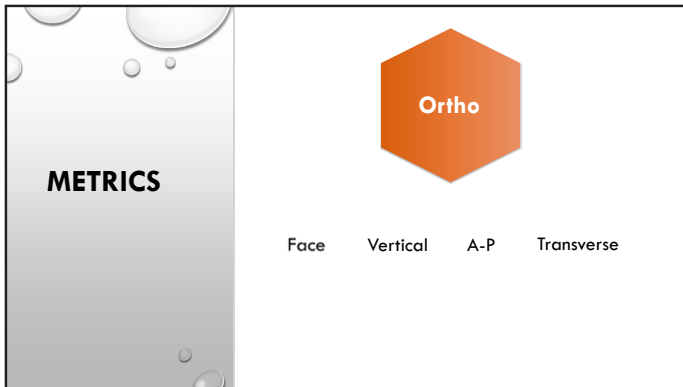
DIAGNOSE, DESIGN, DELIVER

DIAGNOSE

DIAGNOSE







The *How*

Delivery

Smile Design

Patient's
Desire

Smile Design

Esthetics

Patient's
Desire

What
is beauty?

Smile Design

Esthetics

Health

Patient's
Desire

Predictability

Function

Smile
Analysis
and Design

Smile
Analysis
and Design

Analyze our patient vs ideal metrics.

Decide which elements will be treated.



Simplified Smile Analysis



Simplified Smile Analysis

Combining Traditional Orthodontic and Esthetic Metrics



The Face



The Face

The Smile



The Face

The Smile

The White



The Face

The Smile

The Pink

The White



The Face

The Smile

The White

The Pink



The Face

Face Type



Face Type



Face Type

Profiles



Face Type



Profiles



Face Type



Profiles

Symmetry



Face Type



Profiles



Symmetry



Face Type

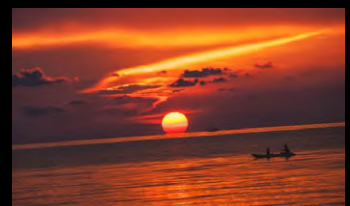


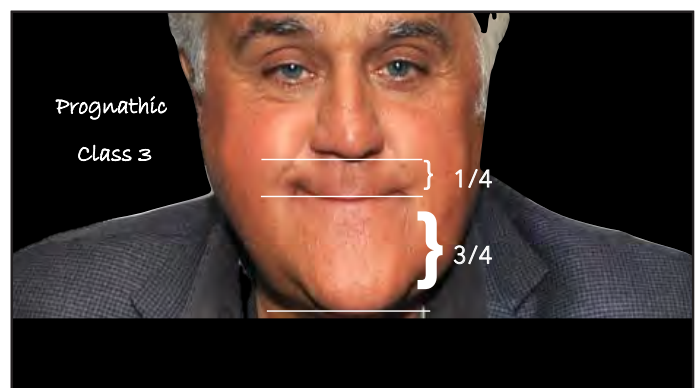
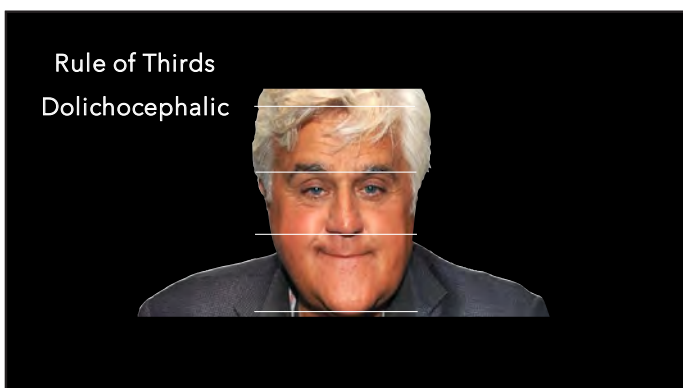
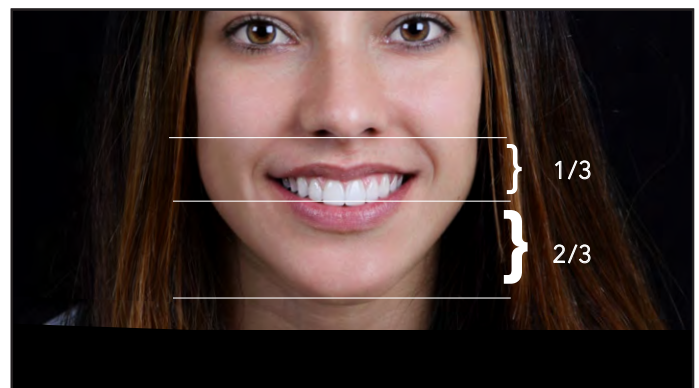
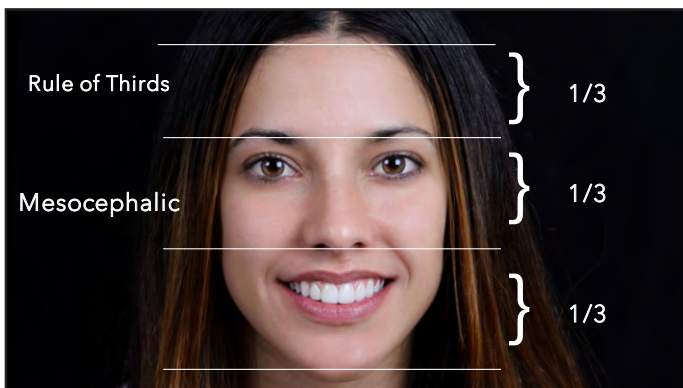
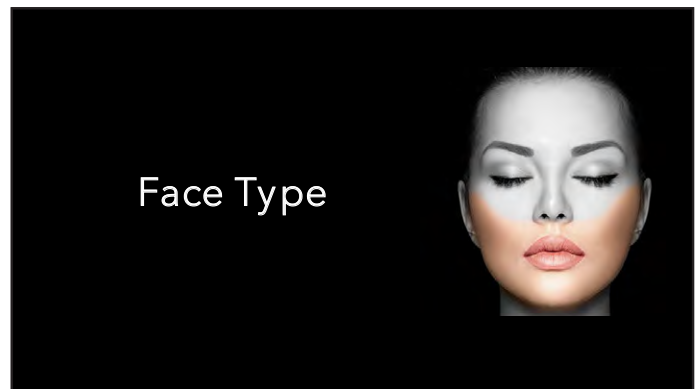
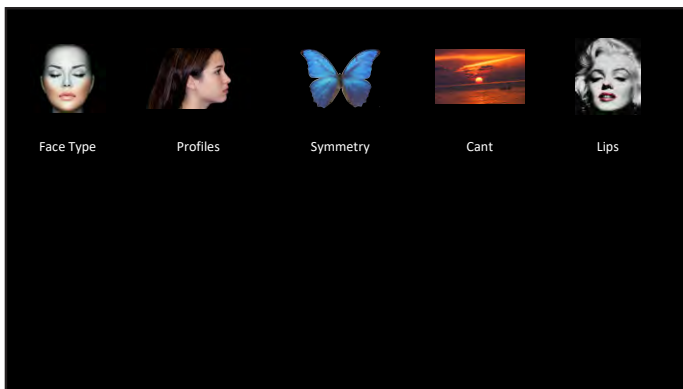
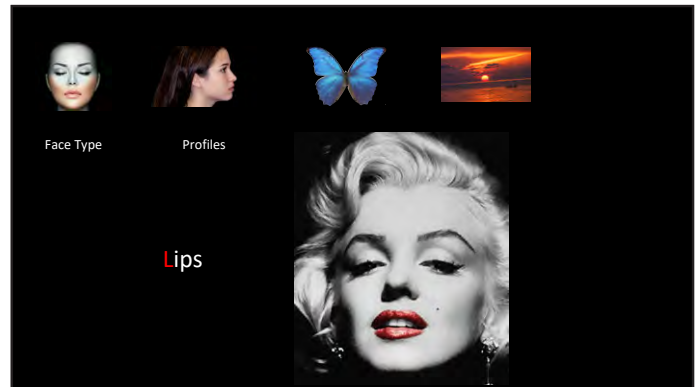
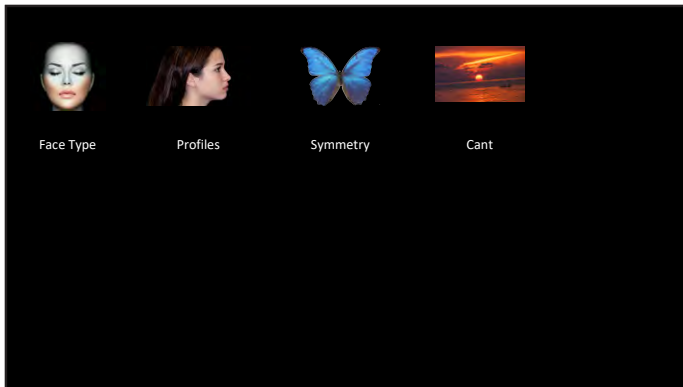
Profiles



Symmetry

Cant





Rule of Thirds

Dolicocephalic

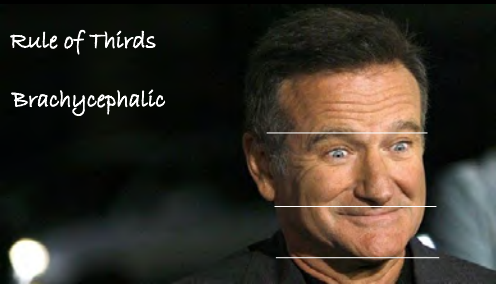


Maxillary Excess



Rule of Thirds

Brachycephalic



Why is this important?



Face Type



Profiles



Symmetry



Cant



Lips

Profiles



Profiles

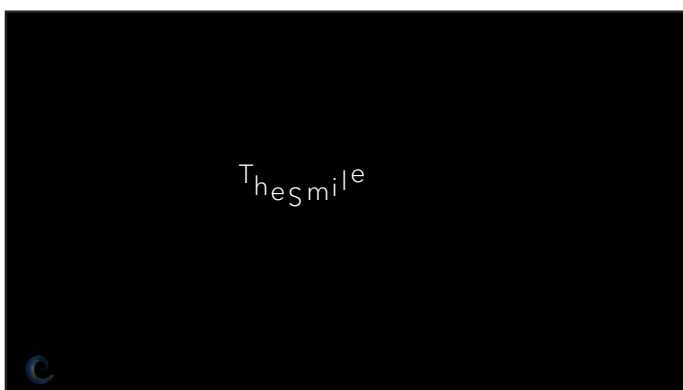
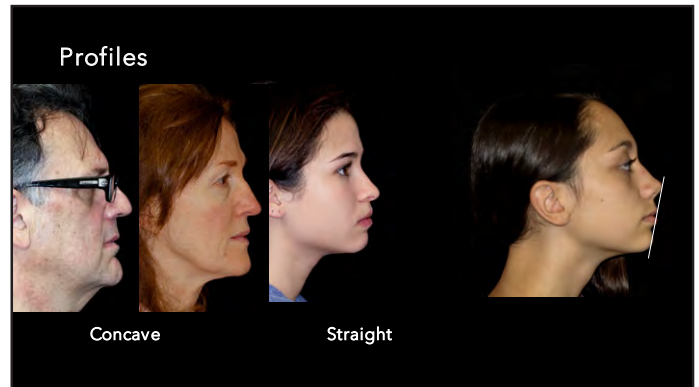
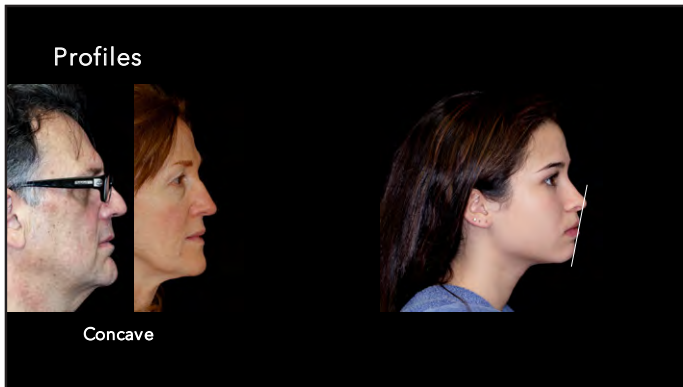
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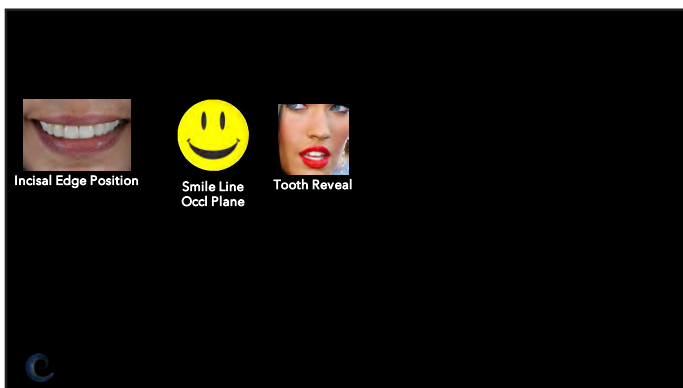
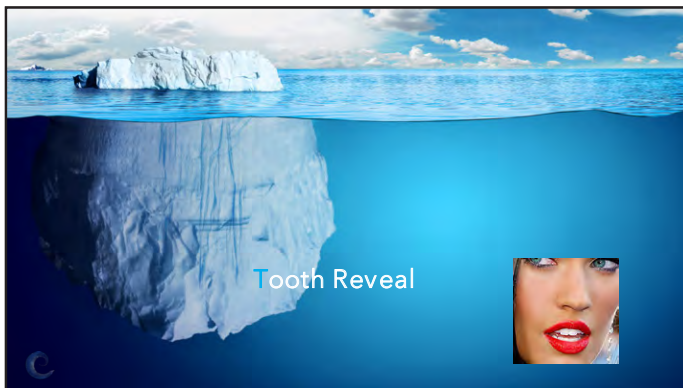
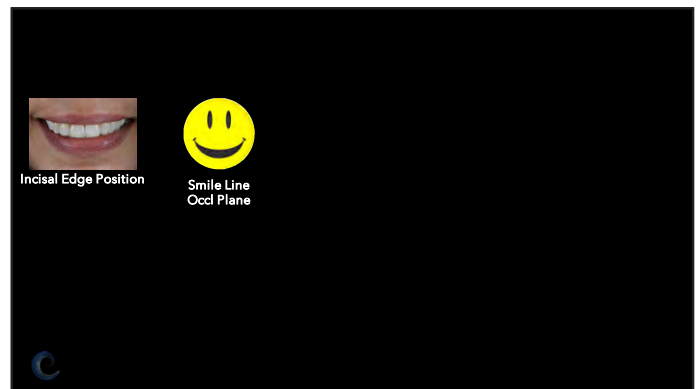
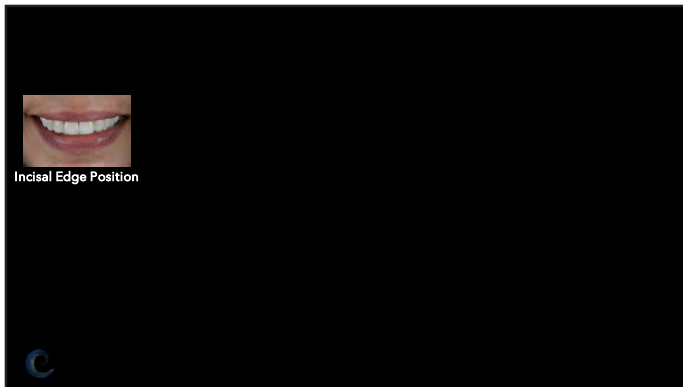


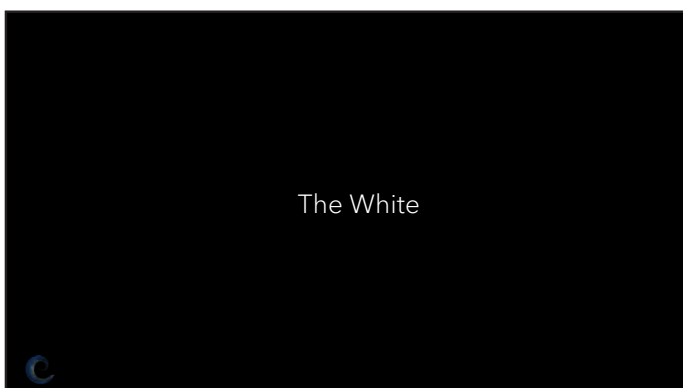
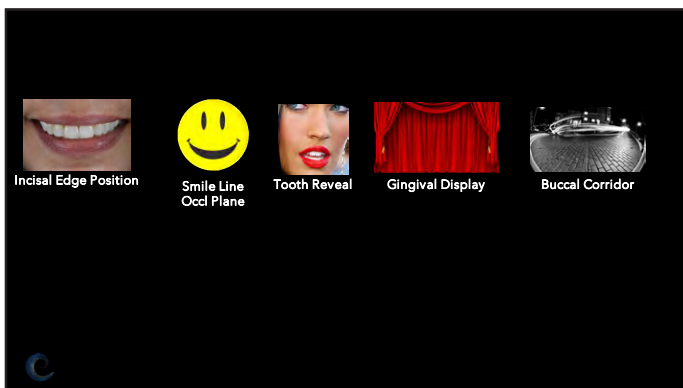
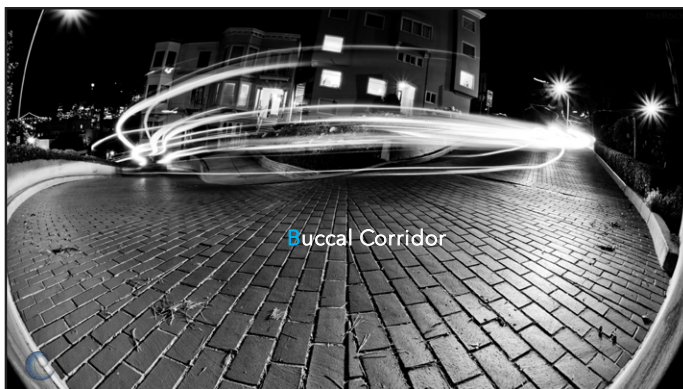
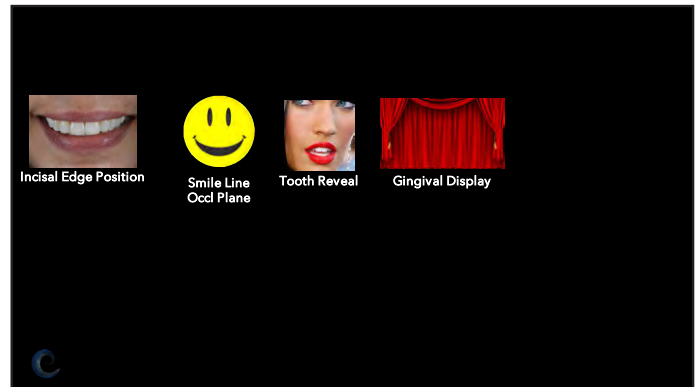
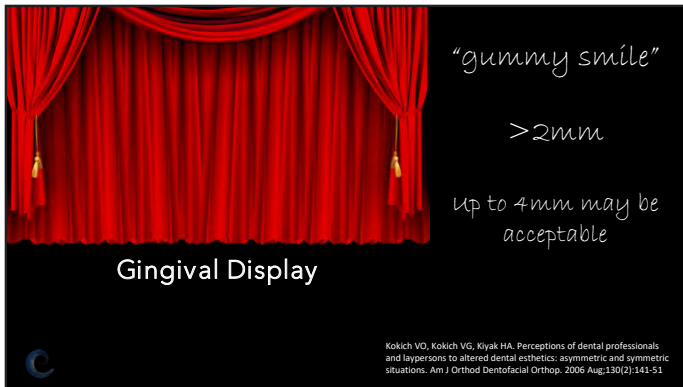
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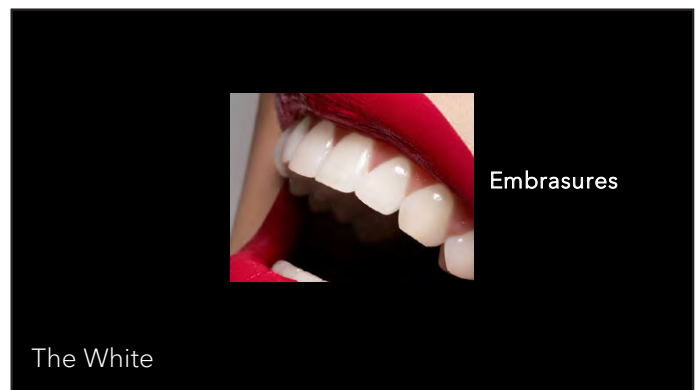
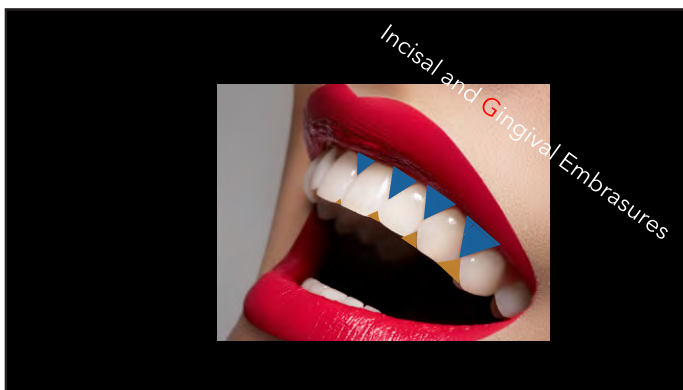
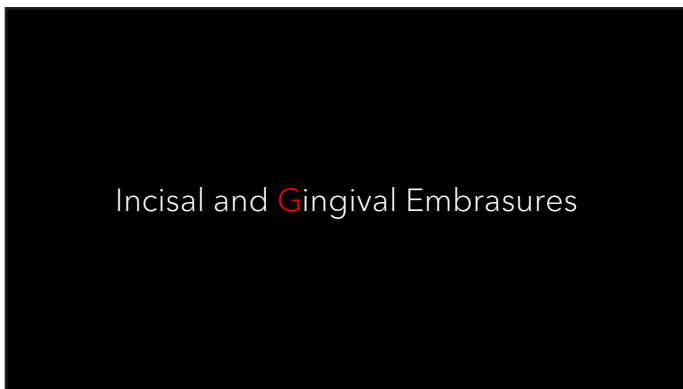
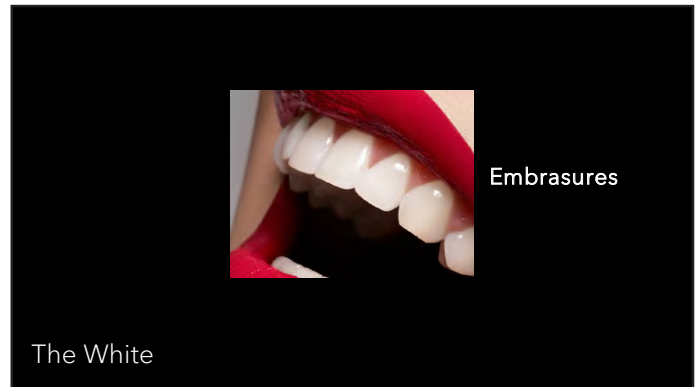
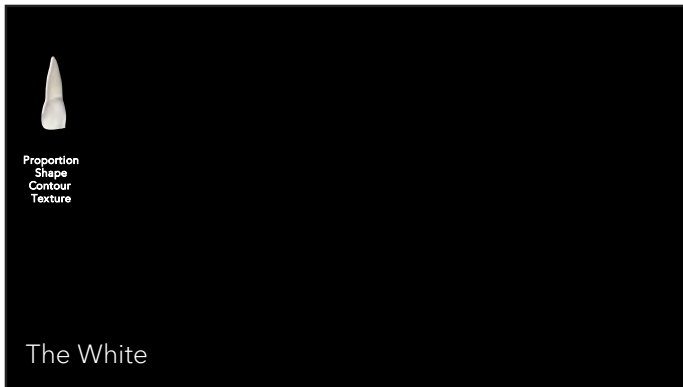


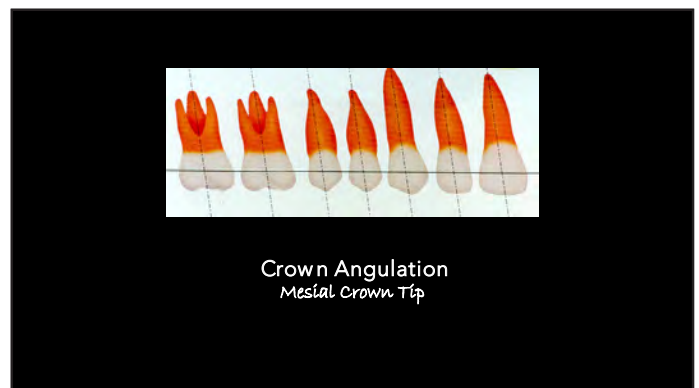
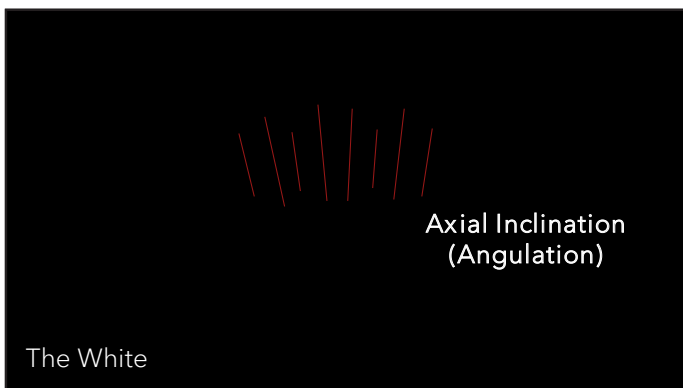
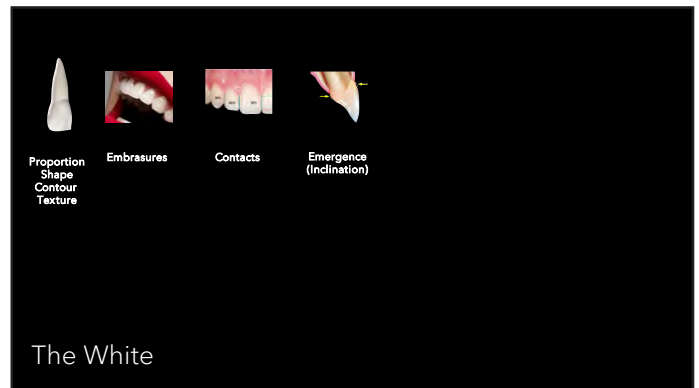
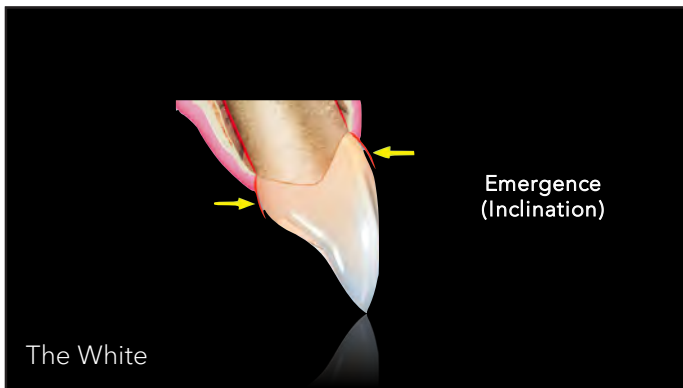
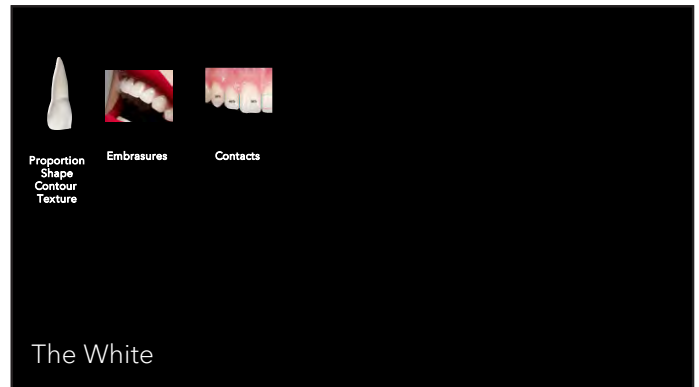
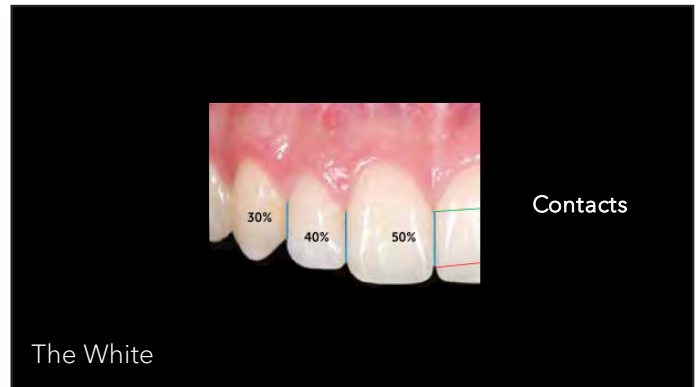
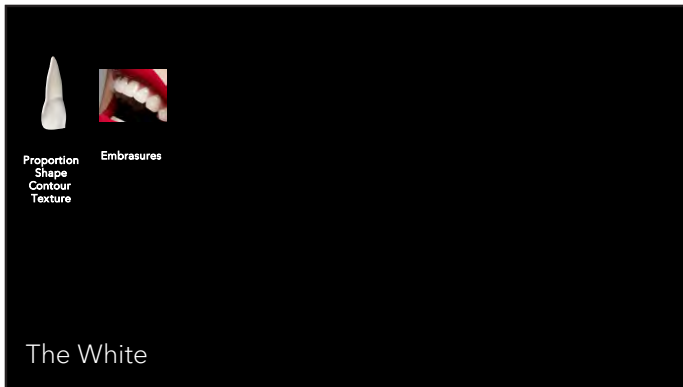
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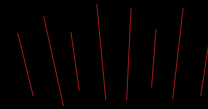






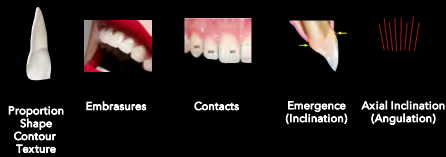


Axial Inclination (Angulation)



Axial Inclination
(Angulation)

The White



The White



Color

The White

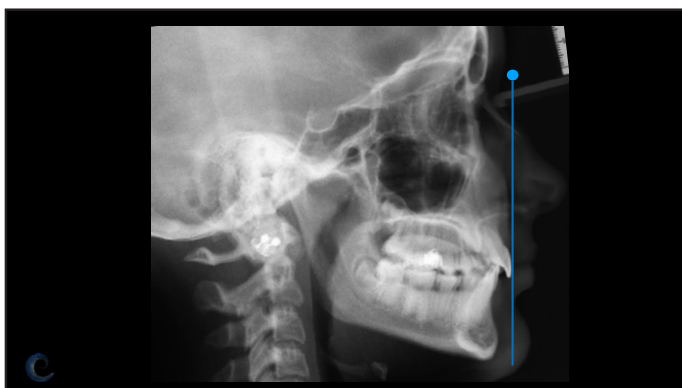
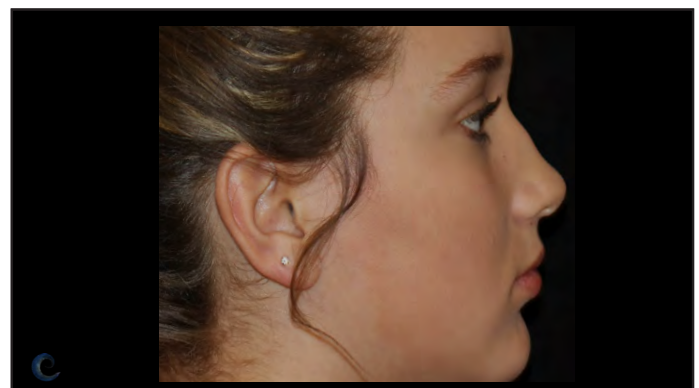
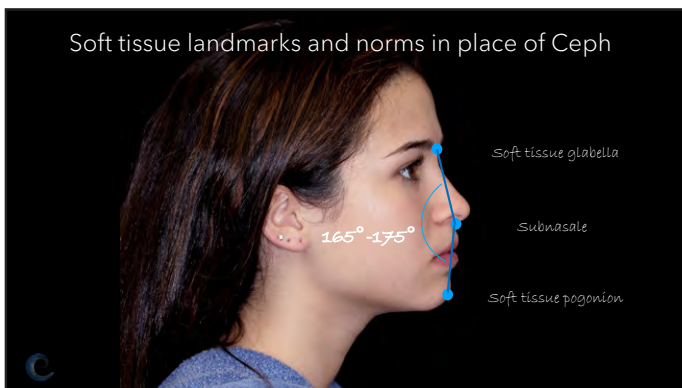
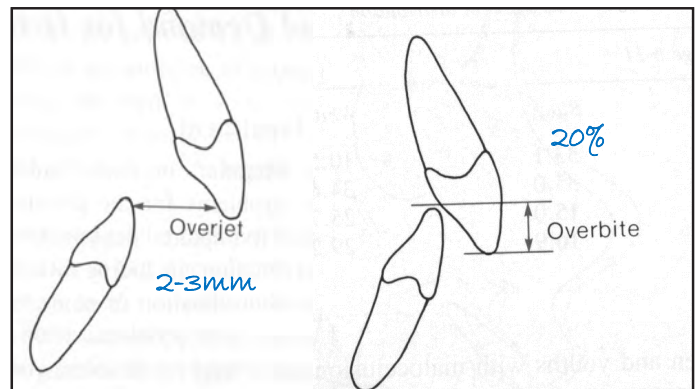
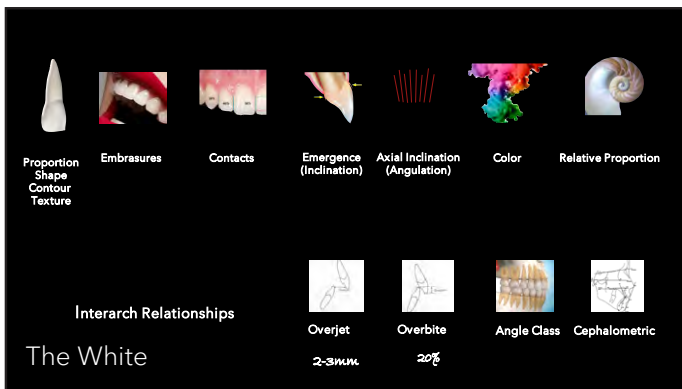
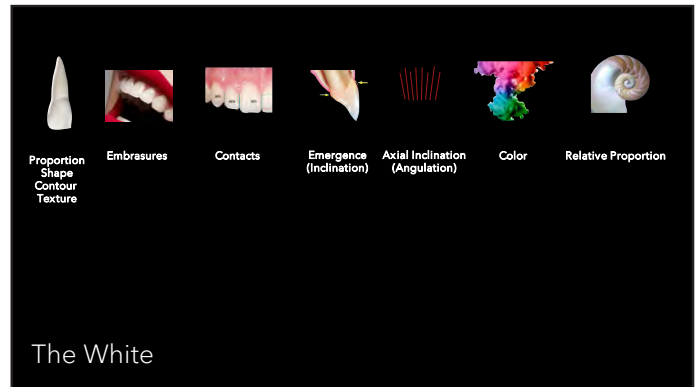
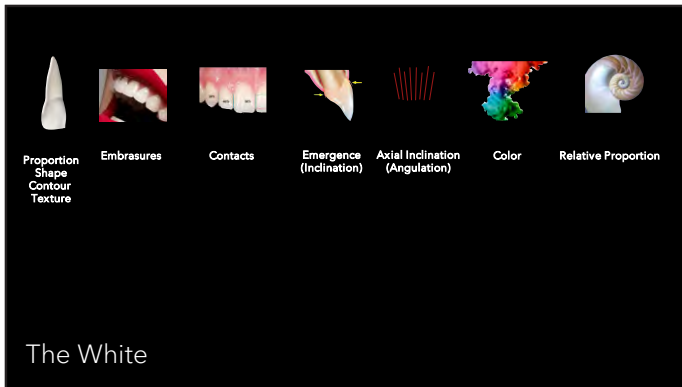


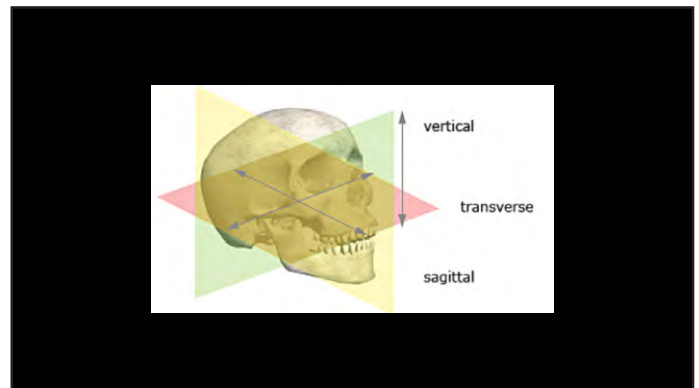
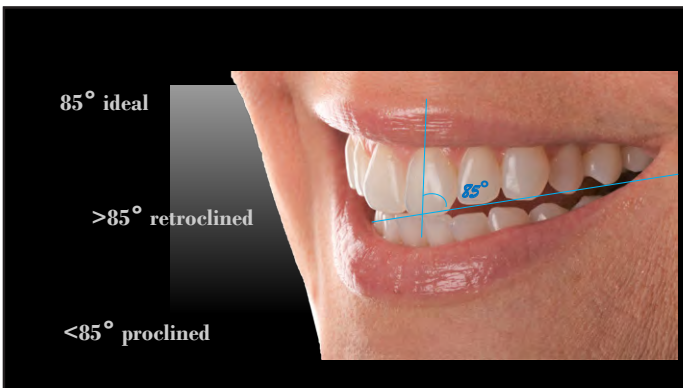
The White



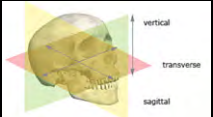
Relative proportion

The White





Upper arch width



34-36mm mixed dentition
36-38 mm adult dentition

If <32mm (measured from lingual groove to lingual groove)
need arch development
(Archwire, RPE)

The Face The Smile

The White The Pink

The Pink



— _ — _ — _ —

Gingival Margins

The Pink

— _ — _ — _ —

Gingival Margins

The Pink



Black Triangle

Open gingival embrasure

— _ — _ — _ —

Gingival Margins



Black Triangle

The Pink

— _ — _ — _ —

Gingival Margins



Black Triangle



Biotype

The Pink

— _ — _ — _ —

Gingival Margins



Black Triangle



Biotype



Contour
Color
Texture

The Pink

Restorative Driven Orthodontics

Thank you!

Restorative Driven Orthodontics

2 DAYS HANDS ON WORKSHOP

June 12-13, 2026
Roslyn, New York

- Understand how teeth move and how to move them
- Improve the success rates of your Invisalign cases
- Orthodontics is the key to better Implant, Veneer and FMR outcomes

Register Today
at eMotiondental.com

SELF EVALUATION

Restorative Driven Orthodontics: Optimizing Implants in the Esthetic Zone

1. Which of the following is a risk when aligning teeth rotated teeth
 - a. Tooth fracture
 - b. Attrition
 - c. Open gingival embrasures
 - d. Periodontal disease
2. T/F - The first objective when evaluating a case for treatment is to determine the treatment plan.
3. When evaluating the normal facial proportions, we use
 - a. Rule of proportion
 - b. Golden Proportion
 - c. R.E.D.
 - d. Rule of Thirds
4. T/F - The imaginary line from the tip of the nose to the chin, which is use to classify facial profiles is called the "E plane"
5. According to the Robbins and Rouse book Global Diangosis, what is the average resting lip position for young females?
 - a. Zero mm
 - b. 1-2 mm
 - c. 3-4 mm
 - d. 5-6 mm

Answer Key: 1. C, 2. F, 3. D, 4. T, 5. C

Photobiomodulation in Dentistry: A Game Changer for Tongue-Tie Management and Beyond
Robert A. Convissar, DDS, FAGD

Introduction to
Photobiomodulation

PBM
PHOTO-BIO-
MODULATION

Light Energy Has Been Used For
Centuries For Healing Purposes

Wealthy Romans Had Solariums In
Their Houses - Literally Sun Rooms

Ancient Egyptians, Greeks and
Indians All Used Sunlight For
Healing

Before antibiotics were
discovered, TB patients were
prescribed "forced sunbathing",
known as heliotherapy, which
increased vitamin D production.
This practice ended with the
introduction of antibiotics to treat
TB.

Here's The Definition:

PBM

PBM is defined as using a laser
whose output power is well below
surgical parameters to affect tissue

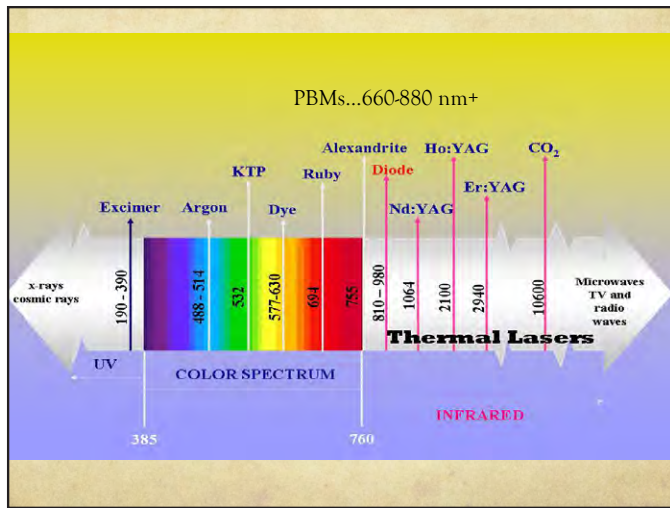
These are NON-
SURGICAL....NON-CUTTING
Devices

They are purely palliative treatment
devices

PBM

SOFT LASER
COLD LASER
THERAPEUTIC LASER
LOW LEVEL LASER (LLLT)
all synonyms

Diodes 100mW - 500mW



Chiropractors
Veterinarians
Physical Therapists
Osteopathic Physicians That
Perform OMM
Etc.
Have You Seen Ads in Pennysavers
For Cold Laser Treatment of:
Carpal Tunnel Syndrome...
Backaches.....Neck Aches.....Tennis
Elbow.....Knee Problems....
Ankle Problems...Achilles
Tendinitis.....etc.?

Athletic Trainers From
These Organizations
Use PBM:
FIFA
NHL
NBA
MLB
NFL

PBM

4000 Scientific Studies in the literature...with 250
new papers/year

- Biostimulation/Biomodulation
- Pain Relief
- Accelerated Wound Healing/Post Surgery
- Regeneration of Soft/Hard Tissue
- Immune System Enhancement
- Avulsed Teeth/Trauma
- I personally have used it for:
- TMD
- Bell's Palsy
- Trigeminal Neuralgia
- Dentin Hypersensitivity
- Analgesia for Pediatric Operative Dentistry
- Aphthous Ulcers-Herpetic Gingivostomatitis.....Etc.

How does PBM work?

In order to understand how it
works, you need to understand the
role of Nitric Oxide (NO) in human
physiology - that's a whole one hour
course by itself

The following description is a very
brief, very rough and cursory
explanation. There is a ton of peer-
reviewed literature describing how it
works

Annals of Internal Medicine

1994 Feb 1;120 (3) 227- 237

Nitric oxide: a physiologic messenger

**Two major classes of nitric oxide synthase
enzymes produce nitric oxide. The constitutive
isoforms found in endothelial cells and neurons
release small amounts of nitric oxide for brief
periods to signal adjacent cells, whereas the
inducible isoform found in macrophages releases
large amounts of nitric oxide continuously to
eliminate bacteria and parasites. By diffusing into
adjacent cells and binding to enzymes that
contain iron, nitric oxide plays many important
physiologic roles. It regulates blood pressure,
transmits signals between neurons, and
suppresses pathogens.**

One of the many functions of NO
is that
it controls mitochondrial
O₂ consumption by inhibiting
cytochrome c oxidase.

When there is excess NO, there is
less than an ideal amount of ATP
production

(Remember the Krebs cycle - 36
ATP per cycle during aerobic
respiration???)

One of the CHROMOPHORES for PBM Lasers
is NO.
Chromophore?
What's a Chromophore?

Virtually EVERYTHING About
Laser Dentistry is Based On Three
Things:
Chromophore
AND
Chromophore
And
Chromophore
Without A Complete
Understanding Of Chromophore,
You Will Never Get 100% Out Of
Your Laser - No Matter The
Procedure.....No Matter The
Wavelength

CHROMOPHORE:
A Light Absorbing Compound or Molecule
Normally Occurring in Tissues That
Attracts ***Specific Wavelengths*** of Laser
Energy

Why Do We Wear Light Colors In the
Summer And Dark Colors in the Winter?

Why Have We Used Lead Aprons For Years
When Taking X-Rays?

The Answers to Both Questions is
Chromophore/Absorption of Light Energy





Chromophores
Pink/Red
Fibrotic/Edematous
Water Content

One of the CHROMOPHORES for PBM Lasers is NO.

PBM lasers REMOVE NO from binding sites on mitochondria so that the mitochondria may produce their 36 ATP

The more ATP the cells produce, the healthier the cells are.

PBM Light augments the metabolic rate of cells with comprised metabolism, but normal cells are not affected.

THIS IS WHY PBM affects only distressed (unhealthy) cells and has no effect on healthy cells (there is no NO to interfere with aerobic respiration)

Clinical Applications

- Pain reduction after surgery
- Better and faster integration of implants and bone grafts
- Analgesia for restorative procedures
- Reducing pain in TMJ arthritis and facial pain
- Nerve regeneration
- Reducing dentin hypersensitivity
- Faster healing of soft tissue lesions; cold sores, aphthous ulcers, mucositis

Secondary Clinical Effects

- Increase lymphatic flow = reduced edema
- Stimulates production of beta endorphins = pain relief
- Reduction of depolarization of c-fibers = decreases pain sensation*** (Ped. Op.Dent)
- DNA and RNA synthesis in fibroblasts = protein synthesis
- Collagen Synthesis in Fibroblasts = wound healing
- Angiogenesis and neurovascularization = creation of blood and lymph vessels

Secondary Clinical Effects

- Stimulation of osteoblasts and odontoblasts = builds bone and dentin
- Decrease histamine, bradykinins, substance P and Acetylcholine = depresses the inflammatory response

Over The Next Hour We Will Discuss The Use Of PBM In:

- Pediatric Dentistry/Operative Dentistry
- TMDs
- Oral Surgery
- Perio Surgery
- Implantology
- Dentinal Hypersensitivity
- Orthodontics
- Oral Medicine
- Endo

CONTRAINDICATIONS/CAUTIONS

To The Use Of PBM:

1) Never Use It On The Belly Of A Pregnant Patient

2) Never Use It Over The Thyroid Gland (May Affect Thyroid Activity)

- 4) Use Caution On Tattoos
CHROMOPHORE!!!!!!!
(Pigment May Absorb The Laser Energy - Cause A Burn)
AND
Use Caution When Using It On Patients With Dark Skin
- 5) Use Caution On Hairy Areas (Hair Follicles Have Lots Of Melanin)
- 6) Use Caution On Photo-Sensitive Epileptic Patients
And Of Course
- 7) NEVER Near The Eyes....And Make Certain Laser Eyewear Is In Use!!!!

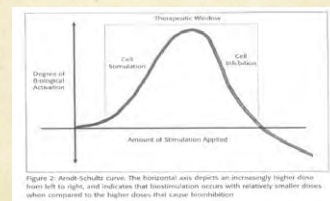
At this time the FDA approves use of PBM for pain management

It Is Perfectly Safe For Almost Any Patient....Any Age (Except For The Contraindications Just Discussed)

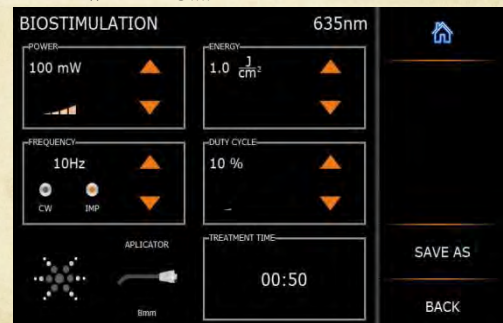
Many Dentists That Perform Tongue Tie Release Use PBM On The Frena BOTH Before AND After The Procedure On One Week Old Babies

- A) 'Cause We Can't Use Regular Topical Pre-Procedure
- B) To Help Palliate Post Procedure

- The Biostimulatory effects are governed by the **Arndt-Schultz Law**, which indicates that weak stimuli will increase physiological process and strong stimuli will inhibit physiological activity. The importance of dose should be kept in mind when using PBM - if you do not get the desired effect, it is important to re-evaluate the dose.



WARNING!!!!



ANALGESIA FOR
OPERATIVE
DENTISTRY
FOR DECIDUOUS
TEETH

Ross G, Ross A. Low
level lasers in
dentistry.
General Dentistry.
2008 Nov-Dec;
56(7):629-634.

Conclusion:
Laser Therapy Used *in Conjunction With*
Appropriate Patient Management Techniques
Will Allow Dentists To Complete Restoration
On a Large Percentage Of Primary Teeth
Without The Need For Local Anesthetic

Remember the Primary Rule For ALL LASER
THERAPY - Soft Tissue Lasers...Hard Tissue
Lasers.....PBM Lasers....
Its ALWAYS LASER AND.....NOT Laser
Instead Of

ADVANTAGE TO NOT INJECTING:

Of Course, This Eliminates the Potential
Problem of Giving Injection Analgesia To
Pediatric Patients

It Also Eliminates The Possibility of Lip
Trauma From The Children Biting Their
Numb Lips



How Long
Does The
Analgesia
Last?

Can
It Work
On Adult
Teeth?



Anti Gagging

For X-rays

Alginates - Especially For
Kids
(For Ortho Models, Etc)

British Dental Journal
Sari, E., Sari, T. The role
of acupuncture in the
treatment of
orthodontic patients
with a gagging reflex: a
pilot study. *Br Dent
J* 208, E19 (2010).

The aim of this study was to investigate two different
acupuncture approaches in the treatment of orthodontic
patients with a gagging reflex (GR). Forty-five patients (mean
age 10.1 ± 2.6 years) had an upper dental alginate impression
taken prior to receiving laser stimulation.
GR assessment was evaluated by using the Gagging Severity
Index (GSI).

After the laser stimulation and acupressure, a second
impression was taken. The Gagging Prevention Index (GPI)
was used to evaluate gagging reflex after the laser stimulation
and acupressure. Both GSI and GPI were recorded at **three**
stages of the dental impression taking procedure:
1) with an empty impression tray
2) with a loaded tray
3) with the ability to keep the impression in the mouth until
set.

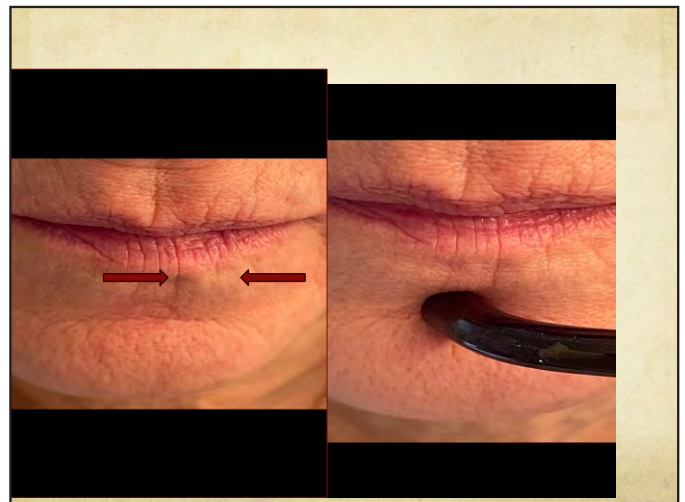
Group A - PBM only - applied to CV24
(mentolabial groove below the lip)

Group B - PBM at CV24 AND acupressure at PC6 (TBD in
a second)

Group C - Placebo

A significant decrease in GPI (Gagging Prevention Index)
values compared to GSI (Gagging Severity Index) values was
observed at the three stages of the impression- taking process
and after the laser stimulation in Group A and B ($p < 0.05$).
The bigger the difference between GPI and GSI means the
bigger the effect of controlling the Gag Reflex

Group A: 37.9% improvement.....(one point)
Group B: 58.9% improvement.....(both points)
Group C: 11.2%





Hegu Acupuncture Point

Back of the hand
between the thumb
and index finger



P6 Acupuncture Point

The pressure point P-6,
or Neiguan, is
located **three fingers'**
widths below your
wrist crease. To find it,
flatten your palm and
place the first three
fingers of your opposite
hand across your wrist.



Have You
Ever Used
Sea-
Bands??

TMJ Symptoms





Xu, Gang-Zhu, et al. "Low-level laser therapy for temporomandibular disorders: **a systematic review with meta-analysis.**" *Pain Research and Management* 2018

31 Studies of Randomized Controlled Studies

LLLT Significantly reduced pain at the short-term follow-up. Temporomandibular joint function outcomes indicated that the overall effect favored LLLT over placebo

Conclusion: This systematic review suggests that LLLT effectively relieves pain and improves functional outcomes in patients with TMD

Tunér, Jan, Sepanta Hosseinpour, and Reza Fekrazad. "Photobiomodulation in temporomandibular disorders." *Photobiomodulation, Photomedicine, and Laser Surgery* 37.12 (2019): 826-836.

Another meta-analysis

"In this review, many included studies support the application of PBM for the treatment of TMDs (joint and/or muscles). Further, PBM is supported **as an adjunct therapeutic modality** for TMDs...Further to that, **no side effects were reported** in the analyzed studies"

Oral Surgery - Post Extraction Tx -
Including 3rd Molar Extractions

Photobiomodulation in Oral Surgery: A Review

Sepanta Hosseinpour, Jan Tunér, and Reza Fekrazad.
Photobiomodulation in Oral Surgery: A Review.
Photobiomodulation, Photomedicine, and Laser Surgery. Dec 2019. 814-825.

All original articles related to PBM for oral surgery in MEDLINE (NCBI PubMed and PMC), EMBASE, Scopus, Cochrane library, Web of Science, and Google Scholar were reviewed

Results: Forty-six clinical trials were included in this study. These trials were categorized into three different types of PBM applications.

Pain reduction after tooth extraction
Decreasing facial swelling.
Alleviating trismus after tooth extraction.

Conclusions: Most papers suggested that PBM seemed to be effective in reducing pain, swelling, and trismus after third molar tooth extraction, neurosensory and nerve recovery after mandibular ramus osteotomy.

The use of PBM can prove to be an effective tool in the management of a wide variety of conditions with greater efficiency than is currently possible.

Faster healing - less possibility of infection - after extractions

Dostalova T, Kroulikova V, Podzimek S, Jelinkova H.

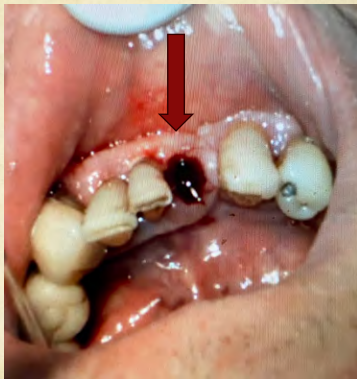
Low-level laser therapy after wisdom teeth surgery: evaluation of immunologic markers (secretory immunoglobulin A and lysozyme levels) and thermographic examination: placebo controlled study.

Photomed Laser Surg 2017;35: 616-621.

"PBM application after tooth extraction has an immunological impact. The investigators reported that there is a positive relationship between salivary level of IgA and lysozyme after 830 nm laser irradiation performed directly to the extracted tooth socket. IgA is an antibody that plays an important role in mucosal immunity.

In addition, lysozyme is responsible for anti-Gram-positive bacterial resistance.

These findings confirmed a positive immunological impact of PBM, which can support the healing process"



Perio Surgery

Posten W, Wrone DA, Dover JS, Arndt KA, Silapunt S, Alam M.

Low-level laser therapy for wound healing: mechanism and efficacy.

Dermatol Surg 2005;31:334-340.

"PBM can induce proliferation of human gingival fibroblasts and expression of collagen type I gene in vitro."

We all know that collagen fibers are the primary components of the periodontal attachment apparatus.....and are an important part of bone formation matrix

Perio Surgery

LLLT has been shown to stimulate the production of basic fibroblast growth factor (bFGF).....which supports fibroblast proliferation and differentiation

Tominaga, R. "Effects of He-Ne laser irradiation on fibroblasts derived from scar tissue of rat palatal mucosa." Kokubyo Gakkai zasshi. The Journal of the Stomatological Society, Japan 57.4 (1990): 580-594.

Yu, Wei, John O. Naim, and Raymond J. Lanzafame. "The effect of laser irradiation on the release of bFGF from 3T3 fibroblasts." Photochemistry and photobiology 59.2 (1994): 167-170.

Wound sites treated with LLLT show accelerated closure

Becker, J Biostimulation of wound healing in rats by combined soft and middle power lasers
Biomed Tech Berlin 1990;35:98-101

LLLT exposure on fibroblasts leads to higher tensile strength for healed wounds

Asencio-Arana, Francisco, et al. "Endoscopic enhancement of the healing of high-risk colon anastomoses by low-power helium-neon laser: an experimental study." *Diseases of the colon & rectum* 35 (1992): 568-573

Perio/Oral Surgery - Hard Tissue Healing

We all know that expression of COX-2 can be beneficial for bone healing. In early stage of bone formation, COX-2 is associated with the maturation of osteoblasts and modulating differentiation genes. This is well-documented in the literature.

Take a look at this paper:

Mozzati M, Martinasso G, Cocero N, et al.
Influence of superpulsed laser therapy on healing processes following tooth extraction.
Photomed Laser Surg 2011;29:565-571.

Mozzati et al. investigated PBM impacts on IL-1b, IL-6, IL-10, and COX-2 in a split-mouth designed study on 10 healthy individuals after similar tooth extractions. The investigators demonstrated that 904 nm diode laser with 200 mW power and 180.5 J/cm² energy density can significantly impede the expression of inflammatory markers.

PBM AND ORAL IMPLANTOLOGY

48 Implants placed into minipigs.

Test Group: PBM on Day 0 - Day 8 - Day 15-

Day 28

VS

No PBM for Control Group

Day 28 All Animals Sacrificed - Jaws Analyzed for Histologic and Histomorphometric Analysis

At Day 28, 25% of Implants Were Completely Integrated vs. 12.5% of Control

Conclusion: PBM Contributes to Enhancing Implant Treatment Outcomes

Foletti, Jean-Marc, et al. "Effect of LED photobiomodulation on dental implant osseointegration: An in vivo study." *Journal of Dental Research, Dental Clinics, Dental Prospects* 17.1 (2023): 28.

Time For Another Meta-Analysis

Vande, Aaditee, Pronob Kumar Sanyal, and Kumar Nilesh. "Effectiveness of the photobiomodulation therapy using low-level laser around dental implants: A systematic review and meta-analysis." *Dental and medical problems* 59.2 (2022): 281-289.

At 2 Weeks, 1 Month, and 2 Months the Results Were Statistically Significant.

Conclusion: The PBM Therapy Showed A Positive Effect On Implant Stability During the Early Stages Of Healing And Can Be Considered For Patients With Dental Implants

Dentinal Hypersensitivity

Walsh, L.J. The Current Status Of Low Level Laser Therapy in Dentistry Part 2: Hard Tissue Applications
Australian Dental Journal 1997; 42: 5: 302-306

There Have Been Several Studies Of The Effect Of LLLT On DH. Most Studies Have Used The GaAlAs Laser Treatment, And Have Demonstrated Desensitization of Hypersensitive Cervical Dentin With An Efficacy Rate Of Approximately 90%



Pain Reduction During Orthodontic Tooth Movement

Nobrega C; de Sliva E, de Macdeo R:
Low Level Therapy For Treatment Of Pain Associated With Orthodontic Elastomeric Separator Placement: ***A Placebo-Controlled Double Blind Study***
Photomed Laser Surg 2013;31:1;10-16

Results: PBM Was Effective In Reducing The Pain From Separators Placed on First Molars

De Sousa M, Pinzan A, Henriques H, et. al
Systematic Literature Review. Influence of Low Level Laser on Orthodontic Movement And Pain Control
Photomed Laser Surg 2014;32:11:592-599

PBMT Demonstrated Efficacy In Reducing Orthodontic Pain

ORAL MEDICINE

Oral Mucositis for Cancer Patients Undergoing Chemotherapy
-for Cancers ANYWHERE in the Body

The Growing Number of Human Clinical Studies Led To A
Recent Systematic Review and Meta-Analysis Resulting in A
Clinical Practice Guideline Recommendation by
MASCC* and ISOO* For The Use Of PBM As
Routine Standard of Care

*The Multinational Association of Supportive Care in Cancer
(MASCC) is an international, interdisciplinary organization
dedicated to the practice, education and research of supportive
care in cancer.

*International Society for Oral Oncology

Cancer 2020 Oct 1;126(19):4423-4431.
MASCC/ISOO Clinical Practice Guidelines for the
Management of Mucositis Secondary to Cancer Therapy

Conclusion: The Updated
MASCC/ISOO Clinical Practice
Guidelines For Mucositis Provide
Professional Healthcare Givers
With A Clinical Setting-Specific,
Evidence Based Tool To Help
With Thee Management Of
Mucositis in Patients Who Have
Cancer

BRONJ
Bisphosphonate Related Osteoradionecrosis of
the Jaws
MRONJ
Medication-Related.....

How Many

- 1) Older Patients (Females at Risk of Hip
Fracture Due To Osteoporosis)
- 2) Metastatic Cancer Patients (Lung-Prostate-
Breast-Etc.)

Are Skittish of Dental Treatment Due To The
Possibility of BRONJ/MRONJ?

PBM Has Been Shown
In Multiple Studies To
Be An Effective
Treatment For
BRONJ/MRONJ

The Overall Success Of PBM With Complete
Healing Was Reported As 96% In A Report Of
241 Patients Exposed To Antiresorptive Or
AntiAngiogenic Therapy And Patients With
Bone Exposure....There is Robust Evidence For
The Role Of PBM In MRONJ Management
From Lab Animal Studies And Human
Clinical Reports

Epstein, Joel B., et al. "Medication-Related
Osteonecrosis of the Jaw: Successful Medical
Management of Complex Maxillary Alveolus
with Sinus Involvement." Case Reports in
Oncology 16.1 (2023): 397-413.

Conservative or Surgical Treatment Combined
With PBM Shows Better Results Than Either
Treatment Alone in Patients With MRONJ.

Early Laser-Assisted Conservative Surgical
Treatment With PBM Is A Better Treatment
Than Conservative Medical Therapy

Shim, Gyu-Jo, et al. "Current Trends in
Adjuvant Therapies for Medication-Related
Osteonecrosis of the Jaw." Applied Sciences
12.8 (2022): 4035.

Bell's Palsy

Fourteen Patients In This Study
11 Out Of 14 Completely Recovered Through
PBM - They Were Diagnosed Between 86 and
182 Days Before PBM Treatment Was Started

The 3 That Did Not Show Improvement Had
BP For 24 Years Before PBM Treatment

Pasquale, Claudio, et al. "Recovery from
idiopathic facial paralysis (Bell's palsy) using
photobiomodulation in patients non-
responsive to standard treatment: a case series
study." *Photonics*. Vol. 8. No. 8. MDPI, 2021.

Trigeminal Neuralgia

This review revealed that low-level laser therapy
reduces pain in trigeminal neuralgia

Falaki, Farnaz, Amir Hossein Nejat, and
Zohreh Dalirsani. "The effect of low-level laser
therapy on trigeminal neuralgia: a review of
literature." *Journal of dental research, dental
clinics, dental prospects* 8.1 (2014): 1.

Plenty of Papers Also Discuss The Use of PBM
for Treatment Of:
Aphthous Ulcers
Herpetic Lesions
Shingles/Post Herpetic Neuralgia
Sinusitis

Etc. Etc. Etc.

The Uses of PBM Are Boundless - and
Increasing Every Week

Endodontics

Naseri, Mandana, et al. "Effect of low-level
laser therapy with different locations of
irradiation on postoperative endodontic
pain in patients with symptomatic
irreversible pulpitis: a double-blind
randomized controlled trial."

*Journal of Lasers in Medical
Sciences* 11.3 (2020): 249.

This double-blind, placebo-controlled,
clinical trial aimed to investigate the
analgesic efficacy of low-level laser therapy
(LLLT) with two different locations, and
their comparison, in postoperative
endodontic pain (PEP) levels in molars
diagnosed with symptomatic irreversible
pulpitis.

BLI showed a significantly higher reduction of PEP compared to placebo in all time intervals of this study. BLI was significantly more effective than BI 8 hours after the treatment.

The number of taken analgesics in the BLI group was significantly lower than the placebo group and was on a statistical borderline compared to the BI group.

Conclusion: LLLT with BLI was an effective measure as a supplement to oral analgesics in the reduction of PEP compared to the placebo.

Just a Few Studies Regarding PBM and
Medicine:

Inflammation in obsessive-compulsive disorder: A literature review and hypothesis-based potential of transcranial photobiomodulation

DRA Coelho, JD Salvi, WF Vieira, P Cassano - Journal of Neuroscience Research, 2024

Transcranial
Photobiomodulation for
Alzheimer's Disease
(TRAP-AD)

Clinical Study
(Ongoing) At New York
University Medical
Center

Many Physicians - And Many People - Use
Light Boxes to Treat SAD (Seasonal
Affective Disorder)

Trajectories of Depressive Individual
Symptoms over Time During Transcranial
Photobiomodulation

M Urata, P Cassano, R Norton, KM
Sylvester... Photonics, 2023

Photobiomodulation
Therapy for Stroke
F Salehpour, S Sadigh-
Eteghad, J Mahmoudi...

Photobiomodulation
2023

A Word About Dosage



What is J/cm²?

Joules per square centimeter

Joule: Unit of Energy

Joule/sq. centimeter = FLUENCE

Fluence: Amount of Energy delivered
per square centimeter

We Need To Discuss
Spot Size
AND
Tip To Tissue Distance
AND
Pressure On The Tissue



Size Of The Tip

Tip To Tissue Distance - Moving Into
And Out Of Focus

Amount Of Pressure Placed On The
Skin/Mucosa If You Are In Contact

All Affect Fluence.....*Dosage*

The Greater The Tip To Tissue Distance
The LESS Dosage Gets To The Tissue

When You Put PRESSURE On
The Tip, You Create A Little Bit
Of Ischemia At That Spot,
Which Decreases The
Penetration



So....What's The Best Dosage For:
My Unit
Treating X

I Can't Tell You.....

Manufacturers Usually Have Dosage Charts
To Help Out.....**BUT**

Every Patient Gets Different Dosages

If We Are Working Extraorally...Such As:

A) Shutting Off The Gag Reflex

B) Treating TMD?

We Need To Take Into Account

A) Is The Patient Very Fair Skinned? Is The
Patient African American?

B) Is The Patient Very Tanned?

C) Is It A Hairy Area?

If We Are Working Intraorally:

Is The Patient's Gingiva Coral
Pink?

Is The Patient's Gingiva
Heavily Melanotic?

CHROMOPHORE -
ABSORPTION!

And of Course, Critically
Important:

What Wavelength Are You

Using:

660 nm?

808 nm?

Longer Wavelength?

What's An Optical Window?

Optical Window aka Therapeutic Window

The range from 650 to 1350 nm where light has its maximum **depth of penetration** in tissue. PEAK absorption is about 800 nm....give or take.

Why Is Depth of Penetration Important?

Depth of Penetration:

- 1) Extraorally...When Working On TMDs, The Laser Energy Must **PENETRATE** Through The Skin...Through The Masticatory Muscles to Get To The Disc/Ligaments
- 2) Intraorally - When Creating Analgesia For Ped. Op. Dent...or Palliation of PEP, The Laser Energy Must **PENETRATE** Through The Gingiva...Through The Bone...Through The Dentin/Cementum To Get To The Pulp

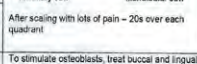
So....What's The Best Wavelength?

Depends....What Are You Doing?

Superficial Treatments.....Mucositis...Aphthous Ulcers...Etc...
Need **LESS** Penetration.....so Perhaps Visible Red 660 nm Is Better

BUT

Deeper Treatments...TMDs....Analgesia.....PEP....Etc...Need **MORE** Penetration

Procedure	Time(s)	Tips	Guide	Effects
Post-Extraction	10	Simple Extraction	To the apex of each indicated location	- Reduced post-op pain and edema - Reduced probability of dry socket - Reduced need for analgesics - Better bone formation - Increased circulation to get faster healing.
	20-60	More difficult extraction		
Root Canal Pulpotomies	5	After suturing overlapping along suture line		- Reduction of post-op pain and inflammation - Reduced need for post-op analgesics - Reduce root sensitivity during scaling procedure. - Pain reduction and stimulation of healing after major scaling
	10-20	At apex		
Scaling	10	Apply before scaling to gingival swelling area. For analgesia during scaling - 20s at apex.		- Reduction of pain after surgery - Faster integration of implant - Reduction of edema (swelling) - Stimulates the immune system and brings neutrophils to site of infection for faster healing.
Implants	20+5	Into bone + overlapping flap		- Analgesia for small tooth preparations and crown cementations reducing use of local anesthetic in these cases. - Reduction of post-op sensitivity - Faster uptake and elimination of anesthesia - Production of secondary dentin in deep restorative situations
Dental Infection	10	Submandibular lymph nodes		
Primary Teeth Restorations	20-80	Check x-rays for proper locations. With your handpiece, apply a light feather touch. During deep restorations, 20-80s inside tooth as well. If open caries, apply over the caries with water-based gel. If no caries, apply to CEJ on B with water-based gel.		- Analgesia for small tooth preparations and crown cementations reducing use of local anesthetic in these cases. - Reduction of post-op sensitivity - Faster uptake and elimination of anesthesia - Production of secondary dentin in deep restorative situations
Cementing Crowns	40-80	Remove temporary crown		

Soft Tissue Lesions	10+10	Submandibular lymph nodes + whole lesion. If lesion larger than tip, overlapping 5s to cover whole lesion. Apply in light contact or slightly away from sore.		- Reduction in pain - Prevention of lesion if caught in early stages. - Faster healing - Decreased recurrence
Anesthetics	10+10	Submandibular lymph nodes + injection site		- Faster uptake of anesthesia - Faster elimination of anesthesia - Increased lymphatic flow - Stimulation of wound healing
Periodontal Abscess	10	To the submandibular lymph nodes. Then 20s more on bone.		
Dentine Hypersensitivity	20+20	At Apex + to Buccal CEJ		- Desensitizing can be done by assistant in second room (dentist just needs to come in for 1-2 min to apply primer and bond) - Depending on patients habits, it may be permanent or may need to be repeated - Reduces intensity of pain - Increases speed of tooth movement because of stimulation of osteoblasts - Help to drain the sinus and reduce the pain of sinusitis
Orthodontics	10	Interproximal between CEJ and apex		
Sinusitis	10+20+20	Submandibular lymph nodes + Base		- Significant reduction of pain - Stimulation of fibroblasts for the production of an epithelial layer in the socket - Decrease root sensitivity - Tissue biostimulation - Stimulation of β-endorphins - Reduction of the conduction of c-fibers (carry pulpal pain)
Dry Socket	>40	Apply into socket until pain lessens		
Root Sensitivity	20+20	At Apex + CEJ or exposed sensitive root surface		- If on outside and want to inhibit scaling, use a dose of 15s or more, which inhibits fibroblasts - Apply 2-3 times weekly - When patient feels tingling or burning of nerve, stop laser treatment and monitor progress - Change under acute muscle/nerve billing fee
Sutured Soft Tissue Wounds	5-10	Overlapping basis		
Nerve Regeneration	10	Apply to site of trauma. Apply to mental foramen		- Return of sensation after traumatic damage or severing of a nerve

A Few Suggestions When Purchasing A PBM

Do You Need Extraoral AND Intraoral Tips?

Do You Need 2 Wavelengths
660 nm and/or 808 nm....Give Or Take

Training-Training-Training

Dosage-Dosage-Dosage

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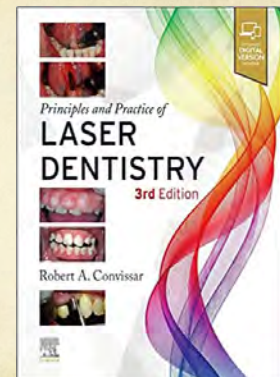
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Foreword By
Gordon Christensen



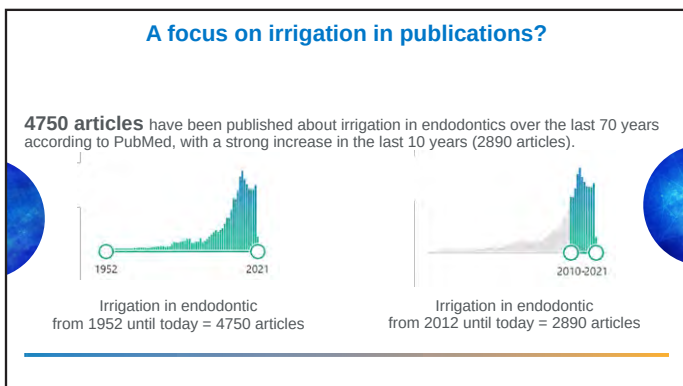
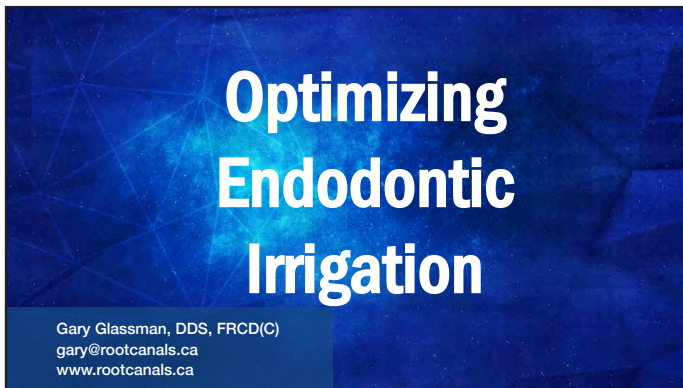
SELF EVALUATION

Photobiomodulation in Dentistry: A Game Changer for Tongue-Tie Management and Beyond

1. PBM Lasers can perform all of the following procedures except:
 - a. Elimination of the gag reflex
 - b. Palliation of postoperative endodontic pain
 - c. Periodontal pocket therapy***
 - d. Relief of TMJ pain
2. All of the following are synonyms of PBM EXCPET:
 - a. LLLT
 - b. Soft Lasers
 - c. Cold Lasers
 - d. Surgical Lasers***
3. All of the following are true about PBM Lasers EXCEPT:
 - a. Are usually between 100 mW – 500 mW
 - b. Are found exclusively in the Infrared part of the electromagnetic spectrum***
 - c. Are usually small hand-held devices
 - d. Are approved by the Food and Drug Administration for Pain Management
4. PBMS have been shown to be effective in alleviation of:
 - a. Post endodontic therapy pain
 - b. TMD discomfort
 - c. Adverse sequela after extractions
 - d. All of the above **
5. Contraindications to PBM Laser use include:
 - a. Cancer patients undergoing chemotherapy
 - b. Using PBM intraorally on pregnant patients
 - c. Using PBM around the Thyroid gland**
 - d. Using PBM on patients less than 5 years old
6. Which of the following will affect absorption of PBM energy when working extraorally?
 - a. Melanin concentration
 - b. Presence of hair in the area
 - c. Tattoos
 - d. All of the above
7. T/F - Using surgical diodes to perform PBM therapy is always safe and effective

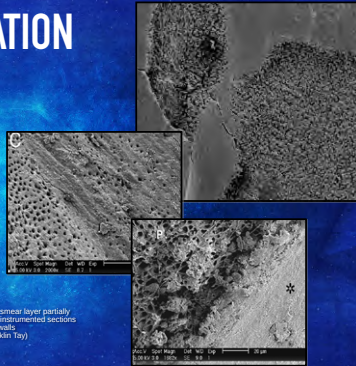
Answer Key: 1. C, 2. D, 3. B, 4. D, 5. C, 6. D, 7. F

Optimizing Endodontic Irrigation
Gary Glassman, DDS



GOALS OF IRRIGATION

- Debride canal
- Dissolve tissue
- Remove smear layer
- Kill microbes



IRRIGATION TYPES

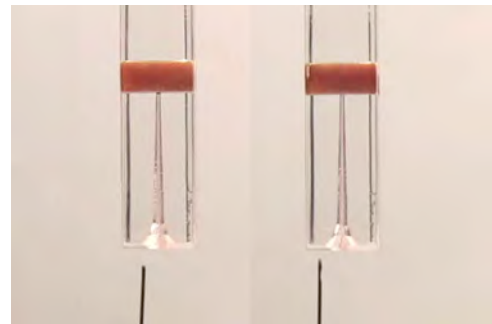


POSITIVE PRESSURE IRRIGATION EXAMPLES

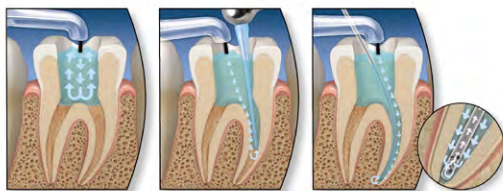


SLIGHT PRESSURE

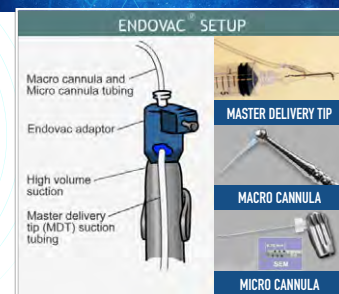
TOO MUCH PRESSURE



NEGATIVE PRESSURE IRRIGATION EXAMPLE ENDOVAC



FINAL IRRIGATION PROTOCOL



ENDOVAC: APICAL NEGATIVE PRESSURE



DEEP DIVE

MORE ON THIS LATER.....

IRRIGANTS

PREPARATION IRRIGANTS

NaOCl (0.5 > 6%)
Hydrogen Peroxide
Citric Acid
Ozonated Water
EDTA
BioPure
Smear Clear

QMix (EDTA & CHX)

INTRACANAL MEDICAMENTS

Calcium Hydroxide
CHX
Formocresol
Alcohol
CMCP
Iodoform Paste
Beechwood Creosote

WHICH ONE OR COMBO?

Most Common Irrigation Methods

Bleach + EDTA + Bleach

Solutions

NaOCl

Dissolves organic tissue

Kills microbes fast

EDTA

No effect on inorganic tissue

CHX

Weakens in contact with other materials

Toxic/caustic effect on PA tissue

Harmful effect on dentin structure??



Solutions

Removes Smear Layer

NaOCl

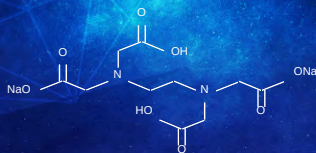
No Bacteria Killing

EDTA

Does Not Dissolve Soft Tissue

CHX

May Erode Dentin with Longer Time Exposure



Solutions

Kills bacteria (not fast)

NaOCl

Improves long term dentin bonding to resins

EDTA

Does not dissolve tissue

CHX

Does not disrupt biofilm

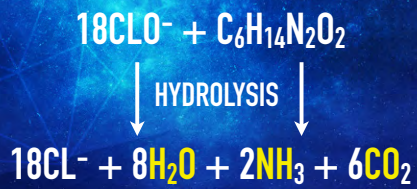


Sodium Hypochlorite

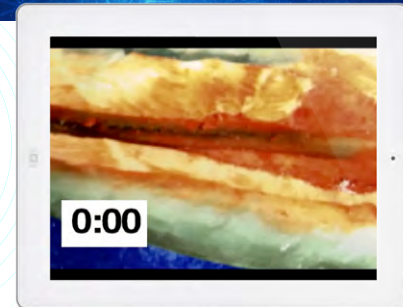
- > Current irrigant of choice
- > Effective antimicrobial agent (Kuruvilla & Kamath 1998, Leonardo et al. 1999)
- > Excellent organic tissue solvent (O'Hara et al. 1993)
- > Lubricates
- > Effective fairly quickly



THE CHEMISTRY OF ENDODONTIC IRRIGATION



GROSS CANAL CLEANING

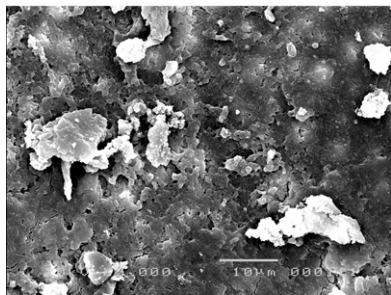


EDTA

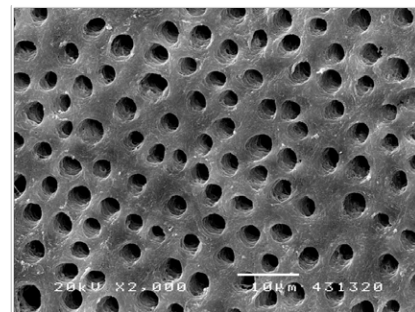


IS IT EFFECTIVE?

Photography on following slides courtesy of
Jantarat J., Yanpiset K., Hamirattisai C.



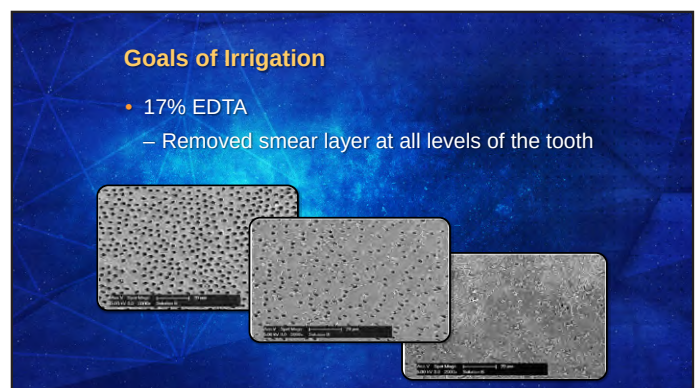
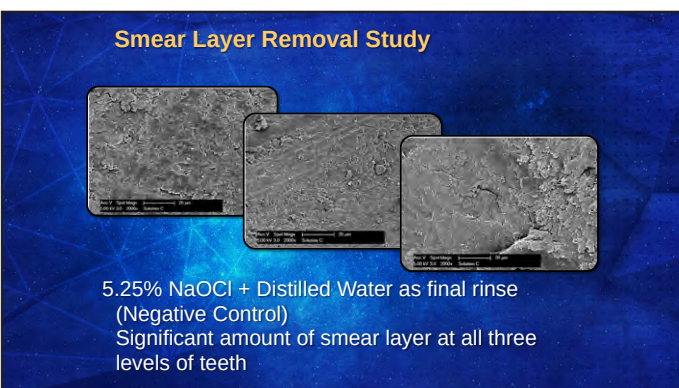
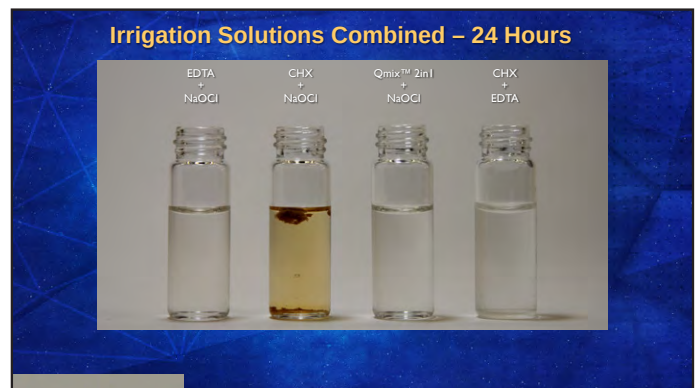
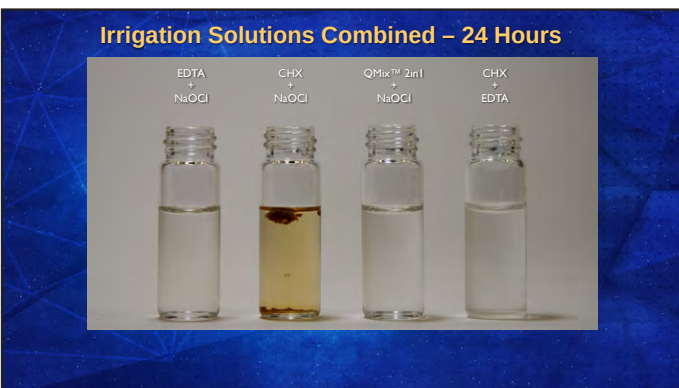
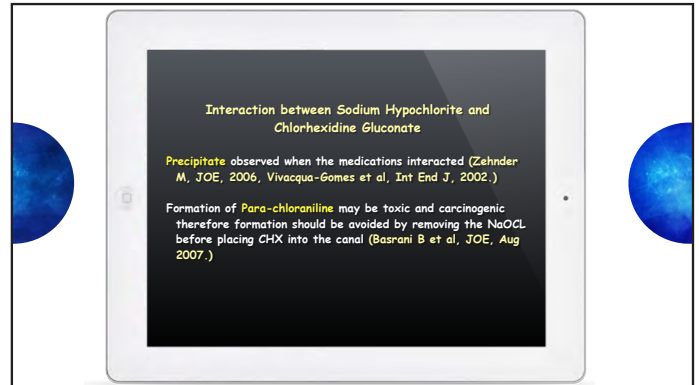
WATER



17% EDTA

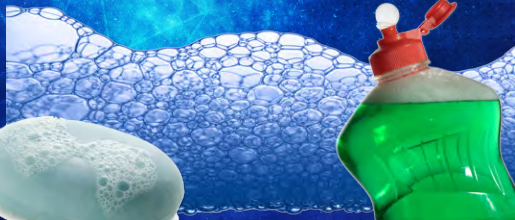
CHLORHEXIDINE





Surfactants

- Reduces surface tension (increased wetting)
- Improved penetration



QMIX™ 2 IN 1

Common practices (post NaOCl):

- Smear layer removal
- Disinfection final rinse

Common irrigants:

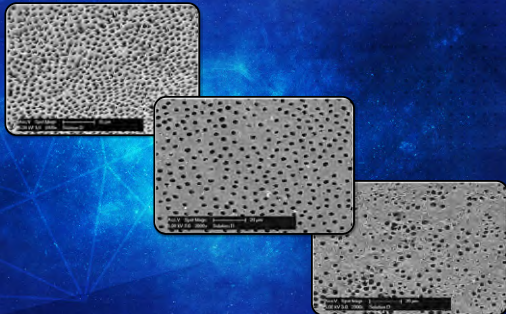
- EDTA
- CHX

Common Sense:

- Combined steps require less canal rinsing, drying and time waiting



QMIX 2in1 removes smear layer at all levels



BIOFILM

Biofilm Formation of Endodontic *Enterococcus Faecalis*

- Sessile microbial communities composed of cells irreversibly attached to a substratum and interface or to each other
- Slow metabolic rate of microorganisms deep in the biofilm impede the effectiveness of many antimicrobials

Duggan J., Sedgley Christine, JOE, July 2007

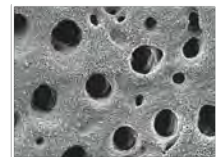
CHEMISTRY OF ENDODONTIC IRRIGATION - ORGANIC DEBRIS

PRE-IRRIGATION



WILD BIOFILM

POST-IRRIGATION



6% NaOCl

Note: 17% EDTA used in all test groups prior to biofilm growth.

Chapp, et al. JOE 506 pg. 434-7

CHEMISTRY OF ENDODONTIC IRRIGATION - ORGANIC DEBRIS

TABLE 1. Summary of the results from the SEM and bacterial culture evaluations

Solution	SEM		Culture Growth
	Presence of Bacteria	Biofilm Status	
6% NaOCl	→	Absent	0% ←
3% NaOCl	—	Absent	20%
1% NaOCl	+	Disrupted	90%
1% NaOCl/MTAD	+	Disrupted	0%
2% CHX	+	Intact	0%
Positive control	+	Intact	100%
Negative control	—	Absent	0%

Chapp, et al. JOE 506 pg. 434-7

CHEMISTRY OF ENDODONTIC IRRIGATION - ORGANIC DEBRIS

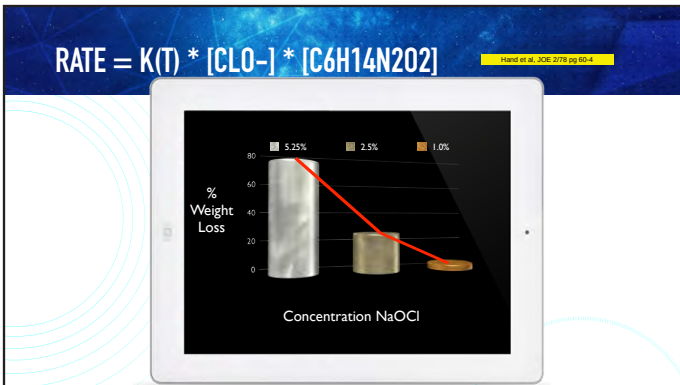
TABLE 2. Percentage kill of *E. faecalis* by different test agents

Test Agent	N	Mean ± SD
1% NaOCl	32	99.78 ± 0.356 ^a
6% NaOCl	96	99.99 ± 0.000 ^a
SmearClear™	32	78.06 ± 33.257 ^b
2% CHX	32	60.49 ± 44.596 ^c
REDTA	32	26.99 ± 29.997 ^d
BioPure™ MTAD™	32	16.08 ± 21.191 ^e

Unit: %.

Different letters in the column indicate statistically significant homogeneous groups ($p < 0.05$).

Dunaway et al. JOE 606 pg. 527-31



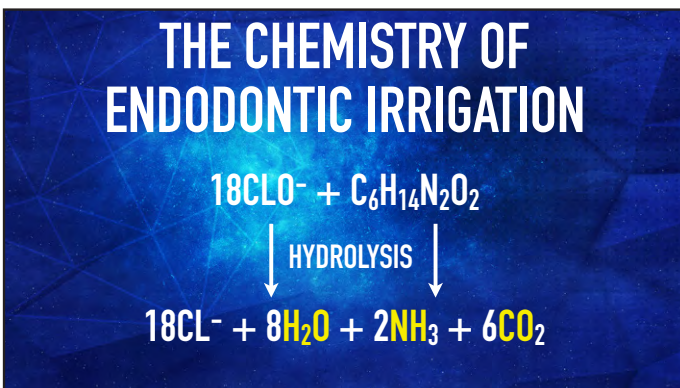
THE PHYSICS OF ENDODONTIC IRRIGATION

6 % NaOCl + 17% EDTA

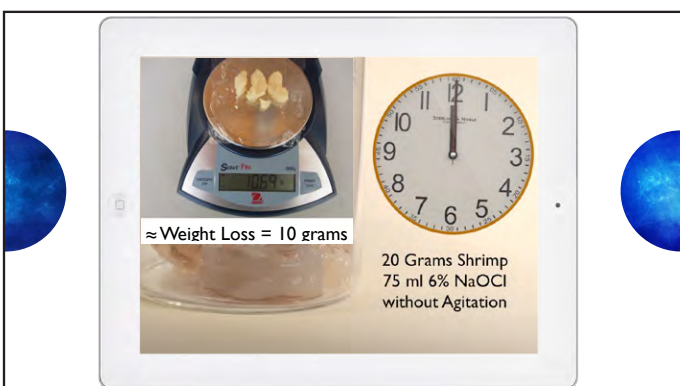
HOW MUCH?
HOW LONG?

BEFORE WE ANSWER THAT QUESTION...

THE CHALLENGES



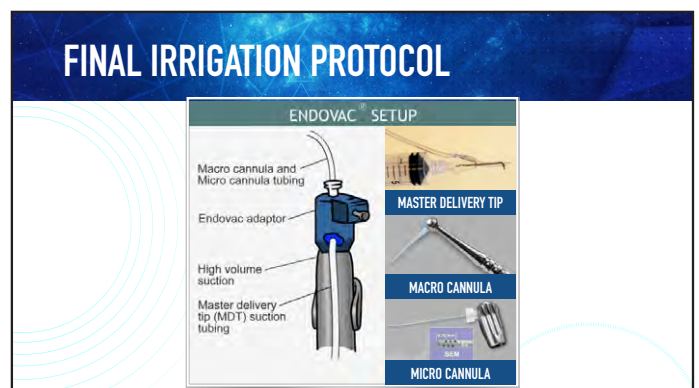
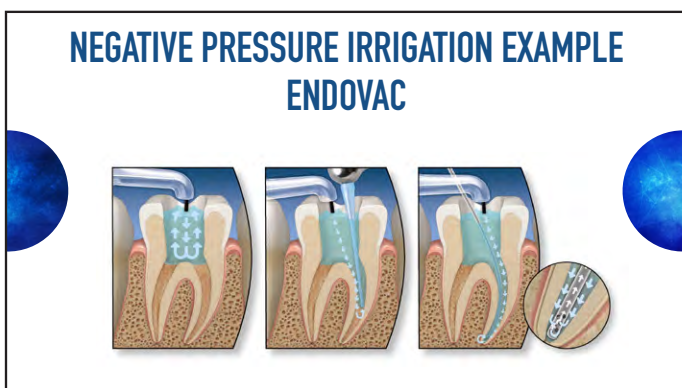
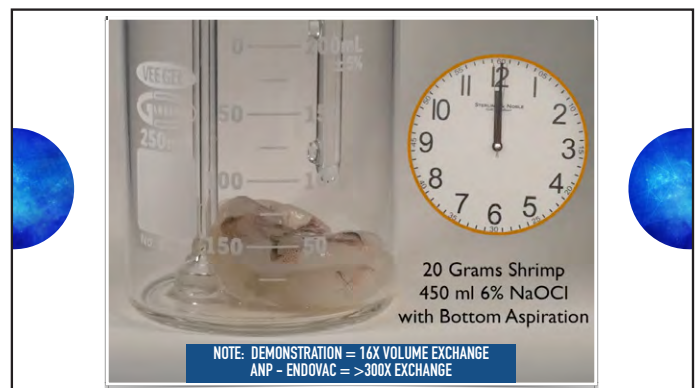
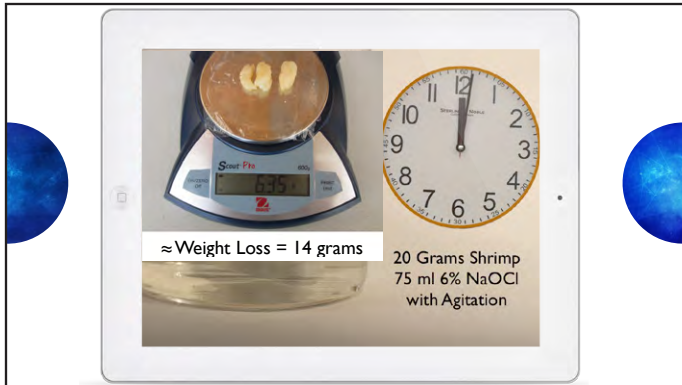
WATER!!!

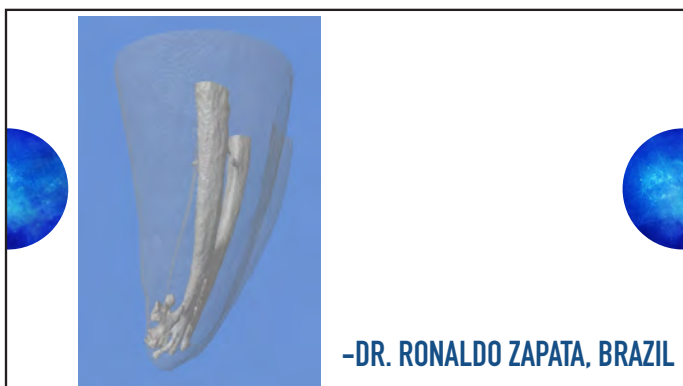
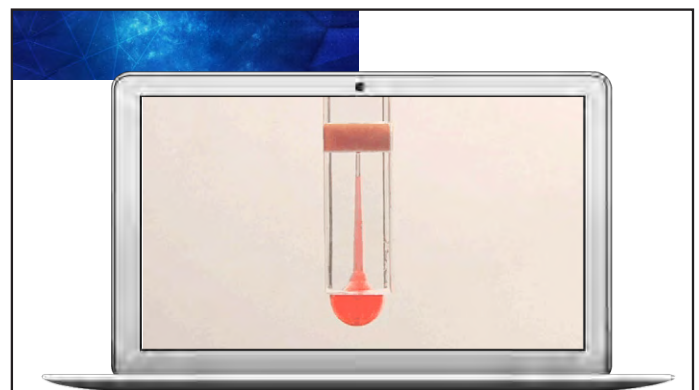
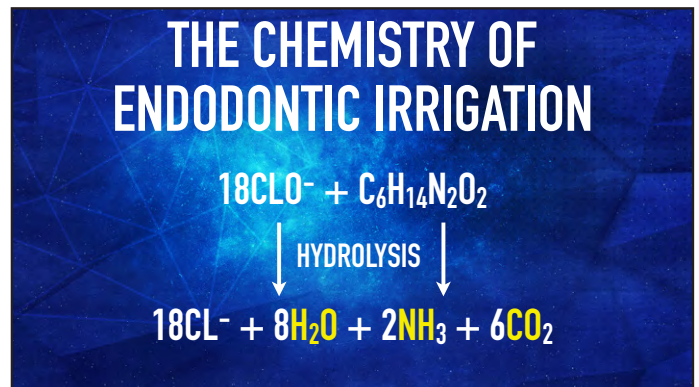
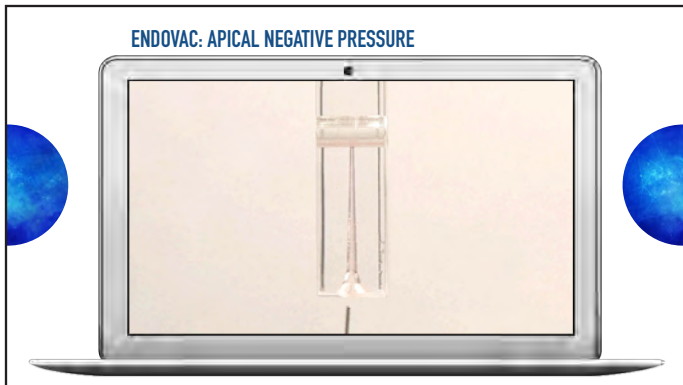


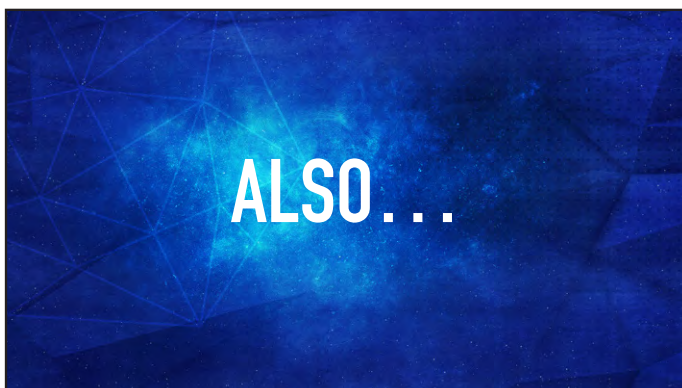
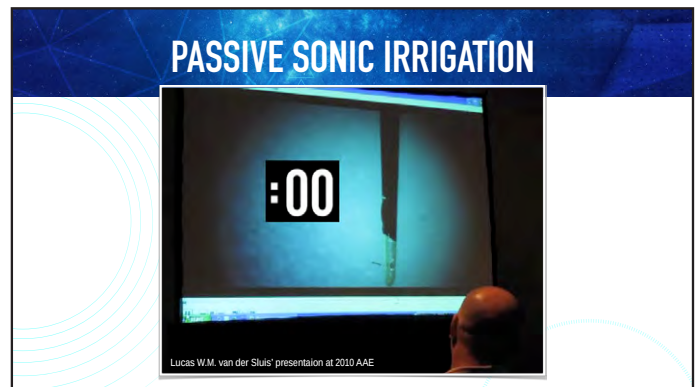
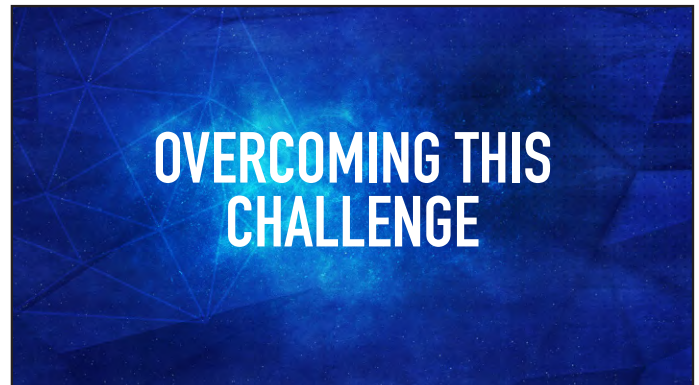
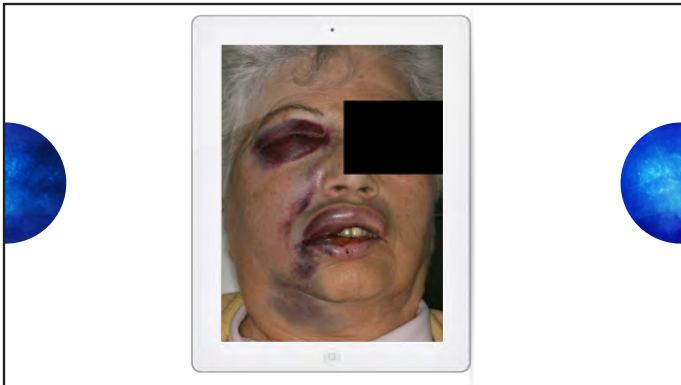
SONIC & ULTRASONIC AGITATION

Jensen et al., JOE 11/99 pg 735-8

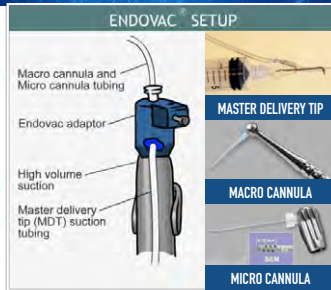
“Passive sonics after hand instrumentation produces a cleaner canal than hand instrumentation alone and is comparable with that of passive ultrasonics.”







FINAL IRRIGATION PROTOCOL



ENDO-VAC: APICAL NEGATIVE PRESSURE



DEEP DIVE

MORE ON THIS LATER.....

DURING
INSTRUMENTATION....

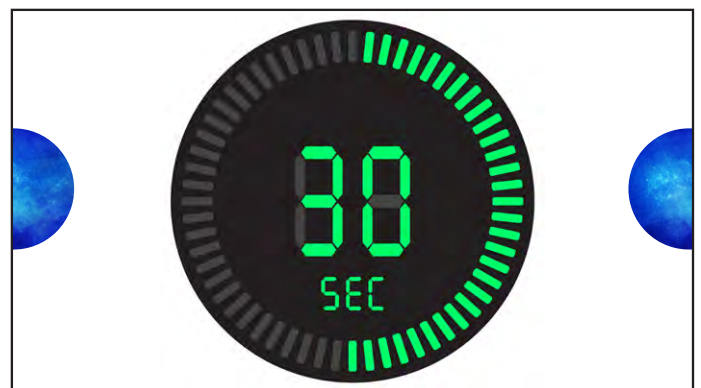
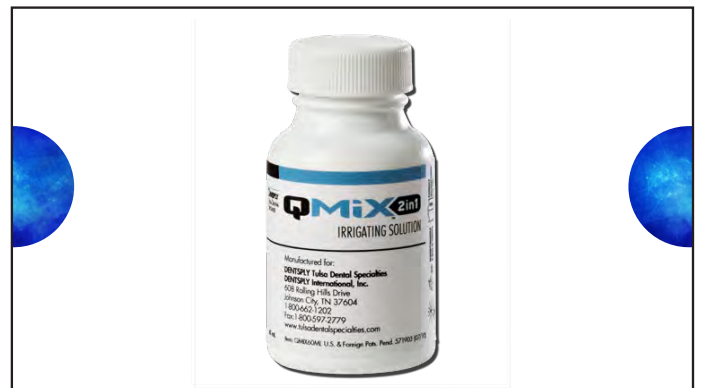
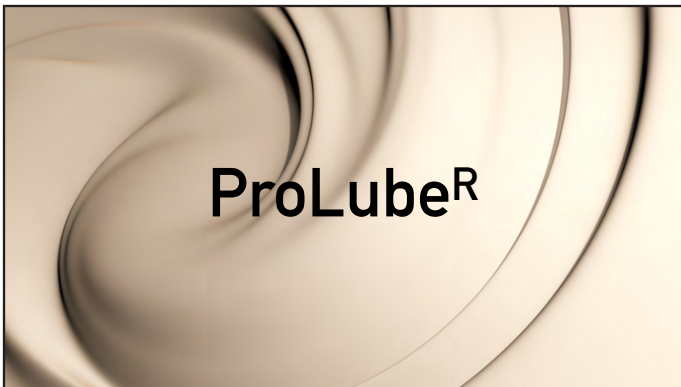
MAKE SURE.....

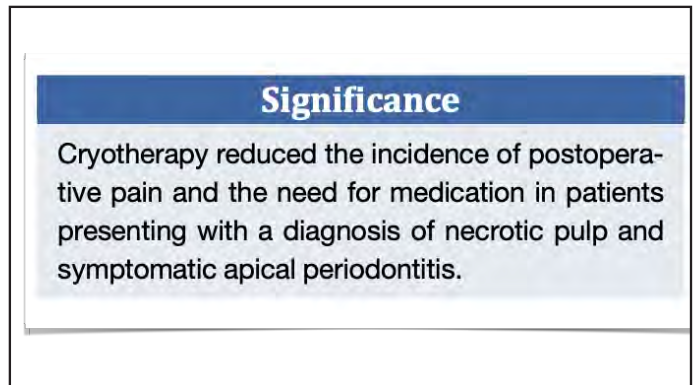
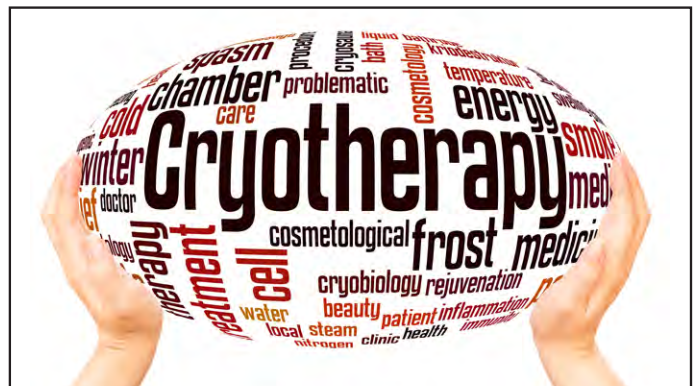
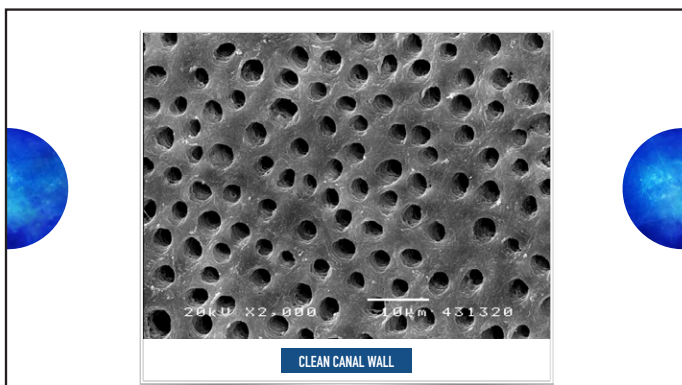
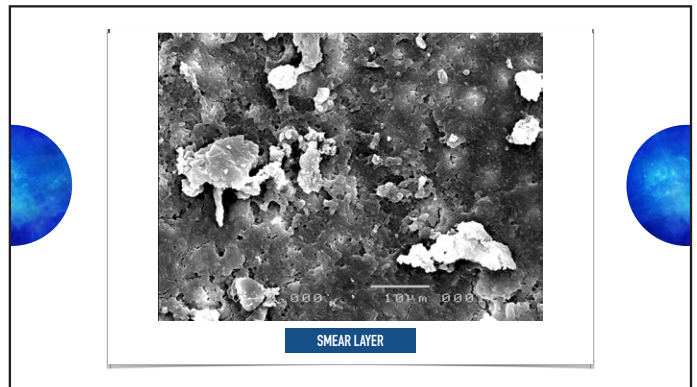
BATH OF FULL STRENGTH
NaOCl
AND PROLUBE

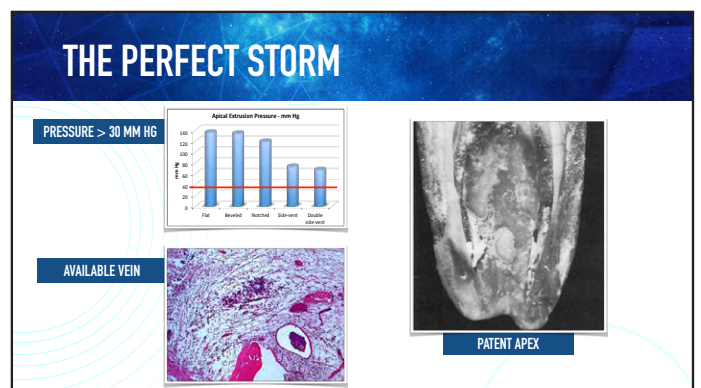
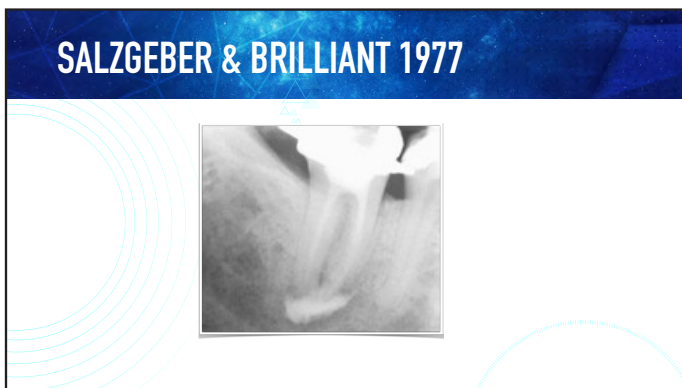
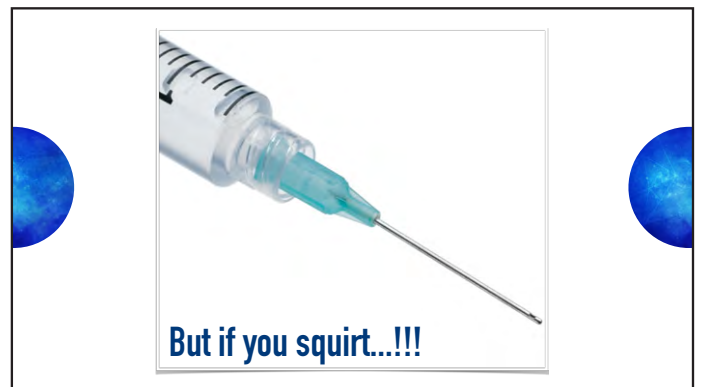
THREE
THINGS YOU
CANT DO
TOO MUCH!

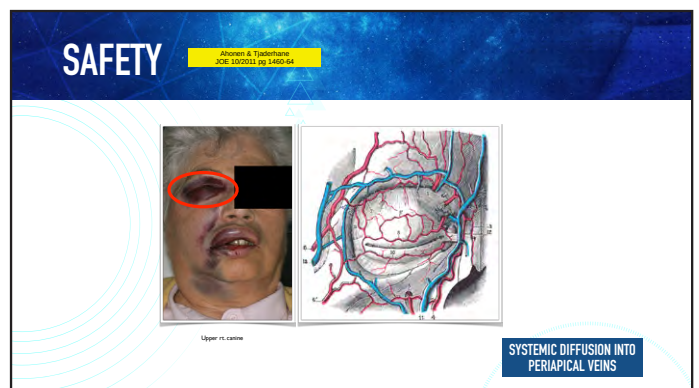
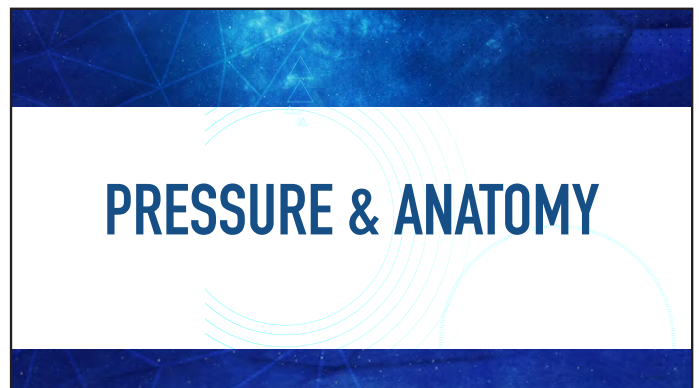
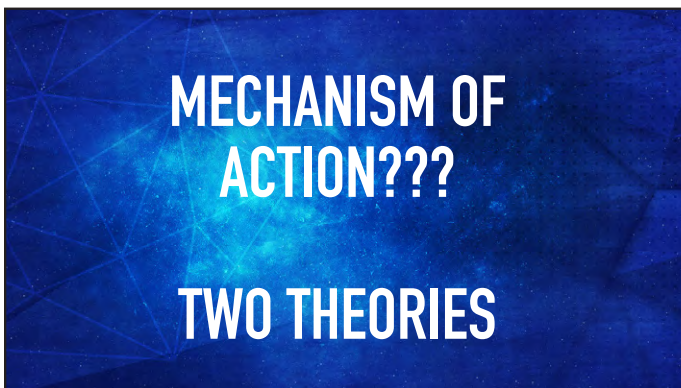
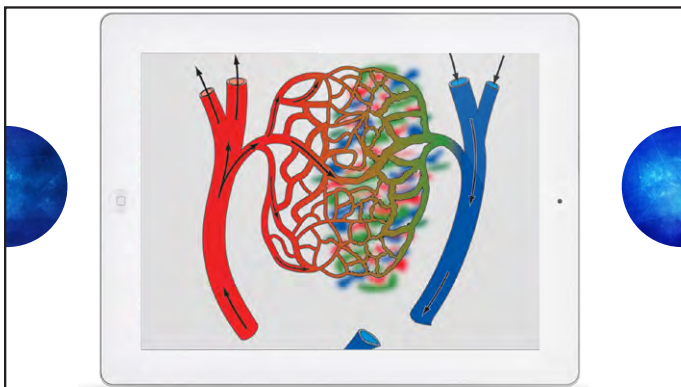
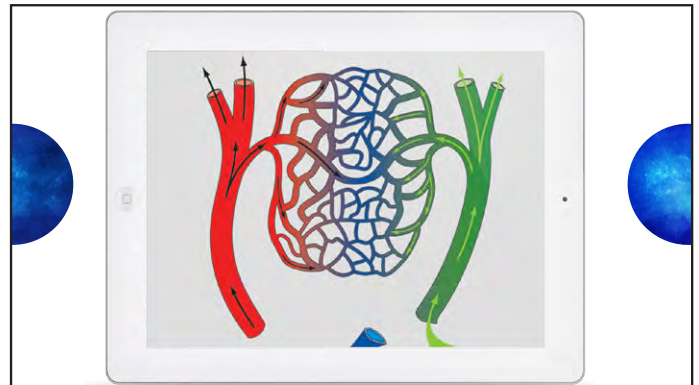
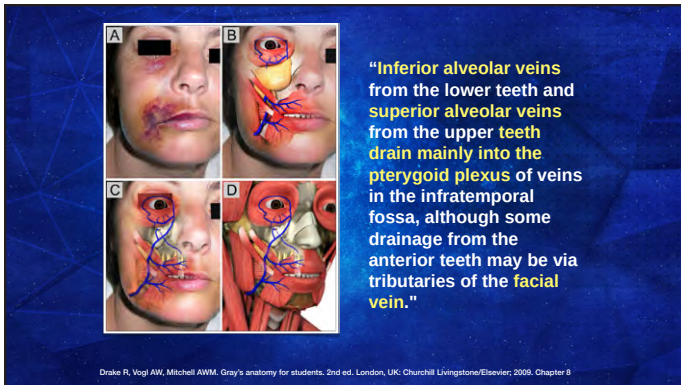
- ✓Patency
- ✓Refresh NaOCl
- ✓Working Length







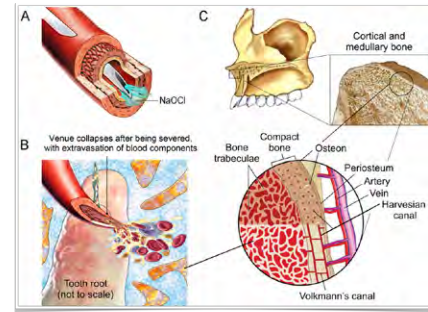




ANATOMY OF SODIUM HYPOCHLORITE ACCIDENTS INVOLVING FACIAL ECCHYMOSIS—A REVIEW

Zhu W, Gyanji J, Niu L, Schoeffel J, Liu S, Santarcangelo F, Khan S, Tay K, Pashtoy D, Tay F.
Journal of Dentistry 2013 Nov;41(11):935-46. doi: 10.1016/j.jdent.2013.08.012. Epub 2013 Aug 28.

A novel hypothesis that involves intravenous infusion of extruded NaOCl into the facial vein via non-collapsible venous sinusoids within the cancellous bone is presented.



Zhu W, Gyanji J, Niu L, Schoeffel J, Liu S, Santarcangelo F, Khan S, Tay K, Pashtoy D, Tay F.
Journal of Dentistry 2013 Nov;41(11):935-46. doi: 10.1016/j.jdent.2013.08.012. Epub 2013 Aug 28.

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Thus, NaOCl extruded through a patent tooth root foramen, an immature apex or a root canal perforation may easily and rapidly infuse into the facial vein, should there be an anatomic variation in the facial venous vasculature (Drake) and when the apically-directed fluid pressure gradient exceeds 30 mmHg."

ANATOMY

METHODOLOGY

- ✓ Following A Cross-Sectional, Non-Randomized Design, 13 Patients Who Suffered Unintentional NaOCl Accidents Whilst Undergoing Root Canal Treatment Were Included.
- ✓ After Remission Of Symptoms, The Root Canals Were Fully Irrigated With An Innocuous Radiopaque Solution And Subsequently Cbct Scanned To Create A 3D-Map Of The Periapex And Tracking Of The Irrigant Pathway Throughout The Periapical Tissues.
- ✓ An Extra Group Of Five Control Patients, Who Underwent Root Canal Treatment With No NaOCl Accident, Was Also Cbct-Scanned After Irrigation With The Tracking Radiopaque Solution.
- ✓ The Anatomical Relationship Of The Cortical Bone And The Root Apex, As Well As The Distribution Of Irrigation Solution In The Periapical Tissue, Was Associated With Patients Undergoing A NaOCl Accident Or Not, Using A Fisher's Exact Test.

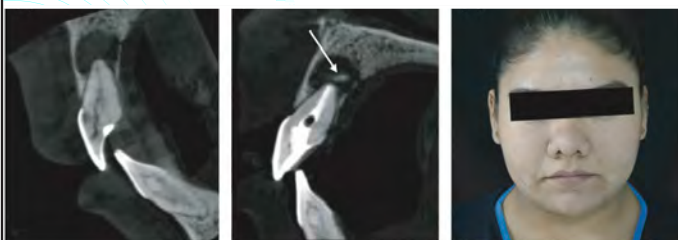
Mapping the periapex anatomical pattern of teeth involved in sodium hypochlorite accidents: a cross-sectional quasi-experimental study

E. M. Souza¹, M. G. Campos² & R. Rosas Aguiar¹

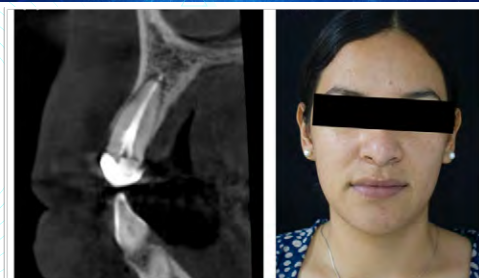
¹Department of Endodontics, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil; ²Department of Endodontics, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

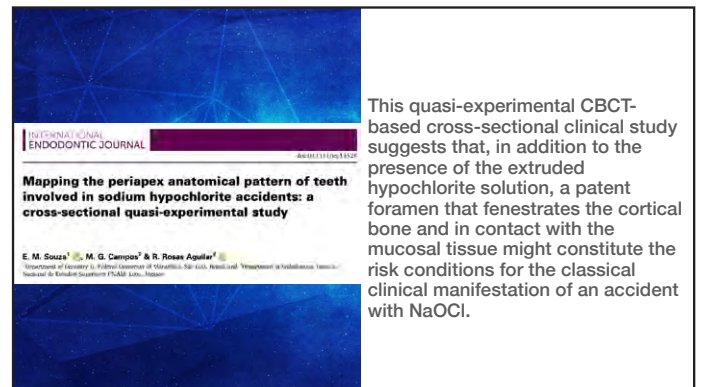
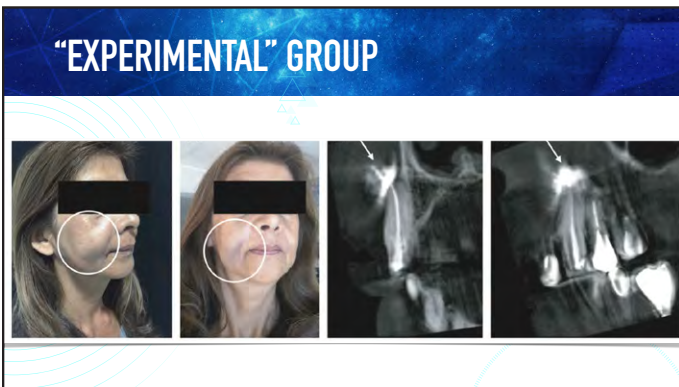
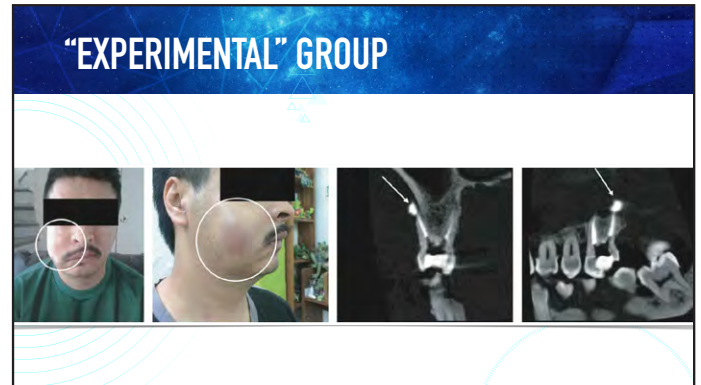
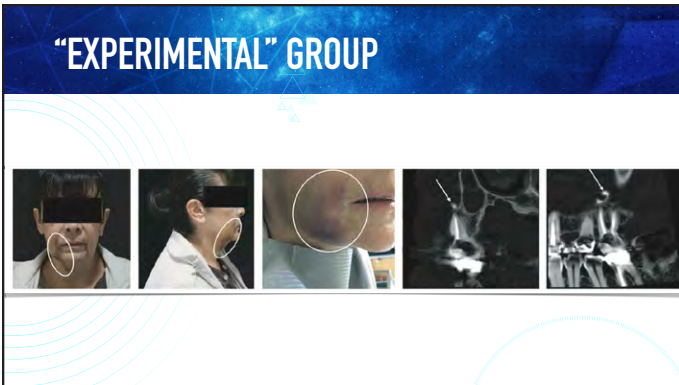
To determine the anatomical reasons for sodium hypochlorite (NaOCl) accidents by testing whether this mishap is likely to occur in cases where the anatomical apex of the teeth fenestrates the overlying buccal cortical alveolar bone, allowing NaOCl to gain direct access to buccal soft tissues.

CONTROL GROUP



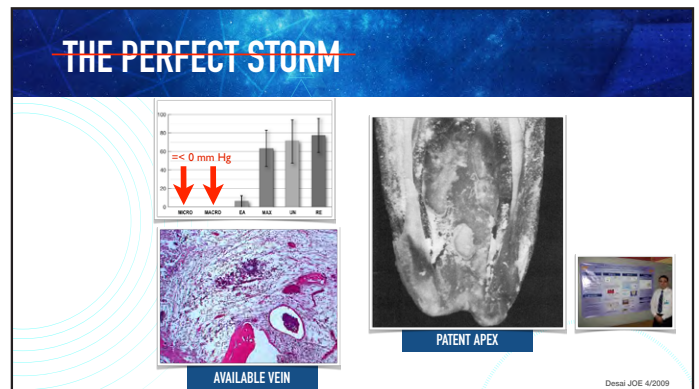
CONTROL GROUP





1. **Inform** the patient regarding the nature of the incident including the possible risks and complications.
2. **Hospitalization** in ALL cases of **respiratory** embarrassment or uncontrolled **hemorrhage** or when the need for IV meds indicated.
3. **Pain control**: Can range from local anesthesia to analgesics.
4. **REFER**: Otolaryngologist if sinus involved. Nephrologist if urine appears unusually dark.
5. **Cold compresses** for one day to reduce swelling.
6. After the first day, **warm salt water rinses** will stimulate blood flow.
7. **Daily recall** is required to monitor recovery.
8. **ABs** not always reqd but are reserved in cases of high risk or evidence of secondary infection.
9. **Corticosteroids** are often given.
10. **Further treatment** like surgical intervention, tooth extraction, or sinus procedures must be assessed.



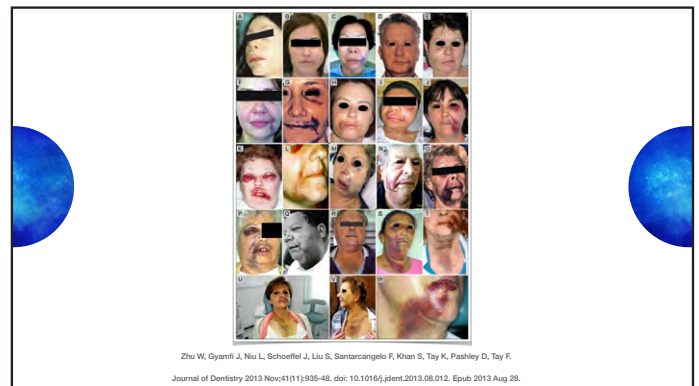


ANATOMY OF SODIUM HYPOCHLORITE ACCIDENTS INVOLVING FACIAL ECCHYMOSIS—A REVIEW

Zhu W, Gyanfi J, Niu L, Schoeffel J, Liu S, Santarcangelo F, Khan S, Tay K, Pashley D, Tay F.
Journal of Dentistry 2013 Nov;41(11):935-48. doi: 10.1016/j.jdent.2013.08.016. Epub 2013 Aug 28.

CONCLUSION

When the irrigant flow rate is below **3.4 ml/min**, the fluid pressure generated is below the mean intraosseous space blood pressure value of **30 mm Hg**.



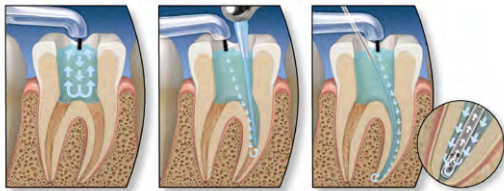
WHEN THE IRRIGANT FLOW RATE IS BELOW **3.4 ML/MIN**, THE FLUID PRESSURE GENERATED IS BELOW THE MEAN INTRAOSSEOUS SPACE BLOOD PRESSURE VALUE OF **30 MM HG**.



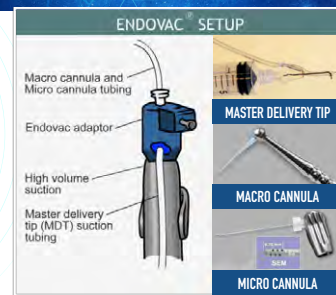
Zhu W, Gyanelli J, Niu L, Schoeffel J, Liu S, Santarcangelo F, Khan S, Tay K, Pashley D, Tay F. Journal of Dentistry, Article in Press, 2013

ENDOVAC™

NEGATIVE PRESSURE IRRIGATION EXAMPLE ENDOVAC



FINAL IRRIGATION PROTOCOL



ENDOVAC: APICAL NEGATIVE PRESSURE



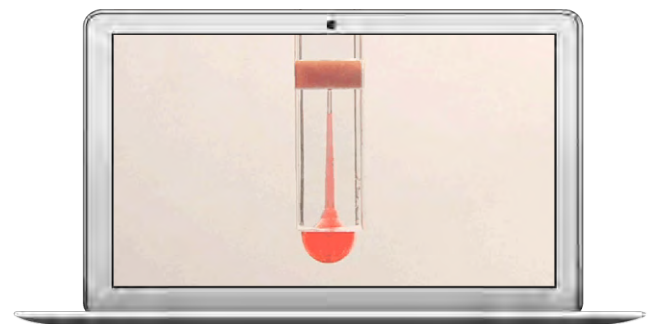
FINAL IRRIGATION PROTOCOL

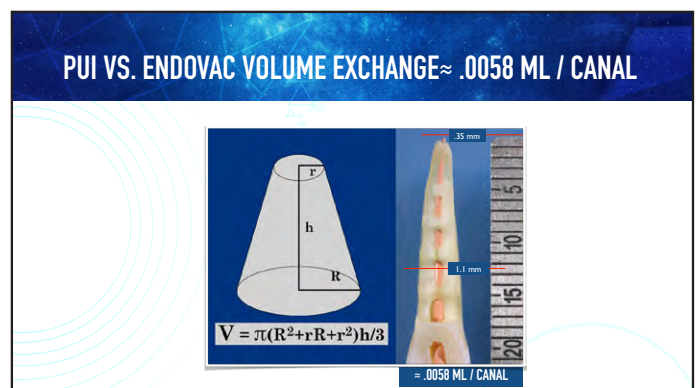
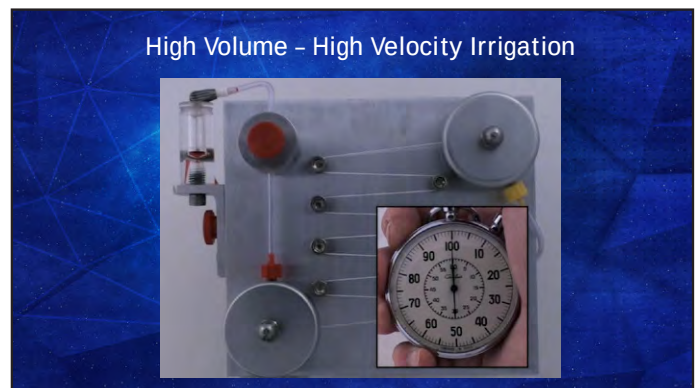
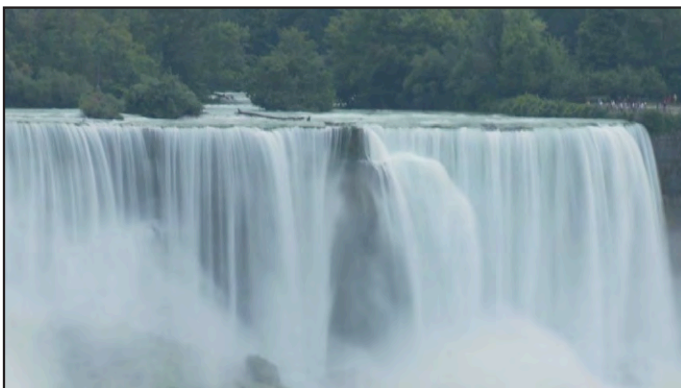
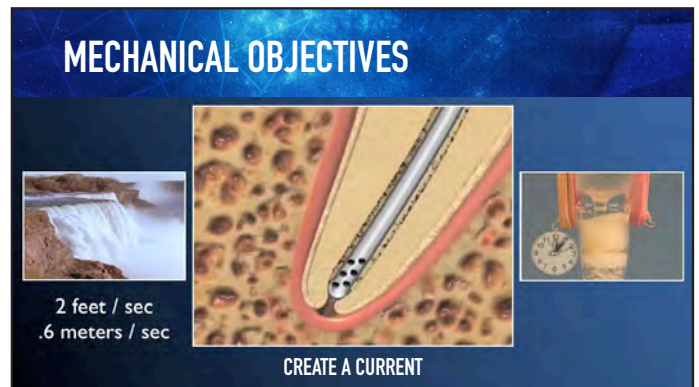
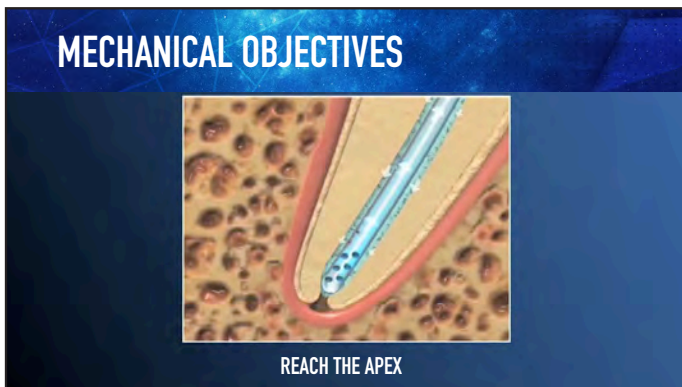
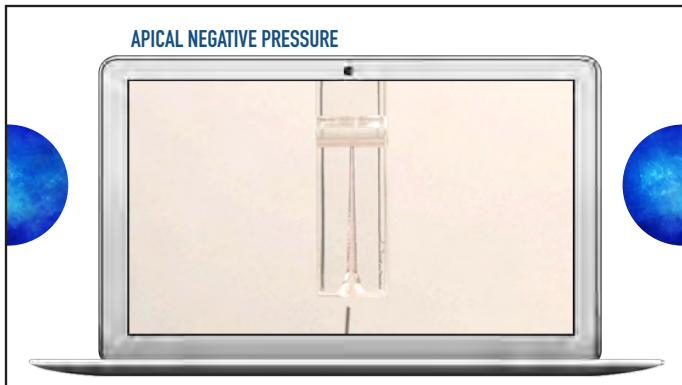
EndoVac System

Part 2

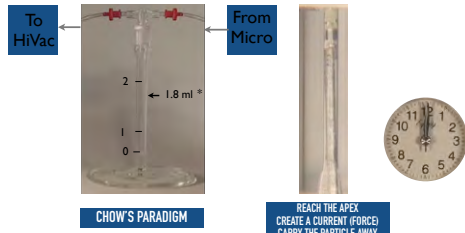
Components & Assembly

APICAL VAPOR LOCK



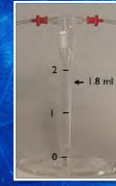


APICAL NEGATIVE PRESSURE - ENDOVAC



ANP - EndoVac

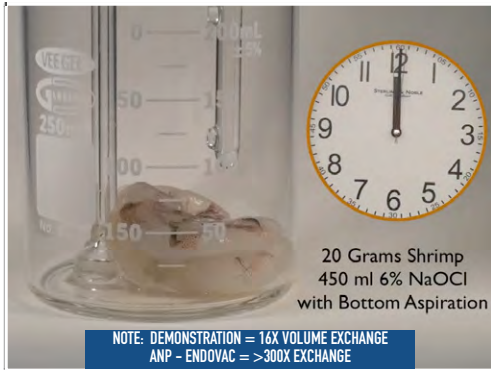
Passive Ultrasonics



≈ 1.8 ml / canal

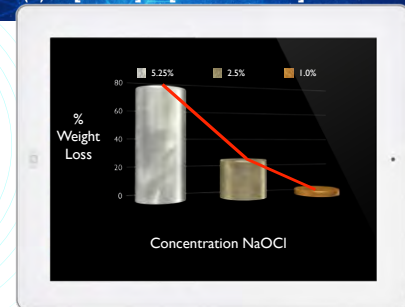
≈ .0058 ml / canal

≈ 1.8 / .0058 = 310x



$$\text{RATE} = K(T) * [\text{CLO-}] * [\text{C6H14N2O2}]$$

Hand et al. JOE 2778 pg 40-4

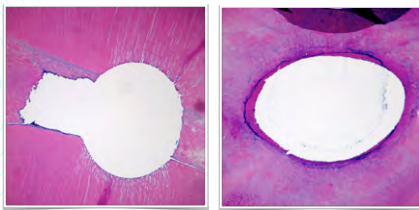


CANAL DEBRIS

Nielsen & Baumgartner
JOE 9/2007 pg. 1040-43

ENDOVAC

TRADITIONAL

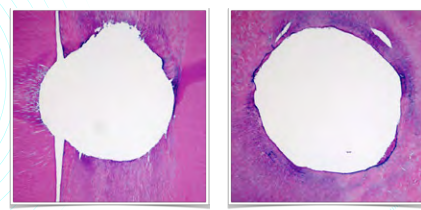


CANAL DEBRIS

Nielsen & Baumgartner
JOE 9/2007 pg. 1040-43

ENDOVAC

TRADITIONAL



CANAL DEBRIS

Nielsen & Baumgartner
JOE 9/2007 pg. 1040-43

TABLE 1. The amount of debris at 1 mm and 3 mm from working length

Group	Mean (%)	Standard Deviation	p Value
EndoVac 1 mm	1.565	2.99	0.0347*
Needle 1 mm	5.730	13.65	
EndoVac 3 mm	0.421	0.96	0.1119
Needle 3 mm	2.825	6.26	

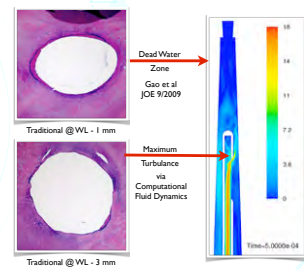
*Significant p < 0.05.

WHY?



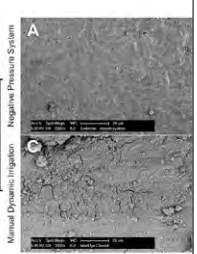
CANAL DEBRIS

Nielsen & Baumgartner
JOE 9/2007 pg. 1040-43



CANAL DEBRIS

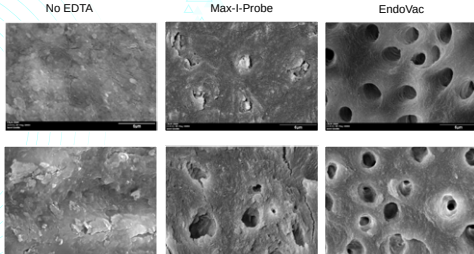
Parente & Tay et al
IEJ 2010 Nov;43(11):1001-12



Results: The ability of manual dynamic agitation to remove smear layer and debris in a closed canal system was significantly less effective ... than the EndoVac ($P < 0.001$).

CANAL DEBRIS

Master's Thesis - University Autonoma de San Luis Potosi Gomez, A



WL -1mm $p < .001$

ANTIMICROBIAL-BACTERIA IN TUBES AFTER ANP

Comparison of the Antimicrobial Efficacy of Irrigation Using the EndoVac to Endodontic Needle Delivery
Feldt A, Miller DDB, and J. Chang Baumgartner DDB PhD

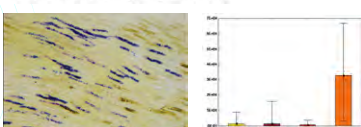
Miller & Baumgartner JOE 3/2010 pg. 509-11

Comparison of the Effectiveness of Three Irrigation Techniques in Reducing Intracanal *Enterococcus faecalis* Populations: An *In Vitro* Study
Patricia R.R. Brito, MSc, Leticia C. Souza, MSc, Julio C. Machado de Oliveira, PhD, Rávio R.E. Alves, PhD, Gustavo De Deus, PhD, Hôlo P. Lopes, LD, and José E. Siqueira, Jr. PhD

Brito et al JOE 09/2009 pg. 1422-27

ANTIMICROBIAL-BACTERIA IN TUBES AFTER ANP

Comparison of the EndoVac Irrigation Using Pulverized teeth
Feldt A, Miller DDB, and J. Chang Baumgartner DDB PhD



Instrumented deep into wall
Assessment of Reducing Intracanal *Enterococcus faecalis* Populations: An *In Vitro* Study
Patricia R.R. Brito, MSc, Leticia C. Souza, MSc, Julio C. Machado de Oliveira, PhD, Rávio R.E. Alves, PhD, Gustavo De Deus, PhD, Hôlo P. Lopes, LD, and José E. Siqueira, Jr. PhD

INFECTED TUBULES

Peters, Wesselink, Moor
IEJ 1995 pg 95

The fate and the role of bacteria left in root dentinal tubules
A. H. PETERS, P. E. WESSELINK, A. H. MOOR

"There is no evidence, however, that special measures should be taken to kill the bacteria in the dentinal tubules. Should time permit, a **sound obturation technique** immediately following the cleaning, shaping and disinfection phases allows the remaining bacteria in the tubules to be either **inactivated or prevented from repopulating the (former) canal space.**"

ISTHMUS CLEANING

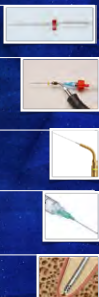
"F" FILE

PRESSURE ULTRASONIC NEEDLE

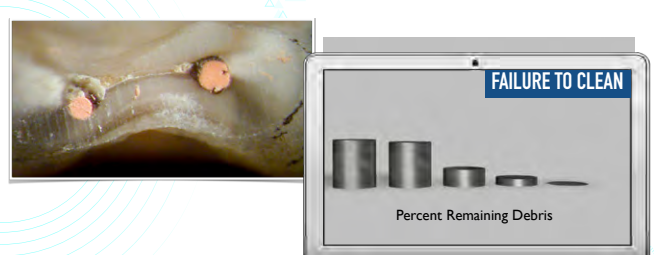
PASSIVE ULTRASONIC IRRIGATION

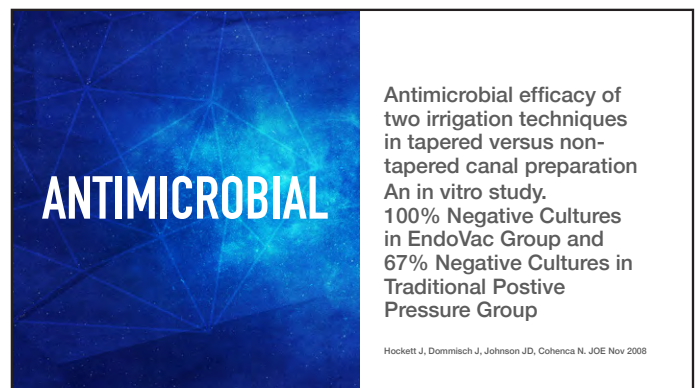
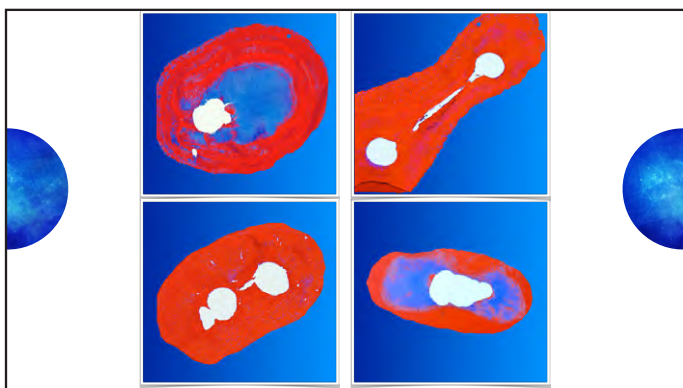
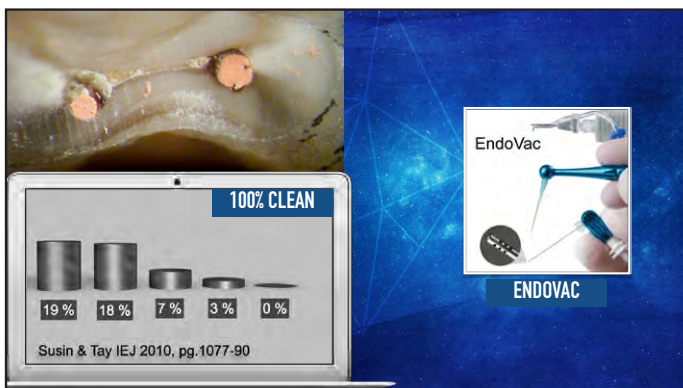
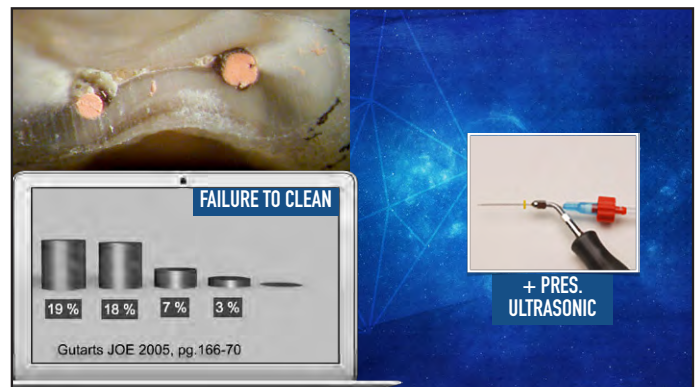
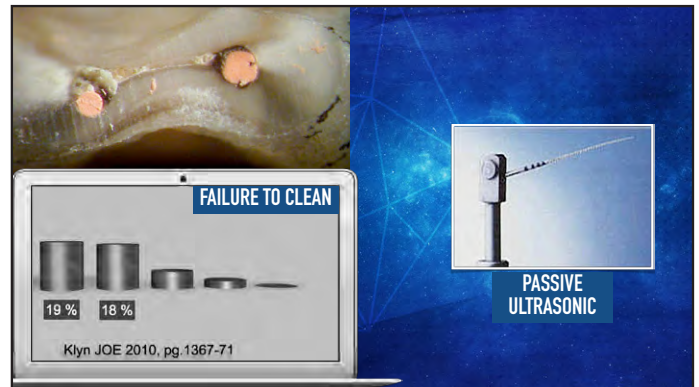
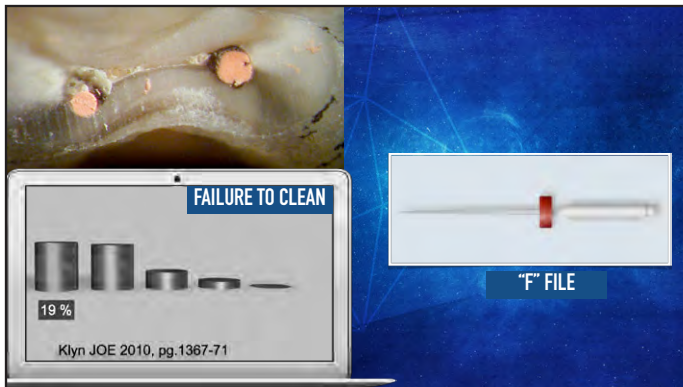
SIDE-VENT NEEDLE

ENDOVAC



ISTHMUS CLEANING STUDIES @ WL -1MM

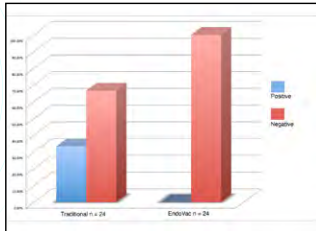




ANTIMICROBIAL IN VITRO

Hackett et al JOE 13(2008) pp 1374-7

TRADITIONAL VS ENDOVAC

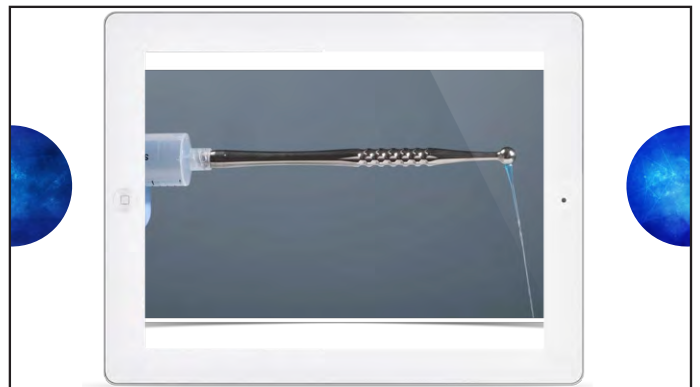


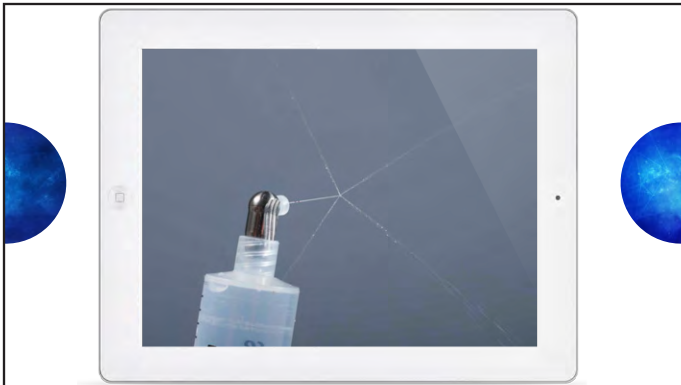
CLINICAL CONSIDERATIONS

LET GRAVITY WORK!



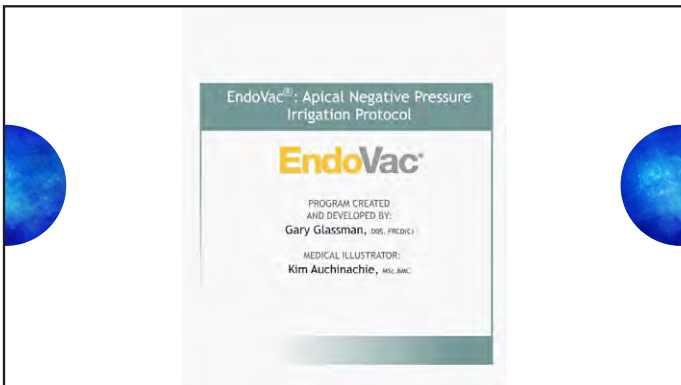
PRETREATMENT





EndoVac System Clinical Example

- * During Instrumentation
- * Macro Cannula
- * Micro Cannula
- * Debris Removal (NaOCl)
- * Smear Layer Removal (EDTA)
- * Tubular Cleaning (NaOCl)
- * Drying



Kerr



TRITON™

With Triton, irrigation is no irritation at all.

BRASSELER USA™

TRITON™ ALL-IN-ONE IRRIGATION SOLUTION
Order No. 302942545

Triton Features and Benefits

Luer-activated valve

~8% NaOCl stored in one chamber and our proprietary blend of 14 chelating agents and surfactants in another, so you'll always get a precise, freshly mixed dose

Mixing chamber is secured with one-way check valves, ensuring mixed solution can't enter the storage chambers below

Pick-up Tubing

BRASSELER USA™

OTHER IRRIGATION ACTIVATION SYSTEMS

Multasonic

Laser

LASERS?



LASERS

✓ BACTERIAL INFILTRATION INTO DENTINAL TUBULES HAS BEEN REPORTED TO BE 400 MICRONS.
HAPPASALO AND ORSTAVIK. J. DENT. RES. 1987 66(8):1375-1379.

✓ CHEMICAL RINSES HAVE A PENETRATION DEPTH OF 100 MICRONS WHICH RESULTS IN THE POSSIBILITY OF BACTERIAL ENTOMBMENT AND MICROLEAKAGE.
BERUTTI ET AL. JOE 1997 23(12):725-727.

✓ SINCE LASER LIGHT IS A PENETRATING MODALITY, IT HAS THE ABILITY TO PENETRATE 1000 MICRONS INTO DENTIN.
MORITZ ET AL. LAS. SURG. MED. (200) 26(3) 250-261.



Waterlase Laser Dentistry.

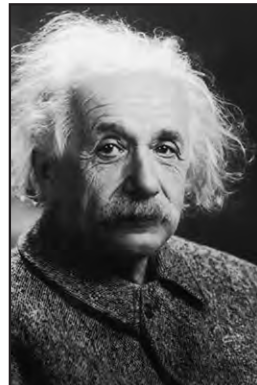
Proprietary 2780 nm Er,Cr:YSGG (erbium, chromium, yttrium, scandium, gallium garnet) wavelength is a hydro kinetic laser in which water is energized by the emitted photons leading to molecular excitation and when combined with water spray, these laser photons create rapid expansion/microexplosions, called **HydroPhotonics**.

This laser provides optimal energy into the water and Hydroxyapatite found in enamel, dentin, and bone.

The result is less pain for the patient, a rapid, precise, and clean removal of target tissues – without heat damage, fractures, or smear layer created by dental burs

LASER

Light
Amplification by
Stimulated
Emission of
Radiation

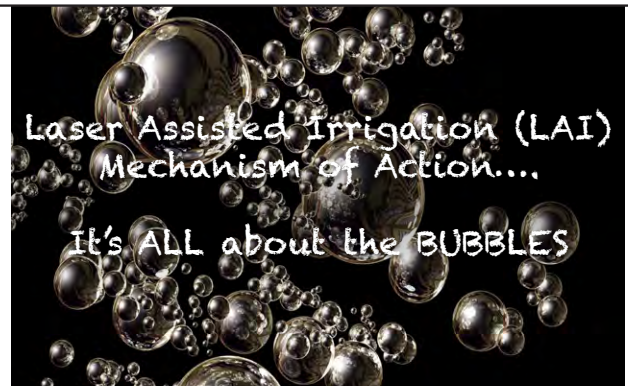


FDA CLEARANCE (2002) INCLUSIONS

- ✓ Tooth preparation, access to root canals
- ✓ Pulpotomy
- ✓ Pulp extirpation
- ✓ Root canal debridement and cleaning
- ✓ Root canal preparation and enlargement

Laser Assisted Irrigation (LAI) Mechanism of Action...

It's ALL about the BUBBLES



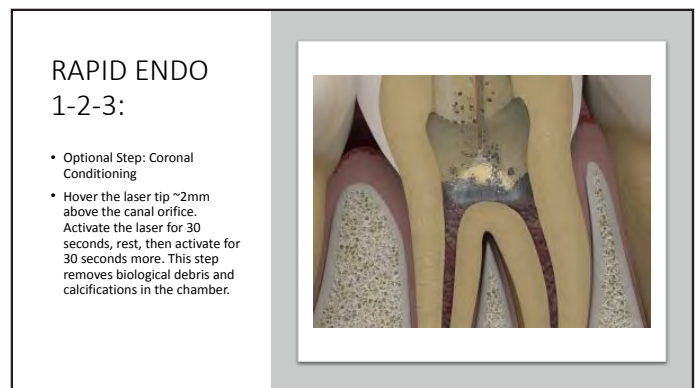
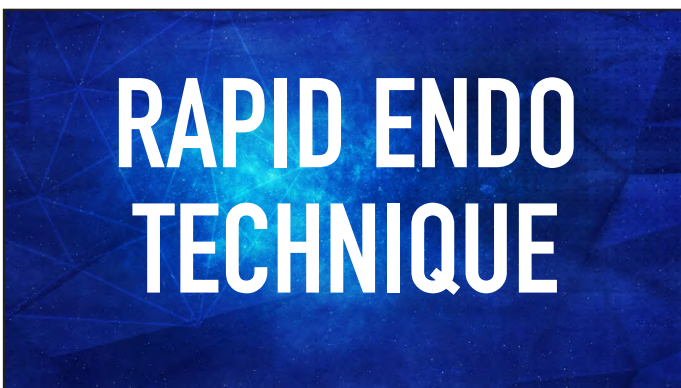
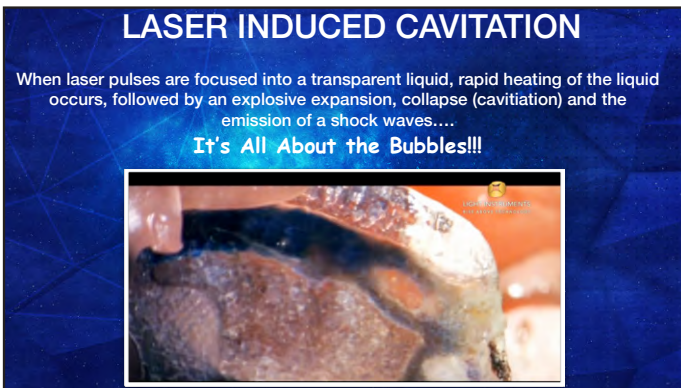
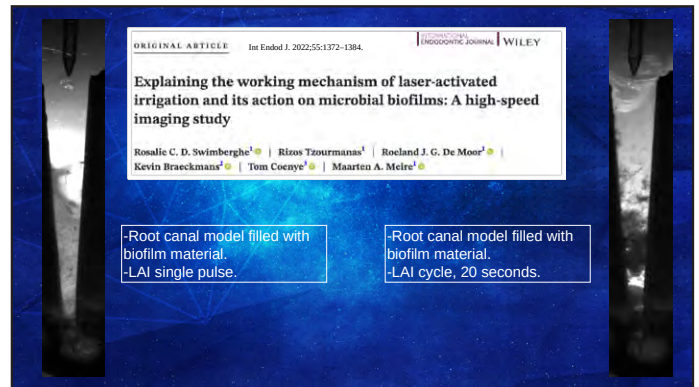
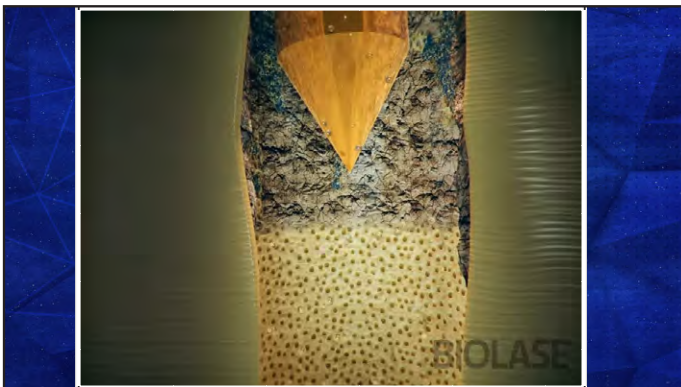
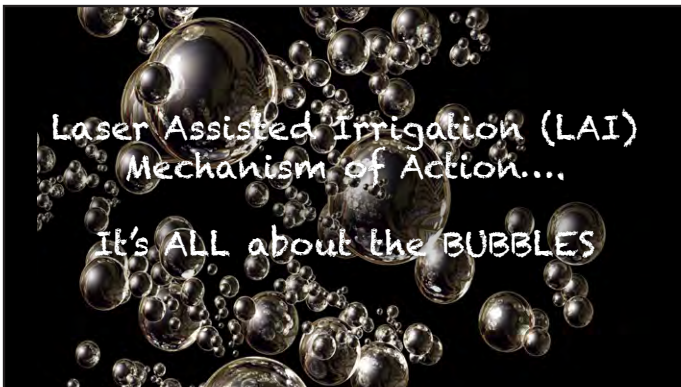
LASER ASSISTED IRRIGATION (LAI)

WATERLASE Er,Dr:YSGG 2780 nm
(Erbium, Chromium: Yttrium-Scandium-Gallium-Garnet)

ADVANTAGES OF LAI

- 99.7% reduction in intracanal pathogenic bacteria, including *E. faecalis*
- Debris & Smear layer removal in only 1-2 minutes per canal
- Almost 3x greater reduction in CFU's compared to highest concentration of NaOCl.
- Irrigant reached apex.

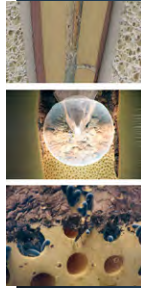
Siqueira and Rocas, "Polymerase chain reaction-based analysis of microorganisms associated with failed endodontic treatment," 000,2004 97:85-94
W. Gordon, et. al, "The antimicrobial efficacy of the Er,Cr:YSGG laser with radial emitting tips on root canal dentin walls infected with *Enterococcus faecalis*," JADA 2007; 138(7):992-1002
U. Schoop, et.al, "The impact of an Er,Cr:YSGG laser with radial-firing tips on endodontic treatment," Lasers in Medical Science; DO 10.1007/s10103-007-0520-4
U. Schoop, et.al, "The use of the Er,Cr:YSGG laser in endodontic treatment. The result of an in vitro study," JADA 2007; 138(7):949-95



RAPID ENDO 1-2-3:

- **INTRACANAL DEBRIDEMENT**

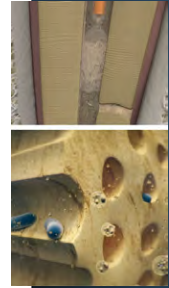
- Prepare the canals to working length with instrumentation of choice, and flood the canal with water.
- Place tip 1-5mm short of working length, or level of obstruction. Activate the laser ONLY while withdrawing the tip. Withdraw at 2mm/sec.
- The laser energy vaporizes water and forms a vapor bubble at the tip. When the bubble collapses, a pressure wave & cavitation microbubbles are created.
- Cavitation bubbles and pressure waves clean canal walls by removing smear layer and destroying biofilm
- Dentine tubules are opened, facilitating deeper lateral cleaning through the unique YSGG wavelength and proprietary Radial Firing Tip.2,3 Repeat the Intracanal Debridement step 3-4 times per canal.



RAPID ENDO 1-2-3:

- **RADIAL DISINFECTION**

- Flood the canals with irrigant of choice. Place tip 1-5mm short of working length. The laser energy creates turbulent flow in the wet canal, eliminating possible apical vapor lock. Activate the laser ONLY while withdrawing the tip. Withdraw at 2mm/sec
- The laser energy creates cavitation effects and pressure waves, causing deeper irrigant penetration into the dentinal tubules, dislodging bacteria from tubule walls, enhancing irrigant efficacy, and further reducing bacteria. The Radial Disinfection step is repeated 3 times per canal and per irrigant



RAPID ENDO 1-2-3:

- **LASER RINSE (OPTIONAL)**

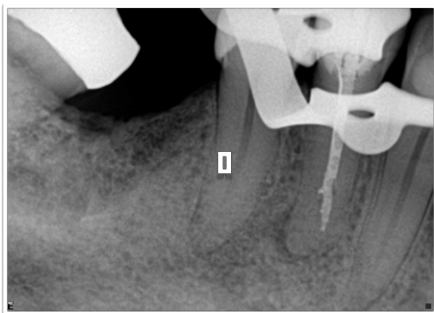
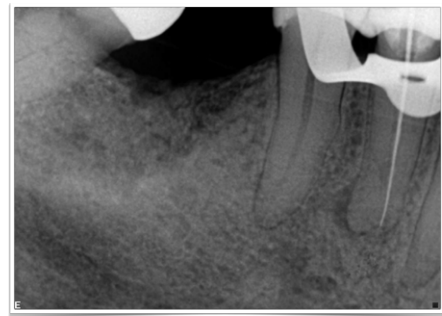
- To remove chemical irrigants, hover the laser tip ~2mm above the canal orifice. Activate the laser for 30 seconds, rest, then activate for 30 seconds more. Use paper points to dry canal, then seal and obturate using your preferred technique.

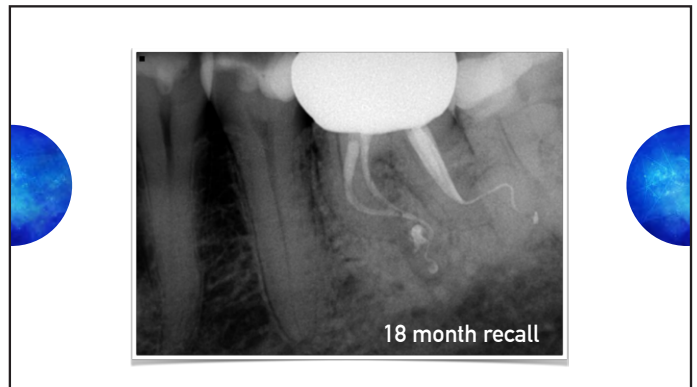
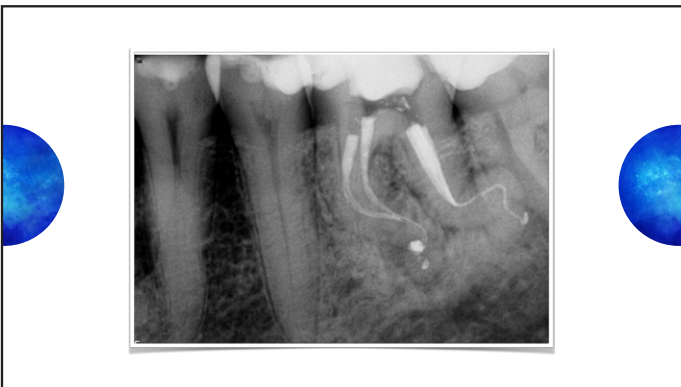
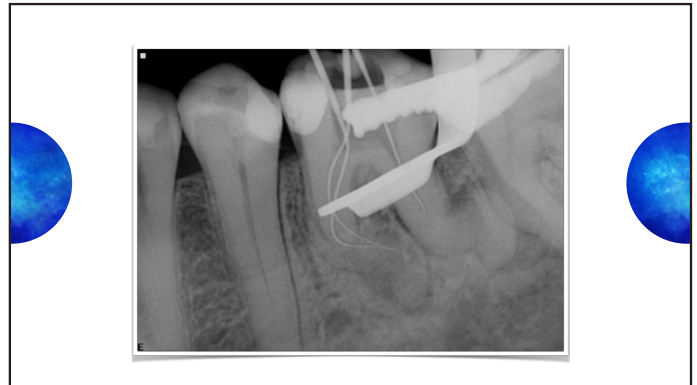


TIPS AND TRICK-BLOCKAGES, LEDGES, PATENCY

- ✓ Shape to obstruction, blockage, ledge
- ✓ Place tip RFT2 just short obstruction
- ✓ Activate and withdraw at rate of 1-2 sec/mm, 30sec@pass
- ✓ **Settings:** 1.25 Watt, 50 HZ, 30% Air, 20% Water

Treatment tip: You can increase Pulse Energy by increasing Power (W) or decreasing Hz (PPS), this will increase the potential to re-establish patency

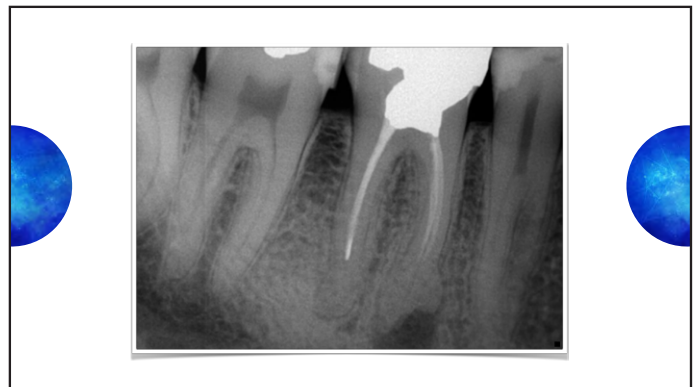


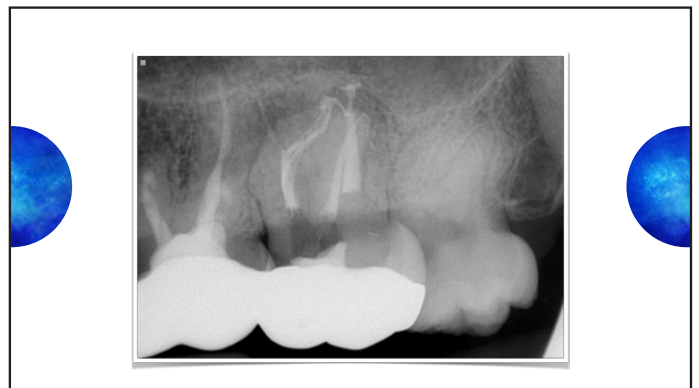
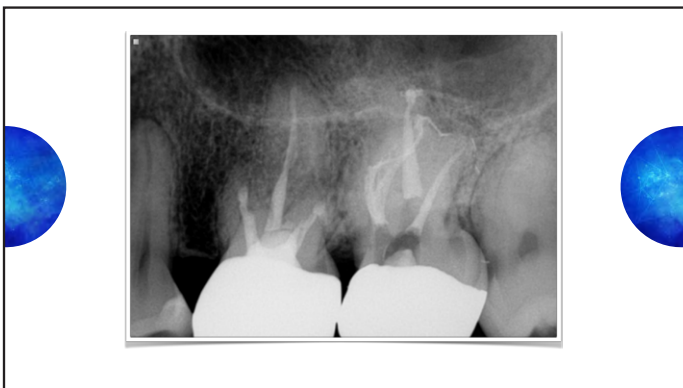
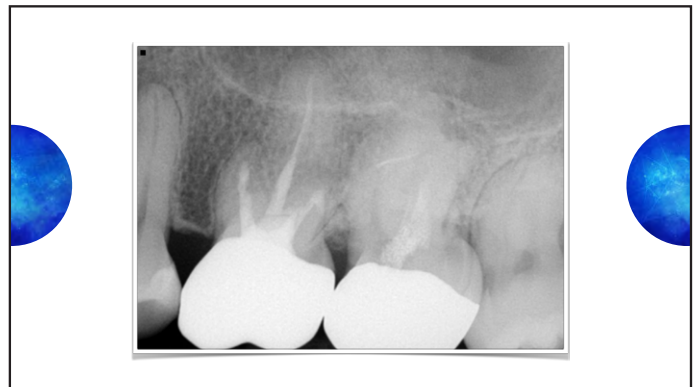
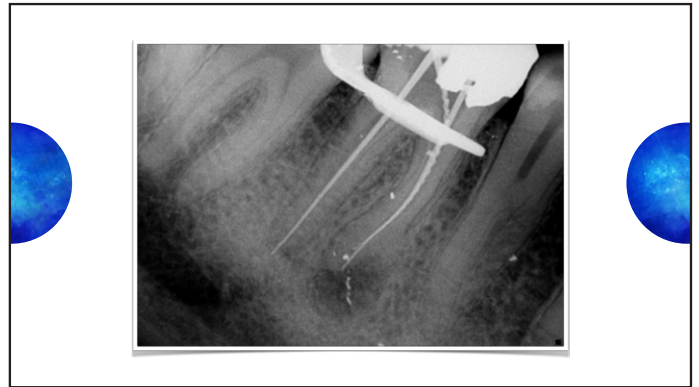
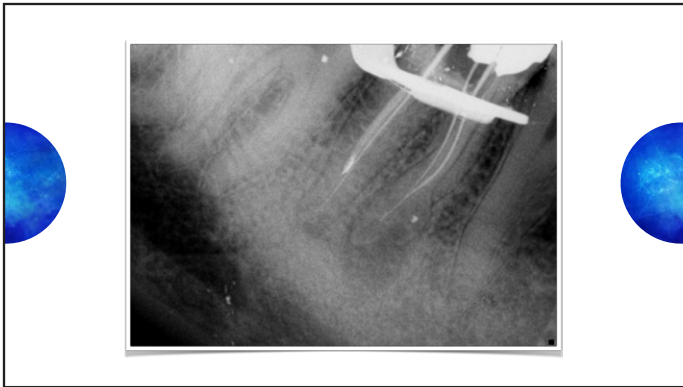


SEPARATED INSTRUMENTS

ZIBARI SEPARATED INSTRUMENT TECHNIQUE

1. Remove bulk of coronal obturation material. *Use the laser with chloroform in the canal to remove gutta percha from around the coronal aspect and the flutes of the separated instrument.*
 - b. attempt to bypass SI using NaOCl and EDTA, and hand files (06, 08, 10 and 15) in a quarter turn-pull motion until a 15 hand file bypasses separated instrument.
2. If unable to remove SI with hand files:
 - * place RFT2 tip as close as possible to SI to within 1mm of SI. * activate laser and withdraw laser tip 1mm per second.
3. If file does not dislodge after 6 passes with the laser tip, repeat step 2 and 3.
 - Setting: 1.00 watts and 50 Hz with air and water on





BIOLASE
Advancing Dentistry™



SCAN ME



SELF EVALUATION

Optimizing Endodontic Irrigation

True/False

1. Endodontic irrigation is essential for disinfecting areas of the root canal system that mechanical instrumentation cannot reach.
2. Sodium hypochlorite (NaOCl) is the most commonly used irrigant in endodontics because of its antimicrobial activity and ability to dissolve organic tissue.
3. Chlorhexidine is an effective irrigant that dissolves organic tissues and should be used as a primary irrigant.
4. Irrigants should be delivered with a high-pressure syringe to ensure deep penetration into the apical third.
5. EDTA (ethylenediaminetetraacetic acid) is used to remove the inorganic component of the smear layer after canal shaping.
6. Activation of irrigants using sonic, ultrasonic, or mechanical agitation enhances penetration and cleaning efficacy.
7. Effective irrigation is optional if the canals have been adequately shaped and cleaned mechanically.

Answer Key: 1. T, 2. T, 3. F, 4. F, 5. T, 6. T, 7. F

Implementing AI in Practice

Side by Side Comparison

With Voice AI

Coaching

Average Score Per Location

Location	Needs Met	Developing	Good
Highgate	100%	0%	0%
Stone Lake	100%	0%	0%
Plant Location	100%	0%	0%
Shoreline	100%	0%	0%
Forest Grove	100%	0%	0%
Brookline	100%	0%	0%
Marquette S.	100%	0%	0%
Eastland	100%	0%	0%
Northside	100%	0%	0%
South Gate	100%	0%	0%

Patient Encounters Communication Analysis

Category	Percentage	View all
Needs Met	10%	View all
Developing	20%	View all
Good	30%	View all
Exemplary	40%	View all

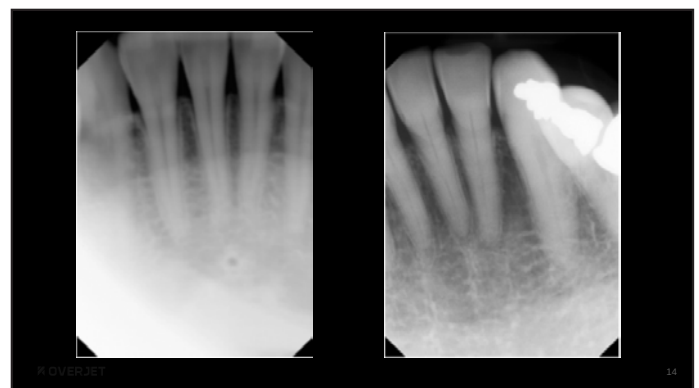
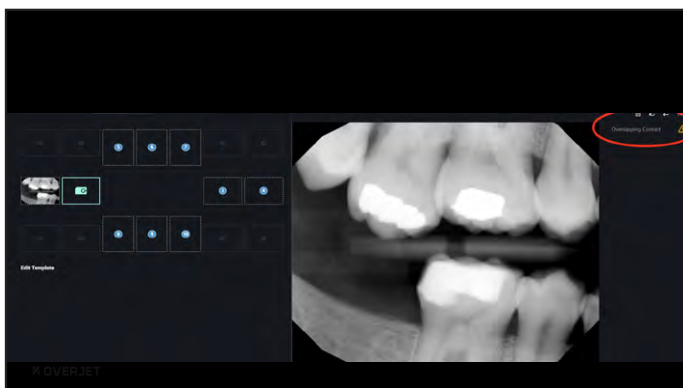
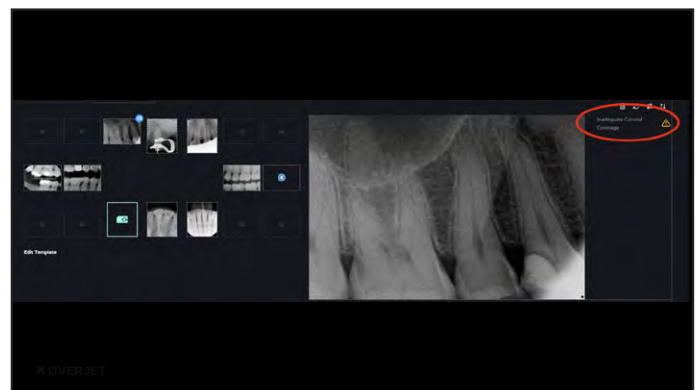
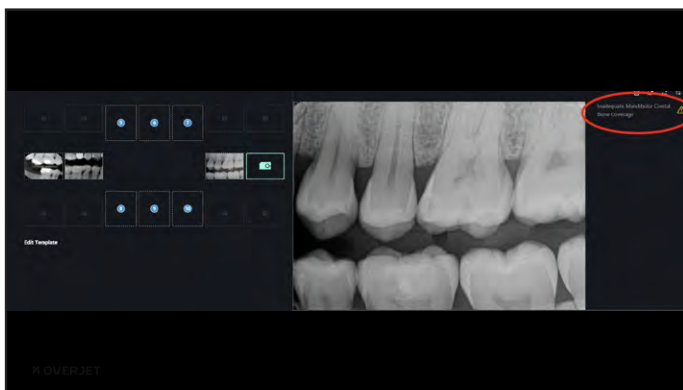
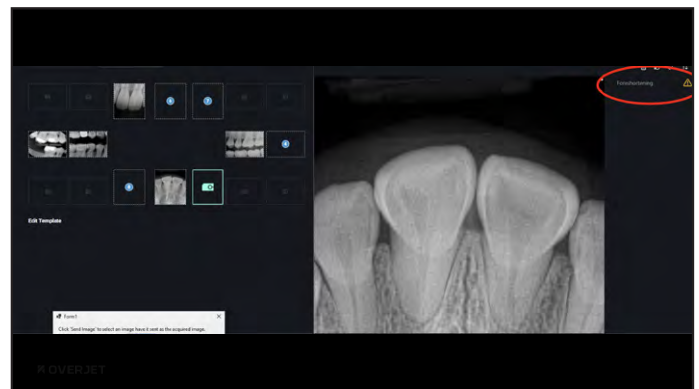
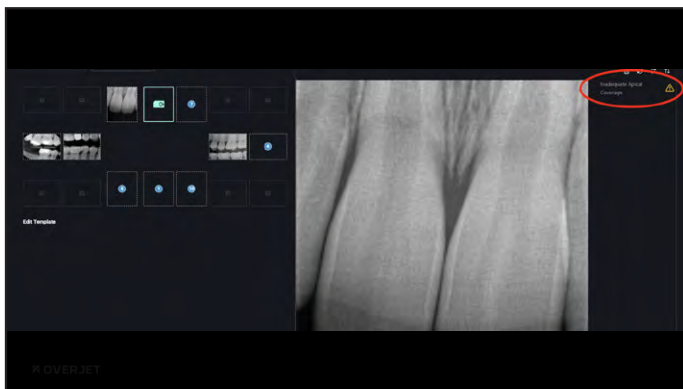
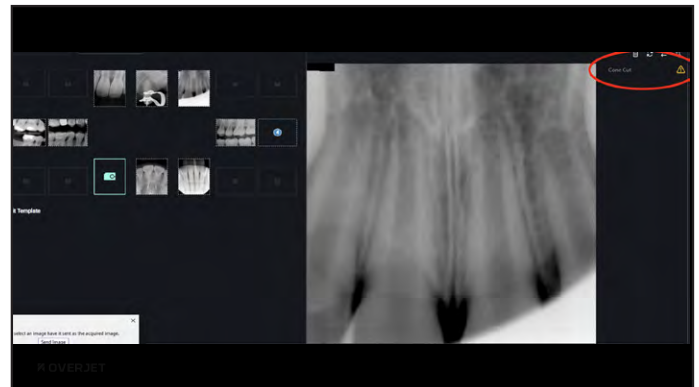
Encounters Details

Location
Encounter Source
Encounter Score
Sort By

Tiffany Wilson • Broadway • Room 1 • Jan 24, 2023 • 11:00 View Encounter
Emergency: Needs Review Clearly Positive Communication Exemplary Efficient/Needs Development
The provider said, "You should've mentioned this earlier," after the patient shared a new symptom, implying blame rather than offering support for the patient's current condition. Jan 24 View Timeline
Collaborators: Dr. Sarah J/S

Taylor Blithewood • Lutheran • Room 2 • Jan 24, 2023 • 10:30 View Encounter
Arieha Ellis • Puritas • Room 1 • Jan 24, 2023 • 10:00 View Encounter

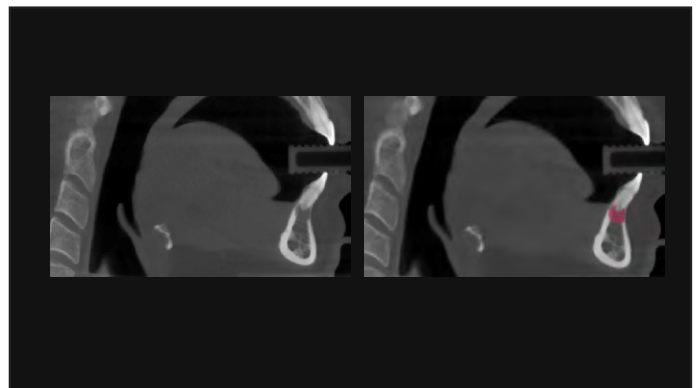
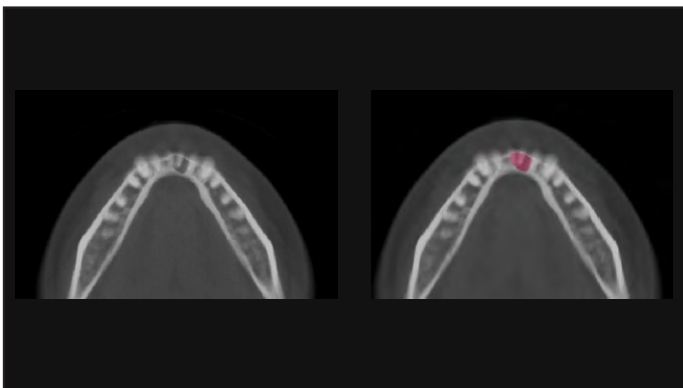
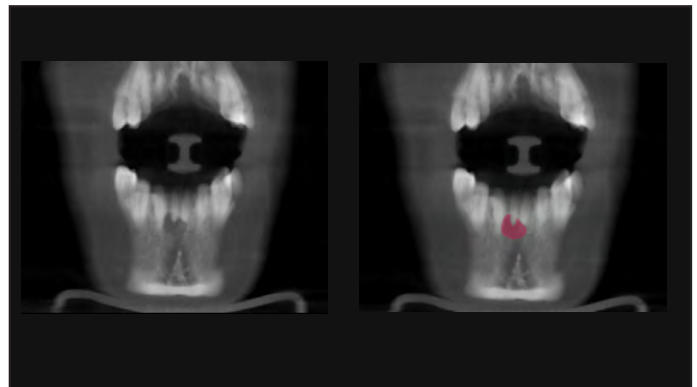
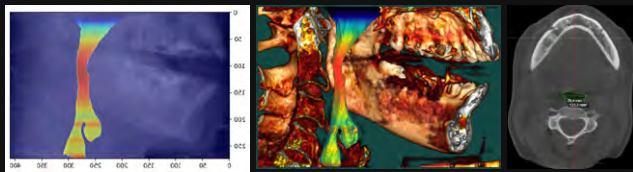
AI- IQA (Image Quality Analysis) and Enhancement



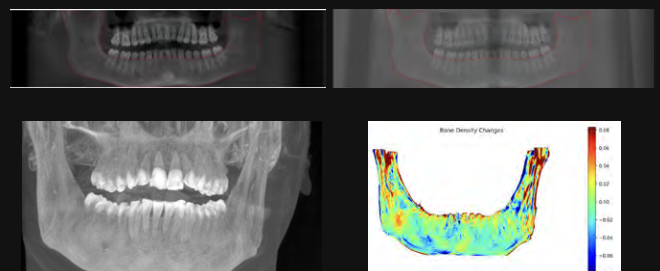
AI Enabled - CBCT



OSA SCREENING AND AIRWAY ANALYSIS AND REPORTING



Early Warning Sign/Awareness



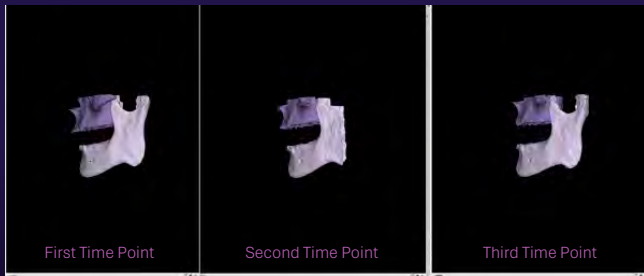
AAE Complexity:
Low Difficulty



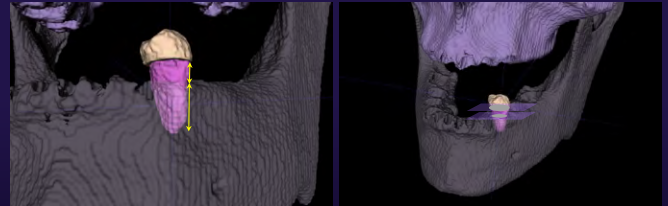
- Single canal
- Canal Length: 21.6mm
- Angulation: <10 degrees
- Perio Status: WNL
- Tooth Necrosis: Y
- Rotation: <10 degrees

Automated Reporting: Tooth #25 presents as necrotic with presence of periapical radiolucency. No evidence of periodontitis. Rec Tx: NSRCT #25

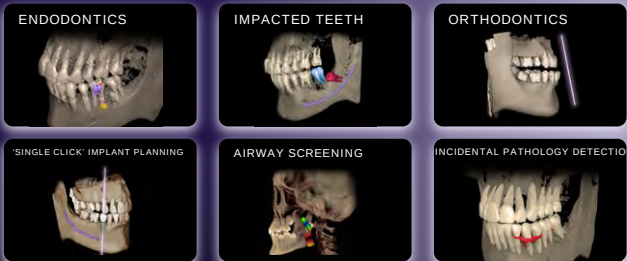
3D Volumetric Longitudinal Bone Level Analysis



3D Volumetric Longitudinal Bone Level Analysis

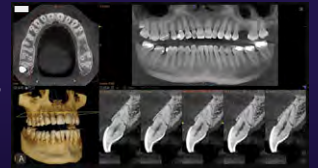


3D - Enabling multispecialty treatment planning workflows with a 90% reduction in manual clinical and technical intervention



Why This Matters – Current Challenges

- CBCT (Cone Beam Computed Tomography) is rich in data, but **manual interpretation is time-consuming and variable**
- Segmentations (nerves, sinuses, airways, teeth, roots, bone) are often done **manually or outsourced**
- High **cognitive load** for clinicians to localize structures or explain to patients

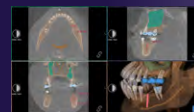


Impact of AI driven segmentation for CBCT



- **Time savings:** Reduces CBCT Analysis and segmentation time from 15-30 minutes to 5-7 minute (working on reducing this to almost <2 min)
- **Accuracy:** AI-driven consistency vs. inter-operator variability
- **Treatment planning:** Simplifies pre planning and screening and automates workflows (3rd molar card, Endodontic Canal segmentations, Implant screening etc.)
- **Patient experience:** Easier to visualize treatment needs (e.g., airway for sleep apnea)

Automated CBCT Workflows



Implant Screening



3rd Molar Screening

Bone level measurements

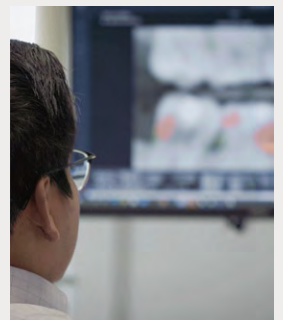
Initial Airway screening - MAC

In closing lets ask ourselves some important questions regarding AI and its impact to the dental ecosystem

- If AI could help us begin to measure clinically relevant findings on radiographs
- If AI could allow to see better and communicate more effectively
- If AI could improve the operational efficiency of your staff and visits
- If AI could help minimize our compliance and legal liabilities
- If AI could help us become better diagnosticians
- If AI could help augment our clinical abilities

Patients make better decisions when they are better informed about their oral health

Thank you for your attention.



SELF EVALUATION

Implementing AI in Practice

1. T/F - The lecture describes Voice AI as a tool that can document, monitor, and analyze patient visits using ambient AI technology.
2. According to the lecture, AI-driven CBCT segmentation can reduce analysis and segmentation time from approximately:
 - a. 5–7 minutes to less than 1 minute
 - b. 15–30 minutes to 5–7 minutes
 - c. 60 minutes to 30 minutes
 - d. 10 minutes to 8 minutes
3. Which of the following was listed as an AI-enabled CBCT workflow?
 - a. Automatic denture fabrication
 - b. Implant screening
 - c. Autonomous orthodontic treatment
 - d. Automated crown cementation
4. T/F - The lecture states that CBCT interpretation and segmentation are often performed manually or outsourced.
5. Which of the following benefits of AI-assisted clinical workflows is specifically mentioned in the lecture?
 - a. Eliminating the need for dentists
 - b. Improving operational efficiency of staff and patient visits
 - c. Replacing all patient communication
 - d. Guaranteeing treatment acceptance

Answer Key: 1. T, 2. B, 3. B, 4. T, 5. B

FACULTY

Eric Ploumis, DMD, JD

Eric Ploumis, DMD, JD of New York, New York, is an attorney, orthodontist, Adjunct Clinical Associate Professor in Graduate Orthodontics at New York University College of Dentistry, and clinical attending faculty at Wyckoff Heights Hospital Pediatric Residency Program. His legal practice as of-counsel with Rivkin Radler, LLP focuses on business and transactional issues related to the practice of dentistry including practice transitions, partnership and employment agreements, office leases and the defense of allegations of professional misconduct. Dr. Ploumis also maintains a practice in orthodontics in New York City, has contributed to many dental journals and is a frequent national speaker on dental-legal topics.

You may contact Dr. Ploumis with your questions and comments by email at EPloumis@DentalPracticeLawyers.com.

Emerging Trends in Dental Practice Opportunities and Structures

Eric Ploumis, DMD, JD

Emerging Trends in Dental Practice Opportunities and Structures

Eric J. Ploumis, DMD, JD

- 
- Amherst College, 1979
 - U. of Pittsburgh Dental, 1983
 - Fairleigh Dickinson U. Ortho., 1985
 - Pace Law, J.D., 1990
 - Clinical Associate Professor, NYU Dept. of Orthodontics, 1989 – present
 - private practice of law and orthodontics, Manhattan and Brooklyn

Lecture Summary

Market forces are radically altering the way we practice. Traditional employment options and business models are giving way to new, exciting, and challenging opportunities.

Excessive student loan debt, increased competition, an uncertain economy, and the encroachment of corporate dentistry are putting pressure on both the junior dentist looking for an opportunity and senior dentist seeking to transition.

This lecture will examine those market forces from a legal and economic standpoint and help us understand, address, and adapt to these emerging paradigms.

Why am I Speaking to You Today?

- We are going to explore some of the practice opportunities the changing landscape presents.
- We will discuss the impact of these changes have on both the younger doctor seeking a practice opportunity and the senior doctor looking to transition out of a traditional dental practice.

Objectives

- We will review the dynamics of the rapidly-changing job market.
- We will examine the new paradigms in the delivery of dental care and how they affect your job opportunities.
- We will explore the impact corporate dentistry is having on the employment and transition market.

7

I. Traditional Employment Opportunities

- Full-time employment with one dentist:
 - leading to partnership
 - leading to buyout
 - leading to new office start-up

8

II. Alternative Employment Opportunities

- Independent contractor
- Part-time employment
- Full-time at multiple offices
- Multi-specialty office (group practice)
- In-house specialist for group practice
- Partner with a complimentary specialist
- Hospital & academic
- Government & public health
- Military
- Corporate practice

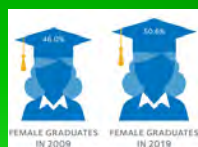
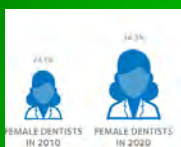
9

Some Stats . . .

- 201,117 dentists in the US
 - 17.0% are under age 35,
 - 24.0% are ages 35-44,
 - 21.6% are ages 45-54,
 - 21.1% are ages 55-64, and
 - 16.3% are age 65 and older.

10

Male/Female Ratio



11

I. Full-time employment with one dentist

- 48% of recent grads prefer this option
- Fewer opportunities than in the past
- Decline in senior doctors' practices has created less demand for associates

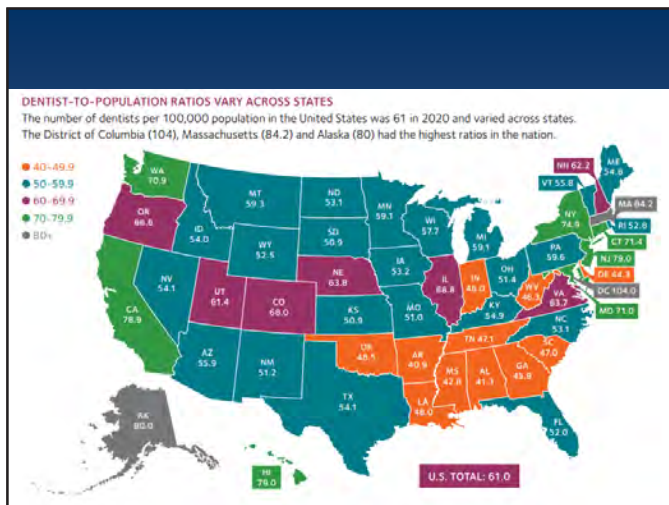
12

- More graduates chasing fewer opportunities
- 201,117 licensed dentists in US vs. 6,609 graduates in 2020 (up by 340 since 2019) from 68 US dental schools
- Rush to the coasts creating more competition for jobs in “prime” areas
- Many non-urban practices are still seeking associates and partners
- Mature practices have declined, less need for associates. Doctors are retiring later.
- Fewer doctors in private practice

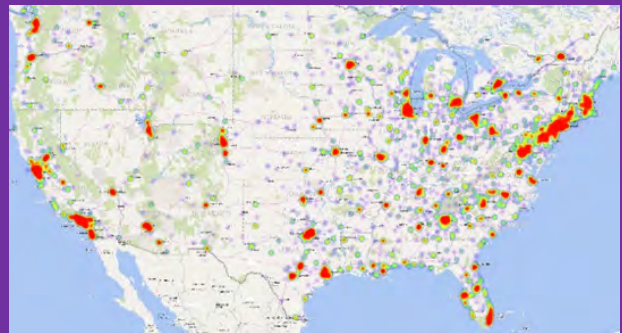
13



14



US Distribution of dentists



16

Why does a senior doctor need an associate?

- Excessive patient load
- Desire to reduce workload
- Transition imminent

17

What are the wrong reasons to take in an associate?

- Professional companionship
- Expectation of growth
- Desire to keep all procedures “in house”
- Locked-in buyer
- Better utilization of overhead

18

Associates, you have two functions in the office:

- Make your employer's life easier
- Make money for your employer



19

Employment leading to Partnership

- Practice must be big enough for both
- Must have a defined hierarchy
- Compatible philosophies
- Must have a clear transition pathway
- Senior doctors should not overstay their usefulness

20

Employment leading to buyout

- Beware of promises that can't be kept
- Short timeline (max five years)
- Is the senior doctor financially prepared to leave?

21

Start-up Practice (pros)

- Your own vision and philosophy
- No one else's baggage
- New equipment, new office

22

Start-up Practice (cons)

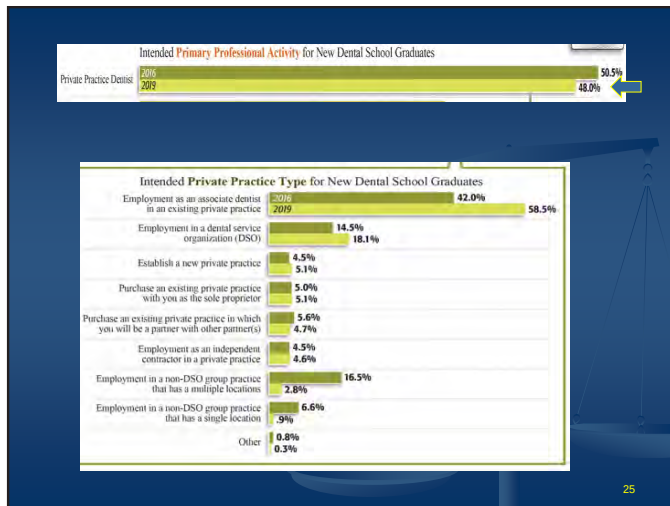
- No patients = no income
- Slow start
- Buildouts are hard and complicated
- Need to "keep your day job"

23

II. Alternative Employment Opportunities

- Independent contractor
- Part-time employment
- Full-time at multiple offices
- Multi-specialty office (group practice)
- In-house specialist for group practice
- Partner with a complimentary specialty
- Hospital, academic, or university based practice
- Government or public health
- Corporate practice (18% of graduates, 5% overall)

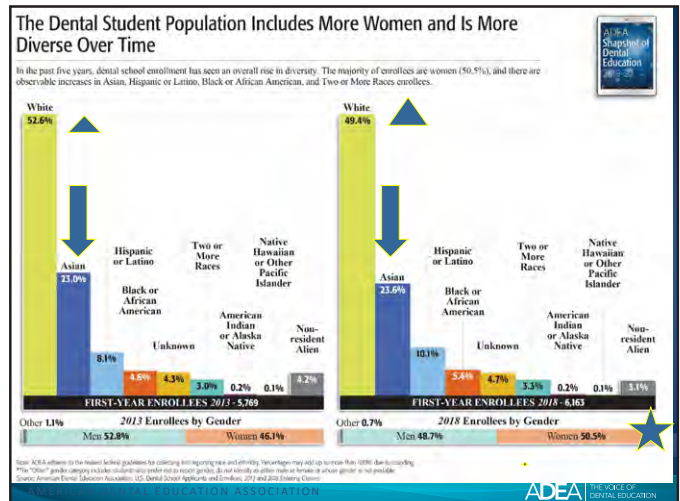
24



Part-time employment

- Appealing way to balance family and work
- All that many offices can offer
- No benefits
- More per hour than full time

Male/Female Ratio



Part time at multiple offices

- No initial investment (but no equity)
- The sum of the parts can be greater than the whole (more \$)
- Flexibility
- Need to balance multiple schedules and the needs of several offices
- No benefits

Multi-specialty office

- General and all specialties in one office
- Nothing leaves the office
- Built in referrals
- Can be employee or part-owner
- Hourly/per diem
- Percentage production/collection
- Limited ability to outsource referrals
- Decreased professional autonomy

In-house specialist for group

- Contract employee or IC
- Hourly/per diem
- Percentage production/collection
- Built in referrals
- Less management hassles
- No initial investment but no equity
- Good financial upside
- Decreased professional autonomy
- Busy-ness issue

31

Hospital, university, government, military, public health practice

- May not need a dental license
- Good benefits, average pay
- Shorter hours, less management
- Opportunity for publications and research
- Limited autonomy (plus lots of intrigue)

32

I. Traditional Opportunities II. Alternative Opportunities

- Independent contractor
- Part-time employment
- Full-time at multiple offices
- Multi-specialty office (group practice)
- In-house specialist for group practice
- Partner with a complimentary specialist
- Hospital, academic, or university based practice
- Government, military, or public health
- **Corporate Practice of Dentistry**

33

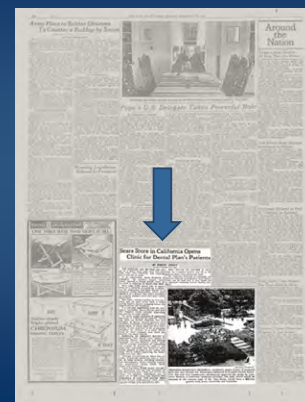


Disrupters

- RiteAid, Walgreens, Duane Read
- Flip phone → Palm Pilot → Blackberry → i-Phone
- Uber
- Amazon
- Dollar Shave
- Tesla
- OCA (1993)
- Heartland
- Invisalign
- Smile Direct Club, Candid, . . .
- Telamedicine/ Teladentistry
- **Corporate Dentistry**

35

Sears Dental, c. 1977 (NYT article)



36

What is “Corporate Dentistry?”

- A mechanism for corporate investors to profit from the profession of dentistry.
- It permits the aggregation of multiple practices into one entity, with the accompanying cost savings.
- It allow a dental professional to shed the management duties of running a small business and focus on the practice of dentistry.

37

What does a DSO do for you?

DSOs Provide Critical Business Support

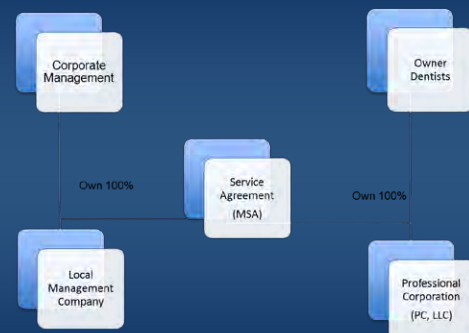


38

- Businesspeople create a **Dental Support Organization (DSO)** to manage your dental practice by utilizing a **Management Services Agreement (MSA)** to handle, and profit from, taking care of the non-clinical aspects of running a dental practice.
- Clinical decisions are still made by licensed dentists.

39

Corporate Dental Group Structure



Corporate Dentistry

- I. Employment Issues and Opportunities
- II. Transition Issues and Opportunities

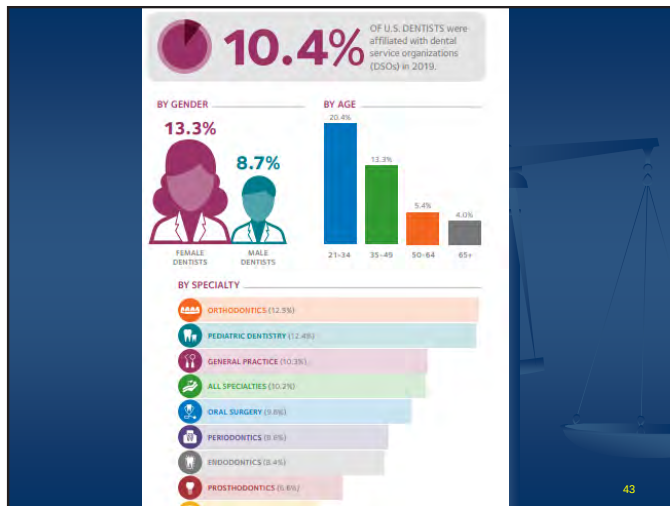


41

I. Working for a Dental Corporation [positives]

- No initial investment
- Fewer management hassles
- No need to seek referrals
- Predictable hours
- You do what you do best
- Good salary and benefits
- Mentoring
- Internal C.E. opportunities
- H-1B visa sponsor
- 18% of 2020 graduating dental students went to work for DSO's (up from 14.5 in 2018)
- 10.4% of all dentists work for a DSO

42

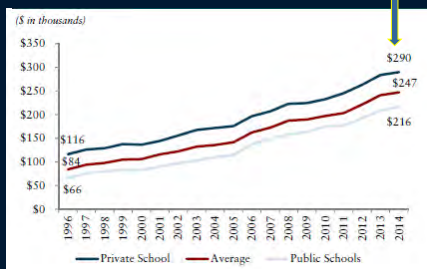


Working for a Dental Corporation [negatives]

- Your employer is a corporation, not a professional colleague.
- High-pressure environment/quotas
- Profit-driven, not patient-driven
- Loss of autonomy
- No equity
- Limited job security

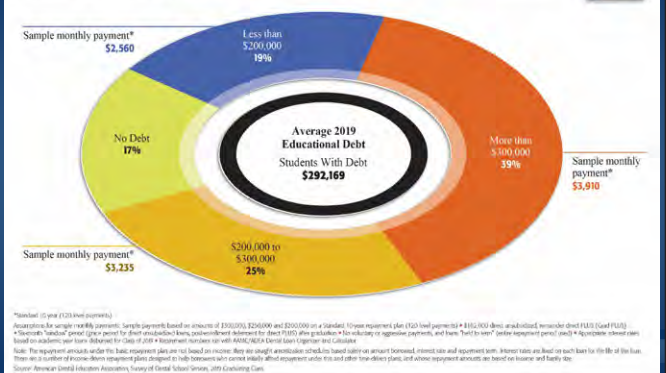
Excessive Dental School Student Loan Debt makes working for a corporation more attractive.

(American Dental Education Association, American Dental Association data)



Over Half of 2019 Dental School Graduates Report Total Educational Debt Under \$300,000

For 2019 dental school graduates with educational debt, the average self-reported educational debt was under \$300,000. Total educational debt is the sum of educational debt incurred before and during dental school.



Working for a DSO: conclusions

- It may be a way to pay off some debt, gain some experience, and get your career started.
- In some instances it may be a great long-term career path.
- It can be a stepping-stone to owning your own practice.

II. Transitioning to a DSO

Are we a profession . . .



or a business?



Dental Support Organization (DSO)

- 10.4 % of all dentists work for a DSO (14.5% of orthodontists)
- 20.4% b/n 21 – 34 do
- DSO: runs the *business* aspects of the practice
- The licensed dentist still runs the *clinical* aspects of the practice.

ADA News

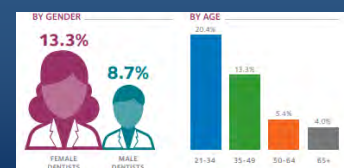
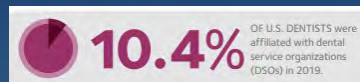
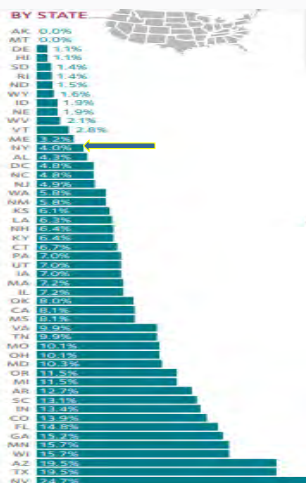
"Dental support organizations . . . offer support to alleviate these nonclinical, administrative responsibilities, so dentists can strictly focus on being a dentist extraordinaire. With this support dentists can get out of debt, achieve an ideal work/life balance and, ultimately, practice on their terms." Rick Workman, founder and C.E.O. of Heartland Dental
(750-840-1,000-1,400 1,700 locations, 38 states, 2,600 doctors)

Why DSO's?

- Corporate ownership of dental practices is illegal in most states.
- Arizona, Mississippi, New Mexico, North Dakota, Ohio, and Utah permit full or partial ownership of dental practices by business corporations.

Affiliation with DSO's

- Heartland Dental has over 2,300 dentists in approximately 1,700 member offices in over 38 states. Over 1 billion in revenue.
- 10.4% of all dentists are affiliated with DSO's
- 18 % of new dentists (age 21 – 34) are affiliated with DSO's
- Arizona 18%, Texas 15% overall



Affiliation with DSO's

- Projections are that by 2024, 34% of all dental practice will be part of a DSO, by 2037, 50%.
- Dentistry provides a relatively safe haven for investors in DSO and is resistant to economic cycles.
- Investors can expect a 15 – 20% ROI.

55



<https://www.theadso.org/>

56



- 85 member DSO's
- 175 industry partners
- 36% of all dentists represented
- 11,000 supported dentists
- 7,000 supported practices
- 30 million annual patient visits

57



- 42 North Dental
- Affordable Care, LLC
- Aspen Dental Management, Inc.
- Dental Care Alliance
- Dental365
- Diamond Braces
- Edge Dental Management
- Great Expressions Dental Centers
- Heartland Dental
- North American Dental Group
- Smile Brands, Inc.
- Underbite Management and Consulting

58

Selling to a DSO: Understanding "EBITDA"

- Earnings Before Interest, Taxes, Depreciation, Amortization
 - Income (adjusting for "add-backs")
 - Expenses (excluding tax, interest, depreciation)
 - Taxes
 - Depreciation/Amortization
- $EBITDA = \text{Revenue} - \text{Expenses}$
(Net income including interest, taxes, depreciation)
- EBITDA gives a snapshot of a business's earnings potential. This is what DSO's use as a metric when considering whether to purchase your practice.
- VC's look for 15 – 20% ROI

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Is selling to a DSO a Panacea?

- A. It may provide a good exit strategy and may be your best or only option if you have a large practice or chain of practices.
- A. The difference between the traditional percentage of gross revenue and multiple of EBITDA is often not as great as rumor has it.
- There are many "strings" attached to selling to a DSO.

60

What will a DSO pay for your practice?

- DSO's will pay a multiple of 5 x EBITDA for a practice with Medicaid/managed care and a weak "platform," up to 10 x EBITDA for an outstanding fee-for-service type practice with good systems in place.
- In a traditional setting you might get 80 – 85 percent of the average of your past three years gross revenue, 100% for an exceptional practice.

Traditional Metric vs. EBITDA Metric

Gross: \$1 million in revenue
Overhead: 50% overhead
Doctor compensation of 20% (\$200,000)
EBITDA of 30% (\$300,000)
Traditional 1x gross price = \$1,000,000 That value is equal to 100% of the revenue or 3.3 x EBITDA

A DSO may pay four to six times EBITDA.
4x = \$1.2M
5x = \$1.5M
6x = \$1.8M

62

- Up to an 80% increase, but comes with conditions, performance milestones, holdbacks, and workbacks.
- If you participate in Medicaid or low-fee plans the price may be greatly reduced. (4x vs 10x)
- You have to stay 3 – 5 years and work the practice for much lower compensation.
- End of all of your "perks" and deductions.
- Price includes your accounts receivables
- After many years, you now answer to a new boss

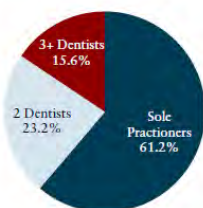
63

- If part of the purchase price is paid in stock you have the usual risk that comes with an equity investment
- If you leave some equity in (rolling or roll-over equity) there is some back-end risk (and reward)

64

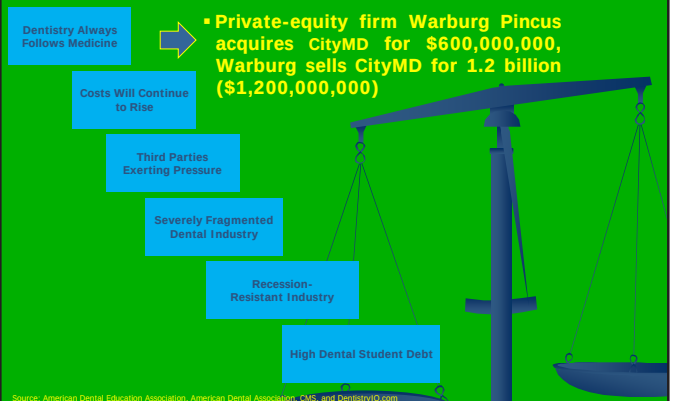
Dentistry is still a highly-fragmented market

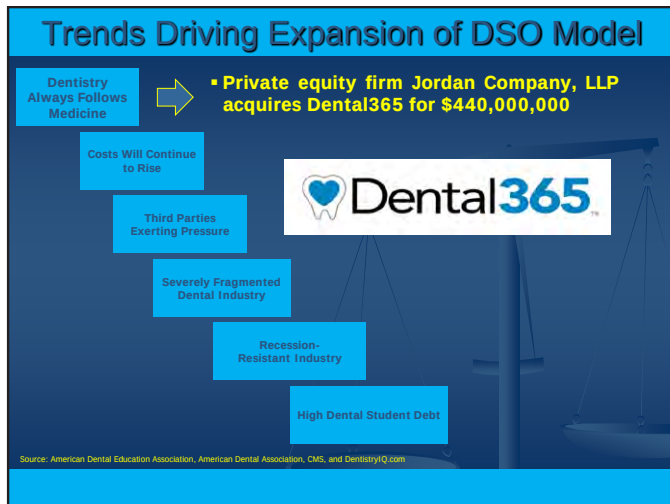
- Market continues to be dominated by small, independent practices operated by a single dentist
- Dentists are overwhelmed with the day-to-day business operations and are looking to partner



65

Trends Driving Expansion of DSO Model





Trends Driving the Expansion of the DSO Model

- With equipment, staff, and supplies costs continuing to increase, revenues are flat or declining. One way to counter this is through economies of scale, which is often available utilizing the DSO model.
- With increased government oversight through regulations and mandates, third party insurances squeezing harder, and the cost of doing business going up, solo dental practices are having trouble managing these forces.
- PPOs are now 80% of the insurance landscape and more than 50% of the population has dental benefits. DSO's can drive a harder bargain with them.

Trends Driving the Expansion of the DSO Model

- 72% of dentists are practicing alone
- Corporate dental companies see a financial incentive in consolidating these solo practice into a DSO
- Dentistry is growing over 5% annually
- Venture capital investors see tremendous opportunity in DSOs. It is difficult to get a consistently higher yield with other investment opportunities.

Top Dental DSOs

■ Heartland	1,700
■ Aspen	1,029
■ Pacific	<u>900</u>
	3,629

ADA News

- *"Dental support organizations . . . offer support to alleviate these nonclinical, administrative responsibilities, so dentists can strictly focus on being a dentist extraordinaire. With this support dentists can get out of debt, achieve an ideal work/life balance and, ultimately, practice on their terms."* Rick Workman, founder and c.e.o. of Heartland Dental

Trends Driving the Expansion of the DSO Model

One of the fastest-growing areas of the dental industry is the Dental Service Organizations (DSO) segment. Although the 20 largest DSOs—with combined annual sales of \$6 to \$7 billion—represent just slightly more than five percent of the total U.S. dental industry, the growth of this segment is fast outpacing that of the solo practitioner. With continued consolidation, either through mergers or acquisitions, DSOs stand to gain a more dominant presence in this important industry.

(source: Dykema Law)

Transitioning to a DSO: conclusions

- May be your best option if you have a very large practice
- You shed many of the odious administrative burdens
- You can maximize your practice's value

US News Best Jobs 2020

100 Best Jobs

1. Software
2. **Dentist**
3. PA
4. Orthodontist
5. Nurse

Best-Paying

1. Anesthgist
2. Surgeon
3. Oral Surgeon
4. ObGyn
5. **Orthodontist**

Best Health

1. **Dentist**
2. PA
3. Orthodontist
4. Nurse
5. Physician

Lecture Summary

Market forces are radically altering the way we practice. Traditional employment options and business models are giving way to new, exciting, and challenging opportunities.

Excessive student loan debt, increased competition, an uncertain economy, and the encroachment of corporate dentistry are putting pressure on both the junior dentist looking for an opportunity and senior dentist seeking to transition.

This lecture will examine those market forces from a legal and economic standpoint and help us understand, address, and adapt to these emerging paradigms.

Disclaimer

This information is not intended at a substitute for legal advice. You should familiarize yourself with the laws of your local jurisdiction and seek legal advice from a local attorney who specializes in such matters.

SELF EVALUATION

Emerging Trends in Dental Practice Opportunities and Structures

1. According to the lecture, which employment option is preferred by approximately 48% of recent dental graduates?
 - a. Corporate practice
 - b. Independent contractor
 - c. Full-time employment with one dentist
 - d. Hospital-based practice
2. T/F - The lecture states that one of the primary functions of an associate is to make the employer's life easier and make money for the employer.
3. What does DSO stand for?
 - a. Dental Service Office
 - b. Dental Support Organization
 - c. Dental Systems Organization
 - d. Dental Staffing Organization
4. T/F - According to the lecture, clinical decisions in a DSO-affiliated practice are still made by licensed dentists.
5. According to the lecture, what financial metric do DSOs commonly use when evaluating the purchase of a dental practice?
 - a. Gross collections
 - b. Net worth
 - c. EBITDA
 - d. Cash flow ratio

Answer Key: 1. C, 2. T, 3. B, 4. T, 5. C

Restorative Driven Orthodontics: Managing Anterior Wear for Conservative Cosmetic Outcomes
Sal Lotardo, DDS, FAACD



Restorative Driven
Orthodontics

Managing Anterior Wear for
Conservative Cosmetic Outcomes



Restorative Driven
Orthodontics

Part 2: Managing Anterior Wear and Optimizing
Implants in the Esthetic zone

Case Types

Pre-restorative Set up

- Level and Alignment
- Gingival Margin Correction
- Intrusion of super-erupted teeth

Space Management

- Closing
- Opening

Implant Optimization

- Extrusion (forced eruption) improve soft and hard tissue
- Root Alignment

Occlusal issues

- Wear
- Restricted Envelope

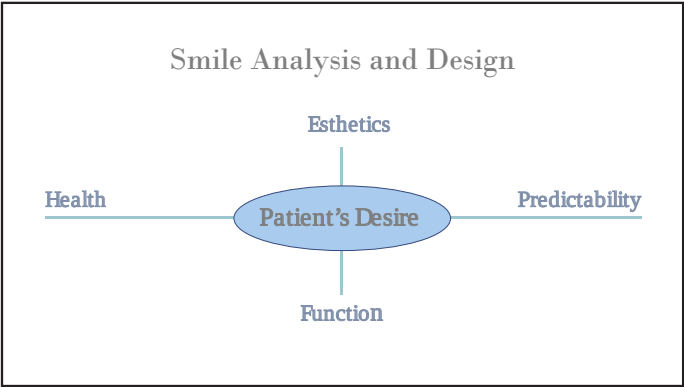
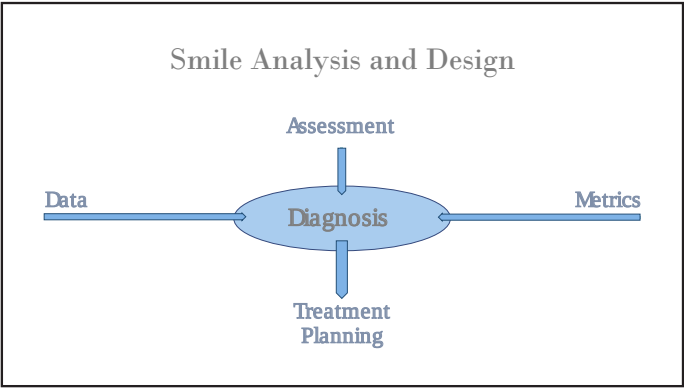
Missing and Peg Laterals

- Canine substitution and revision
- Opening space
- Interceptive and alternative treatments

Invisalign

- Practice Management
- Rescue I







Extrusion

Superpower

Moves the Periodontium in a single bound! (teeth with soft and hard tissue incisally)

Side Kick

Step down bends

Arch Nemesis

Occlusal interference
Adjacent tooth crestal bone

Saves the day for RDO

Implant site preparation
(Tarnow crest height to contact)

Intrusion

Superpower

Same as biology as extrusion

Side Kick

Step up bends

Arch Nemesis

Crown Lengthening

Saves the day for RDO

Compensatory eruption
Leveling occlusion

Tipping

Superpower

Speed

Side Kick

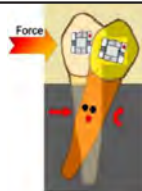
Bracket error

Arch Nemesis

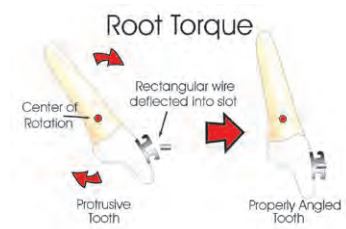
Relapse

Saves the day for RDO

Implant root alignment



Torque



Torque

Superpower

Inclination

Side Kick

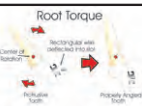
Rectangular wire

Arch Nemesis

Chain

Saves the day for RDO

Retroclined (de-torqued) teeth



Translation

Superpower

Bodily movement

Side Kick

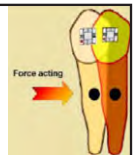
Center of Resistance

Arch Nemesis

Moments

Saves the day for RDO

Implant site preparation



Rotation

Superpower

The power to create or take away space

Side Kick

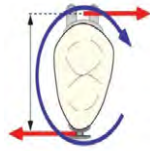
Rotation Wedges

Arch Nemesis

Chain/Coil/Elastics
Relapse

Saves the day for RDO

Alignment, contacts and embrasures



Rotated posterior teeth take up more space in the arch
Rotated anterior teeth take up less space in the arch

Expansion

Superpower

Guardians of the Transverse

Side Kick

RPE

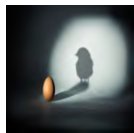
Arch Nemesis

Habits, mouth breathing

Saves the day for RDO

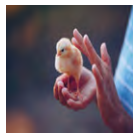
Buccal Corridor deficiency
Airway

RDO Cadence



Pre

Restorative and Surgical
treatments prior to
orthodontic therapy



Pro

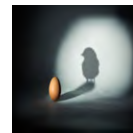
Restorative and Surgical
treatments as orthodontic
therapy progresses



Post

Restorative and Surgical
treatments at the completion
of orthodontic therapy

RDO Cadence



Pre

- Not possible to bracket
- bite too deep
- tooth structure
- Visualize treatment



Pro

- Modification to current
environment needed to
progress with tx



Post

- If pre and pro not
needed post most
efficient

The Game Changers

- Straight Wire Concept *
- Programmed Brackets *
- Nickel Titanium



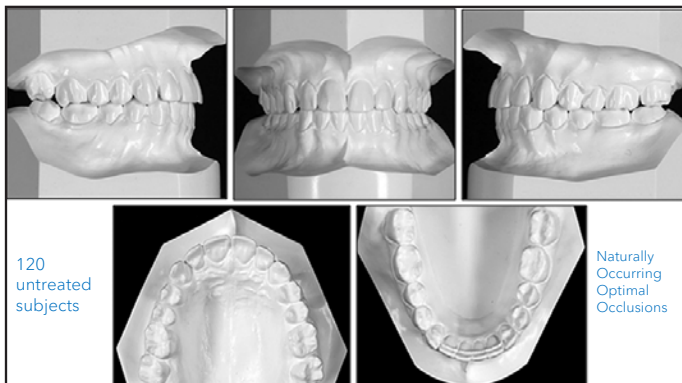
*Andrews L.F.: Straight Wire: The Concept and Appliances L.A. Wells, San Diego, 1971

Lawrence Andrews

Naturally Occurring Optimal Occlusions

Six Keys

*Andrews L.F.: The six keys to normal occlusion, Am. J. Orthod. 62:296-309, 1972

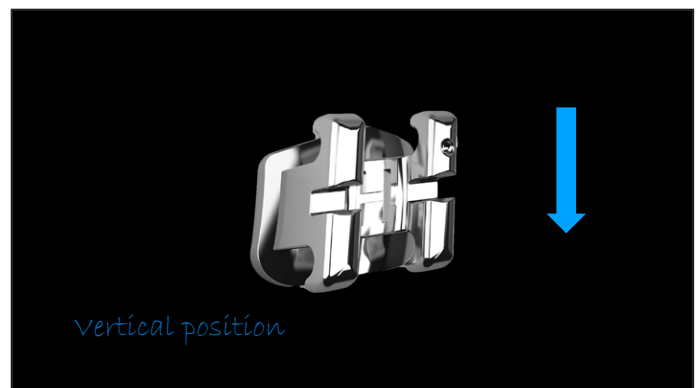
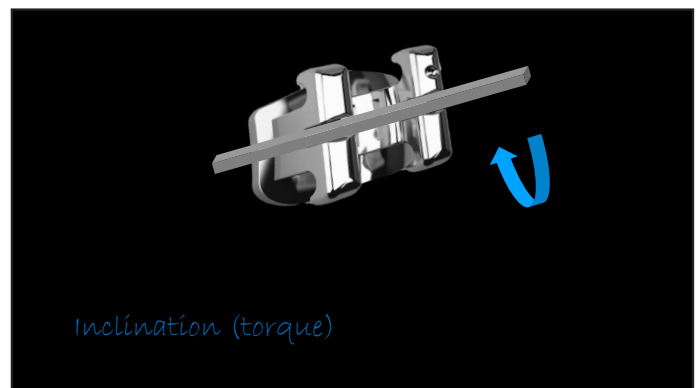
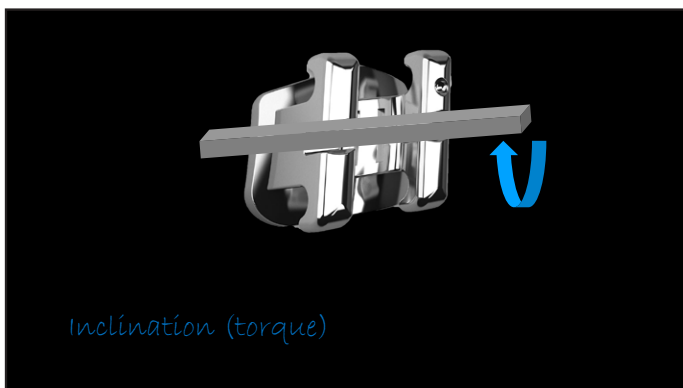
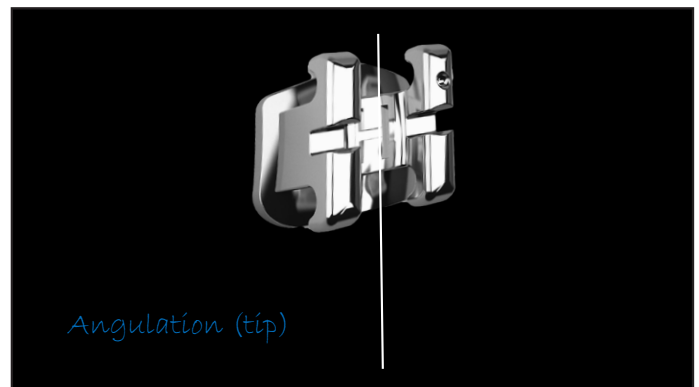
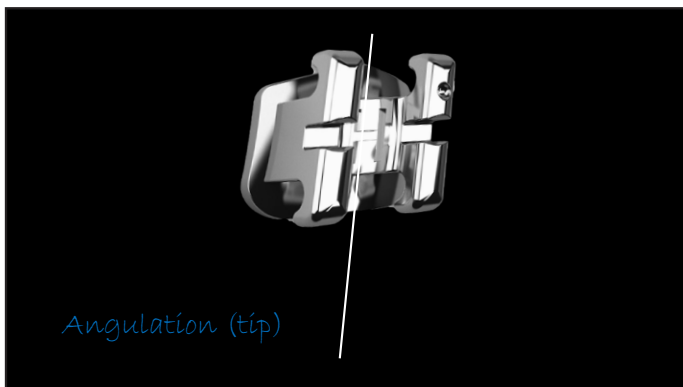
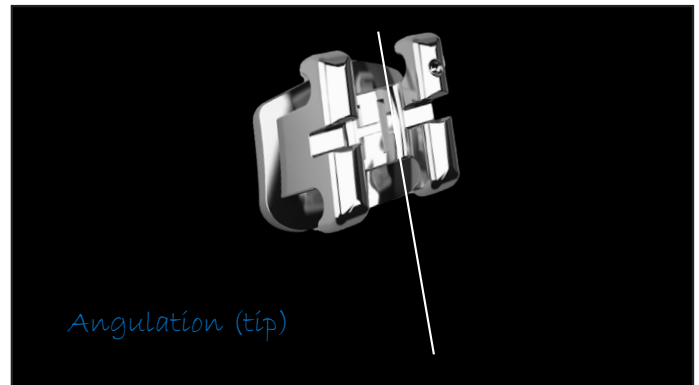


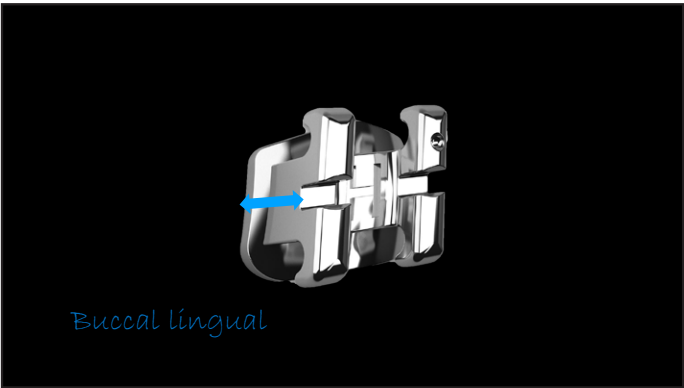
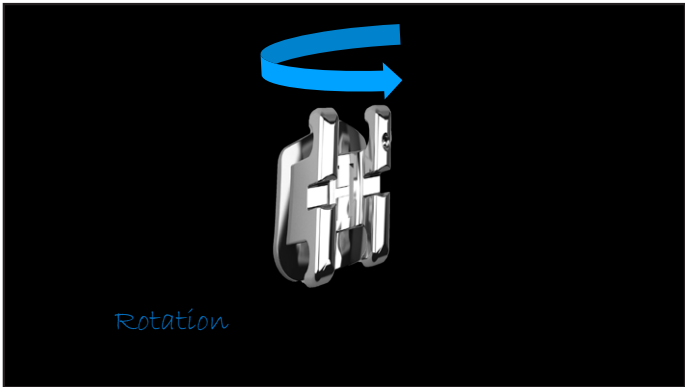
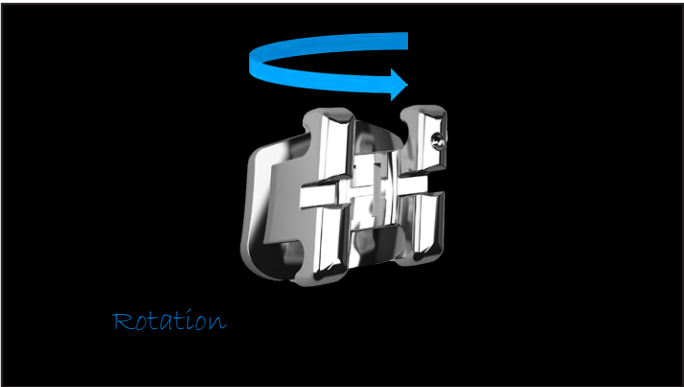
120
untreated
subjects

Naturally
Occurring
Optimal
Occlusions

The Six Keys

- I. Molar Relationship
- II. Angulation
- III. Inclination
- IV. Rotations
- V. Contacts
- VI. Occlusal Plane





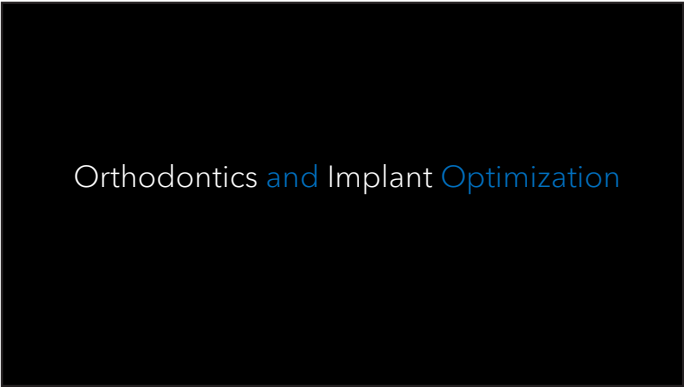
Case Types

Pre-restorative Set up • Level and Alignment • Gingival Margin Correction • Intrusion of super-erupted teeth	Implant Optimization • Extrusion (forced eruption) improve soft and hard tissue • Root Alignment	Missing and Peg Laterals • Canine sub and revision • Opening space • Interceptive and alternative treatments
Space Management • Closing • Opening	Occlusal issues • Wear • Restricted Envelope	Invisalign • Practice Management • Rescue i



Case Types

Pre-restorative Set up • Level and Alignment • Gingival Margin Correction • Intrusion of super-erupted teeth	Implant Optimization • Extrusion (forced eruption) to improve soft and hard tissue • Root Alignment	Missing and Peg Laterals • Canine sub and revision • Opening space • Interceptive and alternative treatments
Space Management • Closing • Opening	Occlusal issues • Wear • Restricted Envelope	Invisalign • Practice Management • Rescue i



Forced Eruption

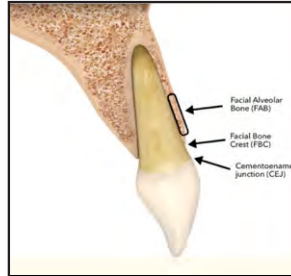


Image from: Rojo-Sánchez J, Soto-Peñalosa D, Peñarocha-Oltra D, Peñarocha-Diogo M, Vila-Almunia J. Facial alveolar bone thickness and modifying factors of anterior maxillary teeth: a systematic review and meta-analysis of cone-beam computed tomography studies. *BMC Oral Health*. 2021;21(1):143. Published 2021 Mar 22.



What are the techniques we have to extrude teeth?

Cervical bracket positioning



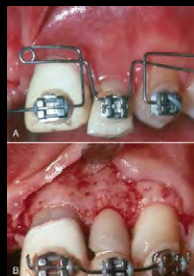
Step down bends



Stupid Wire Tricks



Stupider Wire Tricks



All in



Forced Eruption (Extrusion)

- Restoratively hopeless teeth
- Periodontally hopeless teeth

Minimal buccal alveolar bone thickness of 1 to 2 mm is required to maintain the tissue architecture following tooth extraction and implant placement.

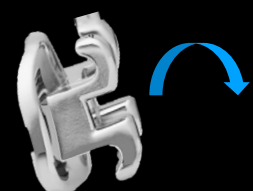


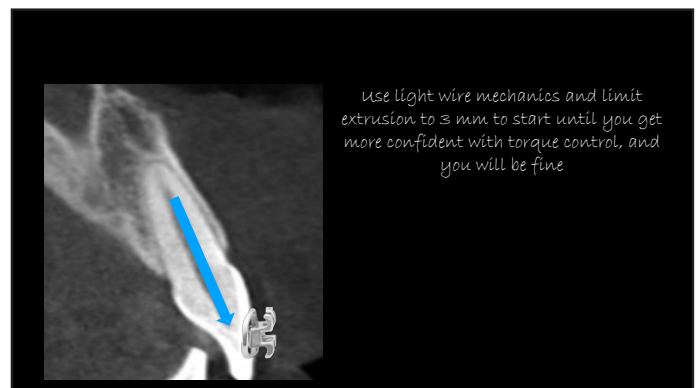
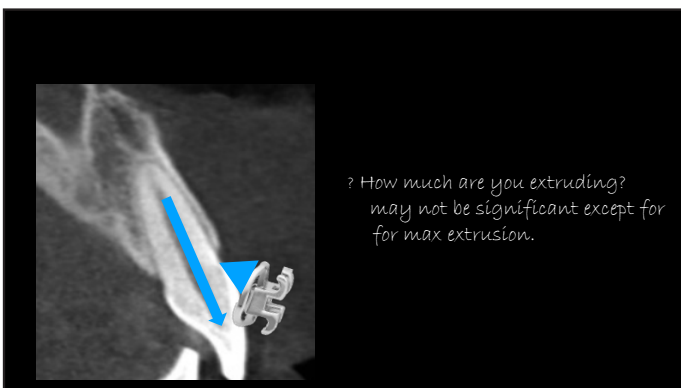
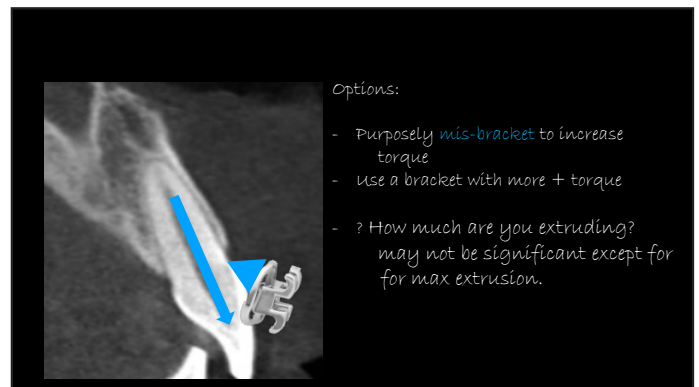
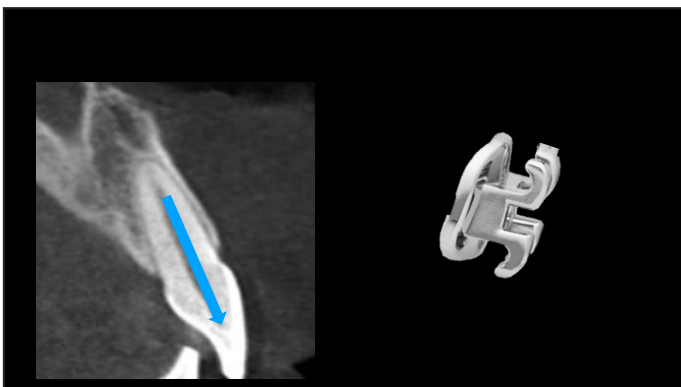
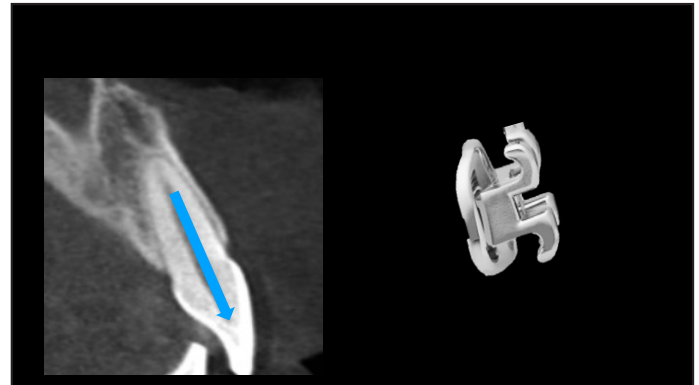
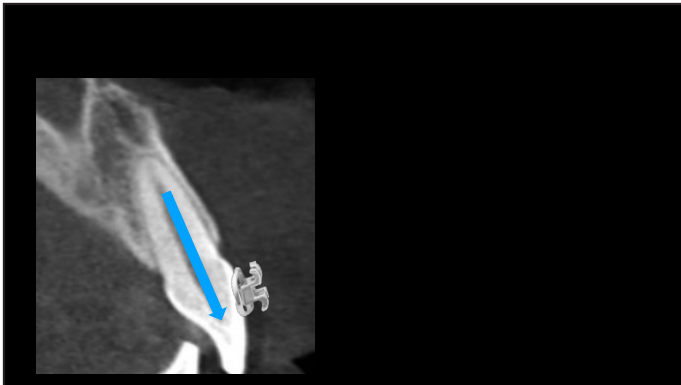
*Vera C, De Kok U, Reinhold D, Limpiphatanakorn P, Yap AK, Tyndall D, Cooper LF. Evaluation of buccal alveolar bone dimension of maxillary anterior and premolar teeth: a cone beam computed tomography investigation. Int J Oral Maxillofac Implants. 2012 Nov-Dec;27(6):1514-9.



The wire and bracket mechanics during extrusion tend to move the root buccally

Mitigate excess buccal motion while extruding by controlling torque





Forced Eruption (Extrusion)

- Restoratively hopeless teeth
- Periodontally hopeless teeth

Forced Eruption

Restoratively hopeless tooth



Remove the old crown and post



Replace post with a biggest/baddest post you have.
- fabricate a temporary crown
Then bracket



Alignment?



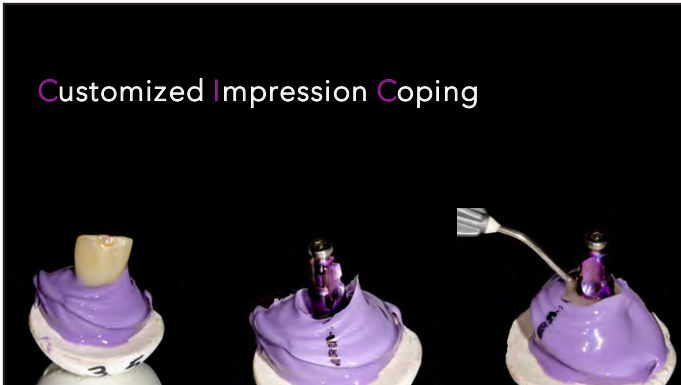
Scan Body
vs
Custom Impression Coping



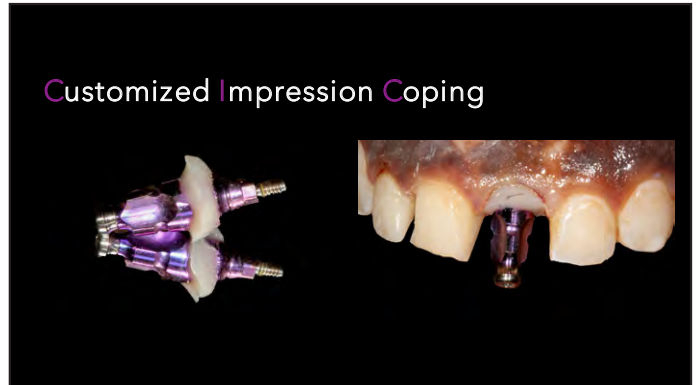
Customized Impression Coping



Customized Impression Coping



Customized Impression Coping



Six Month Follow up



Papilla?



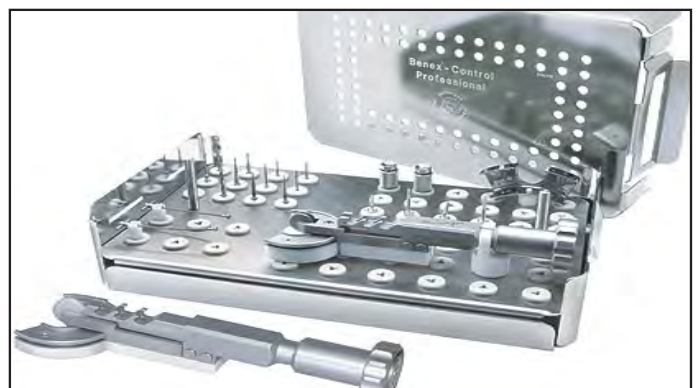
There is forced eruption and there is
Immediate FORCED ERUPTION

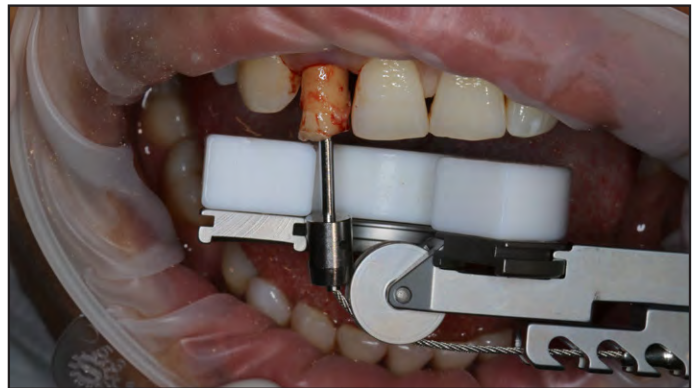
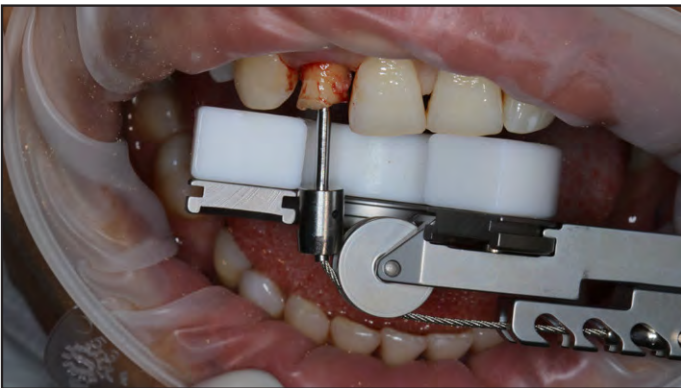
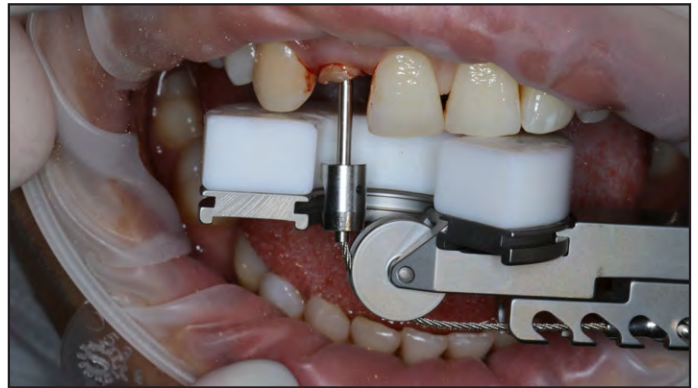
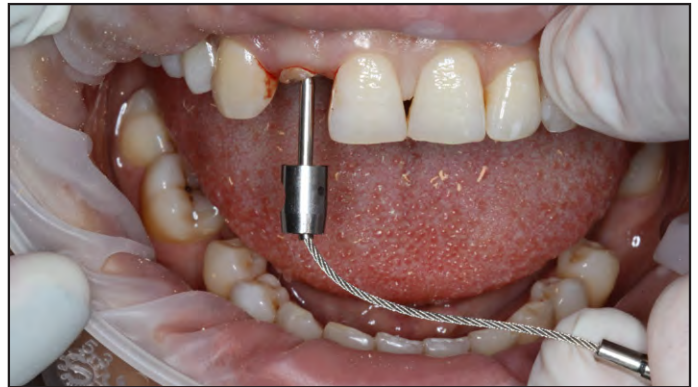


- What are your tx choices?
1. Place post and temp crown- then orthodontically extrude (forced eruption)
 2. Partial extraction (e.g.-socket shield)
 3. Atraumatic extraction (e.g-Tarnow technique)
 4. Immediate Forced Eruption



Immediate Forced Eruption





Case Types

Pre-restorative Set up

- Level and Alignment
- Gingival Margin Correction
- Intrusion of super-erupted teeth

Space Management

- Closing
- Opening

Implant Optimization

- Extrusion (forced eruption) to improve soft and hard tissue
- Root Alignment

Occlusal issues

- Wear
- Restricted Envelope

Missing and Peg Laterals

- Canine sub and revision
- Opening space
- Interceptive and alternative treatments

Invisalign

- Practice Management
- Rescue

Case Types

Occlusal issues

- **Wear, Erosion**
- **Restricted Envelope**

Occlusal Issues / Wear / Super-eruption

Occlusal Issues



Decrease Risk



Super-Eruption Secondary to Wear



Super-Eruption Secondary to Wear



Orthodontic Intrusion Vs. Crown Lengthening

Why do we do more crown lengthening than intrusion?

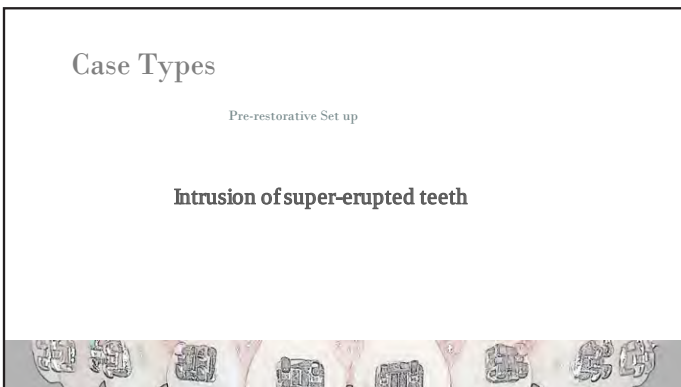
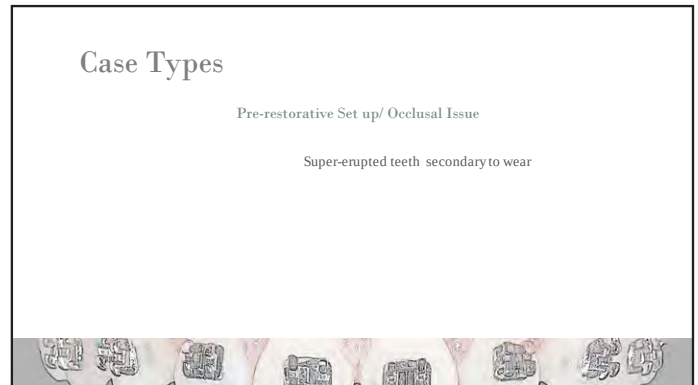
- Faster
- Reluctance to wear braces
- It's what we know

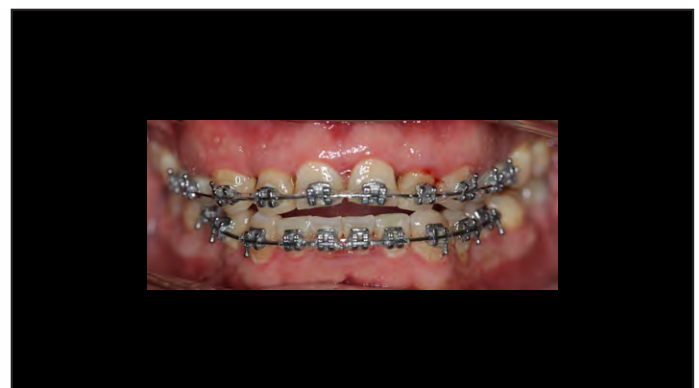
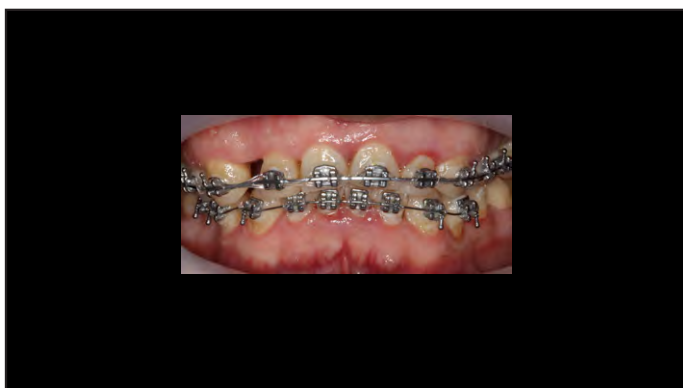
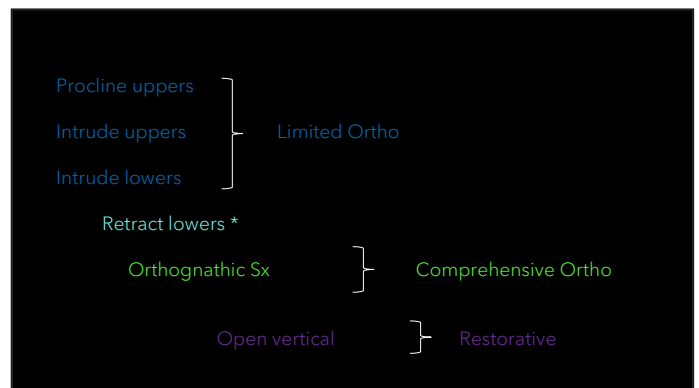
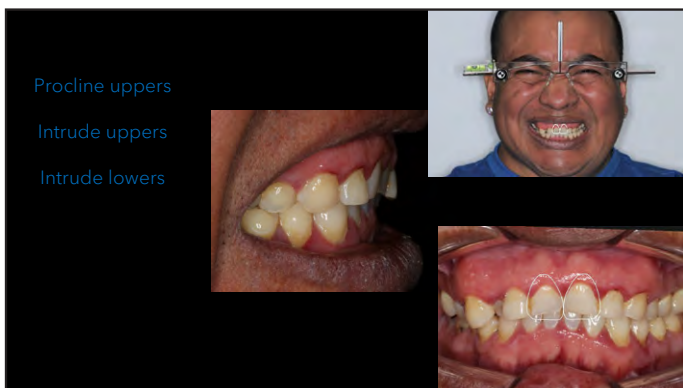


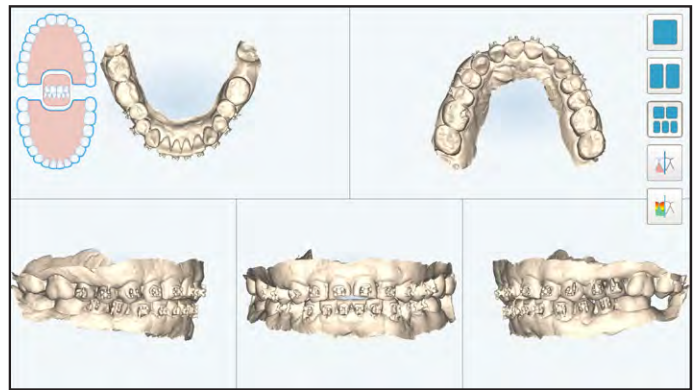
Advantages of Intrusion over Crown Lengthening

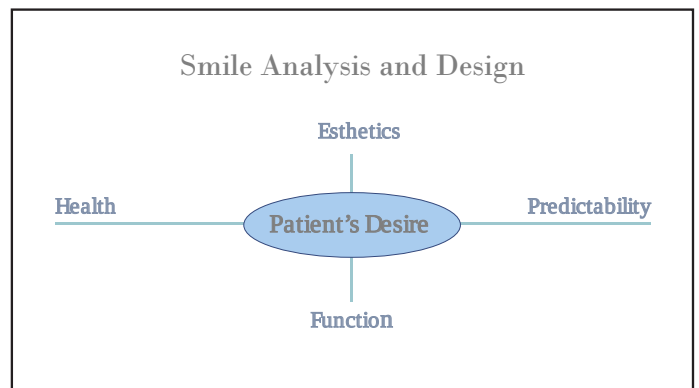
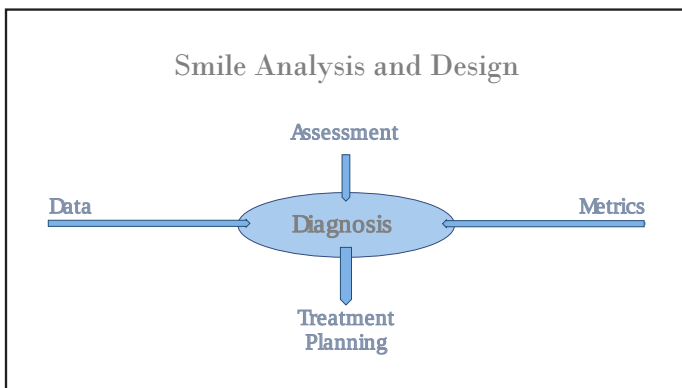
- Margins in Enamel
- Less Invasive
- Emergence Profile
 - Root taper and circumference
 - Arc of Intrusion
- Papilla Repositioning
- Crown root ratio
- Cervical Opacity



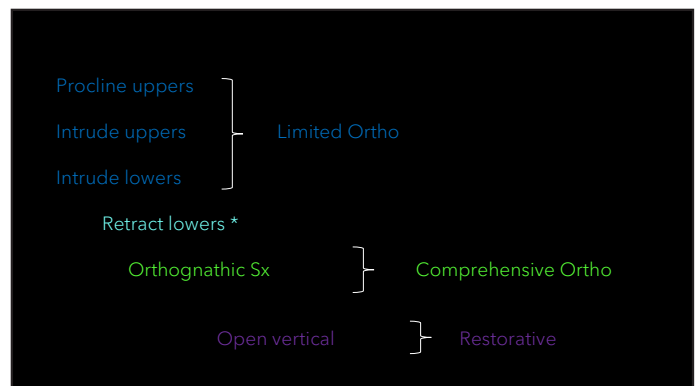






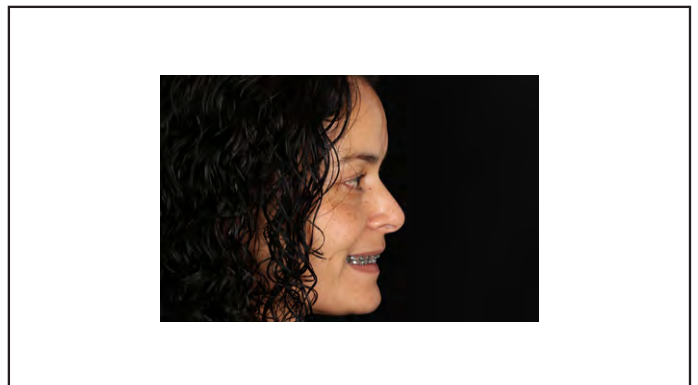


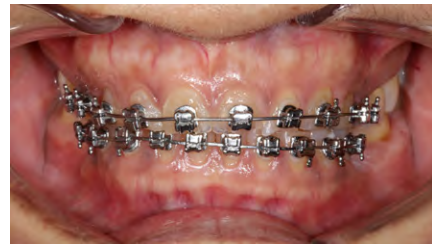
Diagnosis	Goals	Treatment Plan
Erosion	Increase tooth length	Length up or down?
Restricted Envelope	Lessen Gummy Smile	Restorative Space?
Constrict Chew Pattern	Shade	Whitening?
Loss of Posterior Teeth	Symmetry	Smile Design?



Procline uppers
Intrude uppers
Intrude lowers

} Limited Ortho





RDO Restorative Driven Orthodontics

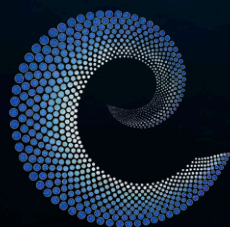
2 DAYS HANDS ON WORKSHOP

June 12-13, 2026
Roslyn, New York

Thank you!

- Understand how teeth move and how to move them
- Improve the success rates of your Invisalign cases
- Orthodontics is the key to better Implant, Veneer and FMR outcomes

Register Today
at eMotiondental.com



eMotiondental.com

SELF EVALUATION

Restorative Driven Orthodontics: Managing Anterior Wear for Conservative Cosmetic Outcomes

1. Which of the following advantages of intrusion over crown lengthening
 - a. more likely to ensure adhesion to enamel for indirect restorations
 - b. maintain crown to root ratio
 - c. lends to more conservative tooth preparation
 - d. all of the above
2. Extruding a hopeless tooth in preparation for implant replacement has the advantage of
 - a. Less possibility of pulpal necrosis
 - b. Increasing soft and hard tissue in the coronal direction
 - c. Increasing soft and hard tissue in the apical direction
 - d. Increasing the crestal bone on adjacent teeth
3. T/F - When only the anterior teeth are worn it is most likely caused by nocturnal bruxism.
4. T/F - There is no risk in extruding a hopeless tooth to improve likelihood of optimal implant outcomes.
5. Controlling torque has the biggest effect on which aspect of spatial tooth positioning.
 - a. Inclination
 - b. Rotation
 - c. Angulation
 - d. Vertical Position

Answer Key: 1. D, 2. B, 3. F, 4. F, 5. A

Leading with Purpose: Mission-Driven Leadership in Dentistry

Brett H. Kessler, DDS



Leading with Purpose:
Mission-Driven Leadership in Dentistry

Brett H. Kessler, D.D.S.
ADA Past -President

ADA American Dental Association

What We'll Cover Today

Laying the Foundation • Mission, Vision, and Values • Starting with Why • Defining Leadership	Knowing the Environment • Forces Affecting the Landscape • Disruptors and Challenges • Trust and Collaboration	Executing with Excellence • Skills, Practices, and Highly Effective Habits
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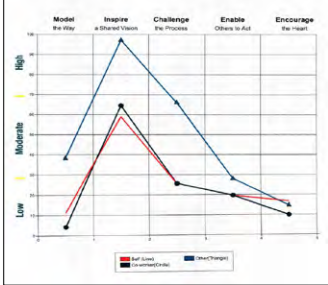
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From Accolades to Reality: A Leadership Reflection

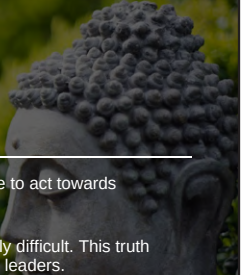



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Leadership success depends on where you **focus**.

You have one year. **Make it count.**



What is Leadership?

Leadership is the art of motivating a group of people to act towards achieving a common goal.

In Buddhism, it is acknowledged that life is inherently difficult. This truth extends to our practice of dentistry and our roles as leaders.



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What is mission-driven leadership?

The practice of leading with a clear purpose that aligns every decision, action, and relationship with a shared mission.

Why this matters...

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ADA Vision

Empowering the dental profession to achieve optimal health for all.

Mission

Help dentists succeed and support the advancement of the health of the public.



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What is the mission & vision of your dental society?



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Start with the "Why" to Inspire Action

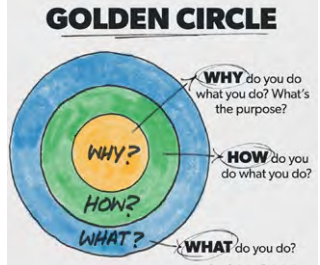
The ADA Board asked:

"WHY" do we serve the public and our profession?

Beyond what we do and how we do it, what is our true calling?"

We make people healthy.

This is our unified purpose – It drives everything we do. This is why we exist and why anyone should care.



GOLDEN CIRCLE

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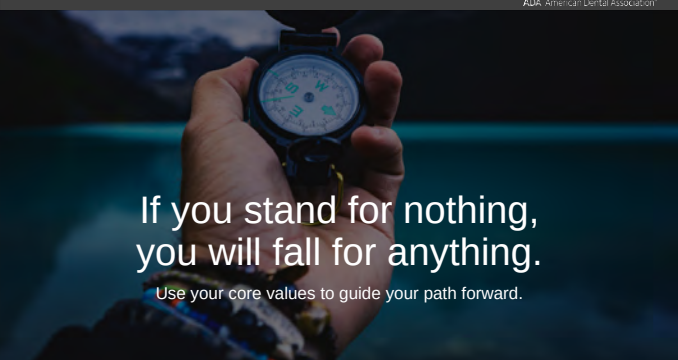
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What is the "why" of your dental society?



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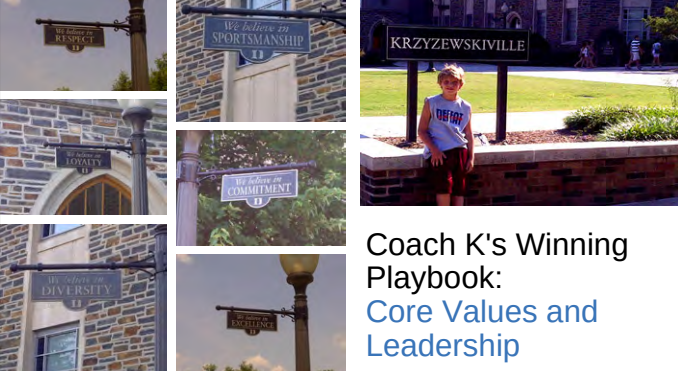


If you stand for nothing, you will fall for anything.

Use your core values to guide your path forward.

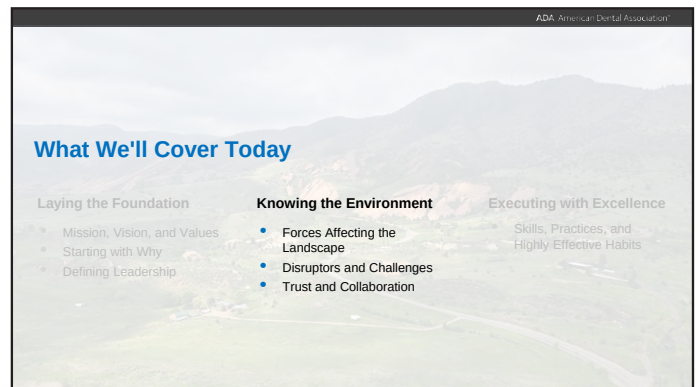
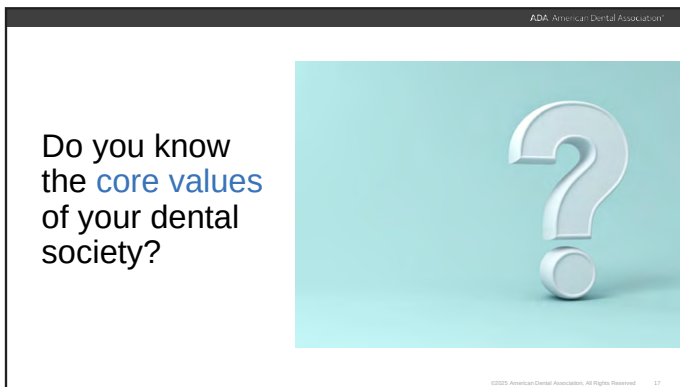
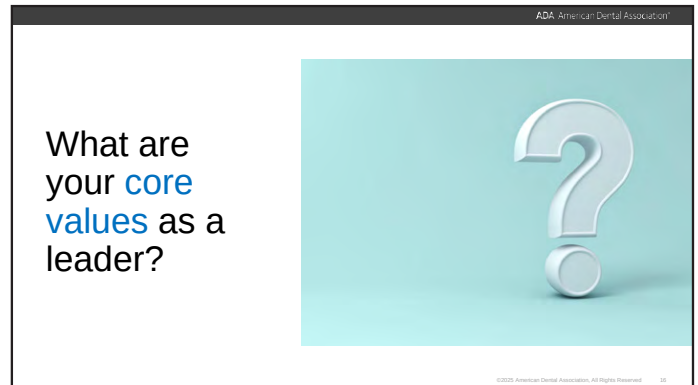
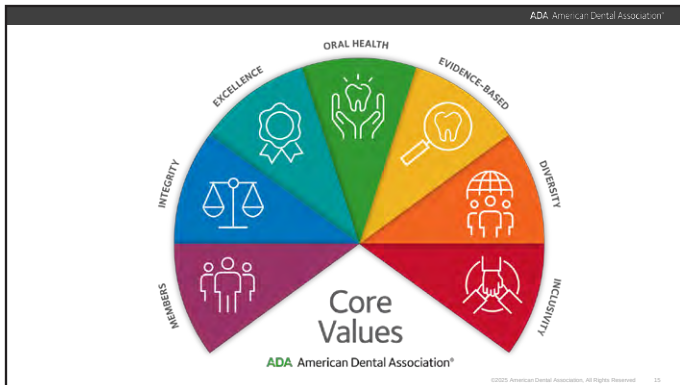
Our Core Values

Dr. Rosato:	Dr. Kessler:
- Honesty - Work Ethic - Family - Kindness - Listening - Resilience	- Courage - Integrity - Family - Humility - Humanity

Coach K's Winning Playbook:

Core Values and Leadership



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Forces Affecting the Landscape

We are at a pivotal moment for dentistry. We need to be together now! (Dentistry is under attack!)

- Dentistry is evolving: emerging technology, patient expectations, workforce demographics.
- Purpose keeps us grounded and guides our decisions through change.

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Disruptors in Healthcare

Technology

Insurance

Regulation

Evolving Practice Models

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Challenges Remain

Dentistry is facing some major headwinds.

- ADA core values are being tested.
- Misinformation threatening public health (e.g., fluoride)
- Rising operational costs + workforce shortages
- Educational debt and insurance barriers

What are the top 3 challenges facing your practice?

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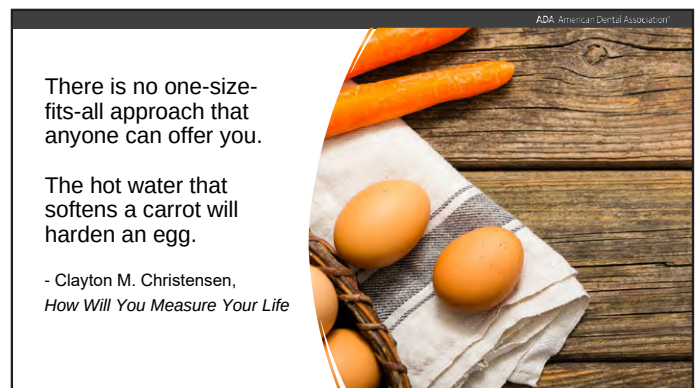
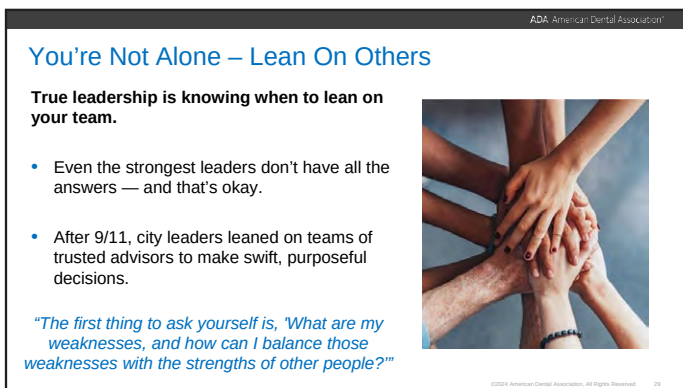
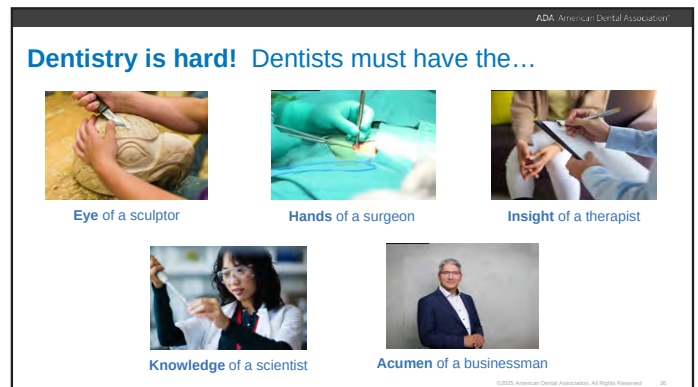
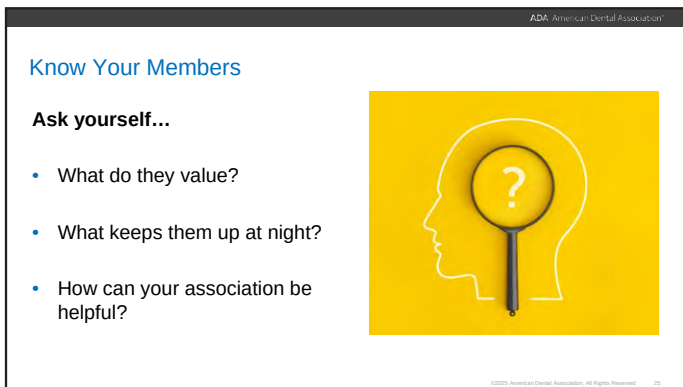
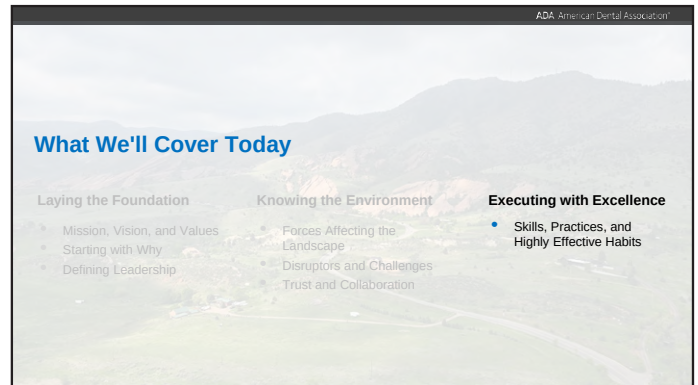
Trust is Our Foundation

To lead with purpose, we must lead with **trust**. And trust is built through **collaboration** — across local, state, and national levels.

Within the Tripartite, Trust Means:

- Listening before leading
- Showing up with transparency
- Respecting different perspectives
- Sharing responsibility and success
- Consistent positive action over time**

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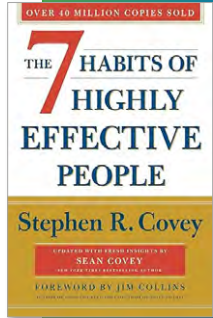
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Challenges are Opportunities



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As presidents-elect, these habits can help you lead with effectiveness and purpose.



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Habit #1

Be Proactive

Highly effective people change their lives by focusing on what they can control.



Lead with intention



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Be Proactive: Responding to Stimuli



STIMULI



PAUSE & REFLECT



RESPOND & REACT

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Habit #2

Begin with the end in mind.

Visualize your goals and set a clear direction for your organization with a principle-centered mission statement.



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My Mission Statement – Dr. Kessler

I lead within the scope of my core values, so I am most effective at creating synergy and achievement.

I match my actions with my intentions, so my integrity is apparent to all who cross my path in life. By living with intention, I inspire others to live their lives to their fullest potential.

Through persistence and discipline to my mission, I live peacefully and within my means.



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My Mission Statement – Dr. Rosato

I meet every challenge with relentless creativity.

I believe in reimagining what's possible, especially when the path forward isn't clear. That's where creativity becomes a force for progress — turning uncertainty into opportunity and vision into action.



What is your **mission statement** as a leader?



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Habit #3

First things first.

Organize and execute around your most important priorities. Live by the principles you value most, not by the agendas and forces surrounding you.



Quadrant 2 – The Key to Personal Progress

Q2 activities are not urgent, but important.

Important	
Urgent, Q1	Not Urgent, Q2
Crises	Prevention activities
Pressing problems	Relationship building
Deadline-driven projects	Recognizing new opportunities
	Planning, recreation
Not Important	
Urgent, Q3	Not Urgent, Q4
Interruptions, some calls	Trivia, busy work
Some mail, some reports, some meetings	Some mail, some calls
Proximate pressing matters	Time wasters

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Habit #4

Think win-win.

Promote mutual benefit in interactions by seeking solutions that benefit all involved. If Win-Win isn't possible, consider 'no deal' as an alternative.



Habit #5

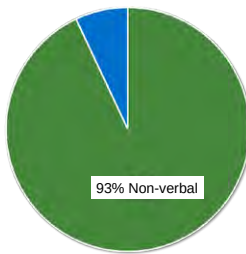
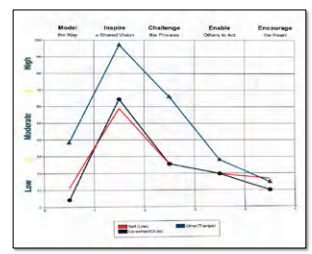
Seek first to understand, then to be understood.

Put yourself in the other person's perspective and **listen empathetically** for both feeling and meaning.



Communication Breakdown
Verbal vs. Non-Verbal

93% Non-verbal

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The single biggest problem with communication is the illusion that it has taken place.

- George Bernard Shaw

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Habit #6

Synergize.

Use trustful communication to leverage individual differences to create a whole that is greater than the sum of its parts.



Habit #7

Sharpen the saw.

Take time out of your "busy-ness" to take care of your physical, mental, emotional, and spiritual well-being.



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Internal	 1. Be proactive	 2. Begin with the end	 3. First things first
External	 4. Think win-win	 5. Seek first to understand	 6. Synergize
Both	 7. Sharpen the saw		

Re-evaluate and revisit constantly

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Who and what inspires you, and why?



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The Human Behind the Hero



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Be more concerned with your character than your reputation...

Your character is what you really are, while your reputation is what other people think you are.

- Coach John Wooden

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October 21, 1998

Recovery gave me a second chance. It's a fragile gift that I treasure and the foundation of everything I do.

I am committed to living my best life and sharing my story with others.



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Five Key Practices

It's the simple actions — like inspiring others or leading with heart — that matter.

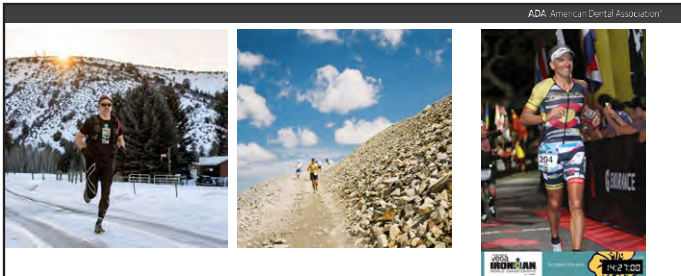
 Model the way	 Inspire a shared vision	 Challenge the process
 Enable others to act	 Encourage the heart	

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Be faithful in small things because it is in them that your strength relies.

- Mother Teresa

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Embrace the challenge, stay focused, and **keep pushing forward.**

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"When you dance on the edge of infinity, there's always enough... Because you aren't taking opportunity from anyone else, you're creating it."

Seth Godin,
The Song of Significance



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What will
you create
this year?



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Questions /
Comments?



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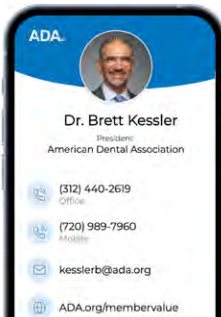
Seven Habits of Highly Effective People – Stephen Covey
Start with Why – Simon Sinek
The Infinite Game - Simon Sinek
Atomic Habits – James Clear
Good to Great - Jim Collins
The Song of Significance – Seth Godin
The Leadership Challenge - Kouzes and Posner
Leadership – Rudy Giuliani

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ADA.org/membervalue

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SELF EVALUATION

Leading with Purpose: Mission-Driven Leadership in Dentistry

1. According to the lecture, what is mission-driven leadership?
 - a. Leading through authority and position
 - b. Managing operations through established policies
 - c. Leading with a clear purpose that aligns decisions, actions, and relationships with a shared mission
 - d. Delegating responsibilities to maximize efficiency
2. T/F - The ADA's vision is to empower the dental profession to achieve optimal health for all.
3. Which of the following was identified as a healthcare disruptor affecting dentistry?
 - a. Increased fluoride use
 - b. Technology
 - c. Expanded vacation benefits
 - d. Reduced patient expectations
4. T/F - The lecture states that trust is built through collaboration and consistent positive action over time.
5. According to Stephen Covey's habits discussed in the lecture, which habit encourages leaders to "seek first to understand, then to be understood"?
 - a. Habit #2
 - b. Habit #4
 - c. Habit #5
 - d. Habit #7

Answer Key: 1. C, 2. T, 3. B, 4. T, 5. C

Immediate Implants in the Esthetic Zone

Brian J. Jackson, DDS

Immediate Implants in the Esthetic Zone

Brian J Jackson, DDS
Board Certified-ABOI/ID

Brian J. Jackson, DDS
Diplomate-ABOI/ID
Fellow-AAID

Board Certified

Reconstructive Dentistry &
Implant Surgery



Director: Brian J. Jackson, DDS



Dr. Jackson is a Board-certified implant surgeon and reconstructive

He received his Doctor of Dental Surgery degree at SUNY/Buffalo, School of Dental Medicine and completed post-graduate training at St. Luke's Memorial Hospital Centers General Practice Residency Program. Dr. Jackson completed his formal oral implantology training at New York University, College of Dentistry.

Dr. Jackson is a Diplomate of the American Board of Oral Implantology/Implant Dentistry (ABOI/ID) and an Honored Fellow of the American Academy of Implant Dentistry (AAID). AAID Past President

Brian j Jackson DDS-Publications and Courses

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What is Immediate Implant Placement Provisionalization (IIPP)?

1. Innovative implant approach consisting of Extraction, Implant Placement, and non- occlusal loading with a provisionalization .

What is Immediate Implant Placement Provisionalization (IIPP)?

1. Innovative implant approach consisting of Extraction ,Implant Placement, and non- occlusal loading with a provisionalization .
2. Less surgery, less appointments, less costs and a faster completion of treatment.

What is Immediate Implant Placement Provisionalization (IIPP)?

3. The comprehensive process marries several stages of treatment into a single visit. Thereby, eliminating the need to see multiple dentists.

What is Immediate Implant Placement Provisionalization (IIPP)?

4. The process utilizes comprehensive clinical experiences and research in biology, surgery and prosthetics to create a healthy, esthetic and long-lasting smile

IIPP-PROTOCOL

Appointment 1

1. Extraction
2. Immediate Placemen
3. Ck Torgue value
4. Final Impression
5. Temporary Abutment
6. GBR-PRP PRF
7. Place Temporary Crown

Appointment 2

1. Remove Temp Abutment/Crown
2. Place Final Abutment/Crown

Summary:

1 SURGERY(1 Injection), 1 Doctor
2 Appointments, Tx Time 2-3 months

APPOINTMENT 1

Esposito M, Grusovin M, Willings M, Coulthard P, Worthington H. The Effectiveness of Immediate, Early and Conventional Loading of Dental Implants: A Cochrane Systematic Review of Randomized Controlled Clinical Trials. *Internat Journ Oral & Maxillo Implants*. 2007; 22: 893-903

Flapless Extraction- Atraumatic

Schropp L, Isidor F. Timing of implant placement relative to tooth extraction. *Journal Oral Rehab*. 2008; 35: 33-43



Immediate Implant Placement Palatal/4mm FGM

Lang N, Pun L, Lau K, Li K, Wong CM. A Systematic review on survival rates of implants placed immediately into fresh extraction sockets after at least 1 year. *Clin Oral Impl Res*. 23 (Suppl. 5), 2012, 39-66



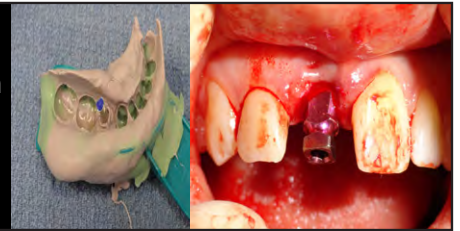
Rigid Fixation-Torque Value >35 N/cm

Javed F, Romanos G. The role of primary stability for successful immediate loading of dental implants. A literature review. *Journal of Dent*. 2010; 38: 612-620



Final Impression/Scan

Kois J, Kan J. Predictable Peri-Implant Gingival Aesthetics: Surgical and Prosthodontic Rationales. *Pract Proced Aesthet Dent*. 2001; 13(9):631-638



Temporary Ti/PEEK Abutment

DeRouck T, Collie Kristian, Cosyn J. Single-tooth Replacement in the Anterior Maxilla by Means of Immediate Implantation and Provisionalization: A Review. *Inter Journ Oral & Maxillo Impl*. Vol 3: 2006; 897-902



Torque-20 Nt/CM

PEEK Abutment



Fabricate Provisional Crown-Fabricate ONLY

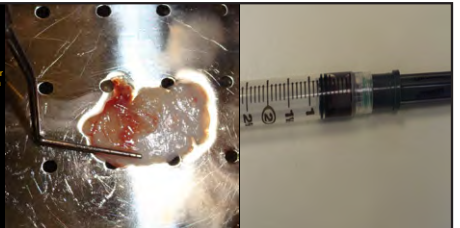
Testori T, Bianchi F, Del Fabbro M, et al. Immediate Non-Occlusal Loading Vs. Early Loading in Partially Edentulous Patients. *Pract Proced Aesthet Dent* 2003; 15(10): 787-794



GBR- PRP/PRF/Allograft

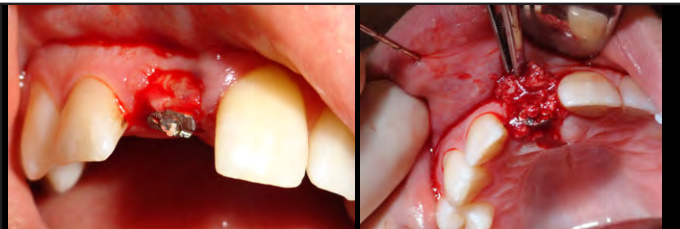
Choukroon J, Diaz A, Simonpieri A, Girard MD, Schoeffler C, Dohan SL, Mouhy J, Dohan DM. Platelet Rich Fibrin (PRF): a second generation platelet concentrate. Part IV: clinical effects on tissue healing. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006; 101(3):66-60

Marx RE, Carlson ER, Eichstaedt RM, Schimmele SR, Strauss JE, Georgeff KR. Platelet-rich plasma: Growth factor enhancement for bone grafts. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998; 85(6):638-646



Cement Provisional Crown- Permanent

Testori T, Bianchi F, Del Fabbro M, et al. Immediate Non-Occlusal Loading Vs. Early Loading in Partially Edentulous Patients. *Pract Proced Aesthet Dent* 2003; 15(10): 787-794



Laboratory Aspect-During OI Stage

- Fabricate Implant Model
- Mount Case
- Design/Fabricate Abutment
Facial margin-1.5mm supra connection
- Design/Fabricate Crown(PFM or All Ceramic)

APPOINTMENT 2

Cannizzaro G, Leone M. Restoration of Partially Edentulous Patients Using Dental Implants with a Microtextured Surface: A Prospective Comparison of Delayed and Immediate Full Occlusal Loading. *Intern Journ Oral & Maxillo Impl.* 2003; 18; 512-522

Remove Provisional
Abutment/Crown as 1 unit

Access hole-reverse
torque



Place Final Abutment-
Torque 30N/cm-(2x)

Crown-ZOP/Resin



Implant Occlusal Principles:
Centric Occlusion, Lateral Excursions,
Protrusion:

ZERO CONTACT

Maximum Occlusal Contact:
Point Contact

What Makes JACKSON-IIPP Unique?

- Final impression at surgery
- PRP/PRF
- Reduced Treatment time 2 appointments
- 1 Doctor

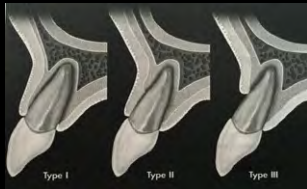
A Simplified Socket Classification and Repair Technique

Elia N, Cho S, Froum S,
Smith R, Tarnow D. *Pract
Proced Aesthet Dent.*
2007;19(2):99-104



Elia Classification-2007 Type 1-Facial ST/Buccal Plate -Normal levels to CEJ

Type 2-3 Wall Defect: Facial ST Present, Buccal Plate Partially Missing
Type 3-Circumferential Defect: Facial ST/Buccal Plate Markedly Reduced post



Bobby 38 yr old male presented
with a large carious lesion and
external resorption

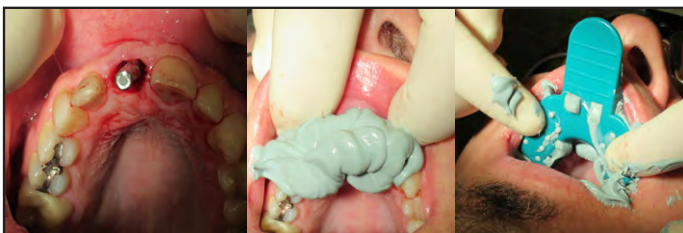
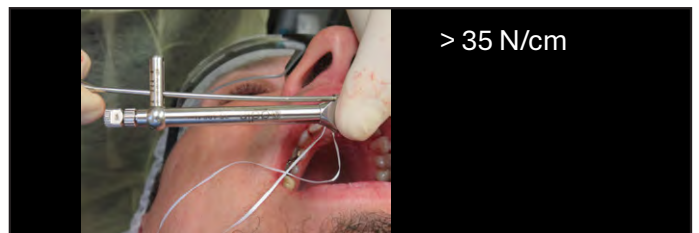
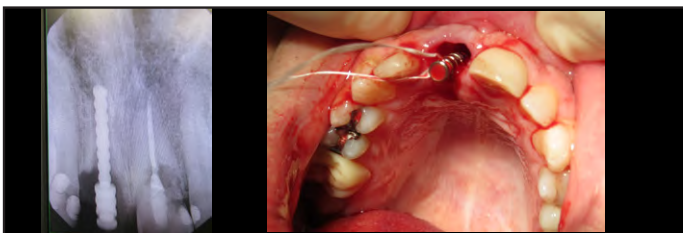
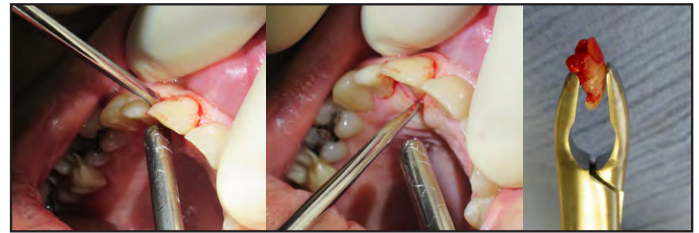
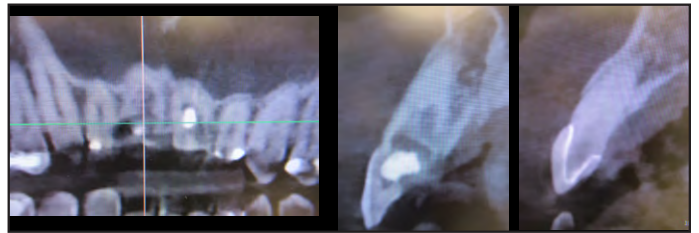
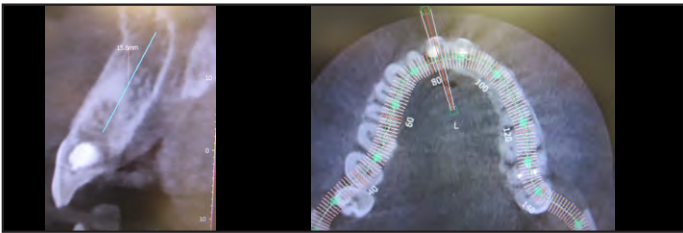
Maxillary Central Incisor(#8)
#9- Similar radiographic finding

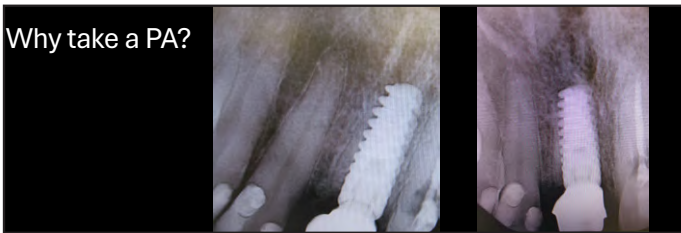
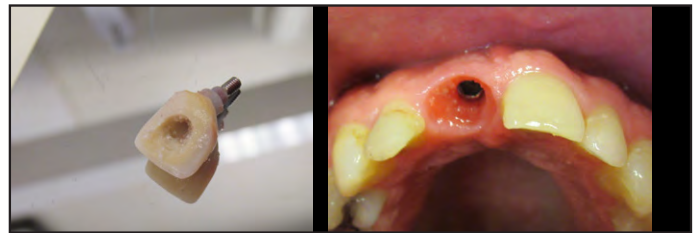
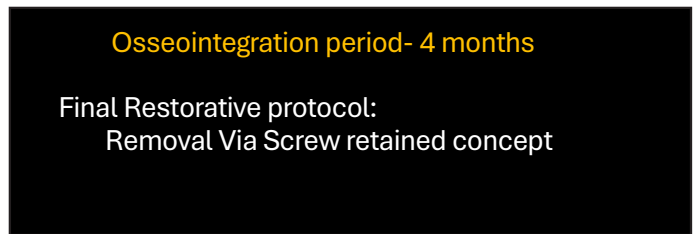
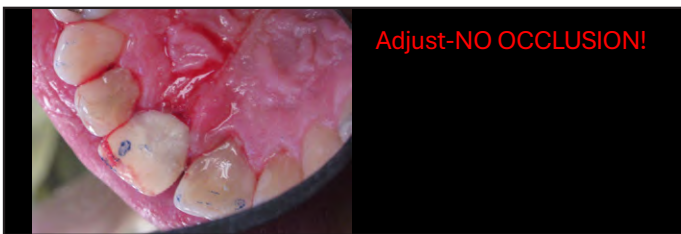
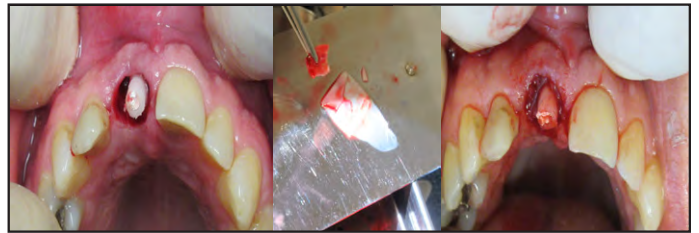
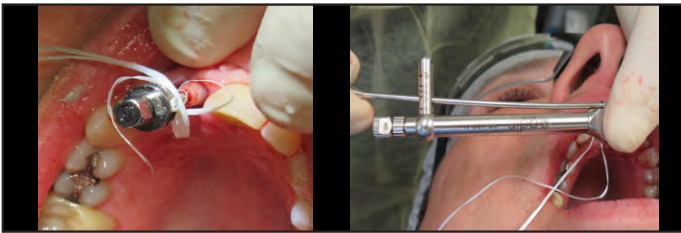
Tx Plan:

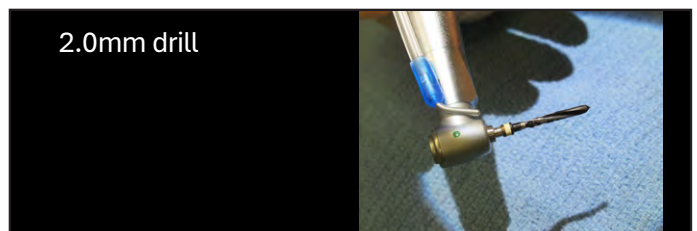
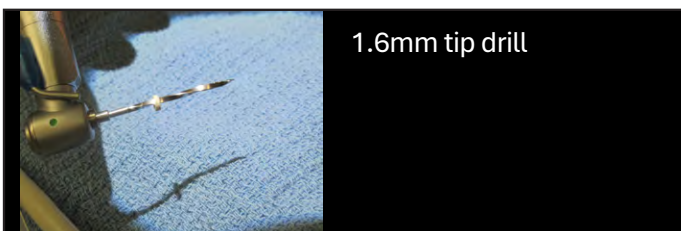
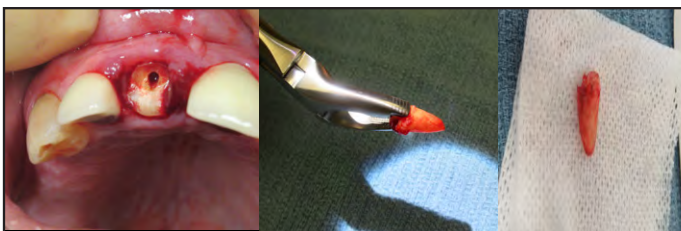
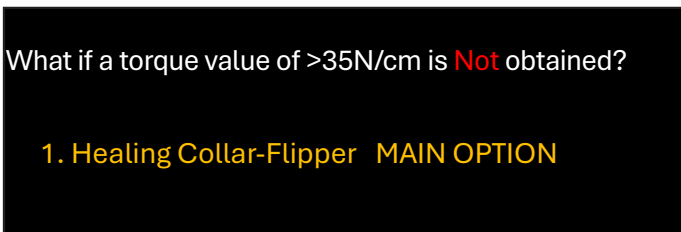
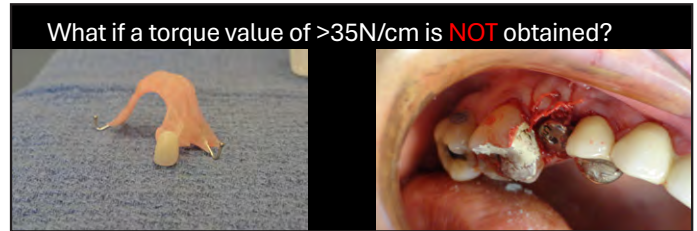
IIPP Approach

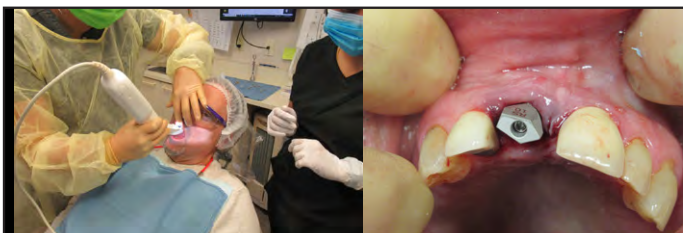
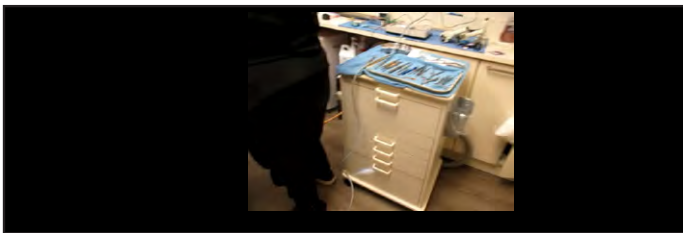
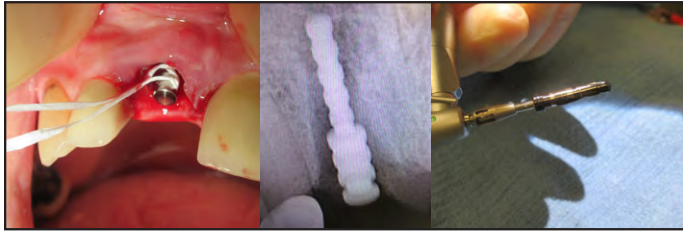
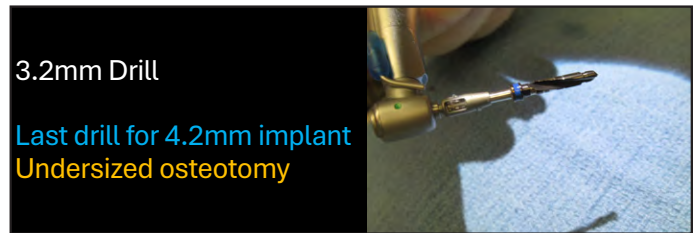
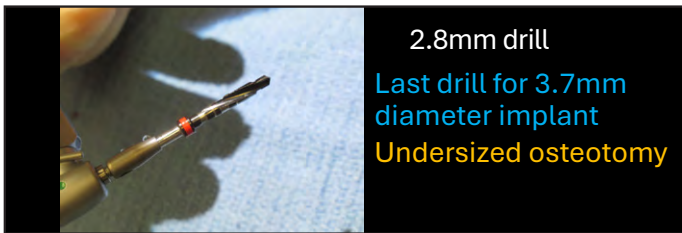
4.2 x 13mm Touareg OS (Adin)
PRP/PRF
MIRB Allograph(RMTB-Fine)

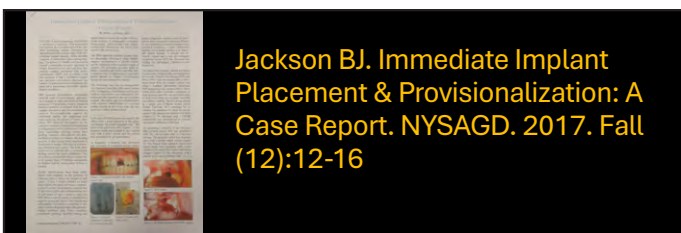
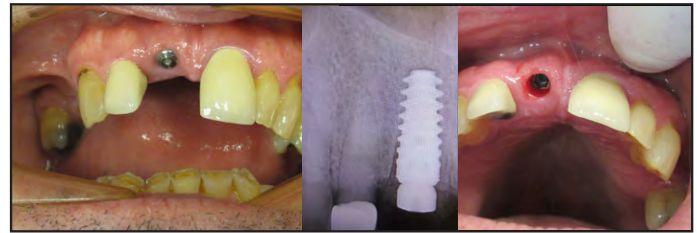
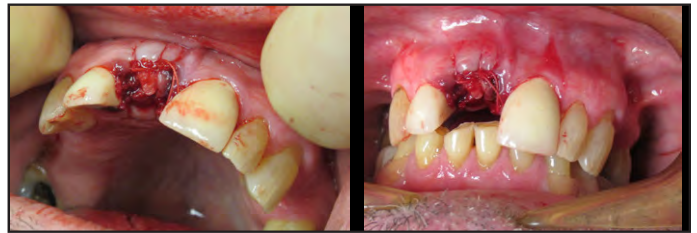




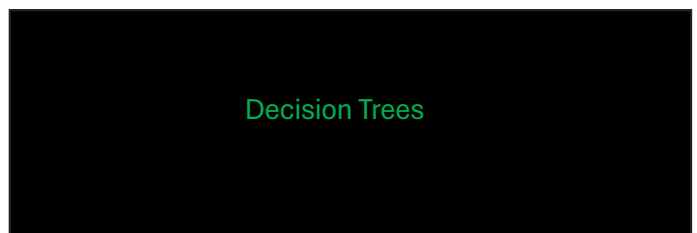




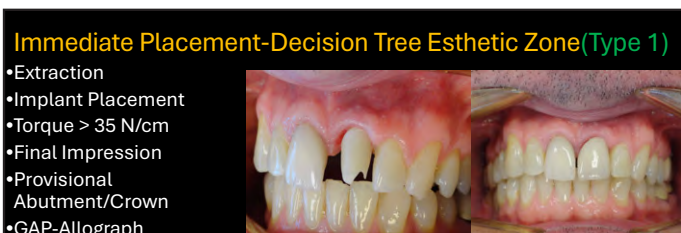




Jackson BJ. Immediate Implant Placement & Provisionalization: A Case Report. NYSAGD. 2017. Fall (12):12-16

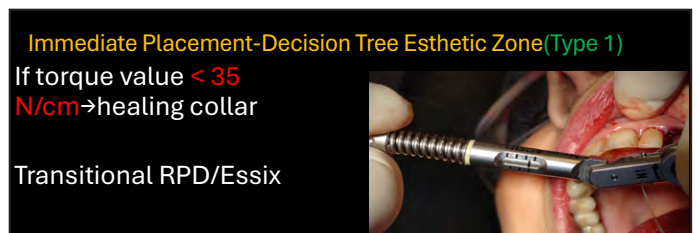


Decision Trees



Immediate Placement-Decision Tree Esthetic Zone(Type 1)

- Extraction
- Implant Placement
- Torque > 35 N/cm
- Final Impression
- Provisional Abutment/Crown
- GAP-Allograph



Immediate Placement-Decision Tree Esthetic Zone(Type 1)

If torque value < 35 N/cm → healing collar

Transitional RPD/Essix

Brian j Jackson DDS-Publications and Courses

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SELF EVALUATION

Immediate Implants in the Esthetic Zone

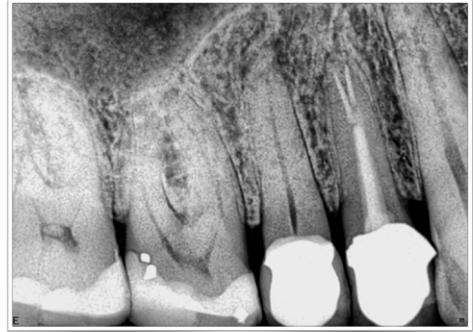
1. According to the lecture, what does Immediate Implant Placement and Provisionalization (IIPP) consist of?
 - a. Extraction, delayed implant placement, and final crown delivery
 - b. Extraction, implant placement, and non-occlusal loading with a provisional restoration
 - c. Implant placement and immediate occlusal loading
 - d. Extraction and removable prosthesis fabrication
2. T/F - The Jackson-IIPP protocol is designed to reduce treatment time to two appointments with one doctor.
3. What minimum implant torque value is recommended to achieve rigid fixation for immediate loading?
 - a. 20 N/cm
 - b. 25 N/cm
 - c. 35 N/cm
 - d. 50 N/cm
4. According to the Elian Classification, a Type 2 extraction socket is characterized by:
 - a. Normal facial soft tissue and buccal plate levels to the CEJ
 - b. Facial soft tissue present with a partially missing buccal plate
 - c. Complete circumferential bone loss
 - d. Absence of facial soft tissue with an intact buccal plate
5. T/F - The provisional crown in the IIPP protocol should be adjusted to have no occlusal contact during the healing phase.

Answer Key: 1. B, 2. T, 3. C, 4. B, 5. T

Principles and Techniques of Root Canal Preparation - Part 1

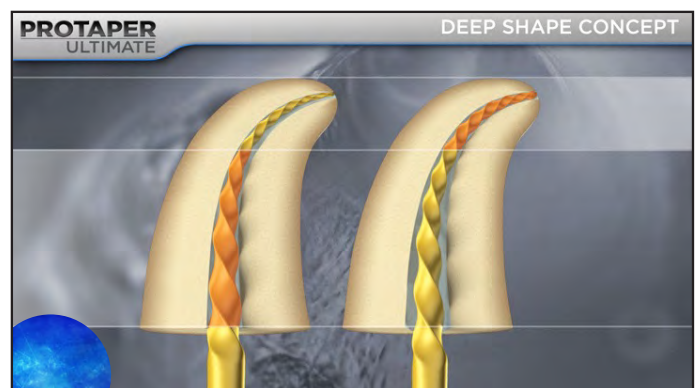
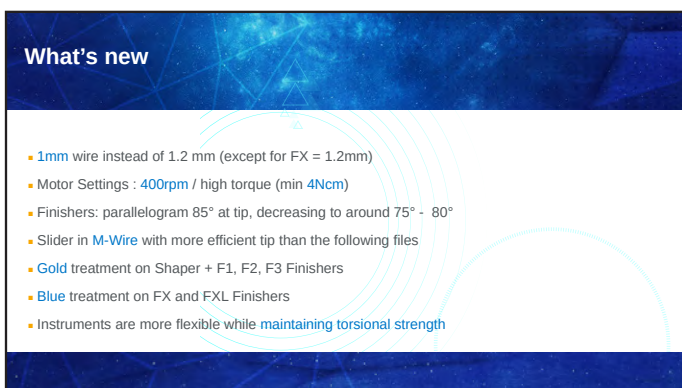
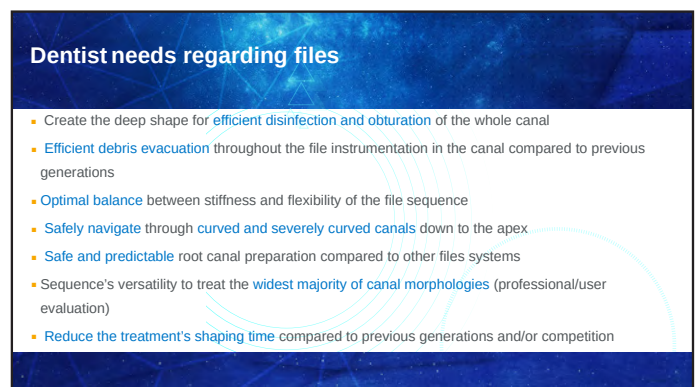
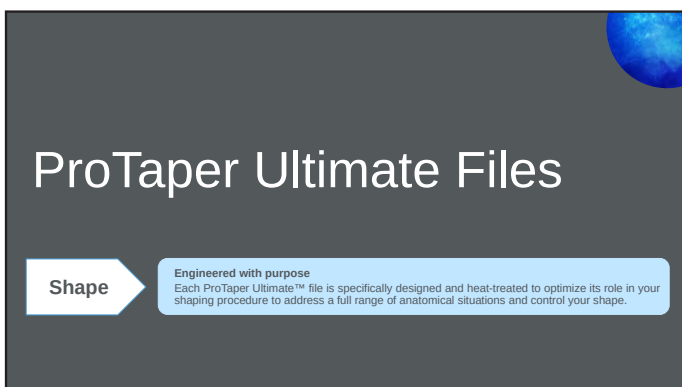
Gary Glassman, DDS

Principles and Techniques of Root Canal Preparation



CHECKLIST TO PREVENT UNTWISTING, BREAKAGE AND PULLDOWN

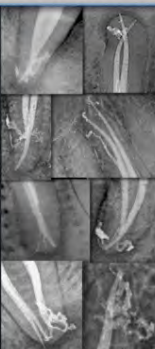
- GLIDE PATH #10 hand file fits LOOSE at working length
- PATENCY!!!
- FILL up pulp chamber brimful with NaOCL
- LUBRICATE with ProLube
- No more PRESSURE than that which would break a sharp lead pencil
- Keep the file MOVING
- DON'T RUSH



PROTAPER ULTIMATE DEEP SHAPE OPTIMIZES



Greater Fluid Volume
Dynamic Fluid Exchange
Fluid Containment
Controlled 3D filling



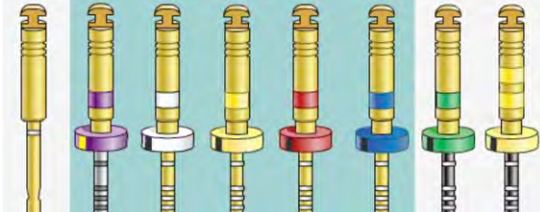
PROTAPER ULTIMATE WHAT'S NEW?

Advance MIE Concept
Simplify the Technique
Facilitate a Safer Procedure
Treat a Wider Range of Anatomy
Rotary File **FIRST** to Secure Canal

PROTAPER ULTIMATE

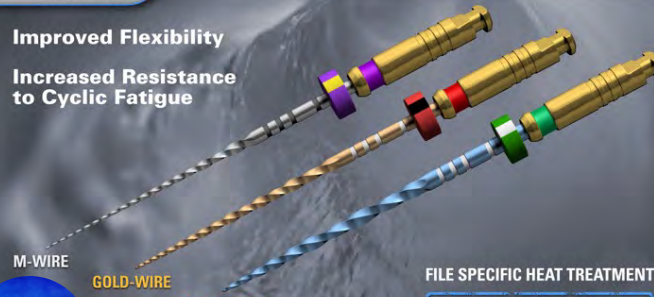
Core Set of Files

SX	Slider	Shaper	F1	F2	F3	FX	FXL
.20/.03v	.16/.02v	.20/.04v	.20/.07v	.25/.08v	.30/.09v	.35/.12v	.50/.10v



PROTAPER ULTIMATE AUGMENTED METALLURGY

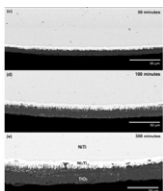
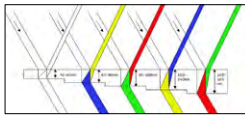
Improved Flexibility
Increased Resistance to Cyclic Fatigue



M-WIRE
GOLD-WIRE
BLUE-WIRE

FILE SPECIFIC HEAT TREATMENT
EXCLUSIVE DESIGN

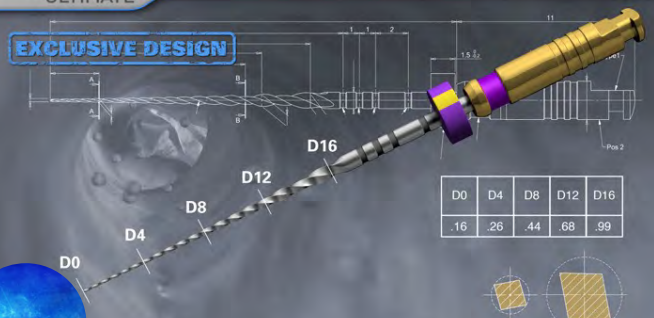
The colour of the wire is a consequence of the titanium oxide thickness

The wave lengths of light that is reflected from the surface depend on the thickness of the titanium oxide layer.

PROTAPER ULTIMATE SLIDER

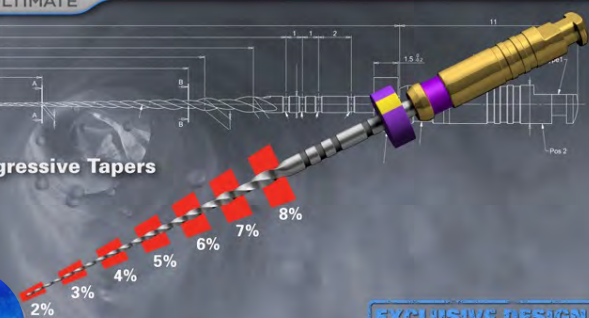
EXCLUSIVE DESIGN



D0	D4	D8	D12	D16
.16	.26	.44	.68	.99

PROTAPER ULTIMATE SLIDER

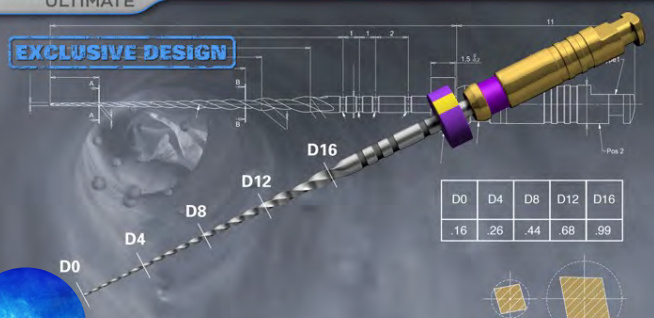
PROgressive Tapers



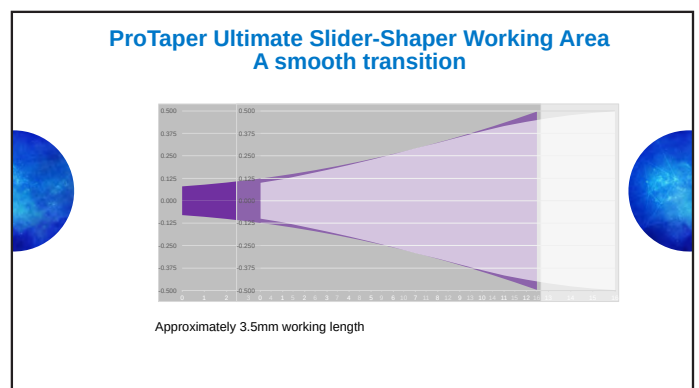
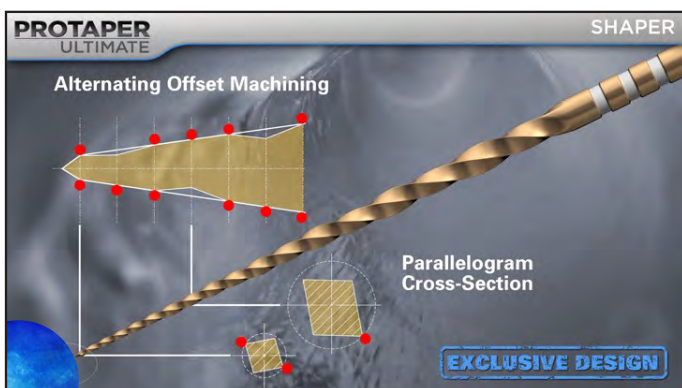
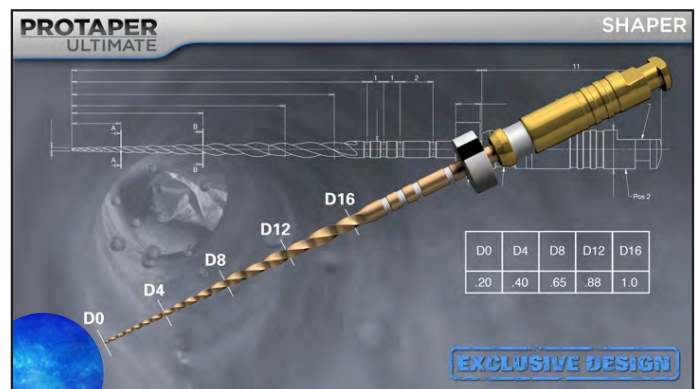
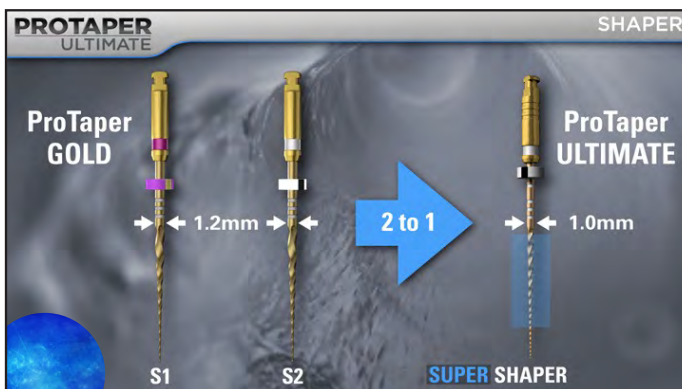
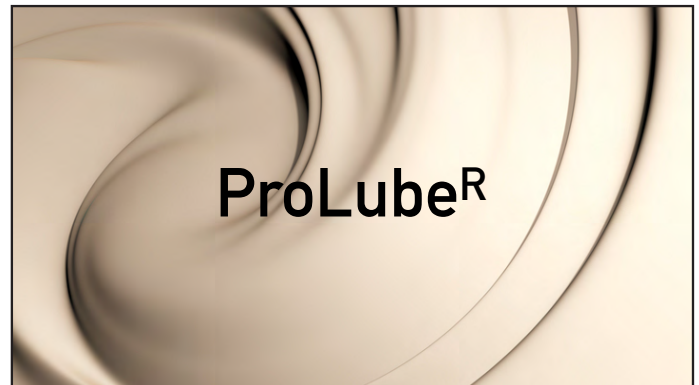
EXCLUSIVE DESIGN

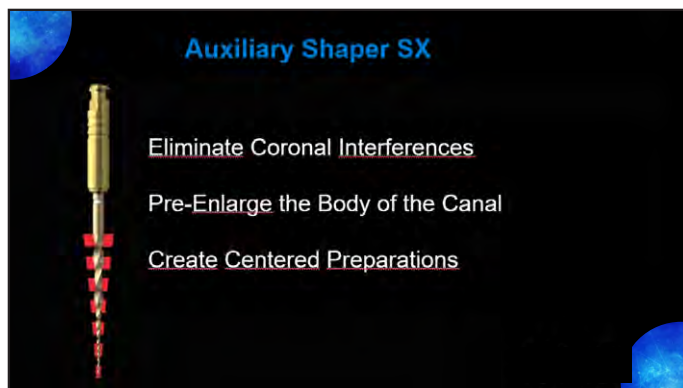
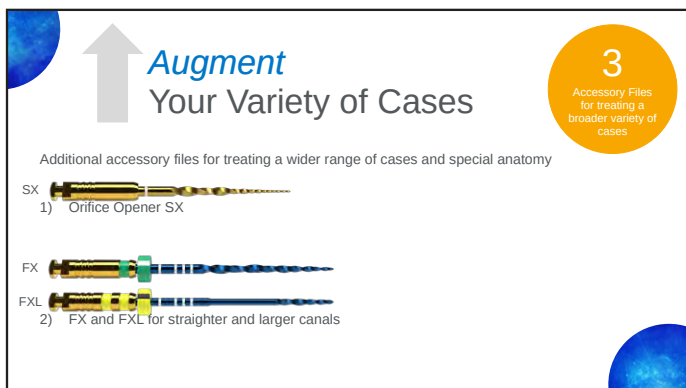
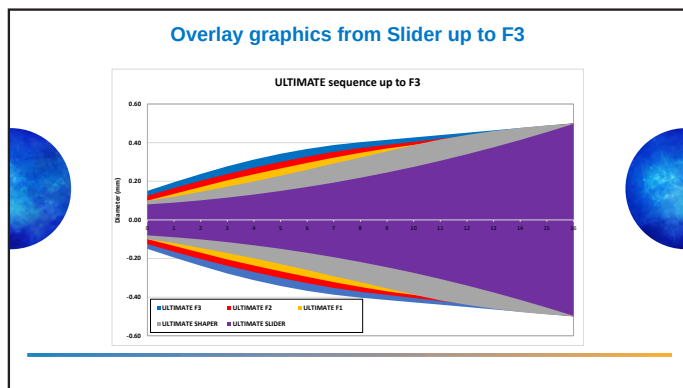
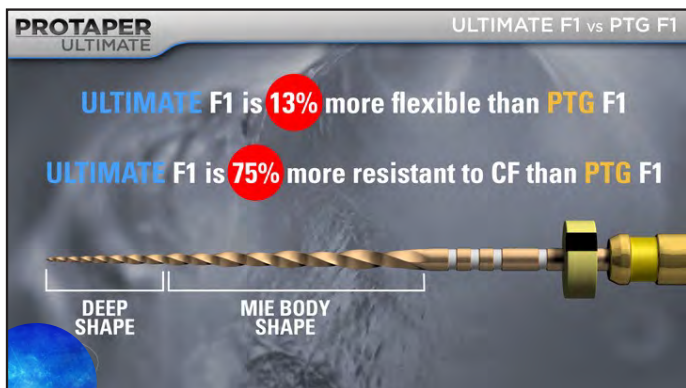
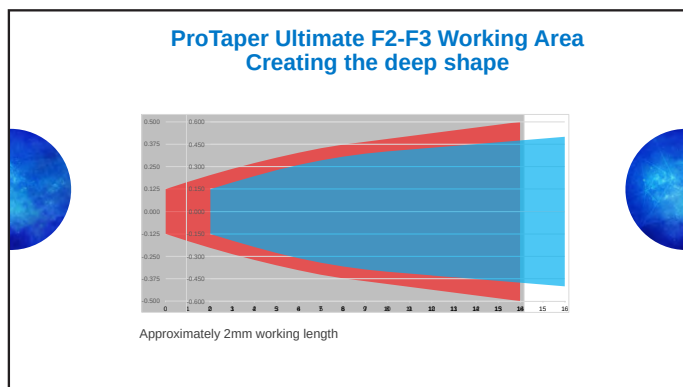
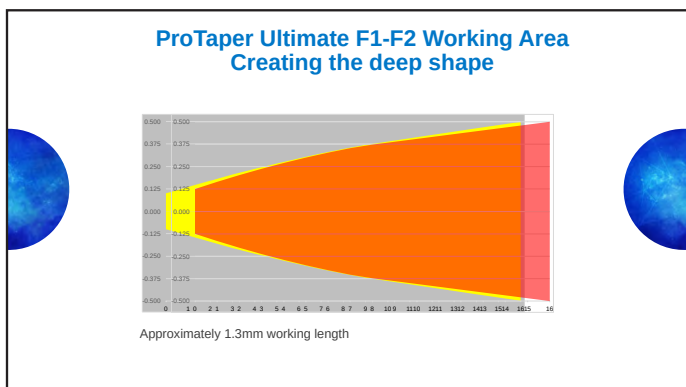
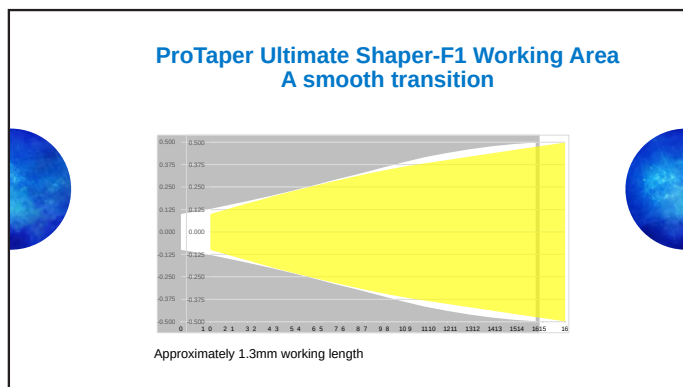
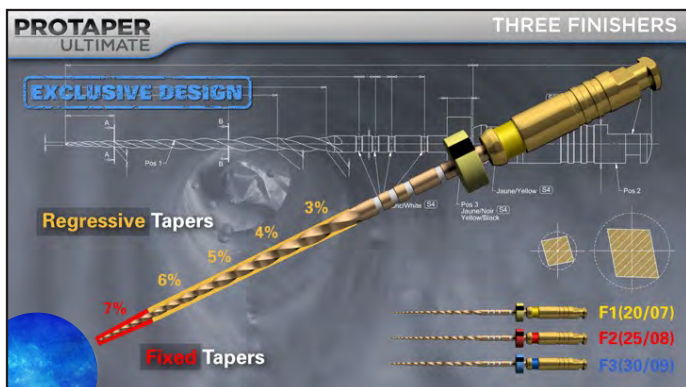
PROTAPER ULTIMATE SLIDER

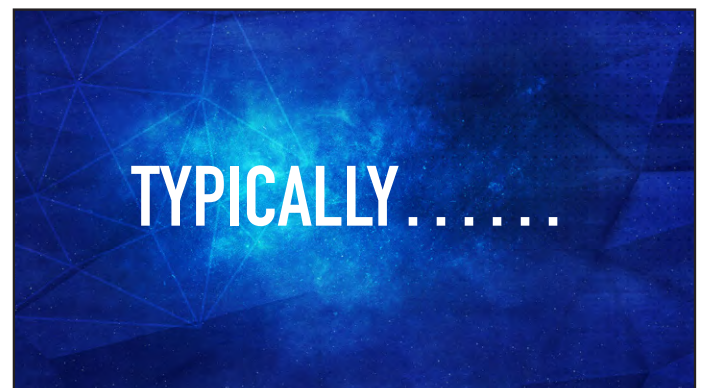
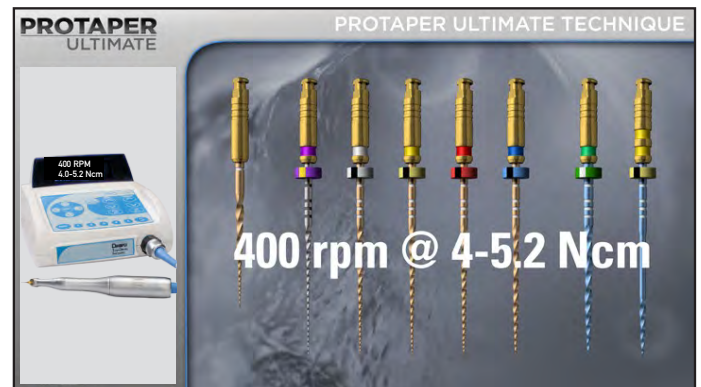
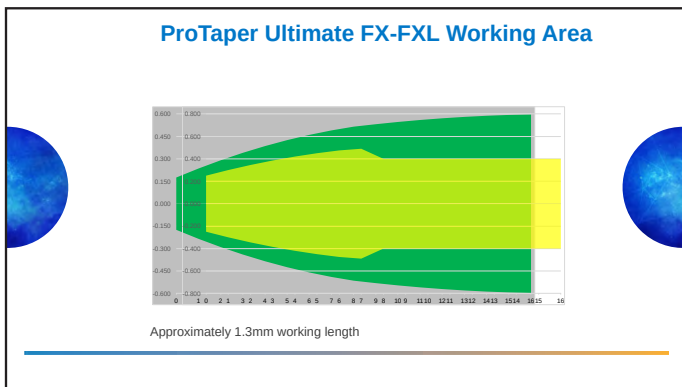
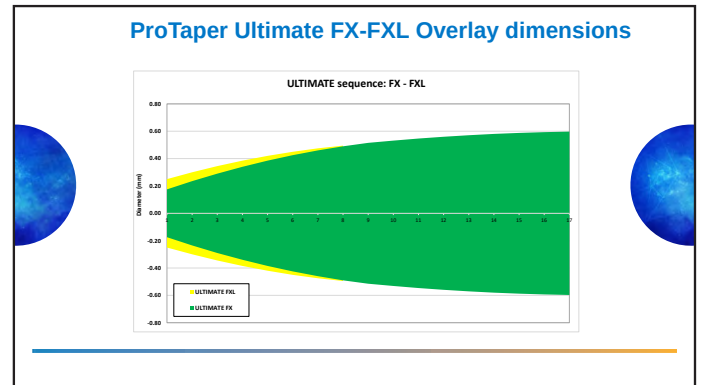
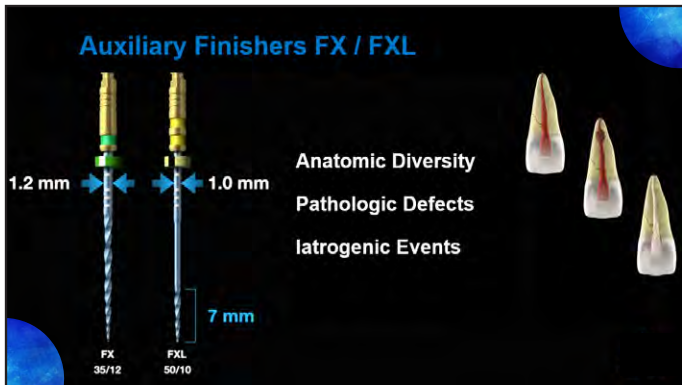
EXCLUSIVE DESIGN



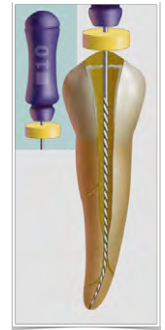
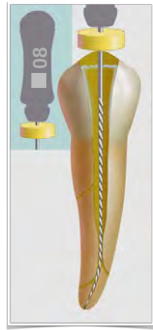
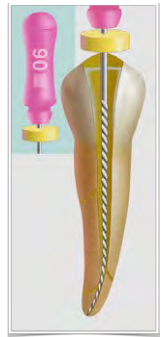
D0	D4	D8	D12	D16
.16	.26	.44	.68	.99



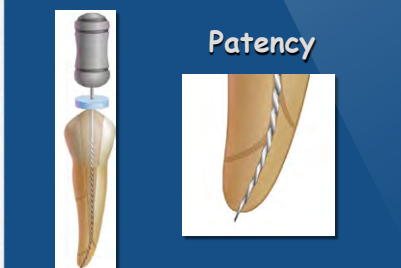




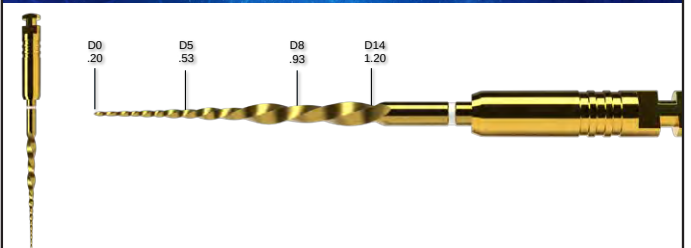
"SCOUT AND SECURE" THE CANAL



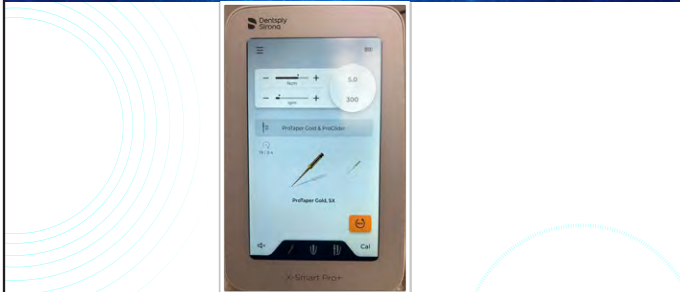
INFORMATION



ORIFICE OPENER SX-ROTARY 400 RPM



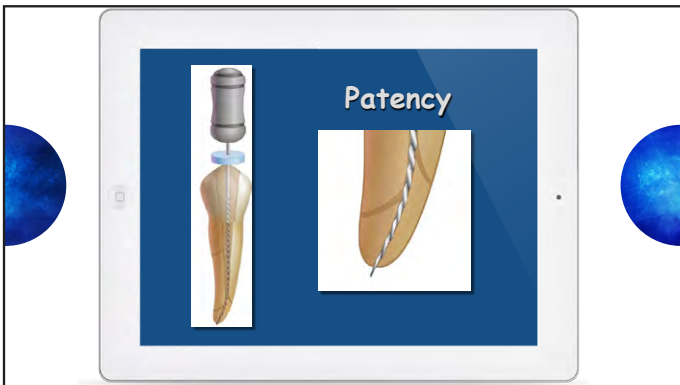
X-SMART PRO AND X-SMART PRO+ ROTARY



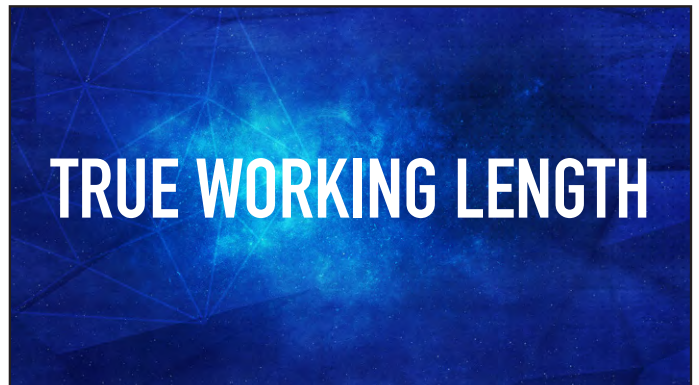
SX Brushing Motion



Patency



TRUE WORKING LENGTH



Apex Locators



OR

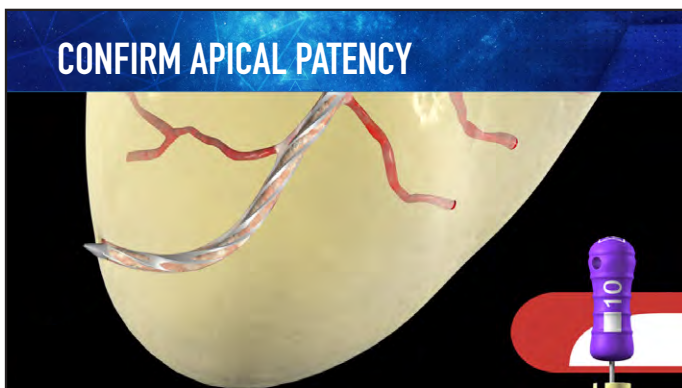
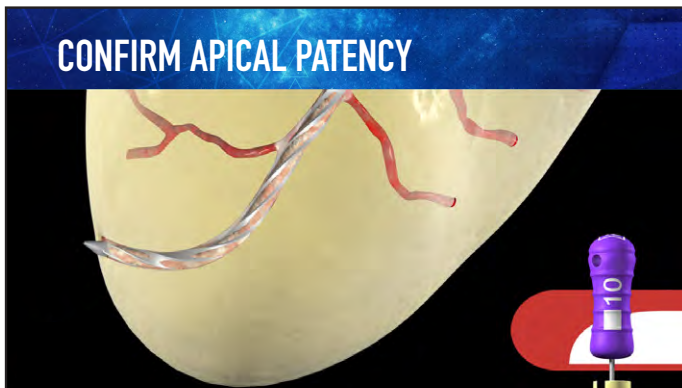
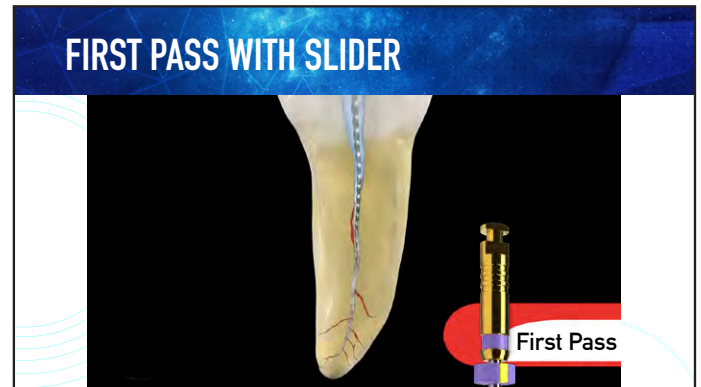
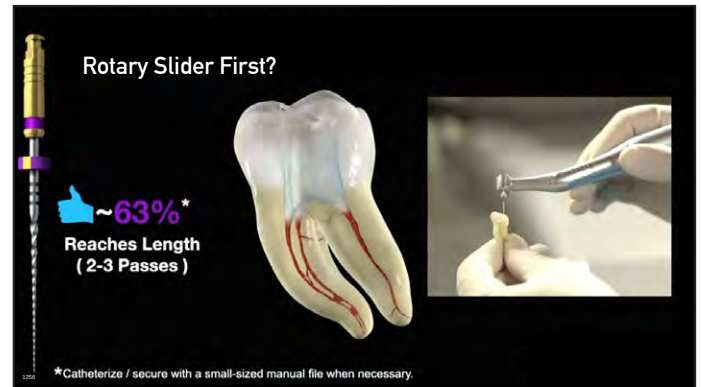


NEW PARADIGM (OPTIONAL)

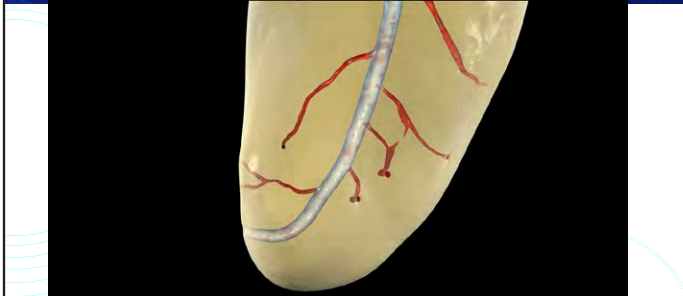


SLIDEPATH (GLIDEPATH)





GLIDE PATH COMPLETED



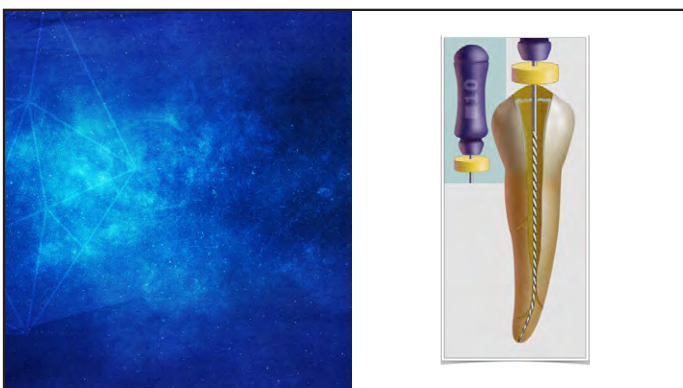
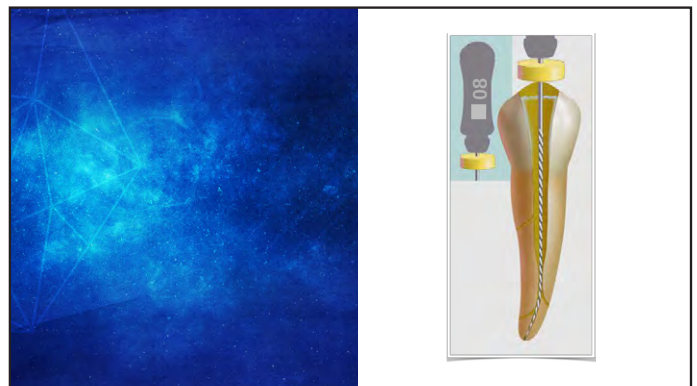
TO BE SAFE!

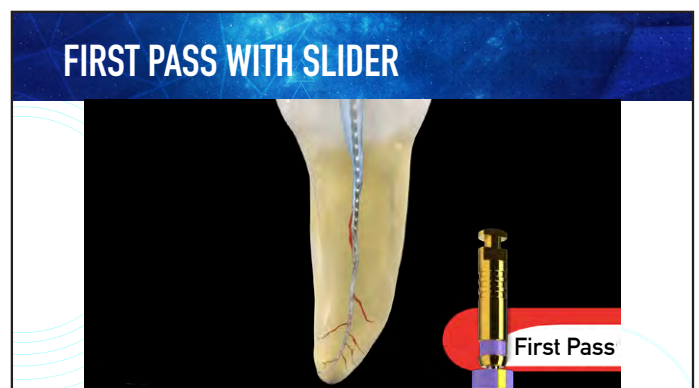
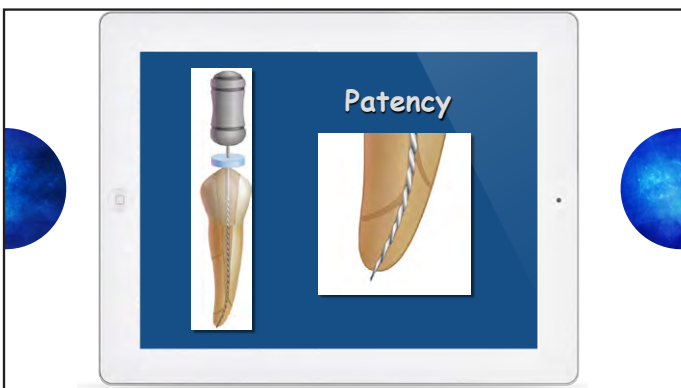
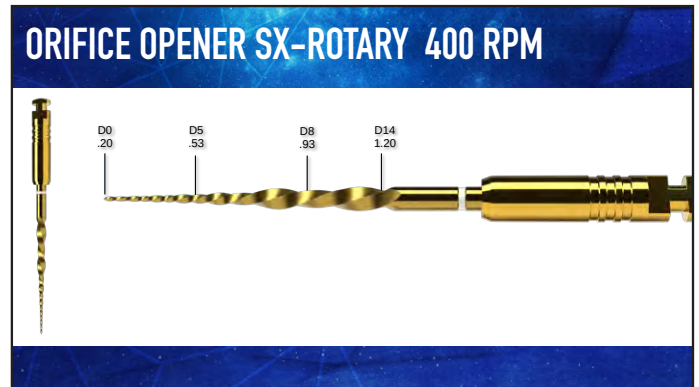
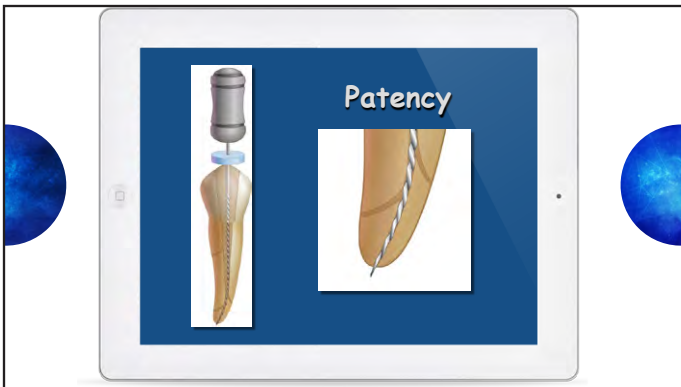


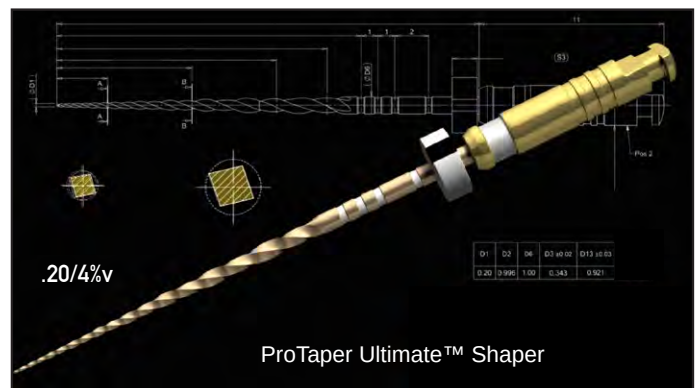
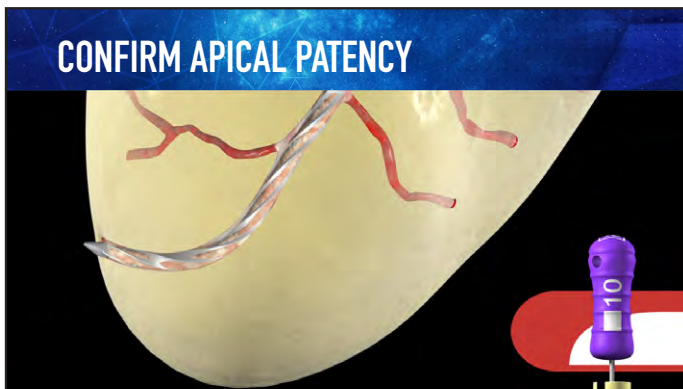
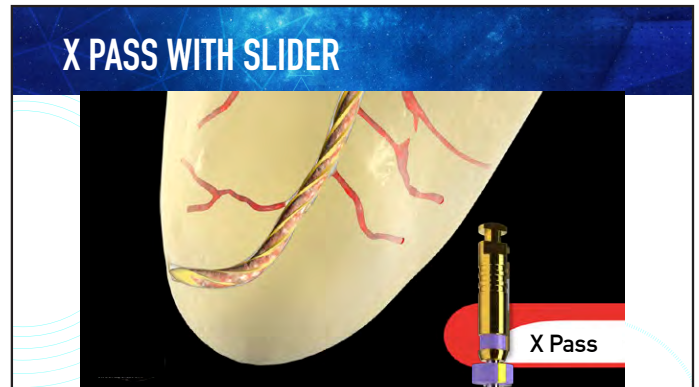
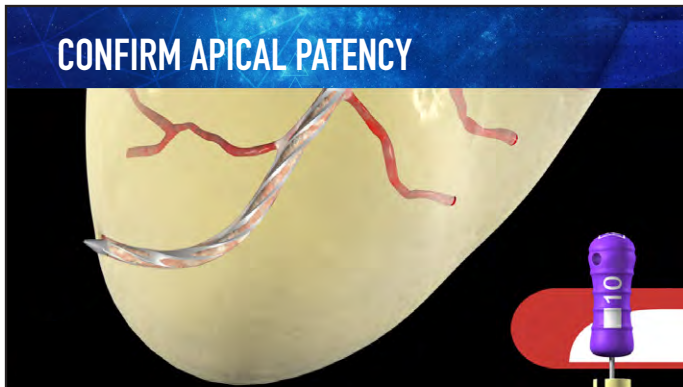
"SCOUT"
THE CANAL



ESTIMATED WORKING LENGTH







Augment Your Shaper

ONE single ProTaper Ultimate™ Shaper instead of the previous S1 and S2*

The ProTaper Ultimate™ Shaper features flexibility with safe cutting efficiency in the coronal two-thirds and provides an easy and safe pathway to the apical one-third to smoothly receive the Finishers.

* Previous generation ProTaper Gold has two Shapers S1 and S2.



Augment Your Finishers

30% more flexible*

The ProTaper Ultimate™ Finishers provide a balance between flexibility and durability in the most challenging endodontic anatomy.

ProTaper Ultimate™ Finishers give you deep shape while preserving dentin in the coronal two-thirds.

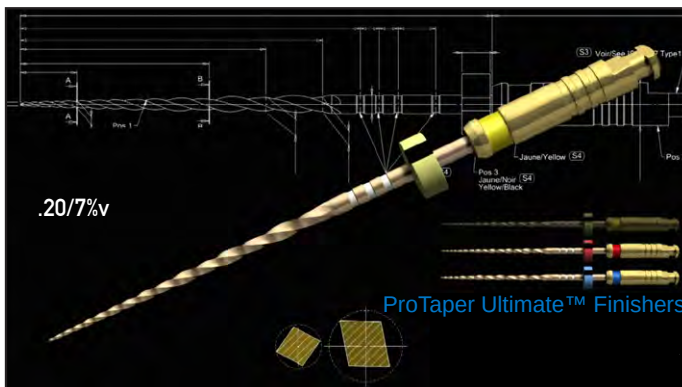
* ProTaper Ultimate F2 versus ProTaper Gold F2

Protaper Ultimate Finishers F1/F2/F3

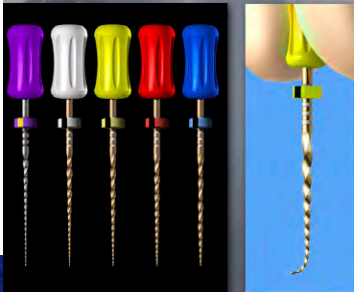
The flexibility for the most challenging anatomies without breaking or unwinding

Clinical Insight: If your file unwinds, the shape of the canal changes and the cone fit will be short or inadequate.

F1 F2 F3

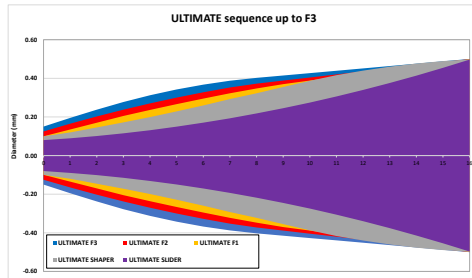


PROTAPER ULTIMATE MANUAL FILES



TECHNIQUE

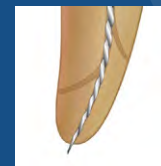
Overlay graphics from Slider up to F3



DURING INSTRUMENTATION...

BATH OF FULL STRENGTH NaOCl AND PROLUBE

Patency



Patency

Failure to Maintain Patency

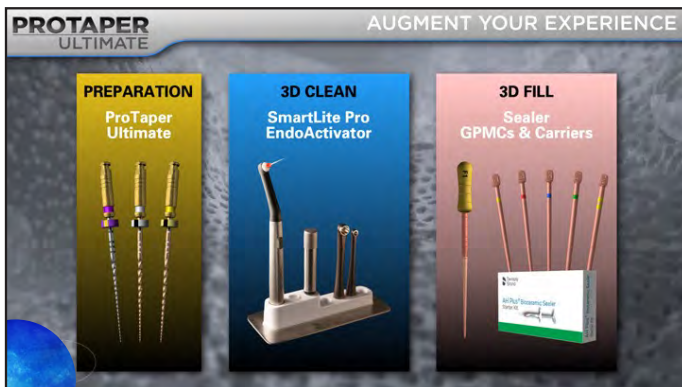
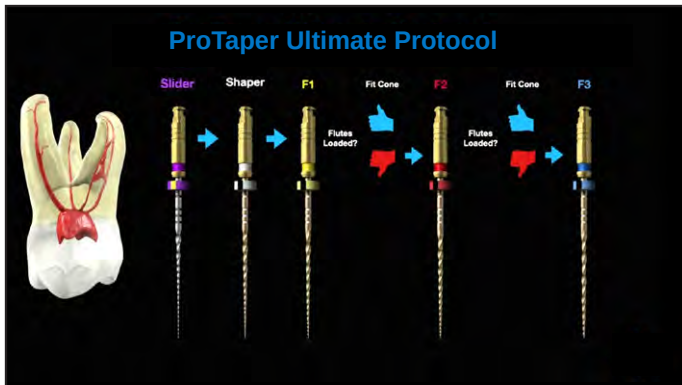
- Loss of apical reference point
- creates obstructions and deflections resulting in alteration of true canal pathway



ProTaper Ultimate Usage Guidelines

- 400 rpm speed
- 4 – 5.2 Ncm torque
- Light Pressure
- Irrigate Frequently
- Clean Flutes Frequently





SELF EVALUATION

Principles and Techniques of Root Canal Preparation - Part 1

True/False

1. Proper endodontic access provides straight-line entry into the canals, minimizing stress on rotary instruments and improving shaping efficiency.
2. The ProTaper Gold system uses a sequence of shaping (S1, S2) and finishing (F1, F2, F3) files made of heat-treated nickel-titanium alloy for improved flexibility.
3. ProTaper Ultimate introduces a dedicated “Slider” file to help create a reproducible glide path before shaping.
4. The design of access cavities should prioritize visibility and canal location, even if that means compromising straight-line access.
5. Both ProTaper Gold and ProTaper Ultimate systems are designed for reciprocating motion.
6. A conservative access cavity that preserves tooth structure at the expense of inadequate canal visualization is ideal for successful endodontic treatment.
7. ProTaper Gold and ProTaper Ultimate systems are both made from nickel-titanium alloy and designed to enhance flexibility.

Answer Key: 1. T, 2. T, 3. T, 4. F, 5. F, 6. F, 7. T

Preserving Tooth Structure and Enhancing Safety - Part 2

Gary Glassman, DDS

Preserving Tooth Structure and Enhancing Safety

Gary Glassman, DDS, FRCD(C)
gary@rootcanals.ca
www.rootcanals.ca



Benefits of Dentin Preservation

The Why?

- Extending the tooth life cycle
- Fracture reduction

O. Peters & G. Bruder New Research in Progress
Presentation at AAE 2015 Annual Session

Tooth Life Cycle and Fracture Reduction



J Conserv Dent. 2018 May-Jun; 21(3): 324–327.
doi: 10.4103/JCD.JCD_311_17

PMCID: PMC5977784
PMID: 29899638

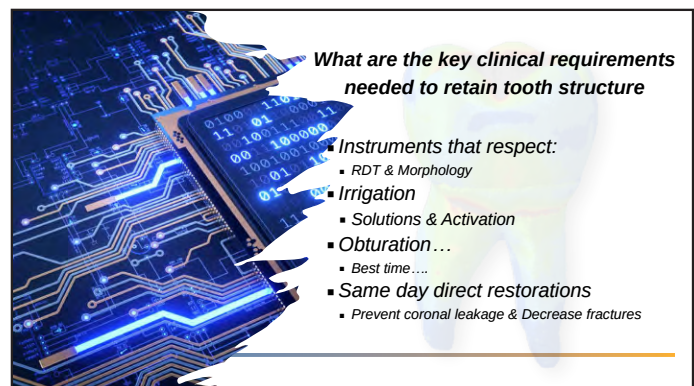
Evaluation of remaining dentin thickness and fracture resistance of conventional and conservative access and biomechanical preparation in molars using cone-beam computed tomography: An *in vitro* study

Deep Makati, Nimisha Chinmay Shah, Dexter Brave, Vishnu Pratap Singh Rathore, Dhaval Bhadra, and Meetkumar S. Dedania

Tooth Life Cycle and Fracture Reduction

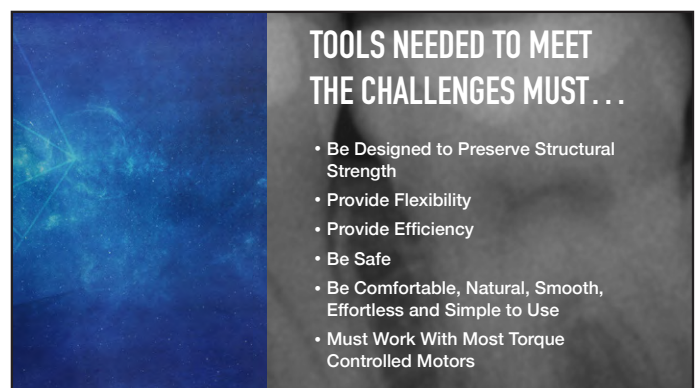
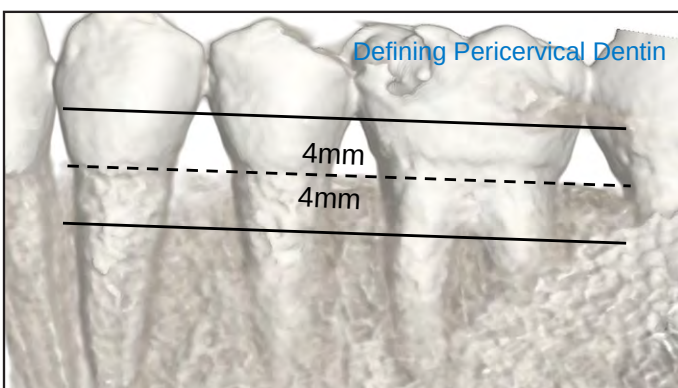
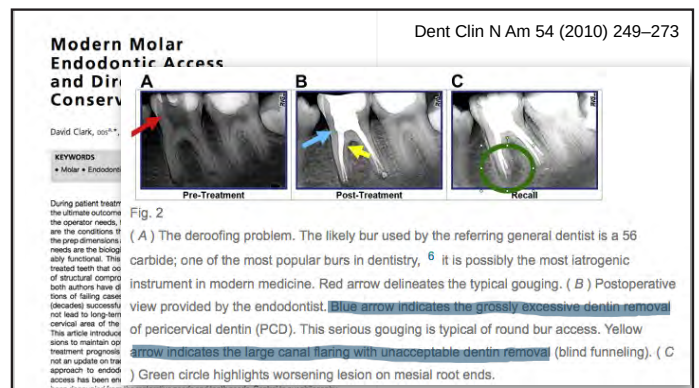
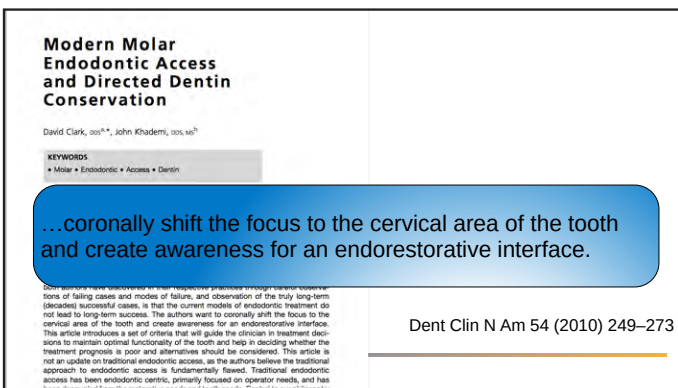
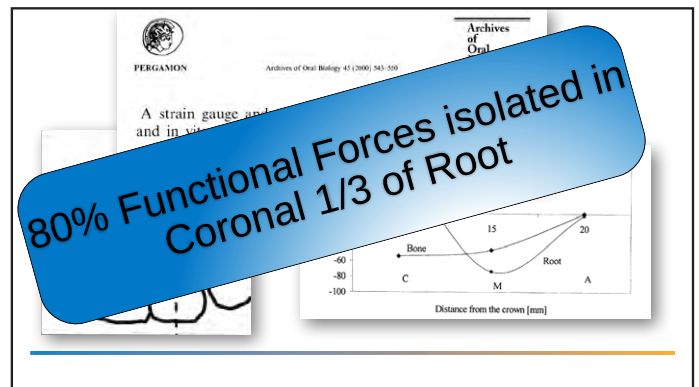
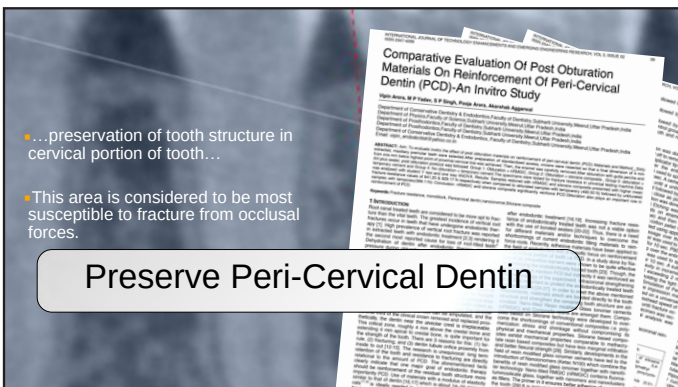
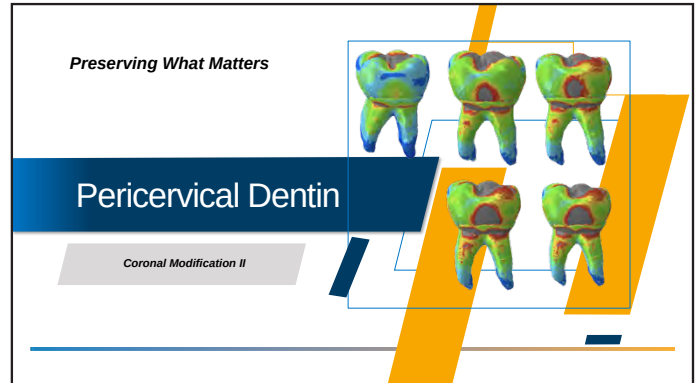
RESULTS

CBCT scans revealed a **statistically significant** reduction in RDT of all the roots of both experimental groups after access preparation and biomechanical preparation intergroup comparison showed statistically significant more RDT in the conservative group than conventional group mean difference being 1.60 mm ($P < 0.001$) [Table 1]. Fracture resistance also revealed a statistically significant difference between both the groups, with conservative group showing comparatively **higher fracture resistance** with a mean difference of 1662.07 N [Table 2].



What are the key clinical requirements needed to retain tooth structure

- Instruments that respect:
 - RDT & Morphology
- Irrigation
- Solutions & Activation
- Obturation...
 - Best time....
- Same day direct restorations
 - Prevent coronal leakage & Decrease fractures



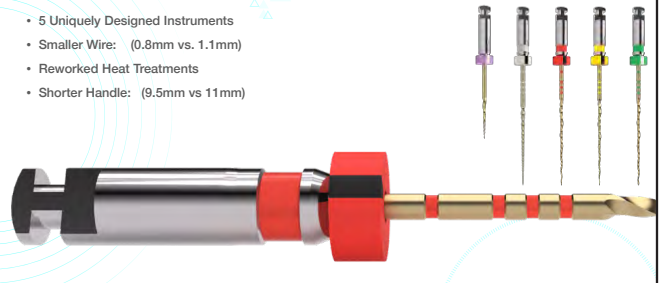
A COMPLETE SYSTEM SOLUTION

- Orifice Modifier
- Glidepath
- Shaping Files
- Adapted Paper Points
- Matching Conform Fit Gutta-Percha
- Irrigation nNeedle



INSTRUMENT FAMILY

- 5 Uniquely Designed Instruments
- Smaller Wire: (0.8mm vs. 1.1mm)
- Reworked Heat Treatments
- Shorter Handle: (9.5mm vs 11mm)

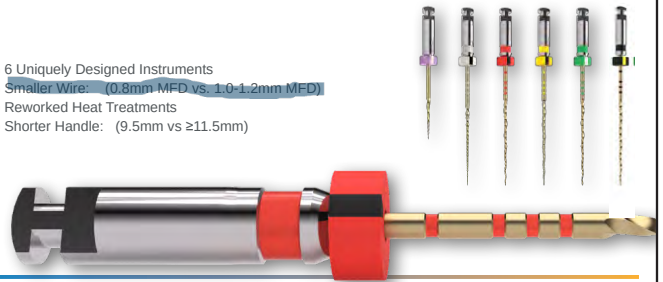


DIMENSIONS

									D0
Glider	17.02v						0.70		0.17
Small	20.04v						0.79		0.20
Prime	26.04v						0.80		0.26
Medium	36.03v						0.80		0.36
Large	46.02v						0.80		0.46

TruNatomy Instrument Family

- 6 Uniquely Designed Instruments
- Smaller Wire: (0.8mm MFD vs. 1.0-1.2mm MFD)
- Reworked Heat Treatments
- Shorter Handle: (9.5mm vs ≥11.5mm)

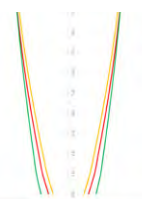


DENTIN REMOVAL ONLY WHERE NEEDED

Always the same coronal diameter



Larger diameters at the apex



Small Prime Medium Large

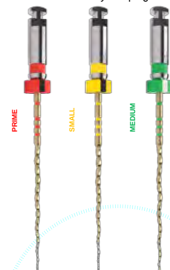
INSTRUMENT FAMILY

TruNatomy Orifice Modifier

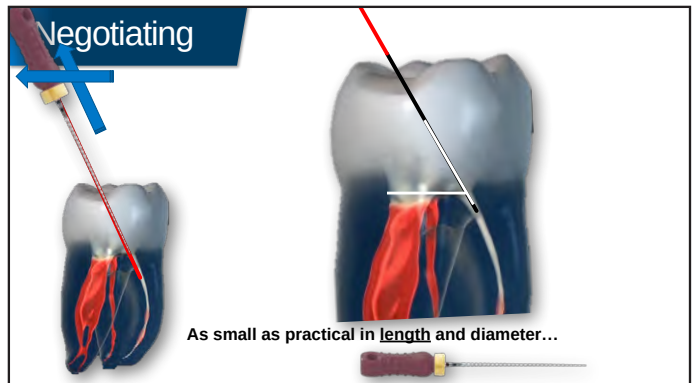
Size #20.08
Fixed Taper
Active part 7mm
MFD of about 7 mm

TruNatomy Glider

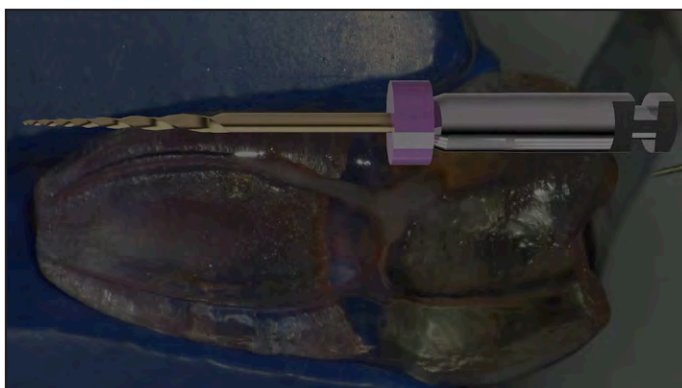
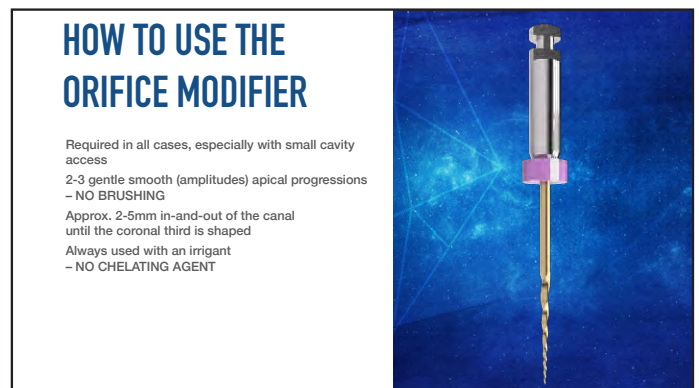
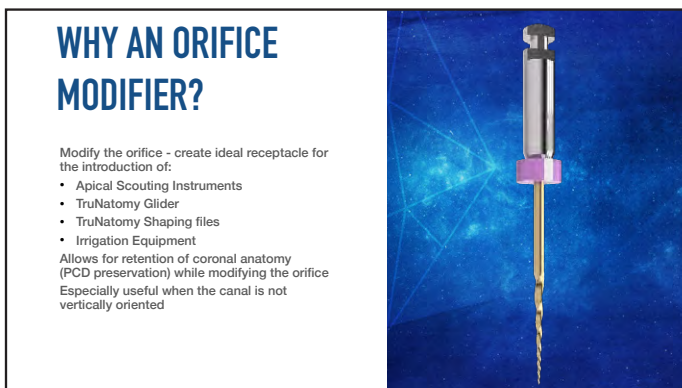
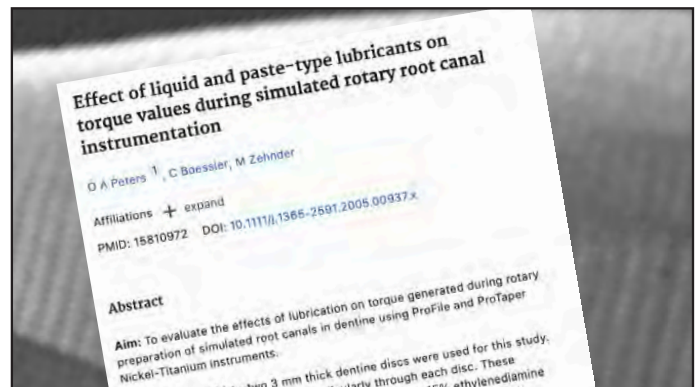
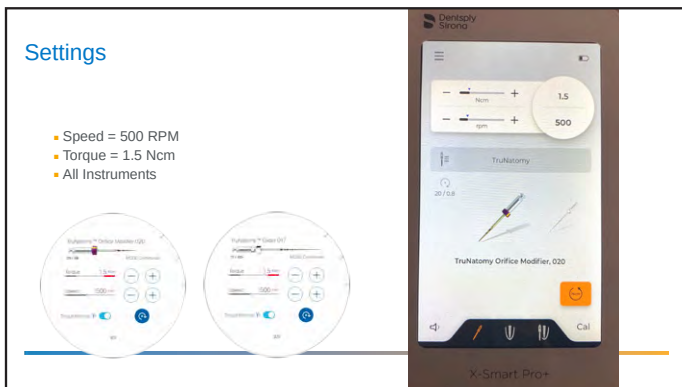
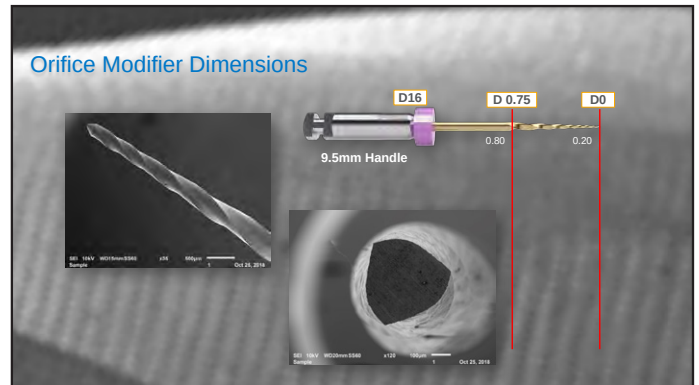
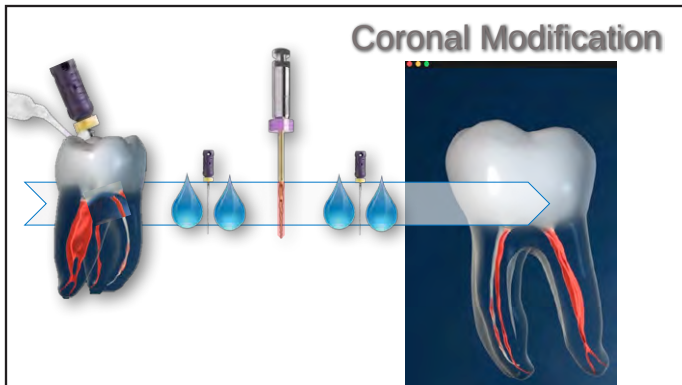
TruNatomy Shaping

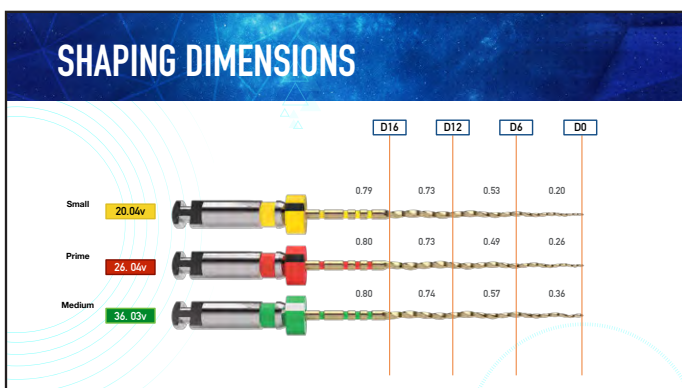
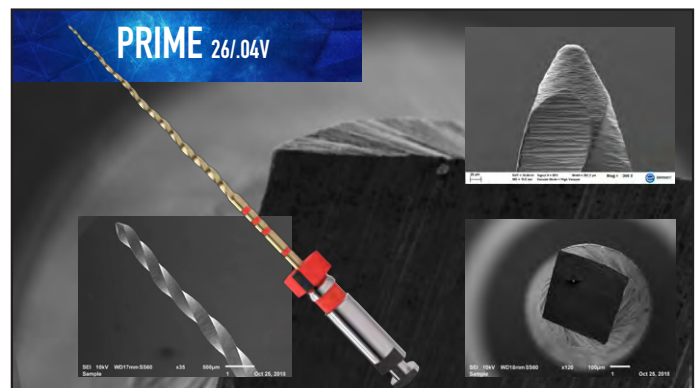
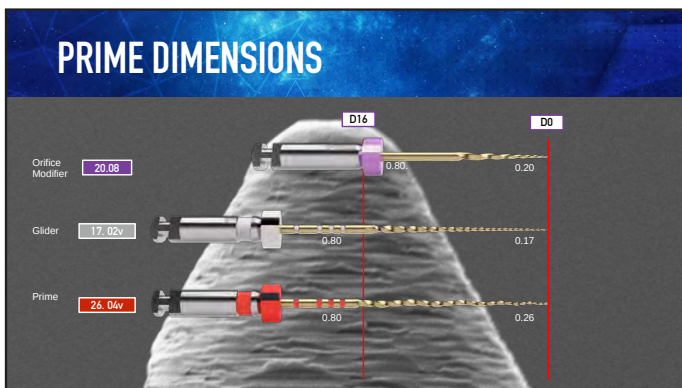
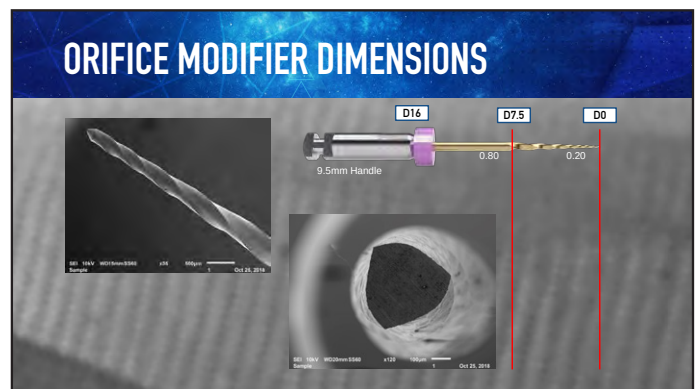
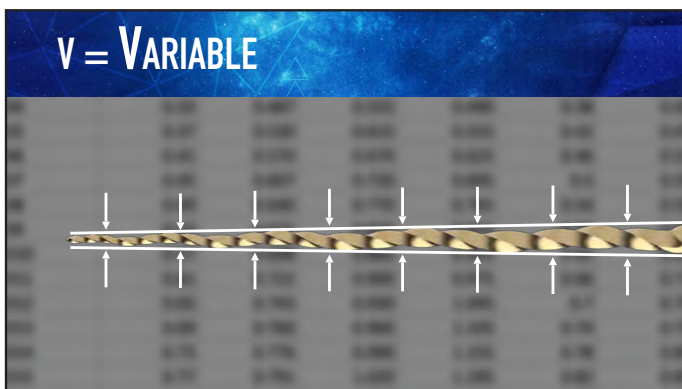
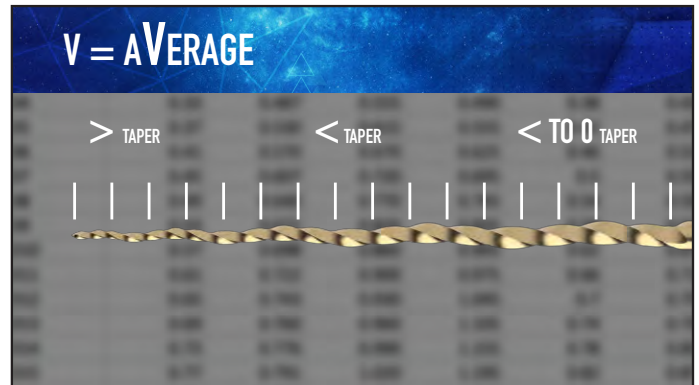
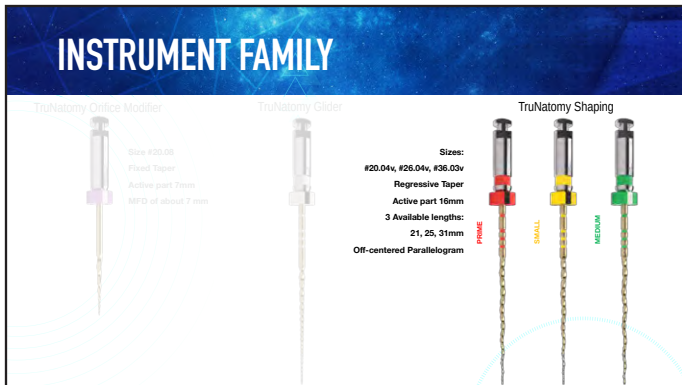


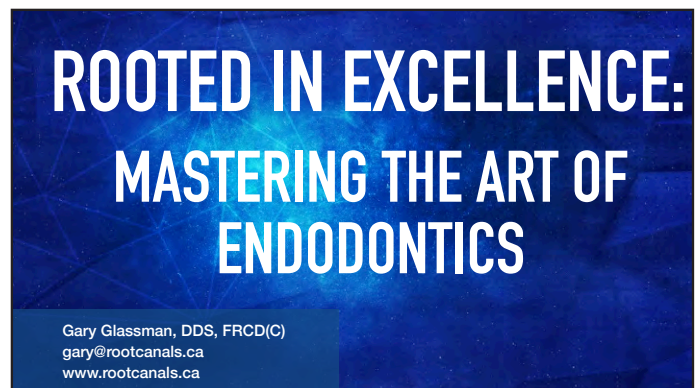
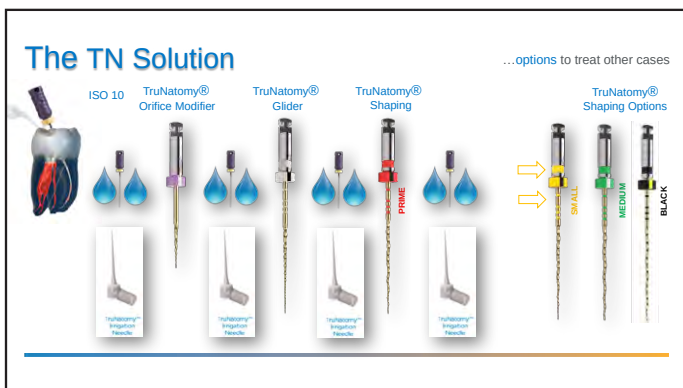
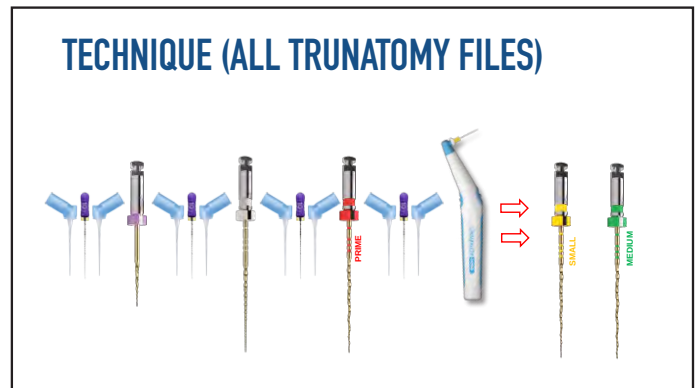
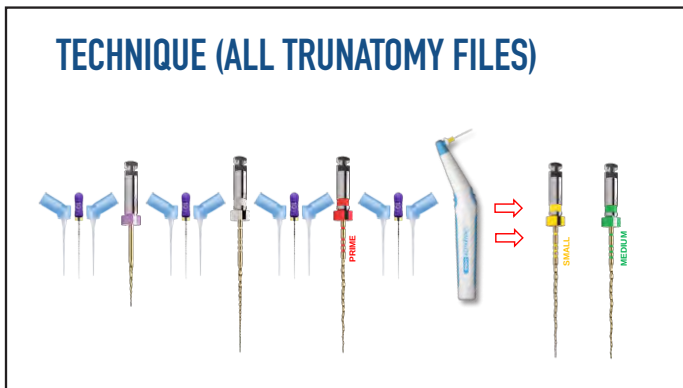
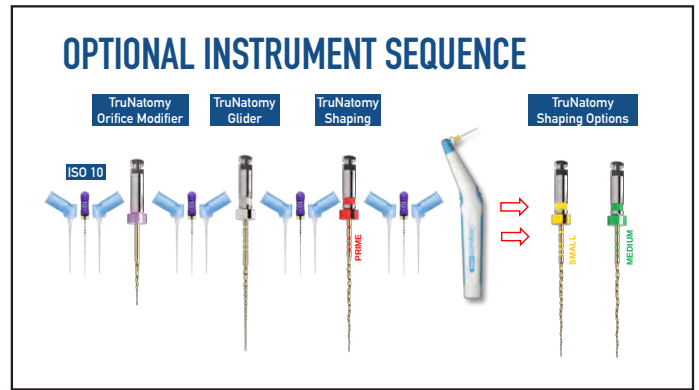
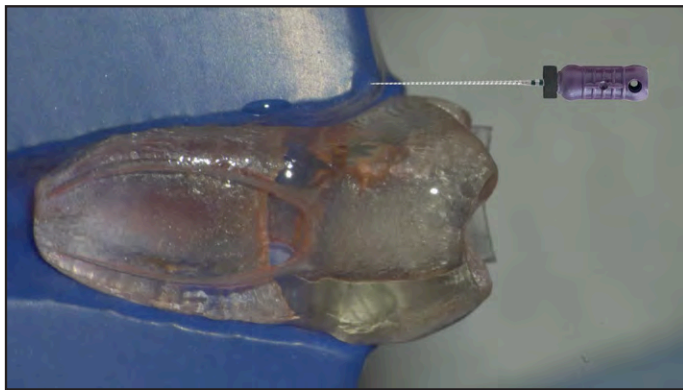
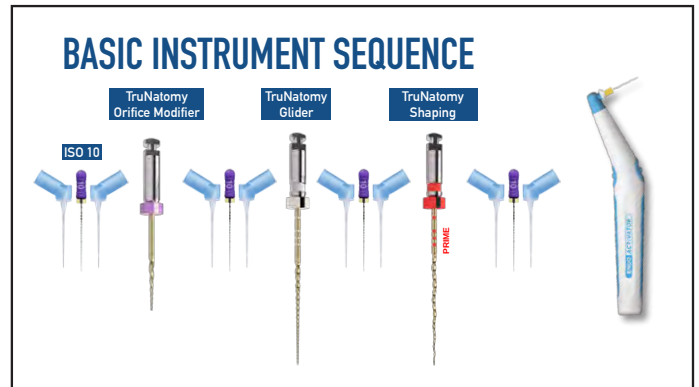
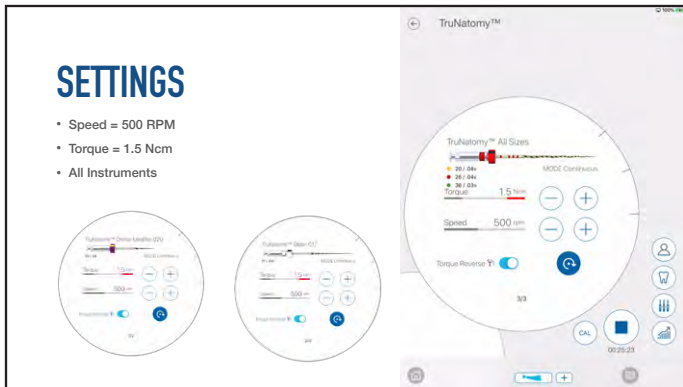
Negotiating

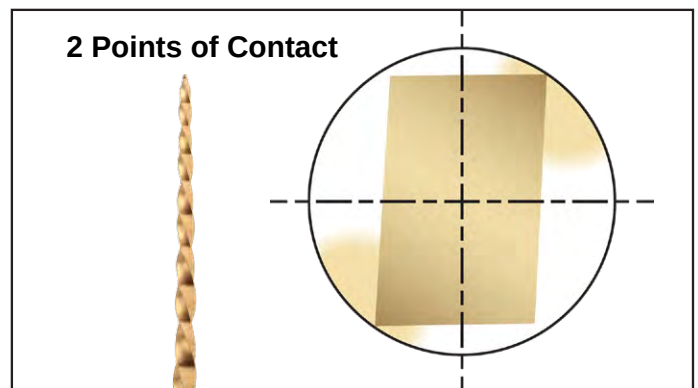
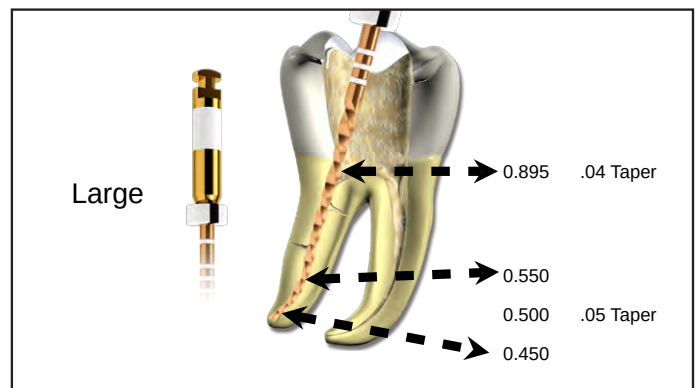
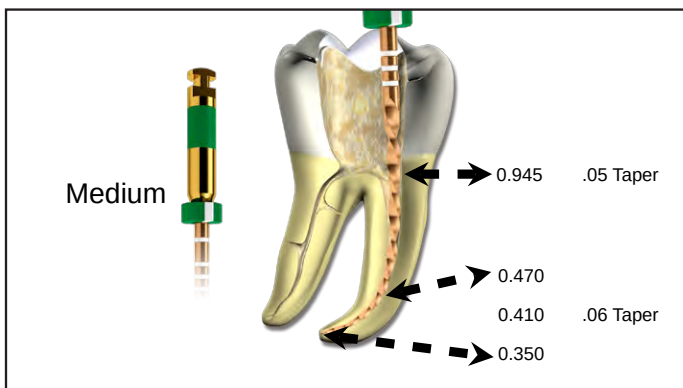
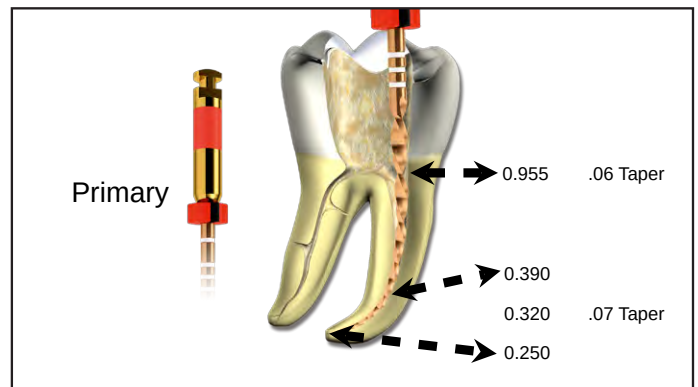
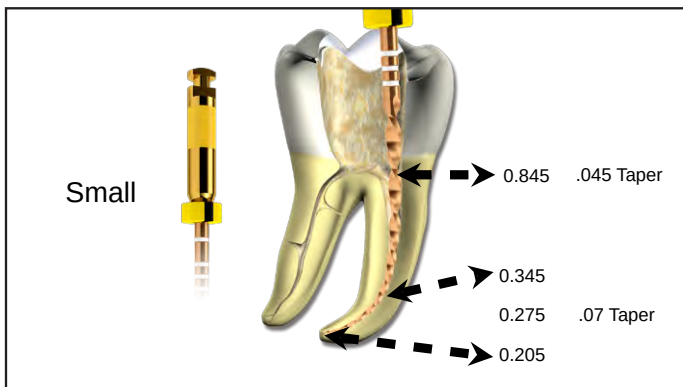
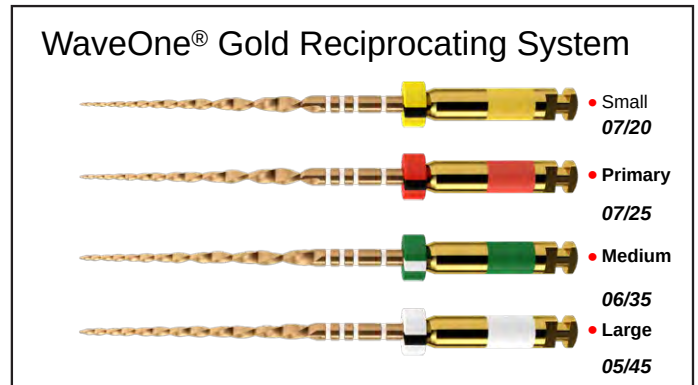


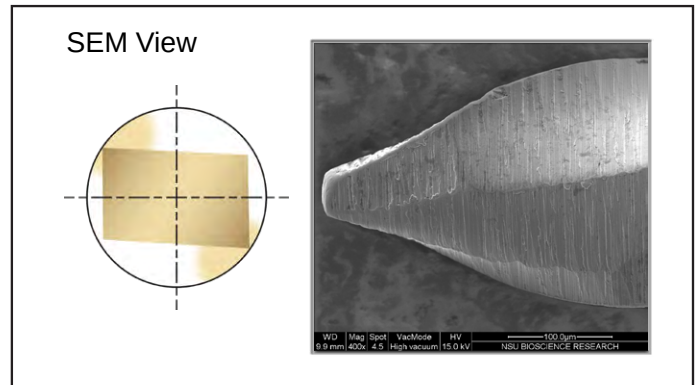
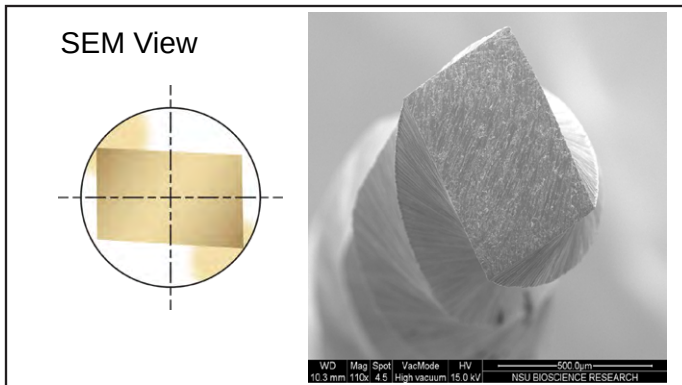
As small as practical in length and diameter...











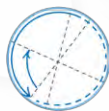
WAVEONE GOLD DESIGN PRINCIPLES

- Reciprocation reduces stresses
- Apical constrictions are generally small
- Sufficient taper allows for good irrigation
- Better metallurgy improves performance



The Concept

- Instrument initially rotates in cutting direction counter-clockwise
- Followed by a shorter reverse motion to releases the instrument from the dentine
- Instrument progresses apically
- The angles of reciprocation are specific to the instrument design and are smaller than the angle at which the instrument would reach its individual -> elastic limit!



Benefits of reciprocating motion

- The longer cutting motion and the shorter reverse motion mean that the instrument is centered better in the canal and the reverse motion releases the stress on the instrument.
- The angles of rotation are smaller than the angle settings at which the instrument would reach its elastic limit.

***High safety against instrument fracture**

TECHNIQUE-WAVEONE GOLD

**THREE
THINGS YOU
CANT DO
TOO MUCH!**

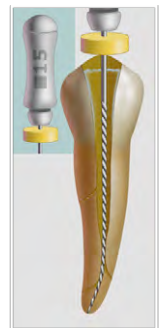
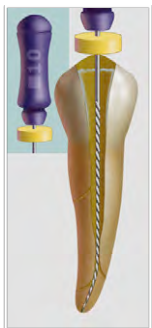
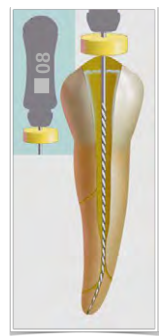
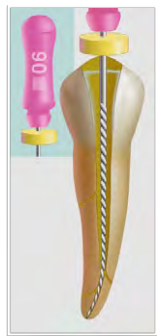
- ✓Patency
- ✓Refresh NaOCl
- ✓Working Length

DURING INSTRUMENTATION...

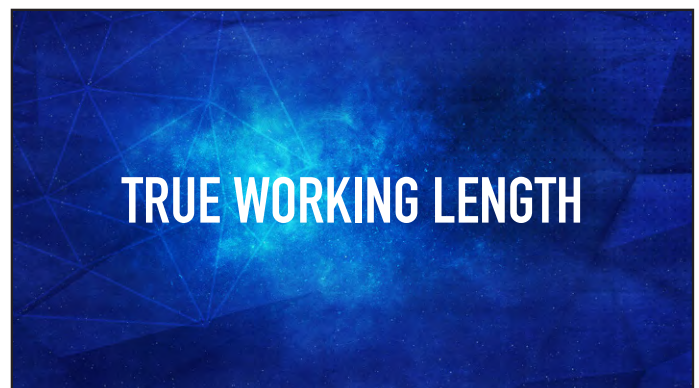
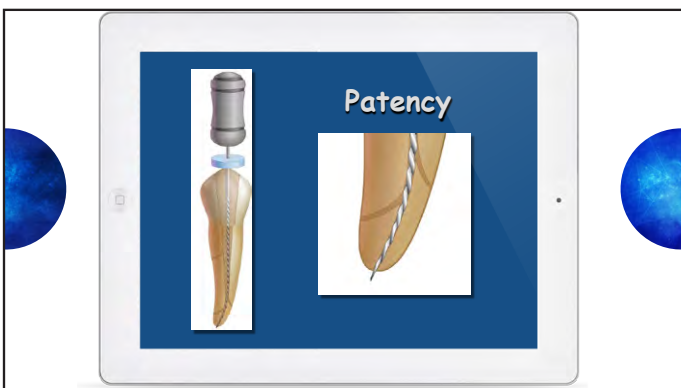
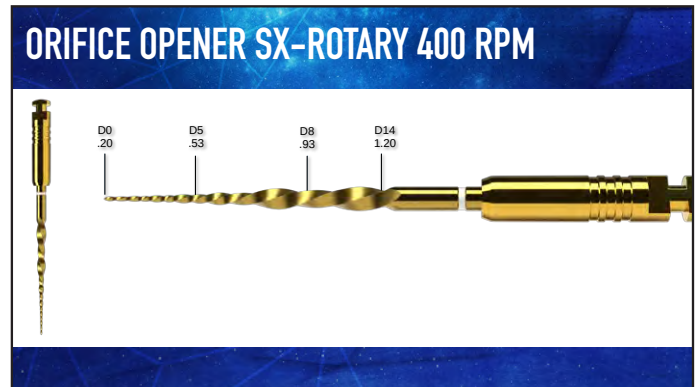
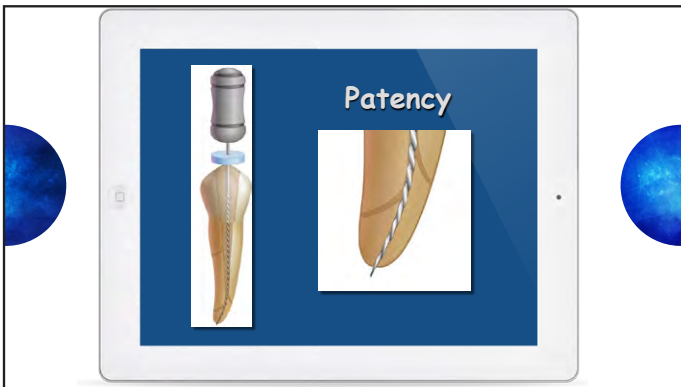
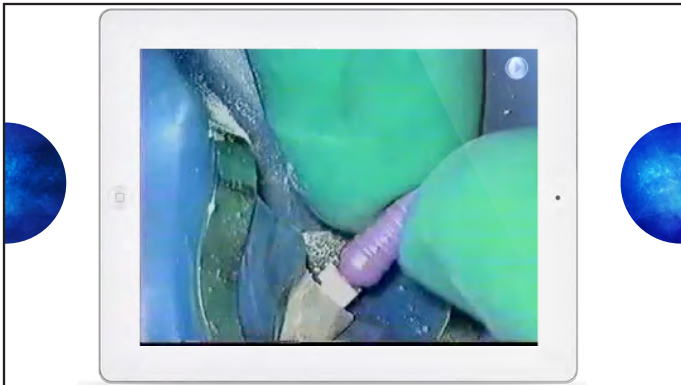
**BATH OF FULL STRENGTH
NaOCl
AND PROLUBE**

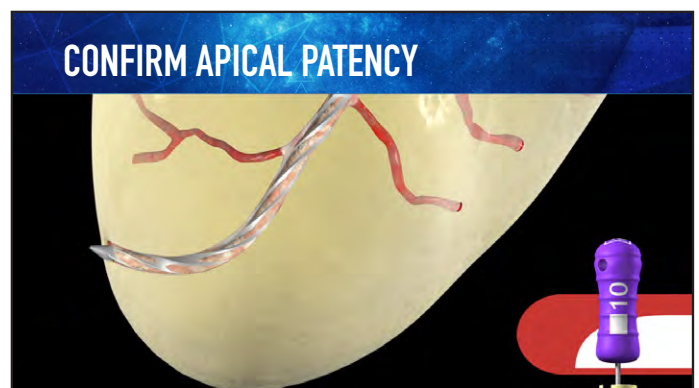
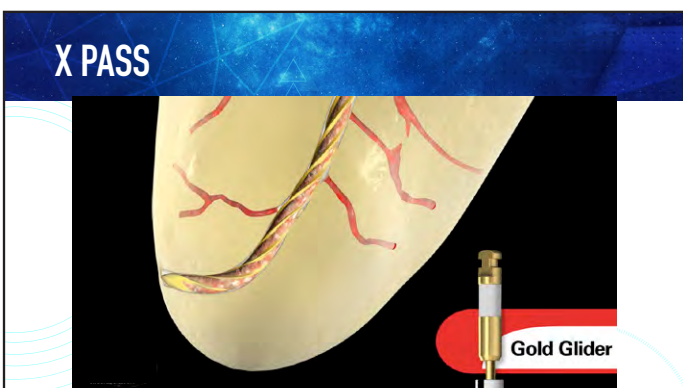
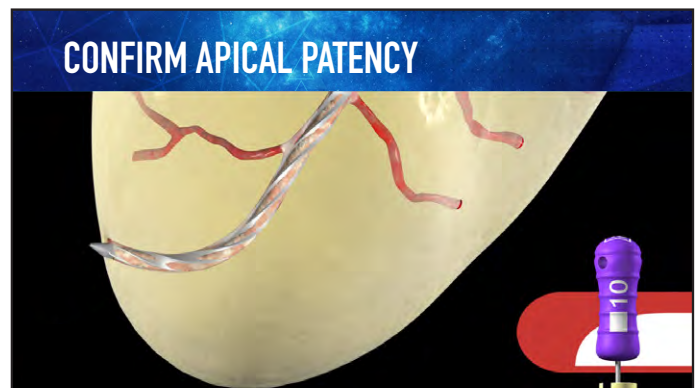
ESTIMATED WORKING LENGTH

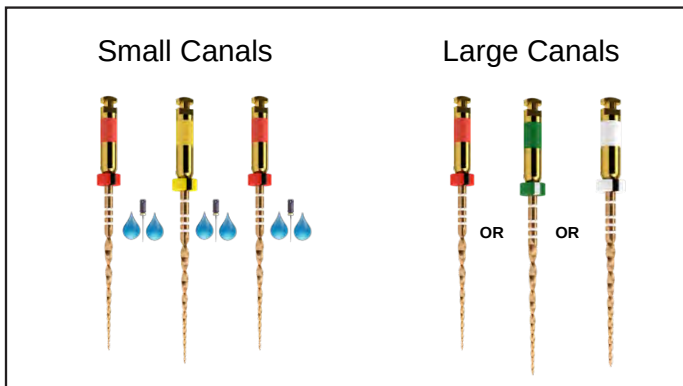
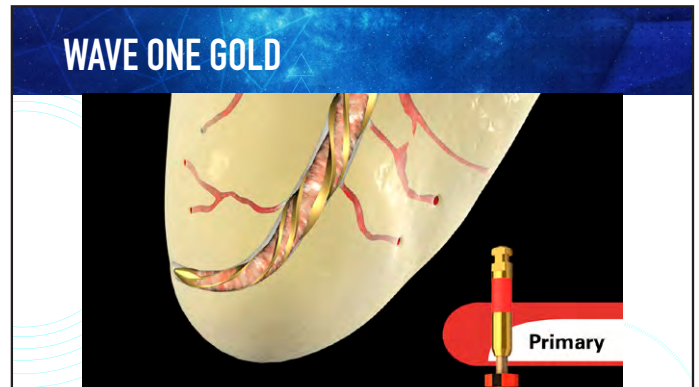
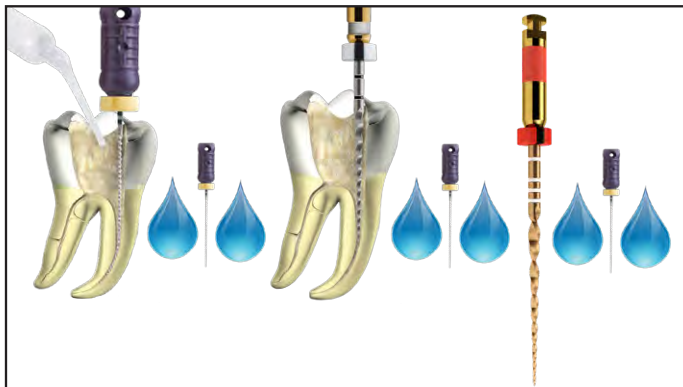
**“SCOUT”
THE CANAL**



OPTIONAL









ROOTED IN EXCELLENCE: MASTERING THE ART OF ENDODONTICS

Gary Glassman, DDS, FRCD(C)
gary@rootcanals.ca
www.rootcanals.ca

NO GLIDE PATH SYSTEMS

No Initial Glidepath

- Designed for one file ends.
- Root canal can be completely prepared with only one reciprocating instrument - without creating an initial glide path in the majority of cases.
- For those that prefer rotary instrumentation, ProTaper Ultimate.

ProTaper Ultimate Rotary

Reciproc Blue Reciprocation

Reduced or eliminate hand filing in both rotary and reciprocation.

RECIPROCATING ENDODONTIC TREATMENT SOLUTION

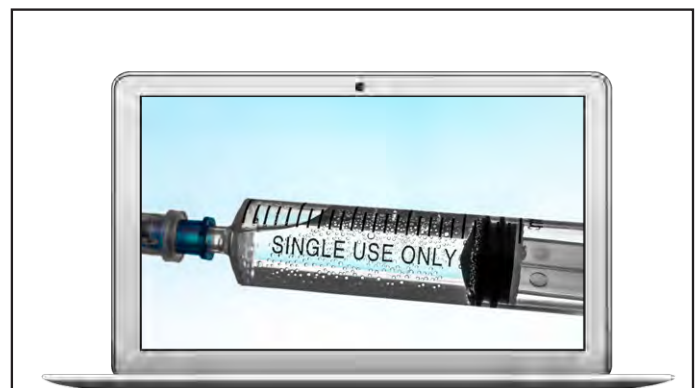
Reciproc™ Blue

RECIPROCATING ENDODONTIC TREATMENT SOLUTION

Reciproc™ Blue

Thank you:

Dr. Ghasan Yared, Dr. Nicola Grande, Dr. Gianluca Plotino, Dr. B Damas, Dr. Mario Zuolo, Dr. David Landwehr



THE STORY

ROANE ET AL. 1985

The "Balanced Force" Concept for Instrumentation of Curved Canals

PREPARATION OF SEVERELY CURVED CANALS WITH LARGE HAND STAINLESS STEEL FILES USED IN MANUAL RECIPROCATION

La cavité du canal est souvent courbée, ce qui rend la préparation difficile. Le concept de "Force équilibrée" permet de préparer ces canaux courbés en utilisant des files à main. Ce concept repose sur l'équilibre des forces appliquées à la file, permettant de suivre la courbure du canal sans créer de forces excessives. Ce processus est illustré dans la figure ci-dessous.

THE STORY

Push CW rotation CCW rotation CW removal

THE STORY



RECIPROC (2011)

THE STORY



RECIPROC (2017)

CANAL PREPARATION WITH ONLY ONE
RECIPROCATING INSTRUMENT IN THE
CONTEXT OF THE DIFFERENT STEPS AND
PHASES OF A ROOT CANAL TREATMENT

Management of MB2, calcified and curved canals



GHASSAN YARED

THE STORY

RECIPROC® vs. RECIPROC® blue in Summary

SAME	ONE FILE ENDO	NITI MATERIAL	S CROSS SECTION
DIFFERENT	TACTILE FEEL Can be pre-bent	FLEXIBILITY +40% more flexible*	CYCLE FATIGUE RESISTANCE 2.3 times more resistant *

RECIPROC® blue

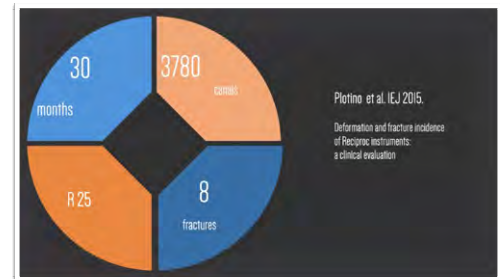
*Start RECIPROC. Data on file.
Source: lab report 16-HO-003

FILE BREAKAGE



2 Δ 26%
Rate of fracture

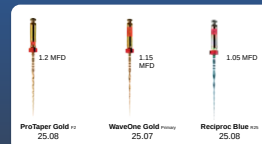
FILE BREAKAGE



FILE BREAKAGE

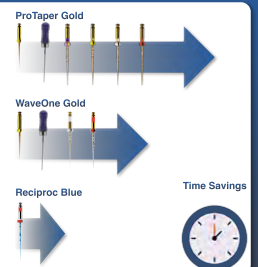
0.21%

The same apical prep you love...



...but with a more conservative MFD.

And far fewer instruments!



Reduces shaping time so you can
focus on what matters:
quality irrigation.

International Endodontic Journal, 41, 339-344, 2008

CLINICAL ARTICLE

Canal preparation using only one Ni-Ti rotary instrument: preliminary observations

G. Yared
102-63 Dawson Road, Guelph, ON N1H 1 B1, Canada

Abstract
Yared G. Canal preparation using only one Ni-Ti rotary instrument: preliminary observations. International Endodontic Journal 41, 339-344, 2008.

Aim To describe a novel canal preparation technique using only one Ni-Ti rotary instrument.

Summary In this novel technique, the canal is negotiated to the working length with a size 50 hand file. Then, the canal preparation is completed with an F2 ProTaper instrument used in a reciprocating movement. In larger canals, the use of additional hand files may be required to complete the apical enlargement.

Key learning points
• A novel canal preparation technique is introduced using only one Ni-Ti rotary instrument in a reciprocating movement.

oralhealth
www.oralhealthgroup.com

THE NITI REVOLUTION

NICKEL TITANIUM

DATA DRIVEN DENTISTRY
THE RECIPROCATING CONCEPT
PIONEERS AND NEW TECHNOLOGY

Reciproc blue: Is a one file endodontic procedure the new reality?
David Landwehr, DDS, MS; Gary Glassman, DDS, FRCD(C)

Oral Health Journal May 2025

Management of second mesio-buccal canal in maxillary molars with one instrument used in reciprocation, without initial scouting and without glide path
Glennan Yared, DDS, MSc, FRCD(C); Gary Glassman, DDS, FRCD(C)

SAFETY / EFFICIENCY OF THE RECIPROC CONCEPT
MORE THAN 600 ARTICLES

BACTERIAL REDUCTION
CLEANING ABILITY
DEBRIS EXTRUSION
MICROCRACKS
INSTRUMENT FRACTURE
RETREATMENT

ABILITY TO REACH WORKING LENGTH WITHOUT INITIAL CANAL NEGOTIATION WITHOUT GLIDE PATH
MANAGEMENT OF MB2 / CALCIFIED CANALS WITHOUT INITIAL CANAL NEGOTIATION WITHOUT GLIDE PATH
SHAPING SEVERELY CURVED CANALS WITHOUT INITIAL CANAL NEGOTIATION WITHOUT GLIDE PATH

ABILITY TO REACH WORKING LENGTH WITHOUT ANY PRIOR INSTRUMENTATION
85-100% OF CANALS IN MOLARS

Reciprocating Scouting When Scouting Was Impossible With Manual SS Files
UNPUBLISHED DATA

PLATING G, GRANDE NM, PORCIANI PF. THE ABILITY OF THE RECIPROC R25 TO NEGOTIATE ROOT CANALS WITHOUT INITIAL PATENCY IN PRIMARY TREATMENTS AND RETREATMENTS: A PROSPECTIVE CLINICAL STUDY.

✓ 70 UNSCOUTABLE ROOT CANALS IN PRIMARY TREATMENTS
✓ 66 CANALS (94%) SUCCESSFULLY MADE PATENT BY RECIPROC

✓ 120 UNSCOUTABLE ROOT CANALS IN RETREATMENTS
✓ 93 CANALS (77.5%) SUCCESSFULLY MADE PATENT BY RECIPROC

PRIMARY TREATMENT ABILITY

RECIPROCATING SCOUTING WHEN SCOUTING WAS IMPOSSIBLE WITH MANUAL SS FILES
UNPUBLISHED DATA

PLATING G, GRANDE NM, PORCIANI PF. THE ABILITY OF THE RECIPROC R25 TO NEGOTIATE ROOT CANALS WITHOUT INITIAL PATENCY IN PRIMARY TREATMENTS AND RETREATMENTS: A PROSPECTIVE CLINICAL STUDY.

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✓ 66 CANALS (94%) SUCCESSFULLY MADE PATENT BY RECIPROC

DE-DEUS ET AL. 2013 ZUOLO ET AL. 2015 BARTOLS ET AL. 2017

RETREATMENT ABILITY

RECIPROCATING SCOUTING WHEN SCOUTING WAS IMPOSSIBLE WITH MANUAL SS FILES
UNPUBLISHED DATA

PLATING G, GRANDE NM, PORCIANI PF. THE ABILITY OF THE RECIPROC R25 TO NEGOTIATE ROOT CANALS WITHOUT INITIAL PATENCY IN PRIMARY TREATMENTS AND RETREATMENTS: A PROSPECTIVE CLINICAL STUDY.

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endo

MANAGING MB2 CANALS

The ability of Reciproc instruments to reach full working length without glide path preparation: a clinical retrospective study
Andreas Bartolo^{1,2}, Bernd-Peter Rohrer⁴, Wolfried Walther¹

Type of treatment	Tooth type	Total MB2/3 canals N	MB2/3 RFWL N (%)
1 st RCTx	First maxillary molar	78	67 (85.9)
	Second	23	23 (100.0)

MANAGING CALCIFIED CANALS

> Patel, 2017 Jul 13;5:e3582. doi:10.7717/peerj.3582. eCollection 2017.

The ability of Reciproc instruments to reach full working length without glide path preparation: a clinical retrospective study

Andreas Barlos¹*, Dennis-Peter Robra², Winfried Walther¹

CALCIFIED CANALS: #6, 8 AND 10 FILES DID NOT REACH LENGTH

77% OF 51 CALCIFIED MB2 CANALS

92% OF 74 CALCIFIED MB1 CANALS

RECIPROC® blue

- 3 sizes
 - R25 for narrow canals
 - R40 for medium canals
 - R50 for large canals



THE INSTRUMENT:

Ni-Ti + THERMAL TREATMENT OF THE ALLOY

R25: 0.25MM AT THE TIP
OVERALL TAPER 5%
REGRESSIVE TAPER FROM D3 TO D16

S-SHAPED
CROSS-SECTION

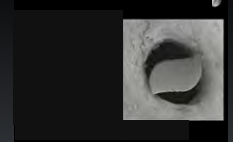


THE INSTRUMENT:

Ni-Ti + THERMAL TREATMENT OF THE ALLOY

R25: 0.25MM AT THE TIP
OVERALL TAPER 5%
REGRESSIVE TAPER FROM D3 TO D16

S-SHAPED
CROSS-SECTION



X-SMART PRO+ RECIPROICATION



SmartLite Pro EndoActivator



- Transillumination
- EndoActivator
- Curing

Single-File Selection

INSTRUMENT SELECTION CRITERIA

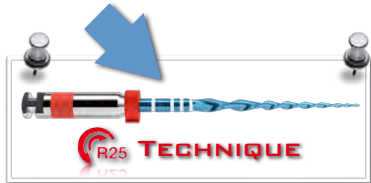
- 1) PreOperative Radiograph
- 2) Stainless-Steel Scouting

Courtesy: NM Grande & G Plotino

Single-File Selection

PRE-OPERATIVE RADIOGRAPH

WHEN THE ROOT CANAL IS NOT VISIBLE IN THE PRE-OP RADIOGRAPH

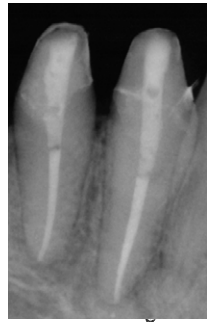


Single-File Selection

PRE-OPERATIVE RADIOGRAPH

WHEN THE ROOT CANAL IS COMPLETELY VISIBLE IN THE PRE-OP RADIOGRAPH

2) Stainless-Steel Scouting

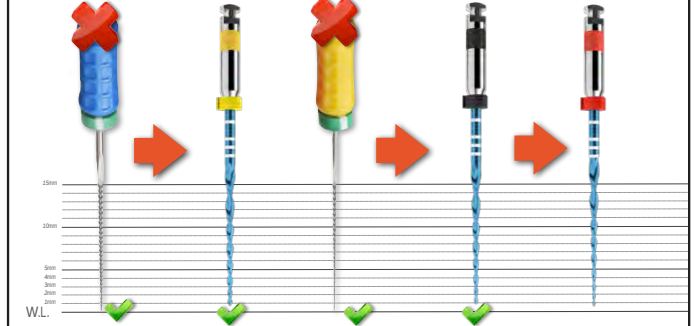


Narrow

Medium & Wide



If the canal is completely visible in the radiograph...

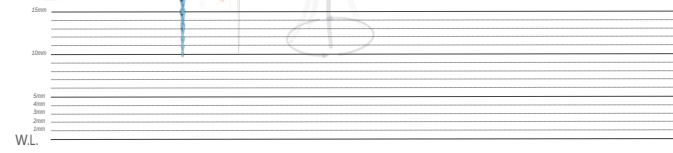


Step by Step

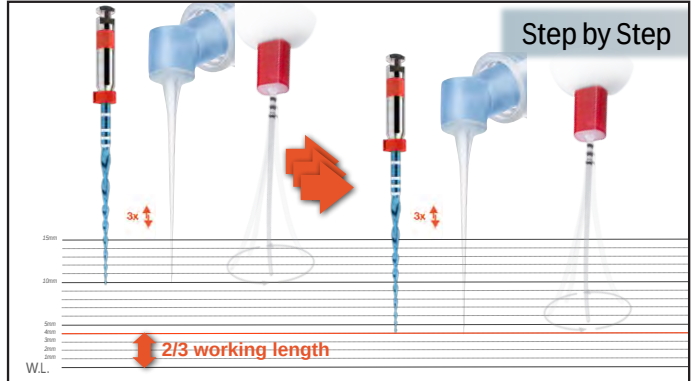
Set $\frac{2}{3}$ of the estimated WL

Coronal & middle third preparation

- ✓ Fast in-and-out pecking motion (1-3 mm amplitude)
- ✓ Only 3 strokes of in-and-out movements
- ✓ It's possible to brush laterally

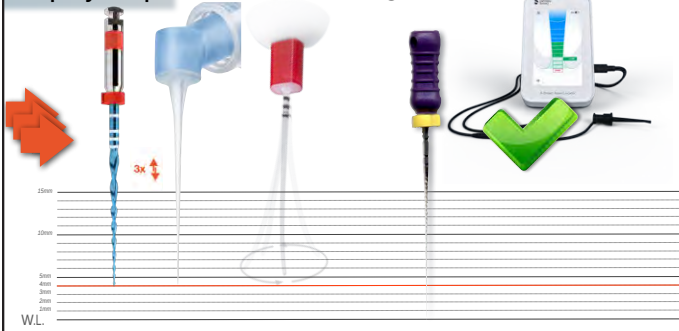


Step by Step



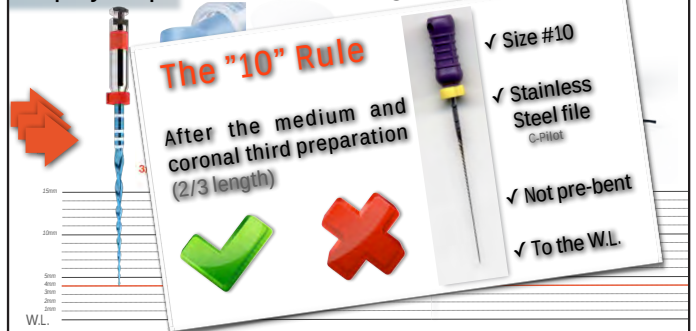
Step by Step

Apical Scouting

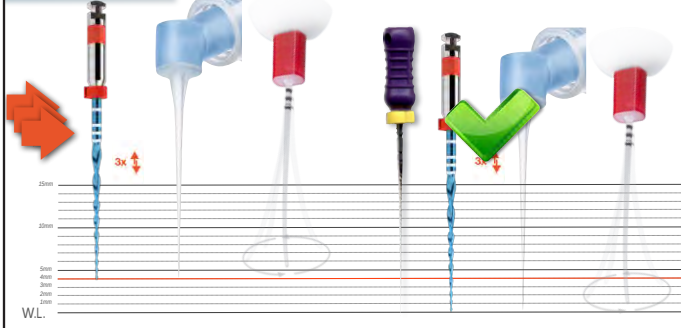


Step by Step

Apical Scouting

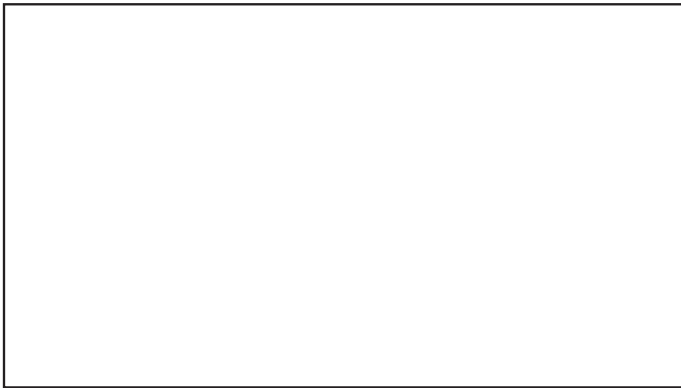


Step by Step Apical Preparation

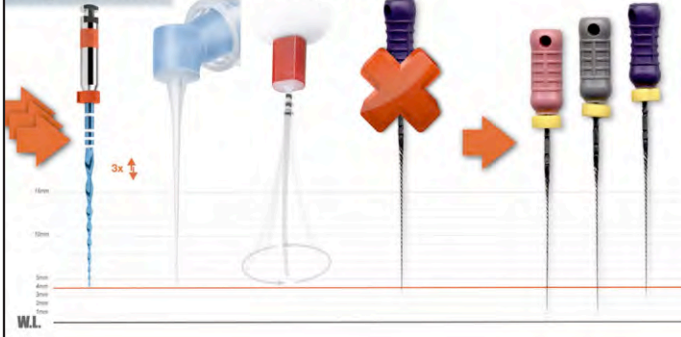


Step by Step

- After every three pecks clean the instrument flutes from debris
- Examine the file for any signs of wear or deformation



Step by Step Apical Scouting

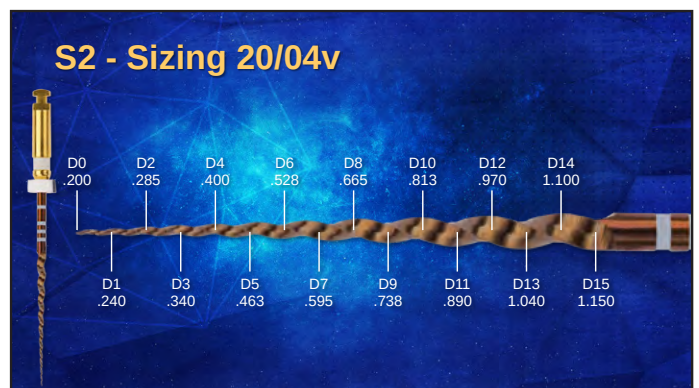
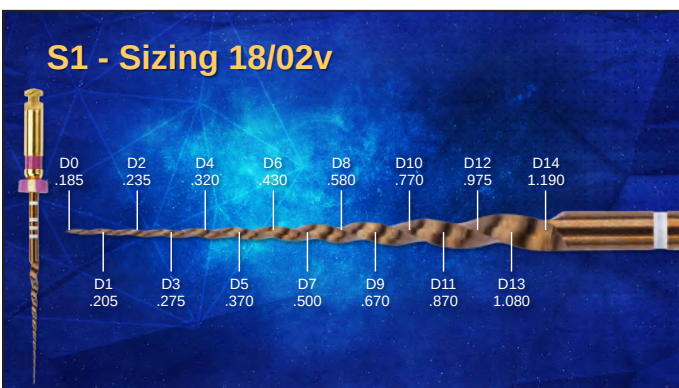
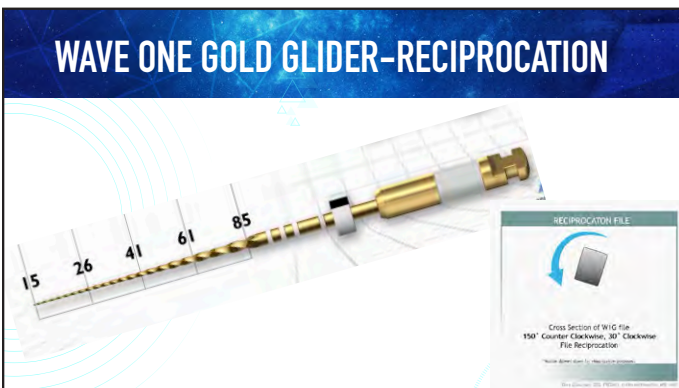
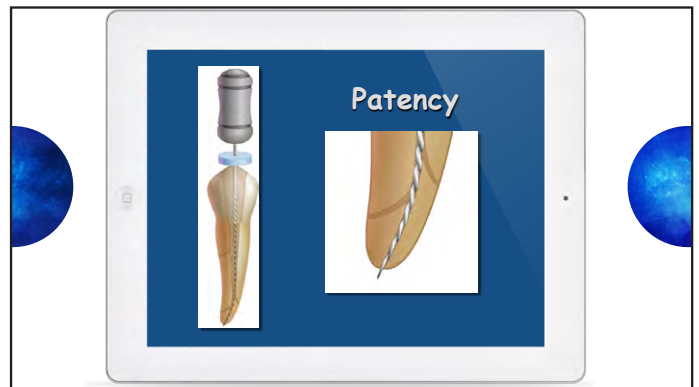
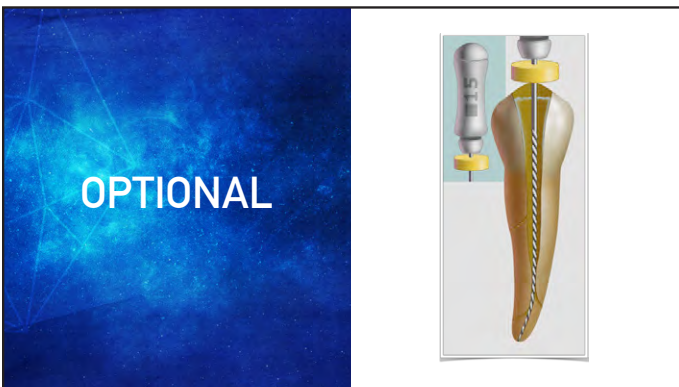
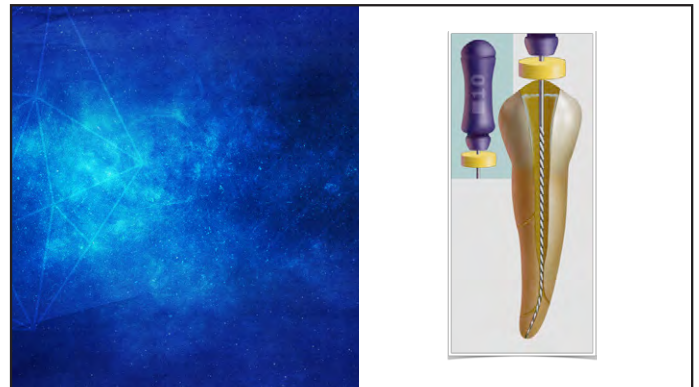
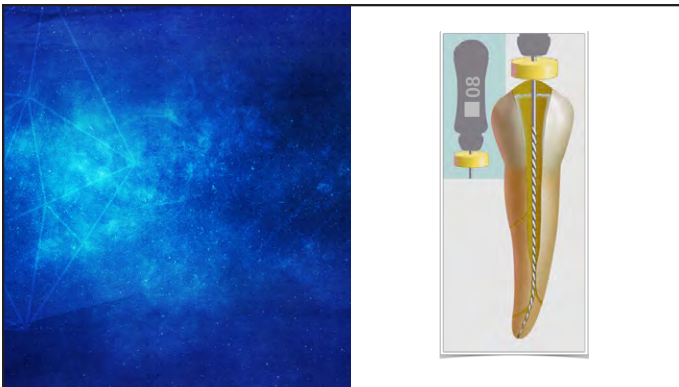


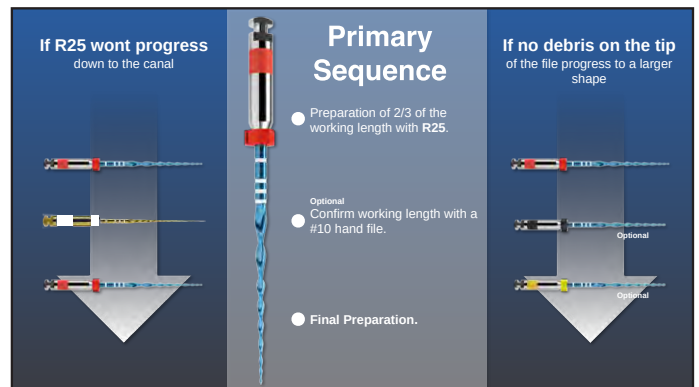
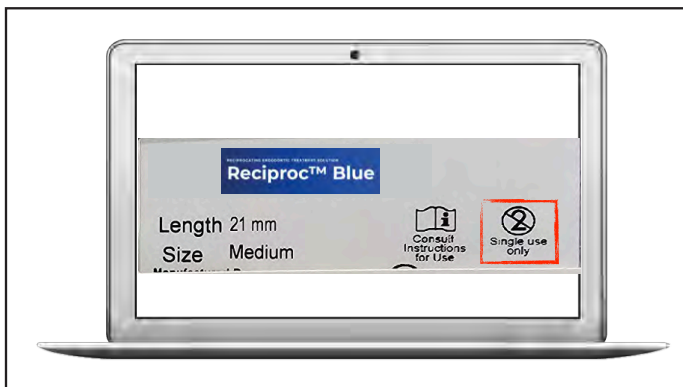
Step by Step Apical Preparation



**“SCOUT”
THE CANAL**







SELF EVALUATION

Preserving Tooth Structure and Enhancing Safety - Part 2

True/False

1. WaveOne Gold is a reciprocating file system designed for single-file canal shaping in most cases.
2. Reciproc Blue files use continuous rotary motion to shape the canal.
3. Both WaveOne Gold and Reciproc Blue utilize heat-treated nickel-titanium to enhance flexibility and resistance to cyclic fatigue.
4. TruNatomy is a reciprocating file system specifically designed for conservative canal shaping.
5. TruNatomy files have a smaller core diameter and regressive taper to allow for minimally invasive canal shaping while preserving dentin.
6. One advantage of using reciprocating systems like WaveOne Gold or Reciproc Blue is reduced risk of file separation due to less torsional stress.
7. WaveOne Gold and Reciproc Blue require a complete sequence of 3 to 5 files per case for effective shaping.

Answer Key: 1. T, 2. F, 3. T, 4. F, 5. T, 6. T, 7. F

Elevating Dentistry: A New Vision for Oral Health in Primary Care

Brett H. Kessler, DDS

ADA American Dental Association®

Elevating Dentistry: A New Vision for Oral Health in Primary Care

Brett H. Kessler, D.D.S.
ADA Past -President

Disclosure Statement

ADA American Dental Association®

My Dental Journey

- **General Practice Residency at Northwestern Memorial Hospital**
 - We were fully integrated in the hospital systems
- **Chicago, Illinois**
 - Worked for the "dentist to the stars"
- **Flint, Michigan**
 - Mentored under Dr. Rob Terry at a private practice
 - Introduced to Pankey Philosophy



ADA American Dental Association®

My Practice

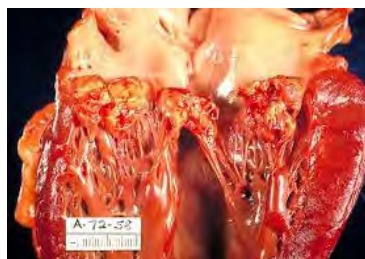
- Fee-for-service (FFS)
- Whole-health approach
- Referrals to/from
 - Concierge physicians/physicians
 - Cardiologists, ENTs, Endocrinologists
 - Chiropractors
 - Nutritionists
 - Life coaches
 - Therapists



ADA American Dental Association®

Culturing an infection in tooth/bone

Exact match of the bacteria that caused the vegetation around the infected heart valve.



ADA American Dental Association®

Cardiology Symposium

- Presented at a Cardiology symposium
- Why not send patients to dentists?
- Because they're on a different benefit/payment model.



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Why is it culturally acceptable that a rod of titanium in the hip region is essential, but not in the jaw?



If we translated the dental “insurance” model to medicine, a patient with DJD would get crutches.


 The image shows a pair of wooden crutches and a red, serrated dental arch model. The crutches are positioned diagonally, and the dental arch model is positioned below them. This visual metaphor represents the concept of a patient with degenerative joint disease (DJD) being provided with crutches, which is a common medical intervention for such conditions.

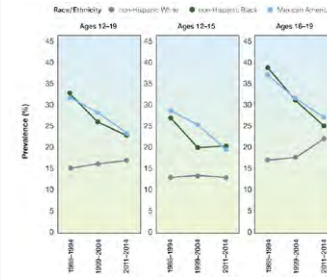
Pediatric dentistry was deemed an essential service, adult dentistry was not.

We were happy when this happened.

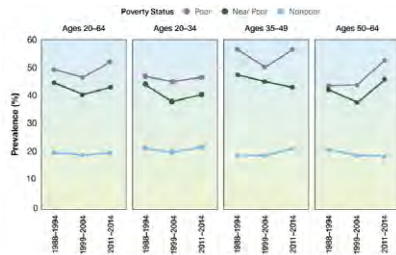
Why?



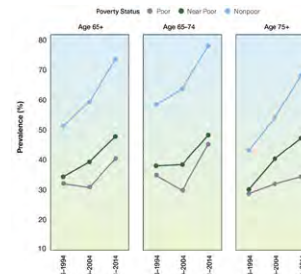
Prevalence of Untreated Caries – Children



Prevalence of Untreated Caries – Adults



Prevalence of Functional Dentition – Seniors



Continued policy decisions on “essential” dental care

May 2023

- CMS requests re-inclusion of dental services as a specific supplemental benefit under Medicare Advantage Organizations reporting requirements.

November 2023

- CMS expands payment for limited dental services deemed medically-necessary.

December 2023

- Biden Administration takes steps to modify Medicare payment policies to expand the types of dental services that are covered.

Dental Benefit in Medicare

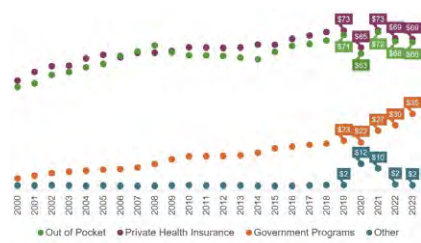
Medicaid Expansion

Getting More People into a Dental Home

These cannot happen unless dental care is an “essential service” under federal and state policy.

- Dental insurance reform.** Transform dental ‘insurance’ into true insurance. Mandate an essential basket of dental care services that must be covered. Mandate prevention at no cost, out-of-pocket spending limits for consumers, medical loss ratio limits and other accountability measures on insurers.
- Coverage expansion.** Mandate dental insurance coverage. This includes through Medicare, Medicaid, federally-facilitated marketplaces, employer-sponsored market.
- Walk the walk on mouth-body connection.** Lay infrastructure for a screening and referral system – two way – between dental and medical providers. Needs to be supported by clinical protocols, data sharing infrastructure, quality metrics and scorecards...and major culture change.

Patient Mix is Changing



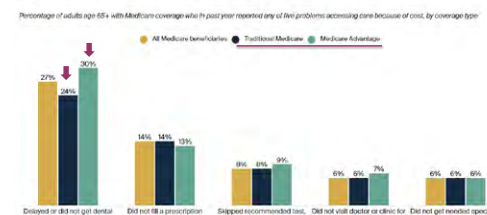
More than a quarter of older adults with Medicare reported not getting dental care, and more than one in 10 reported not filling a prescription because of the cost.

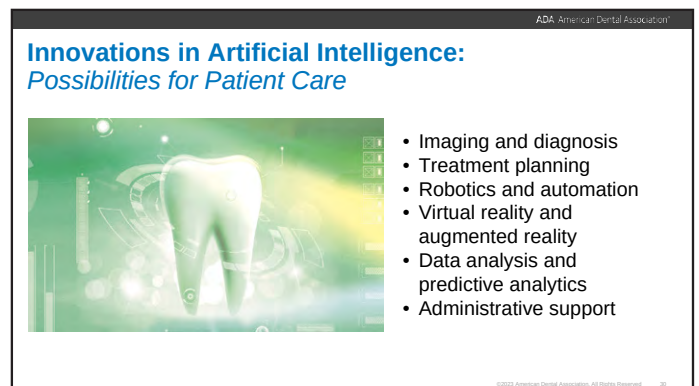
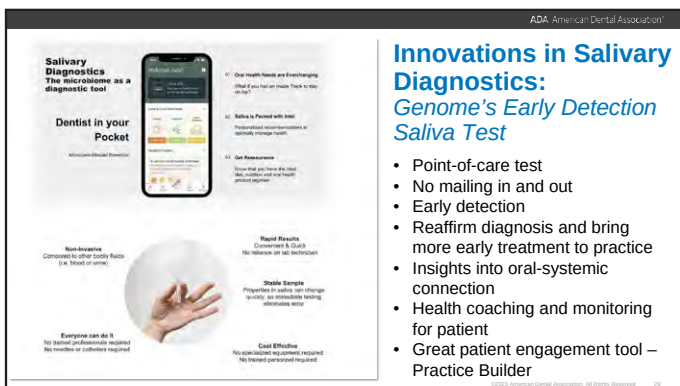
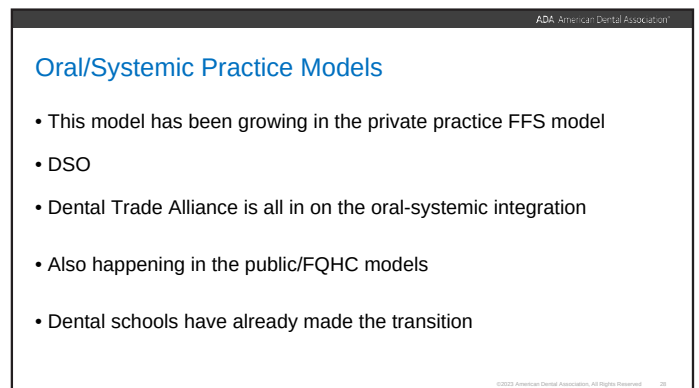
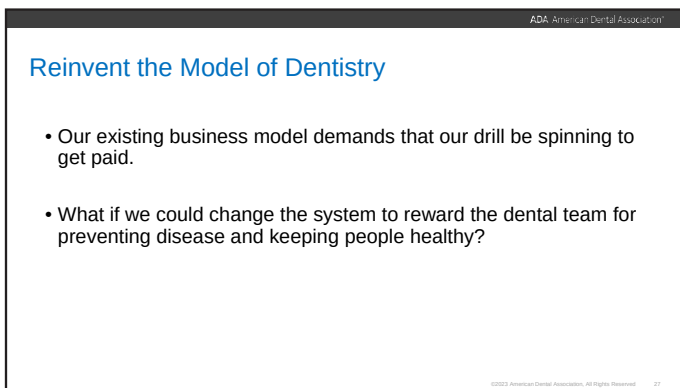
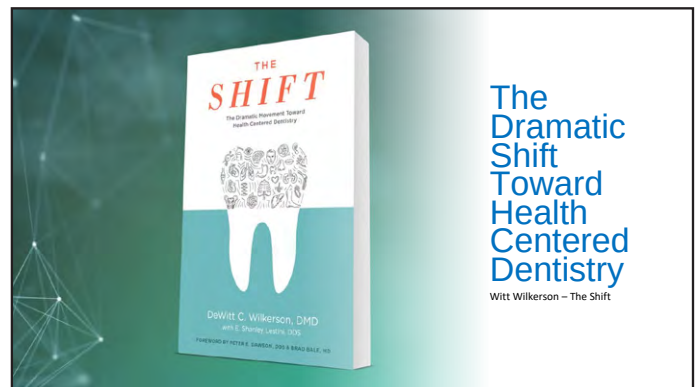
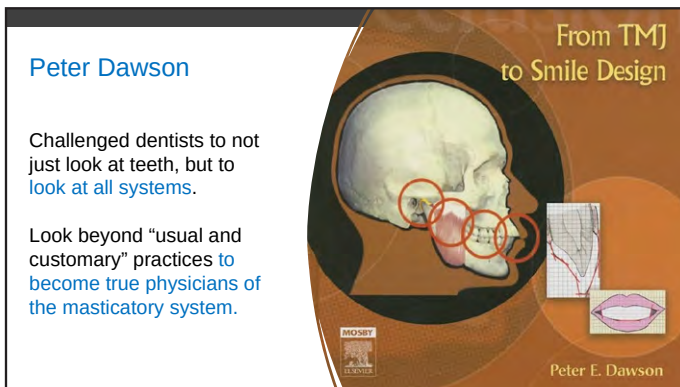
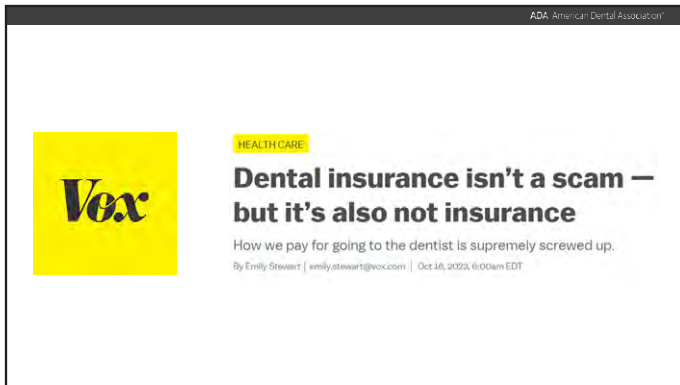
By the way...

Medicare Advantage has no impact.

Why?

Because dental insurance is an unregulated market.





Key Conclusions from the Evidence

1. **Mouth is connected to body.** Lots of new, compelling research today about oral health's link to overall health and well-being, medical care costs, and the economy.
2. **Big gains in oral health among kids.** Steady improvements in oral health measures, big increases in dental care visits. Largest gains have been among low-income children and non-white children. Improvements driven by significant expansions of dental coverage for kids, especially through public programs.
3. **Much less progress for adults and seniors.** For working-age adults, oral health outcomes have not improved. Dental care use has been declining very slowly. Disparities by income and race have been stable. For seniors, some improvements in some oral health outcomes, but mostly among the wealthy.
4. **Cost barriers are really important.** Dental care stands out from other health care services in terms of being unaffordable. Working-age adults, especially low-income adults, face the highest cost barriers to dental care. Cost is the top reason adults and seniors do not go to the dentist.
5. **How's it working.** The current model of dental care delivery and financing is working fairly well for about half the U.S. population, including the vast majority of kids and middle- and upper-income adults and seniors.

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← This is where we need work

The Fork in the Road

- Do we want to get millions of more Americans into a dental home?
- Do we think dentistry is truly 'essential' health care or is it more of a discretionary, self-pay, elective type of service?
- Do we want to walk the walk on mouth-is-connected-to-body and support more medical-dental integration?



What is our vision?
Why aren't we all-in on dental care being essential health care?

ADA Vision

Empowering the dental profession to achieve optimal health for all.

Mission

Help dentists succeed and support the advancement of the health of the public.



We make people healthy.



It's time to start acting like it
—and we are.

PASSION LED US HERE

Making America Healthy Through Oral Health

The ADA is ensuring that oral health remains a priority in national health care landscape.

- On May 6, ADA Leaders were invited to the White House for a meeting with Dr. Heidi Overton, Deputy Assistant to the President for Domestic Policy.
- ADA underscored importance of water fluoridation among other key health measures, including infection control guidance and ongoing collaboration to support public oral health infrastructure.
- Affirmed support for NIH oral health research and funding



ADA American Dental Association

ADA Dentist and Student Lobby Day 2025

Thousands of dentists and dental students united on Capitol Hill to advocate for our profession and patients on key issues, including:

- ✓ DOC Access Act
- ✓ Student Loan Reform
- ✓ Community Water Fluoridation



ADA Dentist and Student Lobby Day

“Oral health is health — it's time to put the mouth back in the body.”
DR. BRETT KESSLER
ADA PRESIDENT

ADA American Dental Association

Upholding Core Values & Public Health Initiatives Like Fluoridation

The ADA will continue to advocate for community water fluoridation as an effective way to prevent tooth decay. These efforts include:

- **Fluoridation Ambassador Program:** To help state dental leaders communicate effectively with lawmakers and the public.
- **Grassroots Support:** Our government affairs team is also providing legislative advocacy guidance and grassroots support to states facing fluoridation bans.



For reliable information about the safety, benefits, and effectiveness of fluoride in promoting oral health, visit [ADA.org/fluoride](https://ada.org/fluoride).

ADA American Dental Association

Bridging the Discourse in Oral Health

In the April edition of JADA...

ADA President-elect Dr. Rosato and I highlight the challenges and opportunities of Make America Healthy Again (the Trump Administration's health care platform) and a vision for navigating our current landscape.



Read more: jada.ada.org

ADA American Dental Association

A Call to U.S. Lawmakers: Oral Health is Health

In a Jan. 19 sponsored editorial in *The Washington Post*...

I urge the new administration and elected officials to ensure that oral health is a priority in future health care policies.

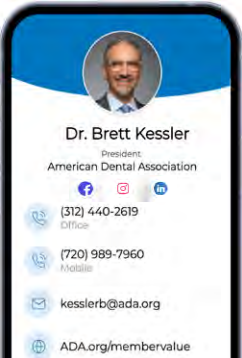


Read more: [washingtonpost.com](https://www.washingtonpost.com)

ADA American Dental Association

Questions? Contact Me!

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SELF EVALUATION

Elevating Dentistry: A New Vision for Oral Health in Primary Care

1. T/F - The lecture states that pediatric dental care was designated as an essential health benefit under the Affordable Care Act, while adult dental care was not.
2. According to the lecture, what is the primary reason many adults and seniors do not seek dental care?
 - a. Lack of transportation
 - b. Fear of treatment
 - c. Cost barriers
 - d. Lack of providers
3. T/F - The lecture advocates for greater integration between medical and dental care through improved screening, referral systems, and collaboration.
4. According to the lecture, which technology was highlighted as a point-of-care tool that can provide oral-systemic health insights in less than 10 minutes?
 - a. CBCT imaging
 - b. Oral Genome saliva testing
 - c. AI periodontal charting
 - d. Teledentistry platforms
5. Which statement best summarizes the central message of the lecture?
 - a. Dentistry should remain separate from medicine.
 - b. Dental insurance should remain unchanged.
 - c. Oral health should be recognized as an essential component of overall health.
 - d. Artificial intelligence will replace traditional dental care.

Answer Key: 1. T, 2. C, 3. T, 4. B, 5. C

Immediate Implants in the Posterior Zone

Brian J. Jackson, DDS

Immediate Implants in the Posterior Zone

Brian J Jackson, DDS Board
Certified-ABOI/ID

Brian J. Jackson, DDS
Diplomate-ABOI/ID
Fellow-AAID

Board Certified

Reconstructive Dentistry &
Implant Surgery



Director: Brian J. Jackson, DDS



Dr. Jackson is a Board-certified implant surgeon and reconstructive

He received his Doctor of Dental Surgery degree at SUNY/Buffalo, School of Dental Medicine and completed post-graduate training at St. Luke's Memorial Hospital Centers General Practice Residency Program. Dr. Jackson completed his formal oral implantology training at New York University, College of Dentistry.

Dr. Jackson is a Diplomate of the American Board of Oral Implantology/Implant Dentistry (ABOI/ID) and an Honored Fellow of the American Academy of Implant Dentistry (AAID). AAID Past President

Brian j Jackson DDS-Publications and Courses

www.brianjacksondds.com

www.bostonmaxicourse.com

www.aaidnashvillemaxicourse.com

[instagram-bostonmaxicourse_bic](https://www.instagram.com/bostonmaxicourse_bic)

www.eastcoastimplantinst.com

What is Immediate Implant Placement ?

1. Innovative implant approach consisting of Extraction, Implant Placement, fixture level impression and a healing collar .

What is Immediate Implant Placement ?

1. Innovative implant approach consisting of Extraction, Implant Placement, fixture level impression and a healing collar .
2. Less surgery, less appointments, less costs and a faster completion of treatment.

What is Immediate Implant Placement ?

3. The comprehensive process marries several stages of treatment into a single visit. Thereby, eliminating the need to see multiple dentists.

IIP-PROTOCOL
Posterior Zone

Appointment 1

Extraction
Immediate Implant Placement
Final Impression
Healing collar
GBR-PRP PRF MIRB allograft

Appointment 2

Remove Healing collar
Place Final
Abutment/Crown

Summary:

1 SURGERY(1 Injection), 1 Doctor-2
APPOINTMENTS , Tx Time 3-4 months

APPOINTMENT 1

Esposito M, Grusovin M, Willings M, Coulthard P, Worthington H. The Effectiveness of Immediate, Early and Conventional Loading of Dental Implants: A Cochrane Systematic Review of Randomized Controlled Clinical Trials. *Internat Journ Oral & Maxillo Implants*. 2007; 22: 893-903

Flapless Extraction- Atraumatic

Schropp L, Isidor F. Timing of implant placement relative to tooth extraction. *Journal Oral Rehab*; 2008; 35: 33-43



Immediate Implant Placement Furcation area 3mm FGM

Lang N, Pun L, Lau K, Li K, Wong CM. A Systematic review on survival rates of implants placed immediately into fresh extraction sockets after at least 1 year. *Clin Oral Implants Res*. 23 (Suppl. 5), 2012, 39-66



Rigid Fixation: No Movement or Spinning-required Torque value recording- Not required!

Javed F, Romanos G. The role of primary stability for successful immediate loading of dental implants. A literature review. *Journal of Dent*. 2010; 38; 612-620

Final Impression/Scan

Kois J, Kan J. Predictable Peri-Implant Gingival Aesthetics: Surgical and Prosthodontic Rationales. *Pract Proced Aesthet Dent*. 2001;13(5):691-696



Temporary Healing Abutment 3mm height with wide emergence

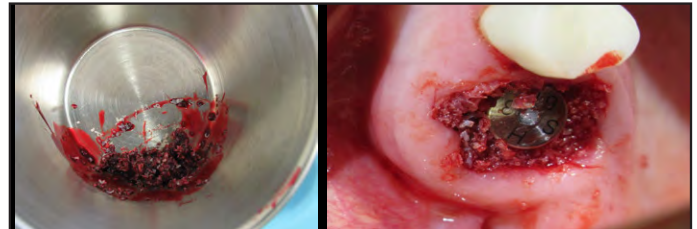
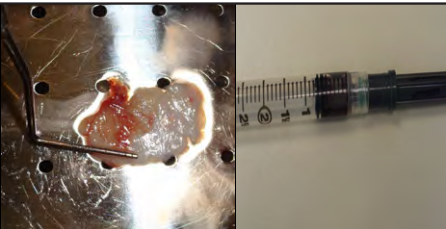
DeRouck T, Collaers Kristiaan, Cosyn J. Single-tooth Replacement in the Anterior Maxilla by Means of Immediate Implantation and Provisionalization: A Review. *Internat Journ Oral & Maxillo Impl*. Vol 3: 2008; 897-902



GBR- PRP/PRF/Allograft

Choukroun J, Dier A, Simonpiet A, Girard MO, Schaeffer C, Dohan SL, Mouton J, Dohan DM. Platelet Rich Fibrin (PRF): a second generation platelet concentrates. Part IV: clinical effects on tissue healing. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006; 101(3):e56-60

Marx RE, Carlson ER, Eichstaedt RM, Schimmel SR, Strauss JE, Georgeff KR. Platelet-rich plasma: Growth factor enhancement for bone grafts. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998; 85(6):638-646



Laboratory Aspect-During OI Stage

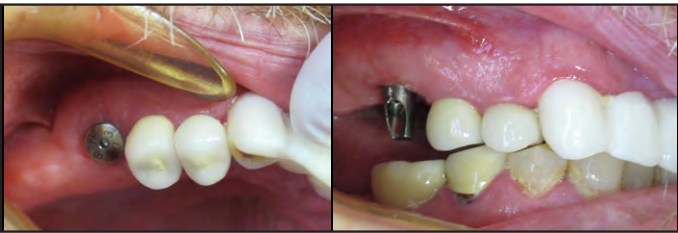
1. Create Implant Model
2. Mount Case
3. Design/Fabricate Ti Abutment
Facial Abutment margin-1.0mm supra connection
4. Design/Fabricate Crown

APPOINTMENT 2

Cannizzaro G, Leone M. Restoration of Partially Edentulous Patients Using Dental Implants with a Microtextured Surface: A Prospective Comparison of Delayed and Immediate Full Occlusal Loading. *Internat Journ Oral & Maxillo Impl*. 2003; 18; 512-522

- 4 Months
1. Remove Healing collar
2. Place final Ti Abutment crown





Implant Occlusal Principles:

Centric Occlusion, Lateral Excursions, Protrusion:

ZERO CONTACT

Maximum Occlusal Contact:
Point Contact

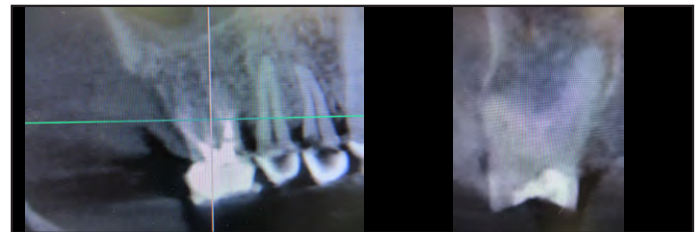
IIP-Multi-Rooted Teeth-Major Concepts

Atraumatic Extraction-Expand, Section Roots, Remove
Is Torque evaluation needed ? NO, Only rigid fixation required

Temp Abut/Crown? No, Only healing collar placed

Pt presents with a fractured
Maxillary right
1st molar (#3)

Dx: Extreme caries
Non-Restorable Tooth



Treatment Concepts-Maxillary Concepts

IIP Max Molar-Protocol

1. Atraumatic Extraction:
2. Expand bone-
periostomes
3. Section (MB, DB, P) and
extract individual roots



Protocol:

Implant position- furcation area

Evaluate amount of bone

Expand osteotomy best-**Do not drill away all the bone!**

Densha(OD) burs ideal for IIP in Max Molar tooth!

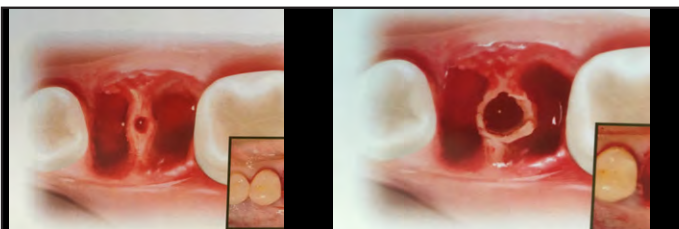
1. 1.6/2.0mm pilot drill
2. 2.0mm **Osseo densify or Osteotome**
3. 2.5,3.0,3.5,4.0mm etc

Expand osteotomy slowly and decide –
width of implant

UNDERSIZE OSTEOTOMY!

Ideal-5.7mm

Most common-4.7/5.00mm



Treatment Plan-#3 IIPP

PRP/PRF

#3- Local Anesthesia

1 carp 54mg 3% mepivacaine w/o epi

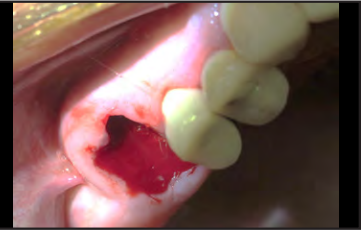
1 carp 36mg 2% Lidocaine w epi
1:100,000



#3- Extraction
15c, perio-tome 1,2,
Section roots
separate
expand more



#3- Extraction
15c, perio-tome 1,2,
Section roots #4,
Atraumatic removal
forceps



#3 Osteotomy Procedure

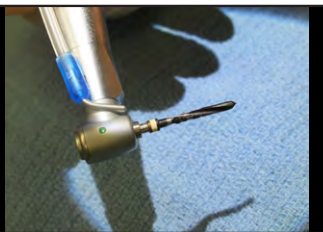
1.6, 2.0 Drill
2.3,2.5,3.0,3.5,4.0,4.2, Densah osseodensification to 10mm
5.0x10mm Touarag-OS (Adin)
MIRB allograph(RMTB/Fine) + PRP, d-ptfe barrier
Healing collar



1.6mm tip drill-Trajectory

2.0mm drill or 2.0mm OD

Clinicians decision

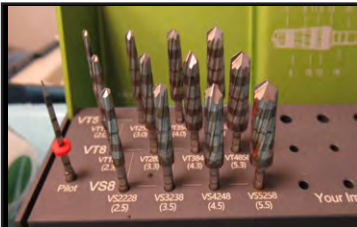


Osseodensification -3.0 and 3.3mm

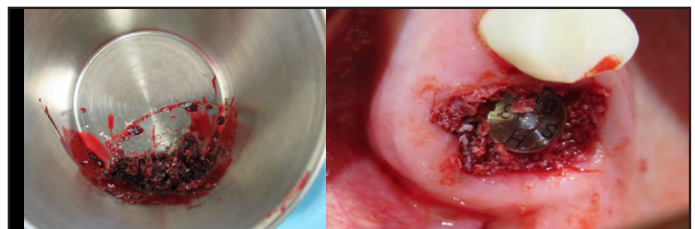
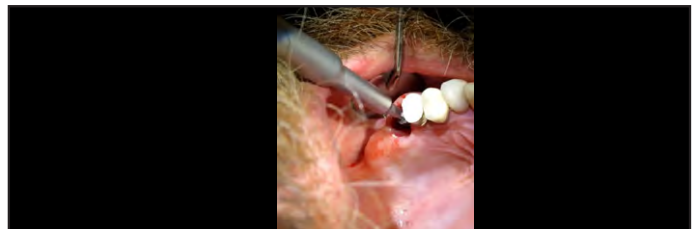
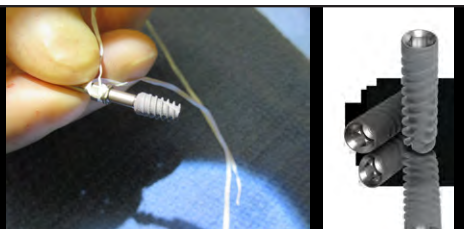
Why?
Quantity-Yes
Quality-Yes



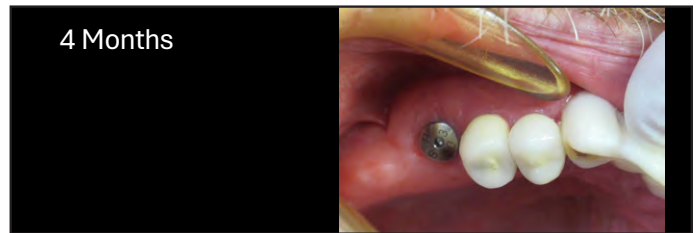
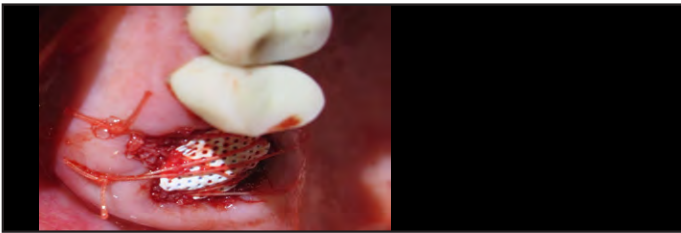
Osseodensification Kit



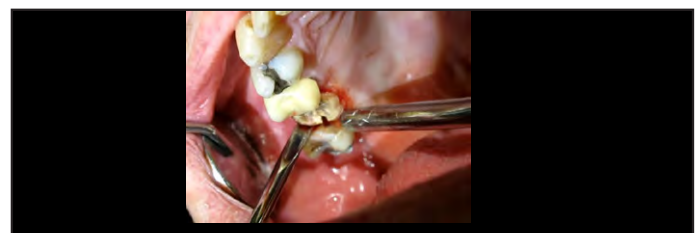
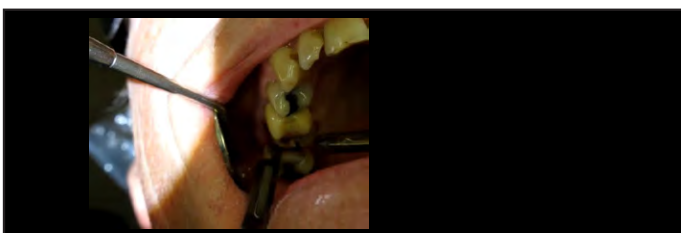
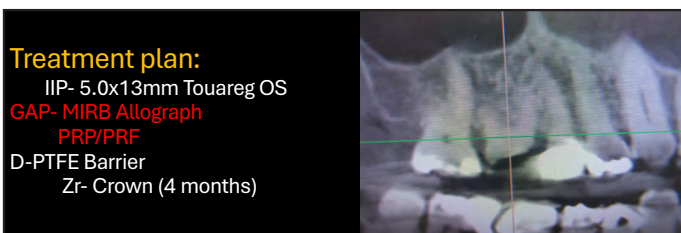
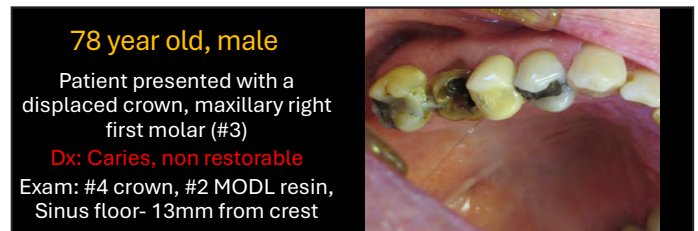
Place implant

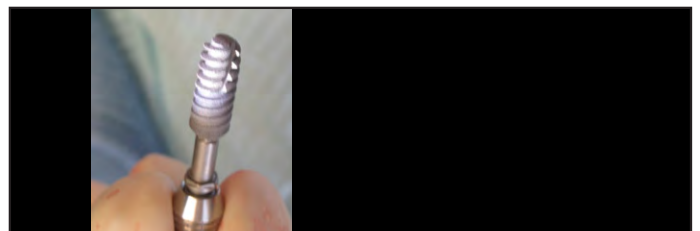
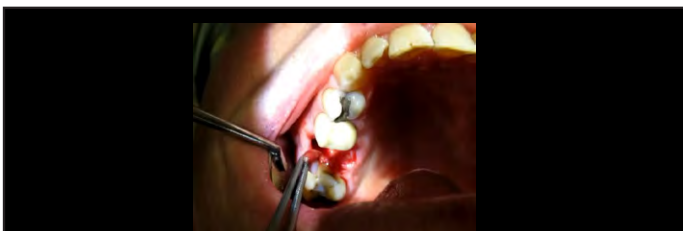


Immediate Implants in the Posterior Zone

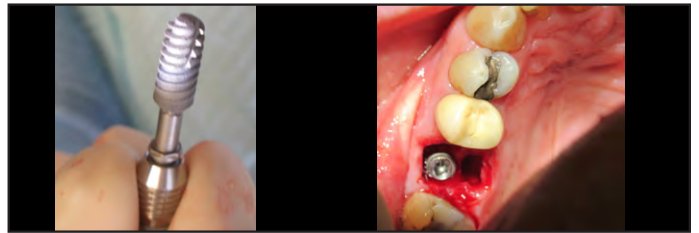
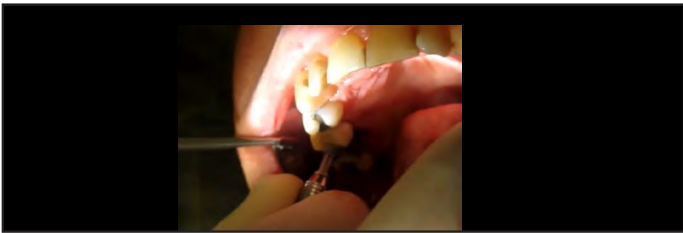


4 Months



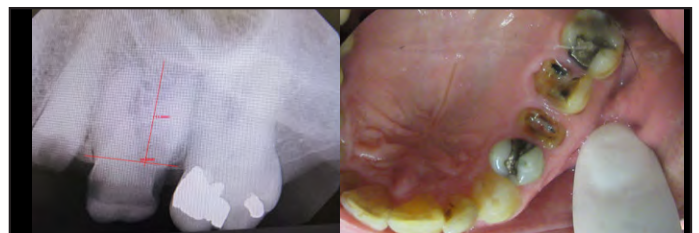


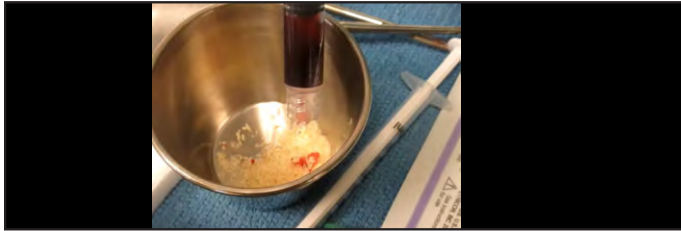
Immediate Implants in the Posterior Zone



75 year old, Male James

CC: "Broken teeth"
Sensitive, Caries, No
clinical crowns





Healing Period-4 months

Restorative final restoration

1. Remove Healing collars
2. Place Ti Abutments
3. PA, Torque 2X
4. Place 2-Unit Bridge

Brian j Jackson DDS-Publications and Courses

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SELF EVALUATION

Immediate Implants in the Posterior Zone

1. According to the lecture, what are the primary advantages of immediate implant placement?
 - a. More surgeries and longer treatment time
 - b. Lower implant survival rates
 - c. Less surgery, fewer appointments, lower costs, and faster completion of treatment
 - d. Elimination of the need for grafting procedures
2. T/F - The posterior-zone IIP protocol requires only two appointments: one for extraction and implant placement, and a second for final restoration.
3. Which of the following is placed at the time of surgery for posterior immediate implant placement?
 - a. Temporary crown
 - b. Final crown
 - c. Healing collar
 - d. Orthodontic retainer
4. T/F - The lecture states that a specific torque value must be recorded for every immediate implant placed in a maxillary molar extraction site.
5. According to the implant occlusal principles presented, what type of contact should be present during centric occlusion, lateral excursions, and protrusion?
 - a. Heavy bilateral contact
 - b. Light contact only in centric occlusion
 - c. Zero contact
 - d. Group function contact

Answer Key: 1. C, 2. T, 3. C, 4. F, 5. C

FACULTY

Ericka Aguilar

Ericka Aguilar, of Riverside, California, has over 20 years experience in the dental industry assisting dentists in improving their key performance indicators by providing guidance on dental billing and coding. She is the owner of Hidden Dental Profits, a business specializing in dentists streamlining and improving the dental billing cycle processes and enhancing their revenue from dental insurance.

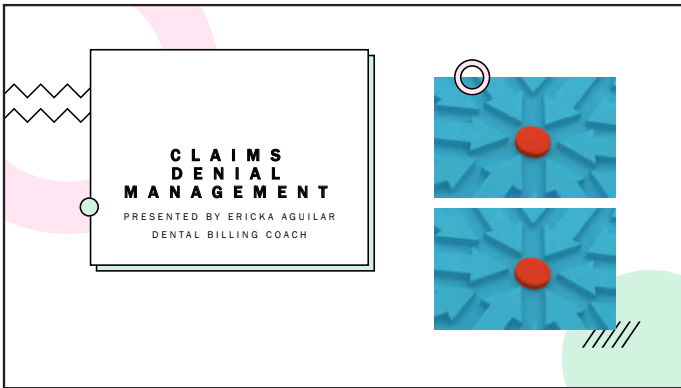
You may contact Ms. Aguilar with your comments or questions at 951-416-5106 or by email at billingcoach@hiddendentalprofit.com.

THE
2026-27

Dental
UPDATE

Claims Denial Management

Ericka Aguilar

A graphic for a presentation titled "What We Are Going to Cover". The title is in bold, uppercase letters. To the right of the title is a yellow circle with a white exclamation mark inside. Below the title is a list of topics.

- Strategies to decrease or eliminate denials
- How & when to use your states Insurance Commissioner
- How to report bundling of procedures
- How to report unreasonable denials
- Submitting clean claims
- How to advocate for your patients benefits

A graphic for a presentation titled "About Ericka". The title is in bold, uppercase letters. Below the title is a list of Ericka's credentials.

- Been a patient advocate (Biller) since 1998
- Founder of National Dental Biller's Appreciation Day - July 20th
- Co-Founder of Hidden Dental Profit
- CEO Veritas Dental Resources
- Host of The Dental Billing Podcast

A graphic for a presentation titled "What is Denial Management?". The title is in bold, uppercase letters. Below the title is a paragraph defining denial management.

Dental claim denial management refers to the systematic process of identifying, analyzing, and resolving denied dental insurance claims.

A graphic for a presentation titled "Statistics". The title is in bold, uppercase letters. Below the title is a list of statistics.

- Average denial rate: 10% - 25% depending on the size of the office
- Average cost of re-working or appealing a denial: \$25-\$118 per claim
- Appeal success rates: 40% - 60%
- Takes about 4 rounds of appeals
- Only 33% of all denied claims in 2022 were appealed

A graphic for a presentation titled "Most Denied Procedures". The title is in bold, uppercase letters. Below the title is a list of procedures.

- Build-up
- Scaling and Root Planning
- Debridement
- Gingivitis cleaning
- Implants

Most Common Reasons for Denials

- Additional information needed
- X-rays are not sufficient
- Did not receive attachments
- Never received the claim
- Timely filing



The REAL Reasons Your Claims Are Denied

- Budgets
- Premiums
- Financial incentives
- Cost containment
- Claim denial goals (cost-saving goals)



Clean Valid Claims

- Completeness – All necessary information to process claim
- Accuracy – Free from errors or discrepancies
- Timeliness – Submitted in a timely manner
- Compliance with policy terms – Effective dates, plan limitations, annual maximum, etc.



Bad Faith Practices

- Unreasonably denying services covered under the policy
- Unreasonably bundling services
- Deliberate delay in claim processing
- Failure to act in good faith



What Does This Mean?

These examples highlight the importance of regulatory oversight and consumer protection to hold dental insurance companies accountable for their actions and ensure fair treatment for policyholders and providers



Become a Whistleblower

- Insurance companies have systems to track complaints and grievances filed against them.
- Know your rights!
- File your complaints and grievances with regulatory authorities.



GET TO KNOW YOUR
STATES INSURANCE
COMMISSIONER WEBSITE



THE HOW-TO
PROCESS



● Step 1 – Identify

- **Denial**
- Additional information needed
- Rejection
- Reason for non-payment



● Step 2 – Contact Claims Department

- Inform claim representative that this claim was submitted with sufficient evidence proving dental necessity.
- Advise that if this claim is not processed for payment immediately, we will be forced to report them to the insurance commissioner.



● Step 3 – Request to Start an Appeal

- Most plans have multiple levels of appeals
- Only necessary to go through one level
- Do not go through all levels of the appeal process



● Step 4 – Report Grievance to the Insurance Commissioner

- Go to your state insurance commissioner's website
- Search for the section for healthcare providers
- Follow the steps to file a grievance



● Step 5 – Write the Grievance

I am writing to file a grievance on behalf of our patient, Jane Doe, regarding the unreasonable denial of dental benefits by Delta Dental under her dental insurance policy. We believe that Delta Dental is engaging in bad faith practices by unreasonably denying our patient's benefits, which are rightfully owed to her under the terms of her policy.



● Step 6 - Wait for a Response

- Email
- Phone call
- Letter in the mail



● What's Going On Behind the Scenes

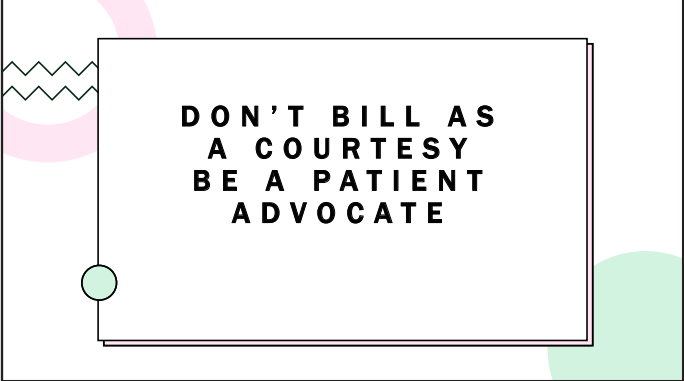
- Insurance commissioner is going to investigate if they have jurisdiction with this plan.
- If yes, they will proceed with investigation.
- If no, they will advise the proper regulatory department (usually federal) and redirect your grievance.
- Insurance company is advised that you will be reporting the grievance to a federal entity.



● Implementation and Task Management

- 1 X per week
- Review recent denials and procedures that were bundled.
- Did you submit a "Clean Valid Claim with sufficient evidence proving dental/medical necessity"?
- Start with step 1





**DON'T BILL AS
A COURTESY
BE A PATIENT
ADVOCATE**

● **Let's Connect!**

- Ericka Aguilar
- LinkedIn
- Email: Ericka@veritasdentalresources.com
- Text/Call: 951-416-5106
- Podcast: The Dental Billing Podcast



SELF EVALUATION

Claims Denial Management

1. T/F - Dental claim denial management refers to the systematic process of identifying, analyzing, and resolving denied dental insurance claims.
2. According to the lecture, what is the average dental claim denial rate?
 - a. 1%–5%
 - b. 5%–10%
 - c. 10%–25%
 - d. 25%–50%
3. Which of the following procedures was listed among the most commonly denied procedures?
 - a. Sealants
 - b. Fluoride treatments
 - c. Implants
 - d. Extractions
4. T/F - A clean valid claim should be complete, accurate, timely, and compliant with policy terms.
5. Which of the following was identified as a bad faith practice?
 - a. Requesting radiographs
 - b. Verifying eligibility
 - c. Deliberately delaying claim processing
 - d. Requesting a narrative
6. According to the lecture, what is the first step in the denial management process?
 - a. File a grievance
 - b. Contact the insurance commissioner
 - c. Start an appeal
 - d. Identify the denial and reason for non-payment
7. T/F - The lecture recommends completing every available level of appeal before contacting the insurance commissioner.
8. When filing a grievance, where should providers go first?
 - a. ADA website
 - b. Dental board website
 - c. State insurance commissioner website
 - d. IRS website
9. T/F - Insurance companies track complaints and grievances filed against them.
10. According to the lecture, how often should offices review recent denials and bundled procedures?
 - a. Daily
 - b. Weekly
 - c. Monthly
 - d. Quarterly

Answer Key: 1. T, 2. C, 3. C, 4. T, 5. C, 6. D, 7. F, 8. C, 9. T, 10. B