FLORIDA FOCUS

December 2024

the publication exclusively for the general practitioner

Drs. Toni-Anne Gordon, Merlin Ohmer, and Nibaldo Morales at the Region 20 caucus. **Below:** Drs. Gerald Botko, Aldo Miranda-Collazo, and Kanwal Chawla, with Executive Director Patricia Jenkins and AGD Treasurer Joseph Picone.

FLORIDA FOCUS

DECEMBER 2024

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President's Message

Happy Holidays from the Florida AGD!

As the holiday season approaches, I want to extend my warmest wishes to each of you. This time of year is a wonderful opportunity to reflect on our achievements, celebrate our successes, and look forward to the future with hope and enthusiasm.

As we reflect on the past year, I am filled with immense gratitude for the opportunity to lead the Florida AGD. I am thankful for the commitment and passion that each of you brings to your practice every day. Your efforts not only improve the lives of your patients but also contribute to the overall advancement of our profession.

As we gather with family and friends to celebrate the season, let's also take a moment to recharge and rejuvenate. The coming year promises to be filled with new opportunities and challenges, and I am confident that together, we will continue to achieve great things.

Wishing you and your loved ones a joyous holiday season and a prosperous New Year. May your days be filled with peace, happiness, and good health.

Warmest regards,

Toni-Anne T. Gordon, DMD, FAGD

President, Florida Academy of General Dentistry

Editor's Note

It is always a delight to attend the House of Delegates and experience the friendship, dedication to the AGD, and love of dentistry which our members display. I've always felt a special connection to the AGD, since we were both born long ago in 1952! Congratulations to the newly-elected officers of the AGD and Region 20 (pages 6-7), and a huge thanks to the previous Region 20 Trustee, Dr. Andrew Martin, for his inspiring service to the AGD!

While most of our focus as HOD delegates was on the proposed resolutions and the deferred reorganization of the AGD, I was happy to read this excerpt from the AGD's 2019-2024 Strategic Plan on page 5 of the HOD Manual and to know how well the Florida AGD is working to meet our goals.

"Continuing Education

"Expand the breadth, depth and convenience of high quality continuing education opportunities for AGD members.

"Goal: *General dentists will provide superior patient clinical outcomes.*

"Practice Leadership and Support

"Create new initiatives to help AGD members lead more financially successful practices by providing practice leadership education and business support.

"Goals: *AGD members lead or work in successful practices with positive business and clinical outcomes."*

Please see pages 4-5 and 8 to learn about recent Florida AGD events and to register for the January courses on leadership and digital dentistry.

A third goal of the AGD is "Public and Policy Advocacy," and to help support it, the AGD's Dentists' Day on the Hill will take place on March 25, 2025. FLAGD Executive Director Patricia Jenkins will be sending our members more information about this important annual event, and we encourage you to participate and help our legislators understand our views as general dentists. Of course, a recent concern is the Florida Surgeon General's policy announcement concerning community water fluoridation, which has become a national topic of debate and has undermined public confidence in this beneficial public health measure. This is particularly alarming given the long history of research on water fluoridation and the well-documented benefit when it is provided at the recommended level of 0.7 parts per million. Please see the AGD's statement on page 10.

As always, thank you to the dentists and other professionals who have generously contributed articles to this issue: Drs. Thomas Wiedemann, Juan Carlos Ortiz Hugues, and Katie Lee and Ms. Carrie Miller. We appreciate their time and professional recommendations and hope the information they've provided will benefit your life. We wish you, your families, and your practice teams a wonderful, healthy, and peaceful holiday season!

All the best,

Millie K. Tannen, DDS, MAGD

Editor, Florida Academy of General Dentistry

FLORIDA ACADEMY of GENERAL DENTISTRY

2025 GENERAL ASSEMBLY MEETING

The Courtyard Marriott
AMELIA ISLAND, FL

Please Join Us In Amelia Island

FREE

Luncheon For FLAGD Members!

Location: Courtyard Amelia Island

2700-1 Atlantic Avenue, Fernandina Beach, FL 32034

Recognize Outstanding Contributions: FLAGD Awards Nominations Are Open!

Do you know someone who dedicates their time to medical missions or tirelessly serves in free clinics? Nominate them for the **FLAGD Humanitarian Award**!

Have you invested countless hours in continuing education? Consider applying for one of our prestigious CE Awards!

Award Categories:

- **Continuing Education Award** (Participation and Lecture Hours)
- **Humanitarian Award**
- **Distinguished Service Award**
- **Frank J. Collins Lifetime Achievement Award**

Save the Date:
The awards will be presented at our **General Assembly Luncheon** on **January 25, 2025**, in **Amelia Island, FL**.

Celebrate excellence and nominate or apply today!

Scan to Register

Scan to Submit a FLAGD Award Nomination!

FLORIDA ACADEMY of GENERAL DENTISTRY

Jan 24-25, Amelia Island

Day 1:

Leadership: High Performance, and Mindset Mastery

Course Description:

Course Course Description: Learn the habits, mindsets, and beliefs it takes to become a leader. Many of us get in our own way. We get caught in negative headspace spirals that keep us stuck in unhealthy relationships, careers, and cycles. It is not big movements but rather small steps that help you become the leader you were born to be. This lecture is focused on the formula for success. Learn the habits, mindsets, and beliefs it takes to become a leader. Finally, understand how self-kindness is key to growth and development. Learn how and when to be kind to yourself as you step into your role as a leader.

Learning Objectives:

- The formula for confidence
- Habits for success
- Developing a growth mindset
- Understanding the power of our thoughts
- Creating a vision for our ideal self & personal performance

Suggested Audience: Dentist and Full Team
AGD Subject Code: 770 or 550
Credit Hours: (8) Participation
Speaker: Dr. Allison Lacoursiere

AGD Member Dentists:
$225 or $350 for both days
Non-AGD Member Dentists:
$325 or $650 for both days
Staff (Non DDS or DMD):
$99 or $199 for both days

Location:
Courtyard Amelia Island
2700-1 Atlantic Avenue, Fernandina Beach, FL 32034

Day 2:

Unlocking the Future of Dentistry: Understanding the 3D Digital Workflow for General Dentists

Course Description:

In this course we will introduce the audience to all of the parts and pieces involved in Digital Dentistry. We will touch on everything from single natural tooth crown fabrication to full arch Immediate loading with PMMA 3D printed dental arches.

Learning Objectives:

- The Different Types of 3D printers and what makes one good for a procedure and another not.
- How Intra-oral scanning compares to traditional impression taking
- The Different arementarium needed to produce full arch restorations
- What is Photogrametry
- Why Cone Beam Tomography is essential in Digital Dentistry

AGD Subject Code: 130
Credit Hours: (8) Lecture
Speaker: Dr. Gordon Fraser

More Info & REGISTER

SCAN ME

PACE ACADEMY of GENERAL DENTISTRY PROGRAM APPROVAL FOR CONTINUING EDUCATION

AGD-Florida
AGD Provider ID #219295
FLAGD.org
AGD-Floirda currently has a National PACE approval

352-663-3763 www.flagd.org FLAGDinfo@gmail.com

2024 ANNUAL MEETING
HOUSE OF DELEGATES
NOVEMBER 21-24, 2024 • CHICAGO

For three days in mid-November, nearly 200 dentists gathered in Chicago for the annual AGD House of Delegates, including 14 members from Region 20 (Florida and Puerto Rico), plus our Executive Director, Mrs. Patricia Jenkins. The 2023-24 AGD President, Dr. Merlin Ohmer of Jacksonville Beach, installed the new Executive Committee, including the 2024-25 President, Dr. Chethan Chetty, and immediately continued his service to the AGD by being elected as the Region 20 Trustee. Congratulations and thank you to all the new AGD officers!

In his moving acceptance speech, Dr. Chetty told us that he was inspired by his dentist father, who "taught me the value of putting service above myself." He asked the delegates, "Isn't this what the AGD is all about - membership and paying it forward?" Dr. Chetty encouraged us to "adapt, react, evolve, and prepare for the future of our profession."

Preparing for the future was definitely the primary business of the delegates, as we discussed and voted on resolutions concerning our organization and profession. Many resolutions on decades-old policies were rescinded, and some newer issues were addressed, including the adoption of a resolution concerning "the employment and supervision of medical aesthetic professionals as permitted by each jurisdiction's licensing authority." Another resolution was amended to address the AGD membership of dentists who had graduated from schools outside the U.S. and Canada, substituting "dental program" for "school of dentistry" in the relevant AGD bylaws.

The proposed reorganization of the AGD's governance had been deferred by the Board, although the delegates had the opportunity to question the Tecker International consultants during a Town Hall meeting. One question they answered was, "What exactly are we trying to solve?"

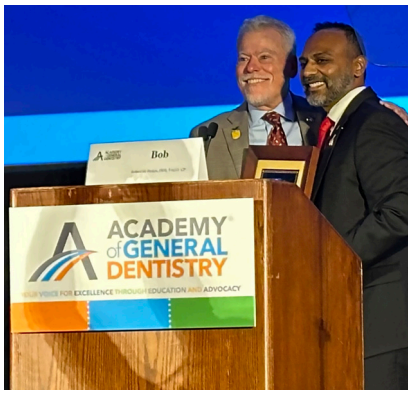
The consultant replied, "The issue lies in the organization's governance structure, which often slows down the decision-making process. Currently, great ideas generated by councils and committees are presented to the Board for approval. From there, they may proceed to the House, where they are debated, referred, or postponed. This cycle can take years, sometimes two or three—to finalize and implement an idea.

"The goal is to streamline this process. By adopting a different governance model, the organization can move ideas from concept to implementation much faster—potentially within a year, rather than several years. Today, decisions and changes need to happen quickly to stay relevant. A multiyear delay risks making the organization less effective and leaving it behind in a rapidly evolving world. The objective is to create a governance structure that allows for timely, efficient decision-making while still maintaining thorough deliberation."

In addition to these conversations, an HOD highlight was the recognition of the work of Dr. Julie Spaniel, who received the 2024 Humanitarian Award for her 14 years of service in Ghana, Honduras, Kenya, and Uganda, and for mentoring pre-dental and pre-med students as they assisted her in her volunteer work.

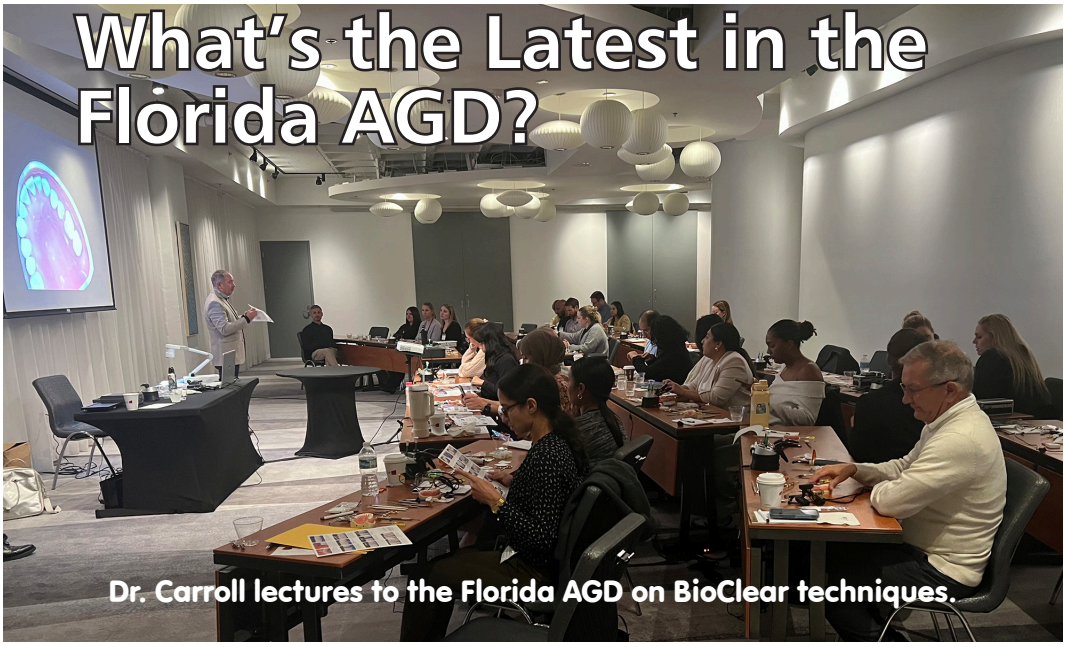
Region 20 Delegates, from left: Drs. Nibaldo Morales, Kanwal Chawla, Richard Huot, FLAGD VP Ray Morse, AGD Past President Gerald Botko, FLAGD Executive Director Patricia Jenkins, AGD Past President & Region 20 Trustee Merlin Ohmer, Douglas Massingill, Past Region 20 Trustee Andrew Martin, Nishita Patel, Region 20 Director Aldo Miranda-Collazo, FLAGD President Toni-Anne Gordon, Hector Cabrera, Millie Tannen, Herminia Rodriguez, and Francisco Marcano

Dr. Francisco Marcano proposes a change to a resolution. House Speaker Dr. Robert Peskin announces the results of the regional elections.



Clockwise from top left: Dr. Ohmer installs the 2025 Executive Committee; from left, Drs. Timothy Kosinski, Editor; Bob Peskin, Speaker; Kimberly Wright, Secretary; Joseph Picone, Treasurer; George Schmidt, VP; Marc Worob, President-Elect; and Chethan Chetty, President. Dr. Ohmer congratulates Dr. Chetty. FLAGD Treasurer Dr. Herminia Rodriguez serves on the Reference Committee on Continuing Education. Drs. Miranda, Marcano, and Gordon savor the treats in downtown Chicago's Eataly. Drs. Nishita Patel and Richard Huot at the Region 20 caucus.

What's the Latest in the Florida AGD?



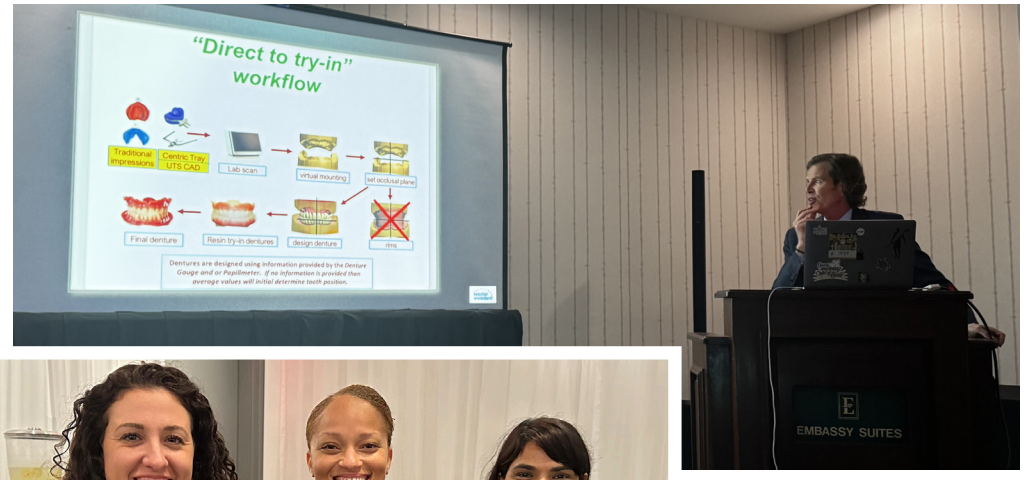
Dr. Carroll lectures to the Florida AGD on BioClear techniques.

On December 6 in Orlando, the Florida AGD hosted Dr. David Carroll's hands-on course "Injection Molding and the Bioclear Technique for Composites," which was co-sponsored by the firm Legally Mine. 35 dentists participated in the workshop, learning the injection molding technique of using warmed flowable and paste composite resin with the BioClear matrices to close diastemas and black triangles and create Class II, III, and IV composite restorations.

Following the 8-hour participation course, President Dr. Toni-Anne Gordon conducted a board meeting of the Florida AGD officers, Directors-at-Large, and Component Presidents. We reviewed the recent AGD House of Delegates and discussed the next FLAGD event, the General Assembly and two days of continuing education, to be held at Amelia Island on January 24-25. Please join us to mingle with your fellow AGD members and to enhance your leadership and restorative skills!

The Central Florida Component held a dinner meeting on December 4, featuring prosthodontist Dr. Scott Schmitt's course, "Next-Gen Smiles: Digital Dentures & Caries Control Innovations." 25 dentists learned about the use of printed and milled technologies for removable prosthetics and about "the products and protocols that are most effective" in reducing the risk of caries.

We look forward to sharing news of Florida's other Components in our March issue. Please let us know if you've attended an FLAGD meeting that you'd like us to include.



Dr. Schmitt lectures on digital dentures to the FLAGD Central Florida Component.

FLAGD Executive Director Patricia Jenkins, President Dr. Toni-Anne Gordon, Dr. Nishita Patel

Dr. David Carroll

Dr. Scott Schmitt

Drs. Herminia Rodriguez and Douglas Massingill at the FLAGD board meeting

Drs. Amr Hassan and Harvey Gordon

Q4 Florida Legislative Report

by Dr. Hector Cabrera
FLAGD Legislative Chair

In late 2024, the American Dental Association (ADA) proposed a series of resolutions aimed at addressing critical challenges within the dental profession, including workforce shortages, licensure portability, and the integration of internationally trained professionals.

Resolution 401 seeks to adjust faculty-to-student ratios in dental hygiene programs to align with predoctoral dental programs, aiming to increase the number of trained professionals entering the workforce.

Resolution 413 focuses on simplifying licensure portability across states to enhance practitioner mobility and better distribute the workforce.

Meanwhile, Resolution 514B proposes allowing internationally trained dentists to practice as dental hygienists without requiring U.S. state licensing exams.

While these resolutions are designed to address pressing workforce and access-to-care issues, they have also sparked considerable debate over their implications for patient safety, professional standards, and the integrity of licensure systems.

Resolution 401: Increasing Allied Personnel in the Workforce

This resolution proposes changes to the faculty-to-student ratios in dental hygiene programs, aiming to align them with predoctoral dental programs. It also seeks to address workforce shortages by broadening the scope of who can perform dental hygiene tasks.

- **Arguments in Favor:**
  - **Workforce Expansion:** Proponents argue that the resolution helps mitigate workforce shortages, especially in underserved areas.
  - **Flexibility in Education:** Aligning ratios may streamline training, allowing institutions to accommodate more students and alleviate bottlenecks in workforce entry.

- **Arguments Against:**
  - **Patient Safety Risks:** Opponents, such as the American Dental Hygienists' Association (ADHA), argue that reducing supervision in clinical settings could compromise educational standards and patient safety.
  - **Professional Integrity:** Critics highlight the unique educational requirements of dental hygiene, warning that the resolution could dilute the quality of care provided by future professionals.

Resolution 413: Licensure Portability

This resolution aims to facilitate licensure portability across states for dentists, potentially using standardized exams or universal criteria.

- **Arguments in Favor:**
  - **Improved Mobility:** Simplifying state-to-state licensure increases flexibility for practitioners, particularly those in military families or those relocating.
  - **Workforce Distribution:** Easier portability could encourage dentists to serve in states with critical shortages.

- **Arguments Against:**
  - **State Autonomy:** Opponents argue that each state should retain control over licensure to address unique regulatory and practice needs.
  - **Standardization Challenges:** There may be difficulty in aligning criteria across states without compromising local standards.

Resolution 514B: Internationally Trained Dentists as Dental Hygienists

This resolution permits internationally trained dentists to perform dental hygiene procedures in the U.S. without requiring state licensure exams.

- **Arguments in Favor:**
  - **Filling Gaps in Care:** Proponents suggest it could address workforce shortages, especially in areas with limited access to care.
  - **Leveraging Skills:** Internationally trained dentists often bring valuable expertise, which could enhance the overall quality of care.
- **Arguments Against:**
  - **Licensure Concerns:** Critics, including the ADHA, warn this could undermine licensure integrity and patient safety by allowing practitioners to bypass stringent state exams.
  - **Professional Overlap:** Allowing dentists to work as hygienists might blur the lines between professions, leading to role confusion and potential conflicts.

Analysis

While the resolutions address critical issues such as workforce shortages and mobility, they have sparked significant controversy. Advocates emphasize solutions to expand care and streamline professional mobility, while critics raise concerns about patient safety, educational standards, and the integrity of licensure systems. The debate reflects broader tensions between regulatory flexibility and maintaining professional rigor.

These resolutions have implications for the dental profession's structure, workforce dynamics, and the quality of care delivered across the U.S. Collaboration between dental and hygiene organizations will be essential to balance innovation with safeguarding public health.

Academy of General Dentistry Reiterates Support of Water Fluoride

by AGD Staff

Warning: Changes Could Impact Public Health

November 26, 2024—The Academy of General Dentistry (AGD) maintains that fluoride, when used appropriately, is safe and effective in preventing and controlling dental decay and expresses concern over recent statements by Florida Surgeon General Joseph Ladapo, MD, to end community water fluoridation.

"The controlled addition of a fluoride compound to public water supplies is considered to be the most cost-effective way to prevent cavities and fight tooth decay," said Chethan Chetty, DDS, MAGD, AGD President, "AGD is reiterating its support of this important health measure and cautioning communities and other government agencies from modifying water fluoridation programs. By drinking optimally fluoridated water, all members of society — regardless of income, education or ethnicity — can benefit from better oral health. We support the use of public funds to assist local and state governments in seeing that their public water supplies are adequately fluoridated."

The U.S. Health Service has established that the optimal concentration for fluoridation is 0.7 parts per million.[1] This range effectively reduces tooth decay while minimizing the occurrence of dental fluorosis. Fluoride helps prevent tooth decay by making teeth more resistant to acids derived from bacteria in the mouth and certain foods and drinks that attack enamel.

According to generally accepted scientific research, fluoride remains safe at the concentrations found in optimally fluoridated water and is a community health measure that benefits children and adults. Regular use throughout life will help protect teeth against decay. All water supplies, including bottled water, should have appropriate fluoride levels. All fluoridated items, including toothpaste, should be used as recommended by a dentist.

Tooth decay affects more children in the United States than any other chronic infectious disease, according to the CDC. They state that, if left untreated, tooth decay can cause pain and infections that hinder eating, speaking, playing, and learning. The problem is pervasive, with 92% of adults aged 20 to 64 having had dental caries in their permanent teeth.[2] This number has been found to increase when fluoride is removed from community water supplies.

"The AGD encourages state and local governments to provide effective levels of fluoride in public water systems to reduce the prevalence of dental caries in their population," Chetty concluded.

1. U.S. Department of Health and Human Services Federal Panel on Community Water Fluoridation. "U.S. Public Health Service Recommendation for Fluoride Concentration in Drinking Water for the Prevention of Dental Caries." Public Health Reports, vol. 130, no. 4, July–August 2015, pp. 318-331, doi: 10.1177/003335491513000408.

2. "Dental Caries (Tooth Decay) in Adults (Age 20 to 64). National Institute of Dental and Craniofacial Research, www.nidcr.nih.gov/research/data-statistics/dental-caries/adults. Last reviewed July 2018, accessed 21 August 2019.

Severe Surgical Complications
Related to Implant Procedures

by Thomas G. Wiedemann MD, PhD, DDS
Clinical Associate Professor
New York University College of Dentistry, New York, United States
Department of Oral- and Maxillofacial Surgery

Abstract

Although a high predictability and long-term success rate of dental implants is well documented in the literature, complications and failures do occur on a regular basis.

Problems with implants have been rising as more clinicians who do not have advanced training and skills are involved in implant placement, bone grafting, and implant-related restorations. Some complications may be relatively minor and easy to correct, while others will be major and may result in the loss of the implant, cause permanent damage of adjacent anatomical structures, or even be life-threatening.

This article is based on clinical cases as well as a literature review and gives an overview of intra- and postoperative complications with severe adverse outcomes causing medical emergencies related to implant procedures, with potentially life-threatening complications that even required intubation, emergency tracheostomy, or intensive care hospitalization.

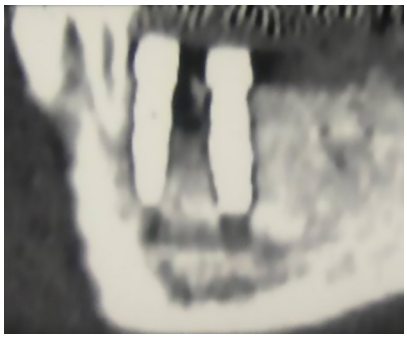


Fig. 1a, left: Penetration of an implant into the mental foramen. Fig. 1b, above: Drill slippage into the mandibular canal.

Introduction

The simultaneous development of unique prosthetics designs, customized components, guided tissue regeneration, in-office contemporary imaging, and computer software has greatly increased implant applications and restorative possibilities. Unfortunately, with the expansion and evolution of dental implant treatment in most dental practices, an increase in complications and morbidities associated with dental implants has occurred. The inherent high cost of implant dentistry in combination with patients' high expectations has inevitably brought its share of complications and legal malpractice claims[1]. Some complications may be relatively minor and easy to correct, while others will be major and result in the loss of the implant or even cause permanent damage to adjacent anatomical structures.

Objective

The aim of this article is to raise and reinforce awareness that even simple implant procedures are invasive in nature and can trigger extremely serious and even life-threatening complications.

Nerve injury

In implant dentistry today, one of the most serious complications is neurosensory impairment associated with implant placement or bone grafting. Studies have shown that approximately 73% of doctors who perform implant surgery have experienced postoperative nerve complications.[2] Libersa et al.[3] evaluated transient vs. permanent nerve injuries after implant placement and determined a 75% incidence of permanent injury. To avoid nerve damage, a thorough understanding of the radiographic anatomy is paramount. If nerve impairment does occur, quick recognition and treatment are crucial to decreasing long-term morbidity. The nerves associated with the maxilla and mandible are associated with inconsistent anatomic locations. The implant clinician should understand the limitations of two-dimensional radiology and the importance of a comprehensive radiographic evaluation of the neural anatomy of the maxilla and mandible. Additionally, the clinician must understand the complications that may arise from unconventional surgical techniques that may increase the morbidity of the procedure.

Most implant-related nerve impairments are the direct result of poor treatment planning and inadequate radiographic evaluation. Nerve trauma occurs when the implant clinician is not aware of the amount of bone or does not know the location of nerve canals or foramina (**Figure 1a**). Preoperative planning is crucial to determine the amount of available bone in approximation to a nerve structure, location of vital structures, bone density, and location for proper placement of

implants. A cone beam computed tomography (CBCT) examination is most commonly used for the three-dimensional planning in these areas. Nerves may be mechanically injured by indirect or direct trauma via retraction, laceration, pressure, stretching, and transection.

Injury to nerves and nerve fibers may occur during the reflection, retraction, or suturing of the soft tissue. Direct trauma may occur from overpreparation of the osteotomy site or lack of knowledge of the true bur length. Most drills have a sharp, V-shaped apical portion to improve their cutting efficiency. The V-shaped apical portion of the drill (termed the "Y" dimension in engineering) is often not included in the depth measurements of the commercial drills and may measure as much as 1.5 mm longer than the intended depth. When the bone is less dense, slippage of the handpiece may occur, leading to overpenetration (**Figure 1b**). The surgical drill may cause a nerve impairment from thermal damage even though the surgical drill does not violate the mandibular canal. Most commonly, this is the result of insufficient irrigation, which leads to overheating the bone. The surgical drill may also cause direct trauma to the neurovascular bundle by penetrating the mandibular canal or mental foramen. The neurosensory impairment will be directly proportional to the specific nerve fascicles that are damaged. Normally, the vein and artery, which are positioned more superiorly than the nerve, will be damaged when penetration of the canal occurs. Indirect trauma may also cause nerve damage from the excessive bleeding (hematoma), as well as thermal and chemical injuries from the penetration into the canal.

The most severe type of nerve injury, with the lowest probability of regeneration, is when the implant drill transects the canal. Injuries to vital nerve structures due to implant positioning are most common in the posterior mandible. These may be caused by direct trauma (mechanical) and indirect trauma or infection (pressure). Placement of an implant into or near the mandibular canal is associated with many types of neurosensory impairments. Placement of an implant close to the mandibular canal may cause trauma due to compression or secondary ischemia. A 2.0-mm safety zone of the implant in proximity to the canal should always be adhered to. Placement of the implant body into the mandibular canal is associated with a high degree of morbidity. Complete transection of the nerve occurs when surgical error involves the preparation of an osteotomy too deep due to inaccurate measurements or slippage of the handpiece. This type of injury results in the most severe of response, a total nerve impairment (anesthesia) and neuroma formation. Usually, this type of nerve injury results in a complete anesthesia and retrograde degeneration resulting in future dysesthesia.

Severe and life-threatening bleeding

Bleeding represents the complication with the highest possibility of a life-threatening consequence.[6] Literature reviews identified several case reports, which reported severe bleeding after implantation. These reports showed that bleeding occurred in the vast majority after implantation in the mandible. In contrast, only a few studies reported bleeding episodes after implantation in the upper jaw.[7] The main localization for life-threatening bleeding after implantation was bleeding in the area of the anterior floor of the mouth. This is attributed to an arterial trauma or injury of the periosteum or the lingual soft tissues and muscles after perforation of the lingual cortex.[8] In addition, this perforation is possible in a sloped configuration of the distal vestibular mandible (**Figure 4**).

The submental artery (2 mm in average diameter)[9] is a branch of the facial artery. The sublingual artery (2 mm in average diameter) arises from the lingual artery and is found coronal to the mylohyoid muscle.[9] The arterial blood supply of the floor of the mouth is formed by an anastomosis of the sublingual and submental arteries. In the canine area, the vessels are located closer to the lingual plate and alveolar crest than they are in more posterior areas.[10] Intraosseous hemorrhage is not a serious event, and control of the hemorrhage can be ensured by compressing the area with a directional indicator, an abutment, or the implant. However, severe bleeding and the formation of massive hematomas in the floor of the mouth are the result of an arterial trauma. A vascular wound may occur after detrimental surgical manipulations or tearing of the lingual periosteum, but in most cases, it is attributed to perforations of the lingual cortical plate. Mechanical pressure exerted by the expanding hematomas displaces the tongue and floor of the mouth both superiorly and posteriorly.[11] This occurrence may lead to extensive bleeding into the submandibular space, resulting in a life-threatening acute airway obstruction within the first few hours after surgery. The hemorrhage can easily spread in the loose tissues of the floor of the mouth, the sublingual area, and the space between the lingual muscles, which may require intubation or an emergency tracheostomy.[10] The surgeons also should consider other sources of potential hemorrhage and subsequent hematoma formation, including injuries to muscles or other soft tissues.[13] The escalating symptomatology of massive bleeding and progressive respiratory distress strongly resemble the clinical development of Ludwig's angina. Most important is the immediate bimanual compression at the suspected site of perforation and transport of the patient to the nearest hospital to secure the airway without delay.[10] Once the airway is controlled, efforts are undertaken for the definitive resolution of the hemorrhage.[12] Hemorrhages can be controlled by gauze tamponage, application of hemostatic agents, cauterization, or digital compression. If a hemorrhage cannot be controlled by these methods, ligation of the bleeding vessel should be performed. An endovascular angiography is an alternative diagnostic tool that can overcome unsuccessful attempts to define and isolate the bleeding source.[11] Incisions in the mucosa to relieve the hematoma should be avoided because they may promote further bleeding. The removal of an already inserted implant would also be ineffective.[11] To prevent unintentional hemorrhages in cases involving the immediate placement of implants or recent tooth extractions, the practitioner should be careful not to use the extraction socket as a guide for angulation because this may lead to the perforation of the lingual cortex.[12,13] Soft-tissue management during the procedure is essential, and clinicians should make every attempt to avoid subperiosteal tears.[13]

> "...even simple implant procedures are invasive in nature and can trigger extremely serious and even life-threatening complications."

Implant displacement

Numerous case reports have been published concerning displacement (at the time of surgery) or migration (after surgery or prosthetic treatment) of implants into an adjacent space such as the maxillary sinus, ethmoid sinus, sphenoid sinus, frontal sinus, orbit, nasal cavity (**Figure 3**), and the anterior cranial base.[14-20]

Implant displacement into the maxillary sinus during surgery or after a period of use is a complication recognized in the literature. Foreign objects in the maxillary sinus must be removed because they cause sinus infection due to impaired mucociliary flow and tissue reactions. Even fungal infections and cancer have been reported in cases of foreign objects slipping into the maxillary sinus.[5]

Regarding implants displaced into maxillary sinus without graft surgery (**Figure 2**), common contributing factors include the following: insufficient surgical planning, lack of anatomical knowledge, surgical inexperience, Schneiderian membrane perforation, excessive force

application, improper force during removal of nonosseointegrated implants, and an improper implant cavity. Other factors that cause delayed implant displacement include a change in intrasinus pressure and nose pressure, peri-implant bone destruction resulting from autoimmune reactions, and suboptimal occlusal forces.[21]

Dental implants slipping into maxillary sinuses can create an infective situation, such as sinusitis, through contact with sinus mucosa. Foreign objects in the maxillary sinus must be removed because they cause sinus infection due to impaired mucociliary flow and tissue reactions. Even fungal infections and cancer have been reported in cases of foreign objects slipping into the maxillary sinus.[5, 21]

Fig. 2: Displacement of an implant into the maxillary sinus

The generally recognized treatment protocol is to remove the foreign object through techniques such as making a window on the sidewall of the sinus intraorally, intraoral endoscopic technique and FESS, or a combination of these. FESS is advantageous in protecting whole sinus tissue and allowing for the cleaning of a secondary sinus infection. However, its disadvantages include inaccessibility to the sinus rear and front walls, failure in preventing oroantral communication, and requiring additional equipment. Moreover, removal is not optimal if the material to be removed is large in size. Often, implants were removed via an intraoral approach, owing to the positions and sizes of the implants; a large area is needed to direct surgical manipulation and prevent another mucosal injury. Although minimally invasive, the endoscopic technique is not preferred because of the restricted size of the opening and because the operation site is often too low.

Although uncommon, implants may be displaced, and migration may occur in the mandible. This may occur from two mechanisms: sublingual osseous undercuts and focal osteoporotic bone marrow defects. Because of the inherent sublingual undercuts in the posterior mandible but also in the anterior region, dental implants may be placed that result in a lack of bone for initial fixation of the implant. Due to the lack of fixation, the implant becomes displaced into the sublingual space. To prevent mandibular displacement, the osseous contours of the bone should be evaluated with three-dimensional radiography. In middle-aged women, radiolucent lesions may be present, usually in the molar area, that are associated with a higher risk of implant displacement. The defects are generally asymptomatic and are mainly determined during CBCT evaluation of the posterior mandible.[22]

Severe postoperative implant infections

If infection occurs after implant placement, appropriate antibiotics may be initiated as soon as possible, along with incision and drainage if indicated. Careful assessment of the involved implants with clinical and radiographic examination must be performed. Occasionally, an infected implant can be treated successfully and achieve osseointegration. However, after 7 days of antibiotics, continual infection dictates implant removal because the likelihood of achieving osseointegration is extremely low.[23] Furthermore, leaving an infected implant in place may cause persistent seeding of infection. Severe infection can result from infected dental implants. The appearance of clinical signs such as fever, dysphagia, and redness and swelling of the floor of the mouth must alert clinicians to suspect a surgically related infection. Descending necrotizing mediastinitis could be a severe complication secondary to infection of the oropharynx. Principles of treatment include antibiotics, surgical drainage and debridement, and careful assessment and removal of the involved implants. Li et al. describes a case of life-threatening deep neck and necrotizing mediastinal infection following placement of osseointegrated dental implants.[23]

Conclusion

Although severe and serious complications are uncommon, dental implant placement is not free of complications, as complications may occur at any stage. Therefore, careful analysis via imaging, precise surgical techniques and an understanding of the anatomy of the surgical areas are essential in preventing complications. As described in this article, surgical complications may arise even in the best initial operative situations. One should be aware of the possible complications related to implant placement so that the patient can be properly informed.

Prompt recognition of a developing problem and proper management are needed to minimize postoperative complications. The implant clinician who is aware of potential complications in all phases of implant therapy will be ready to treat any problem rapidly and competently. An understanding of the necessity of maintaining close communication with the patient throughout the entire treatment process is crucial.

Knowing the potential for these complications beforehand and communicating them to the patient, along with using a strong follow-up protocol, gives the patient further confidence in the clinician should any of these circumstances arise. This is beneficial to reduce stress for the implant clinician and the patient, which minimizes the chances of medicolegal issues.

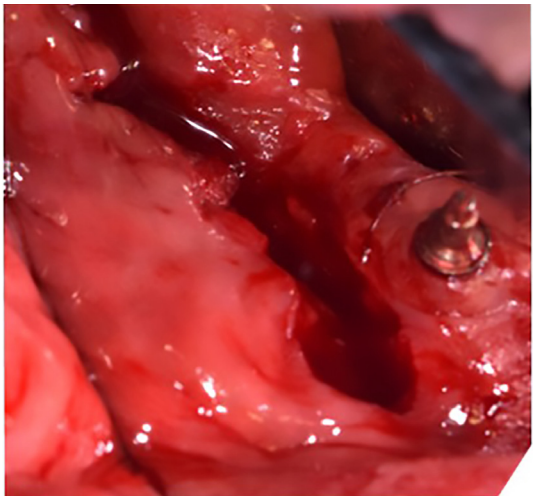


Fig. 3, left: Displacement of an implant into the nasal cavity. Fig. 4, right: Hematoma in the floor of the mouth after implant placement.

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Dental Microscope Systematic Controlled Navigation

in an upper incisor with advanced root canal calcification

Making predictable the unpredictable

by Juan Carlos Ortiz Hugues, DDS CEAS II AEP

Introduction

Root canal calcifications (RCC) are one of the most challenging procedures for an endodontist, regardless of experience in the field. Managing a root canal calcification requires skills, expertise, training, technology, and the patience to manage and minimize risks correctly.

Pulp canal calcification, also known as calcific metamorphosis, dystrophic calcification, diffuse calcification, and calcific degeneration,[1] occurs due to the deposition of calcified tissue in the canal walls.

Because of trauma, aging, or a reaction to tooth wear, operative procedures, vital pulp treatments, or regenerative endodontic procedures, hard tissue may also accumulate within the pulp canal space at a slow rate.[2] During this pulpal reaction, rapid deposition of hard tissue occurs within the canal space, obliterating the root canal trajectory.

Clinical assessment of the anatomy of the pulp chamber and root canal system is a priority for negotiating calcified canals, which becomes a significant difficulty for adequately managing the other endodontic steps. Locating, establishing, and securing the glide path is the most challenging part of instrumentation in calcified root canals. [3, 4, 5]

Pulp stones in the pulpal camera are isolated calcified masses with calcium-phosphorus ratios equivalent to those of dentin. They can manifest in a singular or multiple form and can be placed only at the pulp chamber's orifice or within the root canal.[6] Histologically, they are generally composed of concentric layers of mineralized tissue made by surface accretion around blood thrombi, dying, or dead cells. They can also form collagen fibers, "false pulp stones."[7]

Clinically, pulp stones are a problem as they can be attached to the adjacent dentin walls or surrounded by secondary dentin deposition; also, free-stones have been found completely surrounded by soft tissue.[8] The most complicated pulp stone retrieval management occurs when secondary and tertiary dentin calcifications wholly or partially obstruct the endodontic space, complicating the root canal treatment.

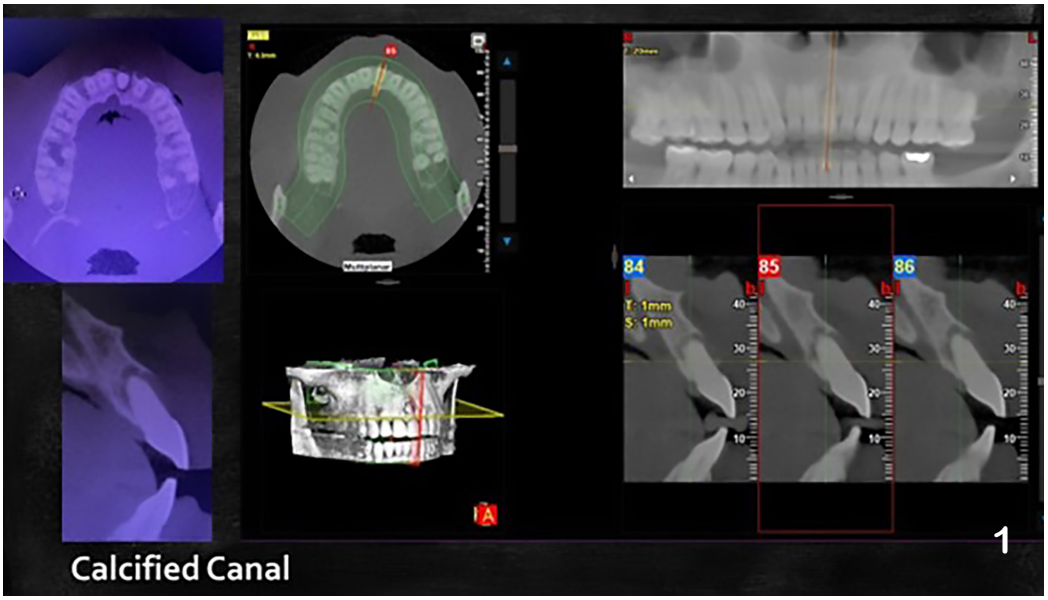
The long-term success of endodontic treatment is closely linked to adequate three-dimensional (3D) cleaning, shaping, and complete 3D obturation of the complex root canal system. Failures are caused by the residual amount of bacteria and an insufficient cleansing of the root canals, compromising the success of the procedure.[9,10] Periapical radiographs at different angulations play a significant role in the diagnosis related to the extent of the calcification for proper endodontic access, and cone beam computed tomography provides an even more accurate diagnosis and information about the inner space of the canal and state of the perirradicular tissues.[11]

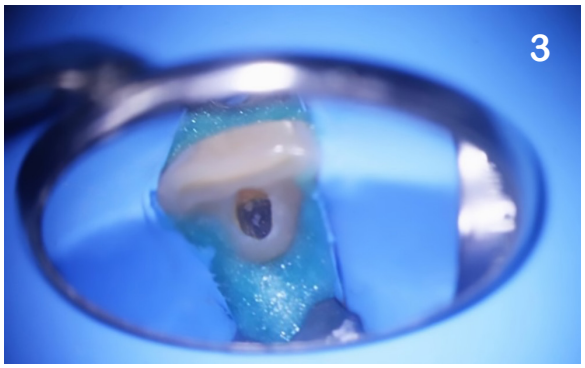
Although in periapical radiography it is difficult to detect the presence of the lumen of the calcified canal, in many cases, the use of the cone beam will suggest the presence of a thin lumen.[2] CBCT provides valuable depth measurements for canal detection and can be used to plan 3D techniques facilitating predictable access during treatment.[12]

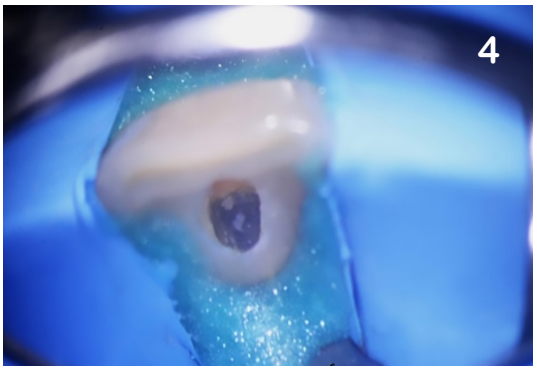
During the canal location, it is crucial to evaluate the visual information in terms of color, textures, and differentiation from the colors of the pulp floor and canal walls. Magnification is essential to managing canal calcifications; thus, it is critical that the lighting and multiple magnification steps of the dental microscope (DM) are used in order to have accurate resolution and to enhance the visual information provided by the human eye, which is improved by the DM in comparison to conventional loupes or naked-eye.[13]

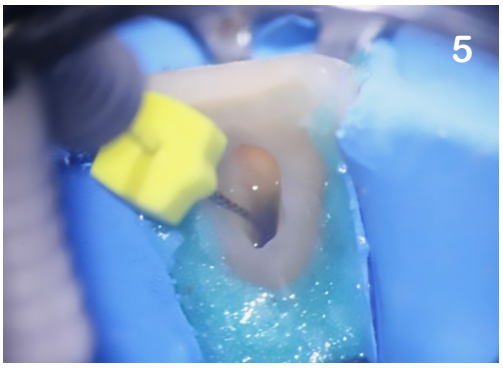
In order to locate the canals, it is mandatory to have a mental map and knowledge of the landscape. This can be achieved by studying the internal anatomy of each tooth and by managing according to the laws propsed by Krasner and Rankow in 2004:[14]

- **Law of centrality:** The pulp chamber floor consistently lies at the center of the tooth, aligned with the cemento-enamel junction (CEJ).
- **Law of concentricity:** The pulp chamber walls maintain concentricity with the external tooth surface at the CEJ level, meaning the external root surface mirrors the internal pulp chamber anatomy.
- **Law of the CEJ:** The distance from the clinical crown's external surface to the pulp chamber wall remains consistent around the tooth's circumference at the CEJ level.
- **Law of symmetry 1:** Except for maxillary molars, the canal orifices are equidistant from a line drawn mesially to distally through the pulp chamber floor.
- **Law of symmetry 2:** Except for maxillary molars, the canal orifices lie on a line perpendicular to a mesial-distal line across the center of the pulp chamber floor.
- **Law of color change:** The pulp chamber floor appears darker than the walls.









- Law of orifice location 1: Root canal orifices are located at the junction of the walls and the floor.

- Law of orifice location 2: Root canal orifices are found at the angles of the floor-wall junction.

- Law of orifice location 3: Root canal orifices are situated at the terminus of the root developmental fusion lines.[14]

Clínically, calcified dentin is darker gray and more opaque, differing from the surrounding dentin due to secondary or tertiary dentin deposition occluding the canal. Using ultrasonic tips with small diameters and clear vision without obstruction with the dental microscope provides accuracy and precision, minimizing the risks of perforation or wearing too much dentin structure or canal deviation.[15]

A humid, not wet, dentin surface can improve the visual information with magnification when removing the calcification with the ultrasonic tips.[16] Constant drying, radiographs, and humid tip activation make the procedure safer by constantly monitoring the orientation of the wear internally within the canal and avoiding deviations. It is recommended to use the highest magnification of the microscope to inspect the tooth and lower or intermediate magnifications to actively work at depth with the ultrasonic tips.

#8 and 10 K-files are interchangeable key instruments for locating the canals, negotiating and recapitulating constantly and using a gentle watch-winding motion with minimal vertical pressure.[17] Modifying the tip of a #10 K-file by cutting the final 2-3 mm with scissors has been shown to penetrate constricted canals more effectively by making the tip stiffer,[18] so it behaves similarly to the C-Pilot files, with great mechanical properties for scouting narrow canals and glide paths.[19]

Nowadays, most file manufacturers have rotary or oscillatory instruments designed with different chemical compositions, designs, tips, tapers, and cross designs for pathfinding, scouting, and glide paths to ease these complexities in root canal management. These instruments use stainless steel K-Files in a reciprocating handpiece.[20,21]

It is recommended to combine a chelator with NaOCL solution, creating a single irrigation solution mixture which can be considered a good alternative to the conventional irrigation protocol (sequential irrigation) of EDTA in gel or liquid, as it works as a lubricant and removes the smear layer, softening the dentin, and increasing the visual differentiation of the calcified dentin and dentin walls layer.[22,23]

Clinical Case

A 47-year-old male patient presented for a consultation, referred by his other endodontist due to pain and sensitivity in tooth #9. In the clinical history, the patient reported severe trauma more than 10 years earlier. Clinically, a dark color in the tooth was perceived.

Two endodontists had advised him to either have apical surgery or to remove the tooth. The patient persistently refused apical surgery due to fear.

In the cone beam image (**Fig. 1**), the apical third of the lumen of the canal was not visible in any of the sections (**Fig. 12**). What *was* evident was the presence of a large rarefaction around the root apex that covered the apical third (**Fig. 1, 9**).

The patient showed high sensitivity to palpation of the soft tissues adjacent to the root and to percussion of the tooth. The final diagnosis was chronic apical periodontitis due to trauma.

With the clinical and radiographic information obtained, it was explained to the patient that surgery would not guarantee the elimination of the bacteria contained within the calcified tissue in the canals, and that given the virtual impossibility of visualizing the lumen of the canal and the periradicular lesion, the hopes of preserving the tooth were minimal.

The patient was informed that the chances of locating the canal were low but that it could be attempted. The patient consented to try the orthograde endodontic approach.

Endodontic access was performed using a #2 round diamond bur, using the dental microscope under low and intermediate magnification to precisely determine each step of the procedure. The bur entered through the cingulum until reaching approximately the cemento-enamel junction, following the Centrality and CEJ Laws (**Fig. 2**).

A tronco-conical diamond bur was used to smooth and rectify the inner walls of the pulp chamber. Then, an E5D ultrasound tip was used to achieve better visual access to the tooth's pulp in depth and controlled selective wear using a dental microscope with medium magnification.

Absolute Dentin® composite* (**Fig. 3**) was placed around the tooth to provide complete isolation, and sodium hypochlorite was placed in the pulp chamber. With the surface humidity, we could appreciate the classic grayish color of the calcified dentin concentrically in the canal.

An E5 ultrasound tip was used at medium power to gradually remove the calcified dentin in a controlled manner, alternating EDTA 17% and hypochlorite. The canal was dried with paper tips, maintaining moist but not wet dentin (**Fig. 4**). The dental microscope was always used at this stage under medium and high magnification to differentiate the textures and colors of the calcified dentin in comparison with the walls of the canal. At each mm of advancement, periapical X-rays were taken to ensure that we were not deviating from the axis, to avoid perforating the root.

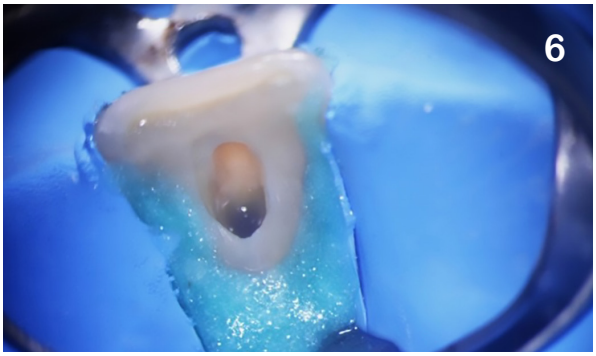
As we continued to advance deeper into the canal, the dentin became less hard, and the calcified dentin became more segmented, which gave us the feeling that the treatment was going to be successful. Upon reaching approximately the union of the middle and apical third of the root, using a #10 K file cut at the tip to make it active and more rigid (**Fig. 5**), we were able to obtain the sensation of entrapment within the canal and the motion of a classical guitar string, which was confirmed with a periapical x-ray.

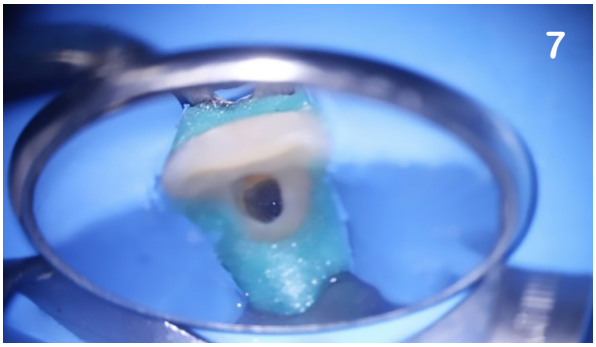
Then, maintaining the alternating irrigation protocol of EDTA 17% and sodium hypochlorite, we performed the same tip-cutting technique on file #8 to activate it. We alternately recapitulated active files #8 and #10 and then moved on to the K files #8, 10, and 15 once the conduit route was obtained (**Fig. 6**).

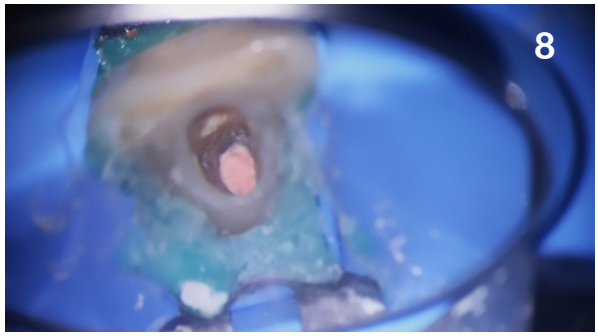
We used an occillatory contra angle with 60° to 60° of occillation, adaptable to K files #10, 15, and 20, to widen the canal safely, always recapitulating with file #10 between files.

Once manually reaching K-file #25, we used rotary files Diadent Dia-X in sequence until reaching the file diameter and taper of 25.06, and manually shaping the apical third up to a #40 K file (**Fig. 7**).

The canal was sealed using the modified Tagger technique, using Guttacondensor #40 to thermoplasticize the gutta-percha (**Fig. 8**) and then definitively sealing the access with flowable composite (**Fig. 9**). A 3-month radiographic follow-up was recommended to the patient.



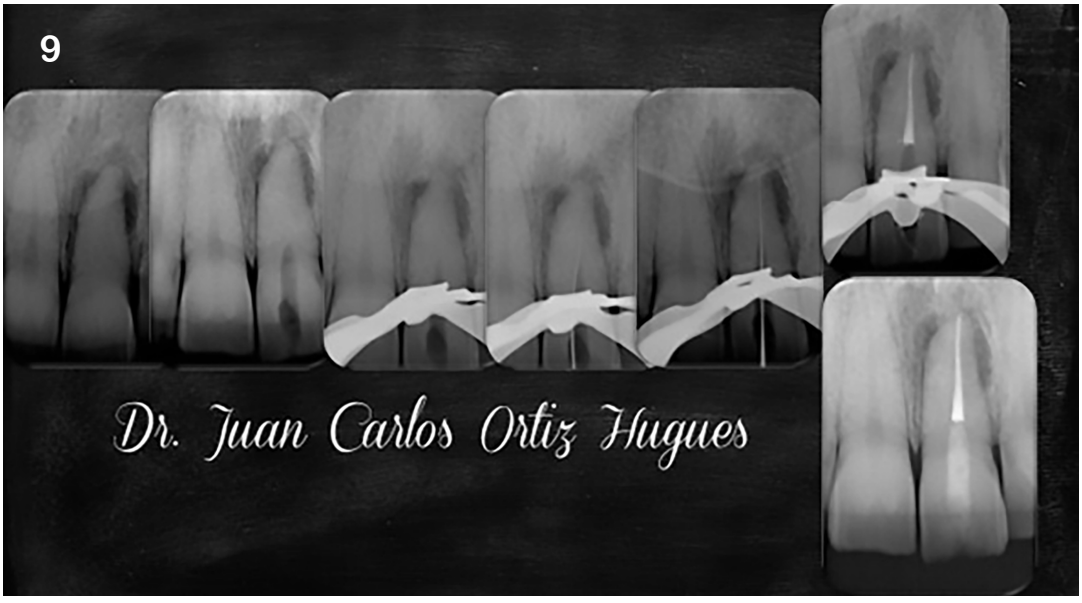




Conclusion

In contemporary endodontics, the management of calcified canal treatments has become more predictable, minimizing the risks of perforation through technology, such as CBT, piezoelectric ultrasound, and the adequate systematic management of the dental microscope at all times.

Systematic approach protocols, patience, and maintaining an attitude of observation and precise work with the combination of ultrasound tips and medium and high magnification of the dental microscope are the ways to manage this type of endodontic complication to obtain efficient and highly predictable results in the long term.



* Absolute Dentin® Parkell, www.parkell.com

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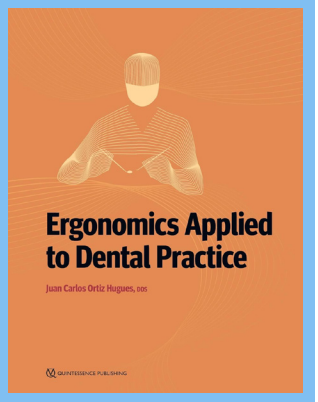

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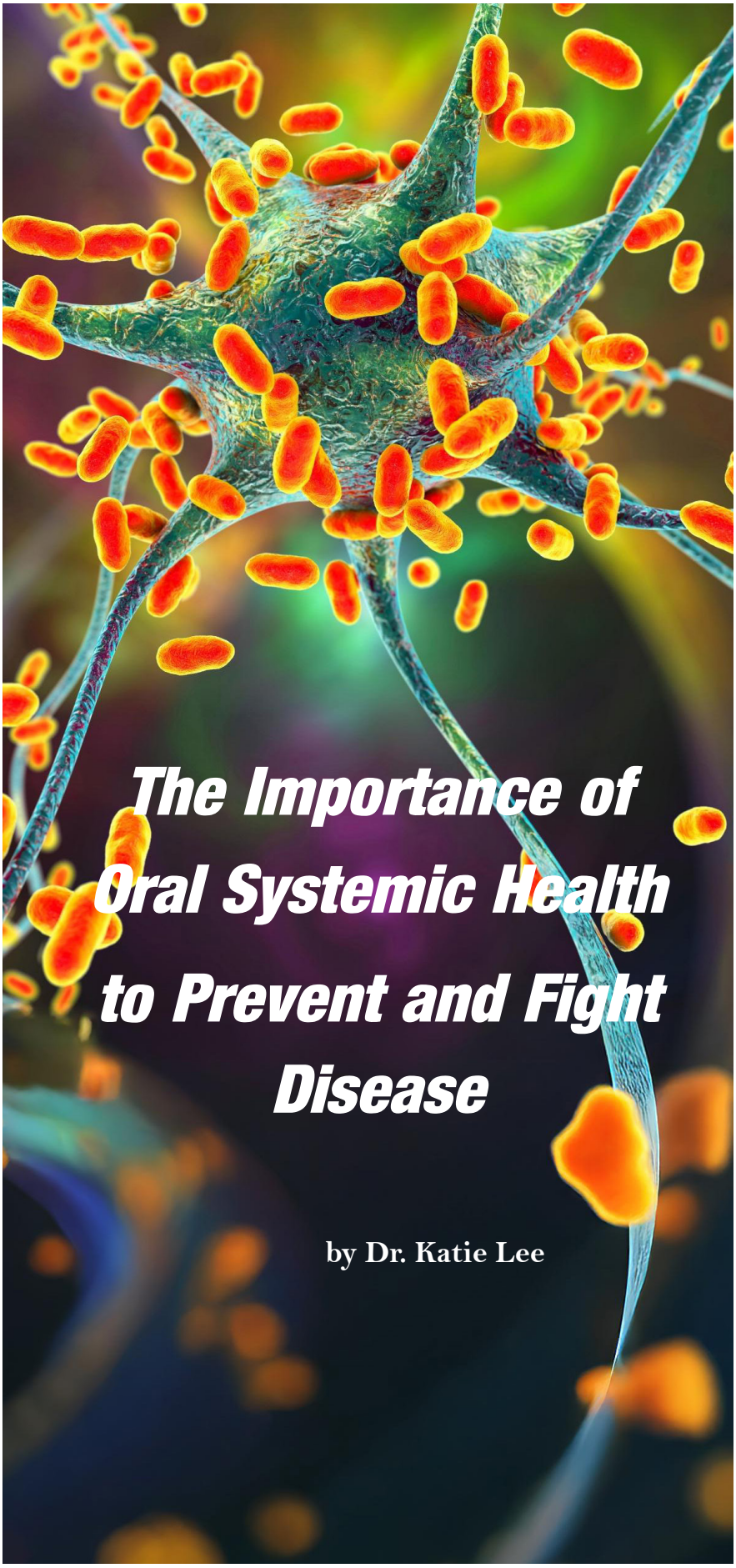


The Importance of Oral Systemic Health to Prevent and Fight Disease

by Dr. Katie Lee

The state of our health in the U.S. is in crisis. More and more people are suffering with disease, unable to fight infections, and severely struggling with their health. We are one of the wealthiest countries in the world, yet we are one of the sickest despite spending the most on health care. Why? I would say it is because we are focused on treating symptoms and not the root cause of disease.

Did you know that there are over 750 bacteria found in the mouth of which 11 specific strains can lead to systemic diseases like heart disease, cancer, Alzheimer's, and even fertility complications? Individuals dealing with disease and fertility issues will have key indicators in their mouths–discovered through innovative technologies and testing–that are flashing warning signs.

There is a deeper connection between bacteria and inflammation that occur in your mouth and how it exacerbates disease. Knowing the fundamentals of oral health and overall health aims to reduce an individual's risk of acquiring a multitude of health issues and prevent life-threatening diseases. Now the root cause of all these diseases we know is inflammation. What is known is that the five bacteria found in the mouth are responsible for causing chronic inflammation (Aa, Td, Tf, Pg, and Fn). These five bacteria are thought to be the most responsible for causing chronic inflammation that could lead to diseases like diabetes, cancer, heart disease, Alzheimer's, and even fertility issues.

Diabetes

Cells need sugar; it's how they get the energy to operate. The production of insulin allows the body to pick up sugar from the bloodstream and take it into cells for use. There are two types of diabetes - Type 1 and Type 2. Type 1 is generally an autoimmune disorder, not preventable, and occurs with bad luck. Type 2 diabetes has the same effects as Type 1, but this version is often attributed to lifestyle and diet and is mostly preventable. Specific bacteria in the mouth kill the cells in the pancreas responsible for insulin production. Without insulin, sugar remains in the blood causing vascular inflammation and diabetes.

A lack of saliva is a huge sign and symptom to look out for when it comes to diabetes. Diabetics often have dry mouth (xerostomia), where teeth become "sticky" and bacteria eat away at the mineral exterior causing rampant cavities. Diabetics will also have pale, cracked tongues and cracked or crusty corners of the mouth / lips (angular cheilitis) due to fungal overgrowth from sugar. Throw in pale tissue on the inside of the mouth and you've hit the symptom trifecta!

While we can't avoid sugar (it's the absolute worst!) completely, it's important to be mindful of the foods you are consuming. Your diet contributes greatly to the bacteria and fungus that grow in your mouth, and sugar is a breeding ground for all the gross stuff—say hello to cavities! Cavities along the gum line are a huge indicator that there may be more going on in your mouth.

Alzheimer's

In the case of the brain, we often speak of two specific pathogens that cause the most damage, bacteria *Porphyromonas gingivalis* (Pg) and *Fusobacterium nucleatum* (Fn). A recent study has actually shown that deaths caused by a diagnosis of Alzheimer's in patients sixty-five and older were associated with antibodies of oral Pg as well as the presence of periodontal disease before dementia. This is because Pg leads to the

formation of amyloid plaques (hallmark sign of Alzheimer's) in the brain and Fn acts as gasoline, throwing fuel onto the fire, accelerating this process. This means oral bacteria are no joke!

Dementia is an all-encompassing term that labels the cognitive decline associated with damaged neurons (brain nerves) and their connections in our brains. The three main varieties of dementia are Alzheimer's, vascular dementia, and Parkinson's.

Alzheimer's, accounting for 70 percent of all dementia cases, is typically acquired from a lifetime neural inflammation, which can be caused by a bacterial infection (often from the mouth), poor blood sugar control (diabetes), or even viruses (cold sores). However, there are a number of gene mutations, like ApoE4 that can also lead to an increased risk of early-onset Alzheimer's.

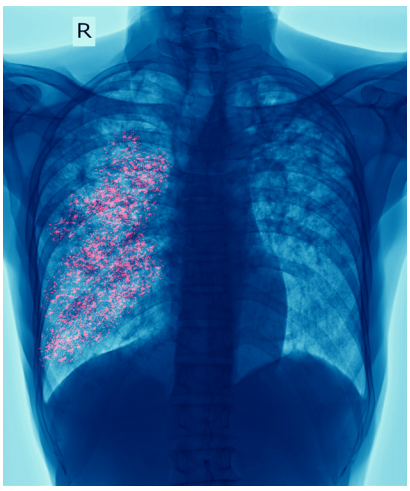
Vascular dementia is often caused by a reduction of blood flow to the brain, usually as a result of obstructive sleep apnea, smoking, high blood pressure, being overweight, and having diabetes (dementia is often considered the "diabetes of the brain"). In particular, these patients may experience more problem-solving issues over general memory loss.

The final major type of dementia is a result of Parkinson's disease. Scientists are still unsure what causes it, but whatever the origin, Parkinson's disease occurs when the nerve cells become damaged or die off, which decreases dopamine in the brain (dopamine smooths our muscle functions). A classic symptom of Parkinson's is seeing someone with a tremor. Due to their poor motor function, Parkinson's patients often also develop poorer and poorer oral hygiene as the disease develops, which further exacerbates the issue as oral bacteria causes neural inflammation.

Heart Disease

Recently, the American Heart Association conducted a landmark study that confirmed that gum disease is causal to heart disease. Why is this so important? It confirms what many of us dentists have been saying all along–those nasty bacteria in your mouth can cause more significant disease in the rest of your body.

Chronic inflammation in our mouths causes things like leaky gum syndrome where bacteria enter the bloodstream (via MMP-8) and circulate through the body triggering inflammatory responses that may contribute to heart problems. Oral bacteria play a role in the development of arterial plaque, which may eventually result in atherosclerosis, a disorder that narrows and hardens the arteries and limits blood flow to the heart. *Streptococcus mutans*, the bacteria that causes cavities, is also the bacteria responsible for 50% of infective endocarditis cases (heart infection). So, patients should also worry about cavities as well as gum disease when it comes to heart health!



Cancer

Chronic inflammation has been linked to just about every stage of cancer. Inflammation fuels cancer cells by helping them create their own blood supply, allowing them to replicate and live longer. It can shut down healthy cells and make it easier for cancer cells to spread throughout the body. Cancer thrives in inflamed tissues. So how do we fight the production of cancer cells? Stop inflammation, and you can stop the development of most (possibly all) cancers.

Oral cancer can be any cancer in the oral cavity–lips, tongue, the floor of the mouth, gums, tonsils, and oropharynx (the part of the throat at the back of the mouth). The reason oral cancer is particularly nasty, and challenging is that it is often discovered in its later stages and has the same reddish color as the tissue it grows in, making it very difficult to detect. Oral cancer can appear as a nonhealing ulcer (especially on the lips) or lumps under the skin.

Tongue Cancer: Tumors most often occur on the sides or underneath the tongue.

Cheek Cancer: Red and white velvety lesions occur at the base of the cheeks (usually in the spot where you would hold your chewing tobacco, catch my drift?).

Throat Cancer: This type of cancer tends to be asymmetrical, can appear white as a stark contrast to the red of your mouth (making it more easily detectable than other oral cancers), produces hoarseness, and blends in with your anatomy. Sometimes patients will feel a lump as they swallow or have a swollen lymph node in their neck or under their chin.

Oral cancer cannot be detected early by having your dentist just look in your mouth since it usually grows beneath the surface of the tissue. This means to truly identify possible cancer; your dentist needs to use the latest technologies such as a VELscope or salivary tests to detect cancer in its early stages.

Fertility

Harmful bacteria in our mouths trigger a systemic inflammatory response, increasing MMP-8 activity which breaks down our gum tissue surrounding our teeth causing leaky gums. Once these bacteria from our mouth infiltrate the circulatory system one of their favorite locations to migrate to is the male and female reproductive systems! In males, oral bacteria can change the shape of sperm leading to a decrease in their motility and even kill sperm reducing their sperm count. In females, oral bacteria impede ovulation, contribute to miscarriages, stillbirths, early labor and maternal health complications during pregnancy. You cannot have a healthy baby and a healthy mom without a healthy mouth.

Dr. Katie Lee is a dentist, speaker, and coach who lives in Colorado. Dr. Lee graduated from University of Illinois at Chicago in 2010 and was an owner-partner in over 80 DSO supported dental practices throughout the US and served as Clinical Partner overseeing 5 states. Currently, she consults for health technology companies and provides implant education for general dentists. Her passion about the oral systemic health link comes from personal experience, and is detailed in her book Saved By the Mouth. Dr. Lee has won Top 40 under 40 Dentists in America, and International Woman of the Year in Dentistry, and is a sought-after expert in the media.

Dr. Lee was involved in an ATV accident as a teenager, which left her without many teeth and rendered her jaw immobile. Dr. Lee experienced how oral health affects systemic health and the benefits of dental implants. Her first-hand journey in recovering from the effects of dental trauma led her to specialize her career on the mouth-body connection® and dental implants. Dr. Lee searches for proven technologies that improve clinical outcomes and the patient experience and loves to educate her peers on those technologies. Dr. Lee authored a book entitled Saved By the Mouth to educate patients and clinicians on the importance of oral health. Dr. Lee has won many accolades, including Top 40 under 40 Dentists in America, and International Woman of the Year in Dentistry. She has been featured on local Fox and NBC news stations and on over 40 podcasts discussing the importance of oral health. Dr. Lee will be opening her new oral systemic health center, The Collective Health Society, in Colorado in 2025.

So What Can Dentists Do?

While oral systemic health isn't new, the concept is just starting to rise in popularity as healthcare is evolving to a more whole-body approach. For decades, dentists and physicians have been siloed, focusing on their respective fields of expertise with little to no crossover. However, as this dramatic shift in care has occurred and the data and research to support the effects of poor oral health on the body are readily available, dental professionals and doctors are working together more often to prevent disease. More and more general dentists are starting to recognize the importance of implementing oral testing and technologies into their practices that not only increase their profitability but greatly impact their ability to treat their patients.

Now more than ever, it is critical for dentists, hygienists, and dental professionals to become educated in oral systemic health practices and the latest tests and technologies that can improve and save the lives of their patients. When it comes to oral testing, every dentist should be a bit nosy when it comes to their patient's health. There are certain simple tests that can all be done in the office, which can help identify inflammation and disease.

Oral Microbiome Testing: This test will find and name pathogenic bacteria present in the mouth and how they are affecting the rest of the body. This can help dentists tailor the appropriate treatment to kill the bacteria.

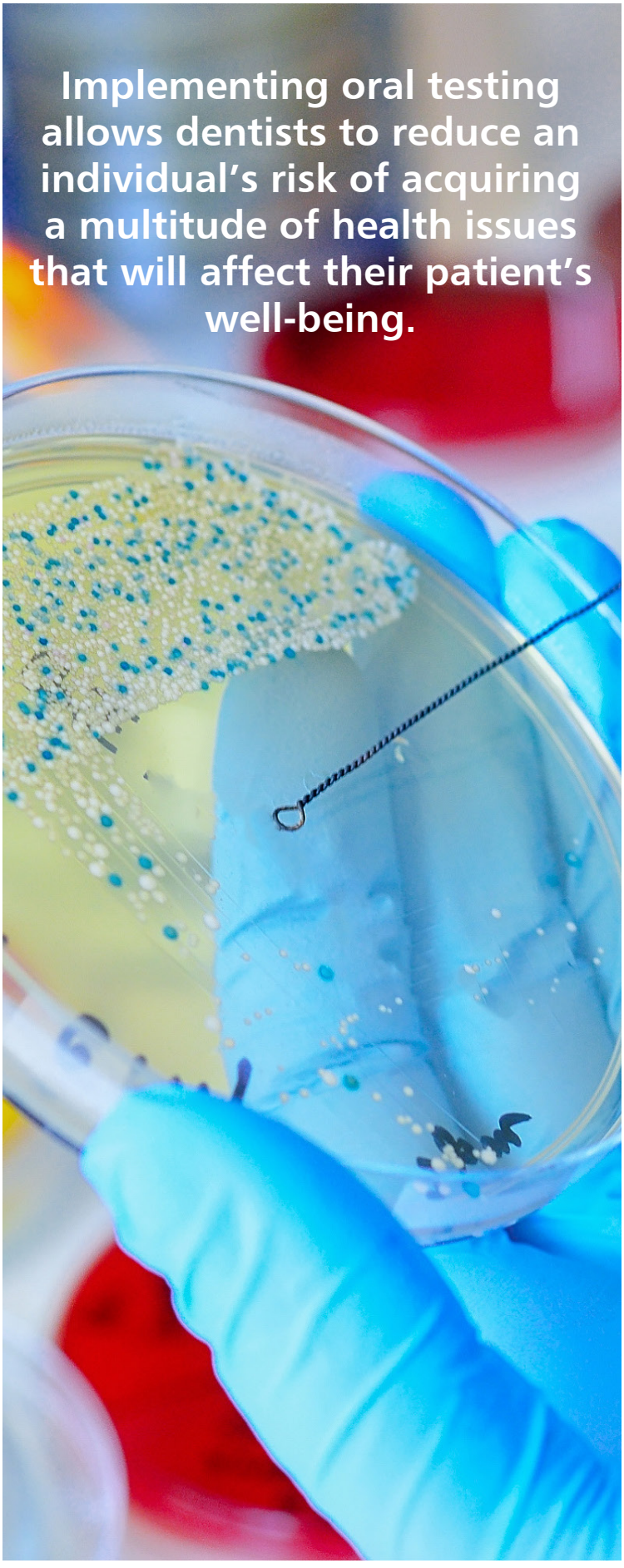
MMP-8 Test: This is a diagnostic test for MMP-8 enzyme levels. MMP-8 is a collagenase enzyme responsible for tissue breakdown in our mouth and throughout our bodies. This test can inform the dentist that breakdown is occurring before it is evident clinically. This means dentists can be proactive not reactive when it comes to care, catching degradation earlier and increasing treatment success.

IL-6 test: This test determines if a patient has a mutation in the IL-6 gene which is a mediator of a systemic inflammatory response. Knowing this, patients can make lifestyle changes to ensure they keep their immune system quiet so that they do not develop other conditions like cardiovascular disease, diabetes, Alzheimer's disease, and periodontal disease.

HPV salivary test: Saliva can be tested for HPV, which is an important risk factor for oral cancer.

Implementing oral testing allows dentists to reduce an individual's risk of acquiring a multitude of health issues that will affect their patient's well-being. As dentists, these simple oral tests provide greater insight into a patient's overall health, how they may be suffering, and the proper course of treatment.

For more information about oral systemic health, visit https://katieleedds.com/courses to learn about the oral systemic link. Dr. Katie Lee's new oral systemic health center, **The Collective Health Society**, will open in Colorado in 2025. This center will include a training facility where she will be educating clinicians on the mouth-body connection and how to integrate these practices into their offices.



Essential Cyber Liability Insurance for Dental Practices: Myths and Must-Have Coverages

by Carrie Millar

FDA Services

The threat of cyber-attacks is no longer a distant concern—it's a direct and growing danger to dental practices of all sizes. Yet, many professionals fall victim to the dangerous myth that their practice is too small to be targeted or that basic IT measures alone are enough to protect them. This mindset leaves practices vulnerable to devastating attacks that can compromise patient data, disrupt operations, and lead to severe financial and legal consequences. It's imperative that dental offices take these threats seriously and secure comprehensive cyber liability insurance that includes essential coverages. Without these protections, your practice could face an overwhelming financial burden that extends far beyond the initial breach.

Myth 1: "I don't need cyber liability insurance because I have a great IT guy."

A strong IT team is essential for preventing attacks, but even the best IT provider cannot guarantee complete protection. Cyber-attacks can still occur, and when they do, IT teams typically focus on recovery, not on handling the financial fallout. They won't cover costs like replacing computers, notifying patients, or compensating for lost revenue.

Cyber liability insurance fills these gaps, providing financial support when things go wrong. A comprehensive policy includes not only preventative measures but also first-party coverages like forensic investigations, breach notifications, and business income loss—covering critical areas that your IT team cannot.

Myth 2: "My practice is too small to be a target."

Many small dental practices believe they are not at risk, but this is a dangerous misconception. Cybercriminals often target smaller practices because they assume their security is weaker. Small businesses, including dental offices, account for over half of cyber-attacks, and the financial impact can be devastating.

No matter the size of your practice, you're at risk. A single data breach could result in lawsuits, lost revenue, and significant out-of-pocket expenses for recovery. Cyber liability insurance helps protect small practices by covering first-party costs like business income loss and computer replacement, as well as third-party liabilities like lawsuits and regulatory fines.

Myth 3: "My office package insurance includes cyber liability coverage."

Many dental professionals assume that their general business insurance covers cyber threats. Unfortunately, most business owner's policies (BOPs) offer little to no protection against cyber risks. These policies are designed to cover property damage and general liability but typically exclude the specific risks associated with cyber-attacks or only have small limits.

A specialized cyber liability insurance policy goes far beyond basic coverage. In addition to protecting against third-party claims, a dedicated cyber policy will cover critical first-party expenses, such as replacing compromised computers, covering ransom payments, and notifying affected patients. Without this comprehensive coverage, your practice could be left exposed to significant financial losses after a cyber incident.

"Cybercriminals often target smaller practices because they assume their security is weaker. Small businesses, including dental offices, account for over half of cyber-attacks, and the financial impact can be devastating."

Myth 4: "HIPAA doesn't apply to my practice."

Some dental professionals mistakenly believe that HIPAA regulations only apply to large healthcare organizations. Any dental practice handling patient information is required to comply with the Health Insurance Portability and Accountability Act (HIPAA). This means that, in the event of a cyber-attack, you must follow strict breach notification guidelines, conduct forensic investigations, and mitigate damages to avoid penalties.

Failure to comply with HIPAA can result in substantial fines and legal action, especially if patient data is compromised. Cyber liability insurance helps cover the cost of HIPAA compliance items after an attack, including breach notifications and forensic investigations, as well as any penalties you may face for non-compliance.

Now that we've addressed some of the most common myths I hear from dental practice clients, let's discuss what your cyber liability policy must include and the appropriate limits you should carry. It's essential to not only secure the right coverages but also to ensure the limits reflect the specific risks to your practice—especially considering your revenue and patient data volume.

Essential Coverages for Cyber Liability Insurance

1. **Forensic Investigation Costs:** When a breach occurs, the priority is determining how it happened and what data was compromised. Your cyber policy should fully cover the cost of hiring forensic specialists to identify vulnerabilities, secure your systems, and ensure the breach is contained.

2. **Breach Notification Costs:** HIPAA and other regulations require you to notify patients affected by a data breach. This isn't just limited to active patients—you are responsible for notifying every patient whose data you have on record, even if they're no longer active. This includes sending out notifications, setting up call centers, and offering credit monitoring services. These costs can skyrocket, so your policy needs to cover them adequately.

3. **Business Income Loss:** Cyber-attacks can disrupt your operations, leading to significant revenue loss while your systems are down. The average downtime for dental practice right now is three weeks.

4. **Computer Replacement and Data Recovery:** If your systems are damaged, or data is encrypted or destroyed, your policy should cover the full cost of replacing hardware and recovering critical patient data. Given the importance of maintaining access to digital patient records, this coverage is crucial to avoid operational paralysis.

5. **Ransom Payments:** Ransomware is one of the fastest-growing cyber threats, where hackers lock your systems and demand payment for release. Your policy should provide ample coverage for ransom demands, but always consult law enforcement before making any payments.

6. **Third-Party Liability:** In addition to covering your direct losses, your policy must protect you from legal claims from patients whose data was compromised. Each patient notified of a breach is a potential future lawsuit. Make sure there is coverage should your practice be found liable for the breach.

Key Consideration: Purchase Limits Based Your Policy Based on Patient Records and Monthly Income

When determining the appropriate limits for your cyber liability insurance, it's crucial to consider both your monthly income and the total number of patient records you store—not just the number of active patients you see regularly. If you store data for 5,000 patients but only see 1,000 active patients, your breach notification costs will still apply to all 5,000 records in the event of a cyber-attack. The more records you maintain, the higher the potential costs for breach notifications and legal liabilities, making it essential to ensure your policy limits are adequate.

Additionally, you should carry coverage limits of at least double your monthly income to maintain financial stability during extended downtimes caused by a cyber-attack. This ensures you have enough breathing room to cover essential expenses like payroll, rent, and other operational costs while your systems are restored. Without adequate coverage, a cyber-attack could lead to significant financial strain that goes beyond just recovering from the breach itself.

By securing a policy that accounts for both your income and the volume of patient data you store, you can better protect your practice from the far-reaching consequences of a cyber-attack and ensure your business can recover swiftly and smoothly.

Carrie Millar is the Director of Operations at FDA Services, the wholly owned insurance agency of the Florida Dental Association. With over 20 years of experience at the agency, Carrie has extensive expertise in cyber liability insurance and helping dental practices secure the right coverage to protect against cyber threats. If you would like to speak to Carrie or any of the insurance experts at FDA Services, call or text 850-681-2996.

Real-Life Cyberattacks in Healthcare: Lessons for Dental Offices

To truly understand the importance of cyber insurance, let's look at some real-world examples of how cyberattacks have affected healthcare providers, including dental practices, and how insurance played a crucial role in recovery.

Case Study 1: Ransomware Attack on a Dental Practice

A small dental office in the Orlando Florida was hit with a ransomware attack, locking them out of their patient files. The attackers demanded a $500K ransom in exchange for the encryption key. Fortunately, the office had cyber insurance, which covered negotiating the ransom payment down to $250K, helped with the costs of restoring their system, forensic investigation, and notification to patients. Without cyber insurance, the practice would have paid over $650K.

Case Study 2: Phone Scamming

An oral surgery office received a call from a "patient" claiming they couldn't access the new patient files and asked if the front office could email them over. Shortly after, the "patient" called again to confirm whether the office had received the email and requested that they open the attachment to verify. Once the email attachment was opened, the hackers gained access to the system. A week later, the hackers demanded $100,000 in ransom to release the patient records. The total cost of the incident, including fees and the ransom, amounted to $200,000.

Lessons for Dental Offices

- **Preparation is Key:** Even small practices can fall victim to large-scale cyberattacks.
- **Cyber Insurance Can Save Your Practice:** While preventive measures are essential, having cyber insurance in place is your best safety net in the event of a breach.

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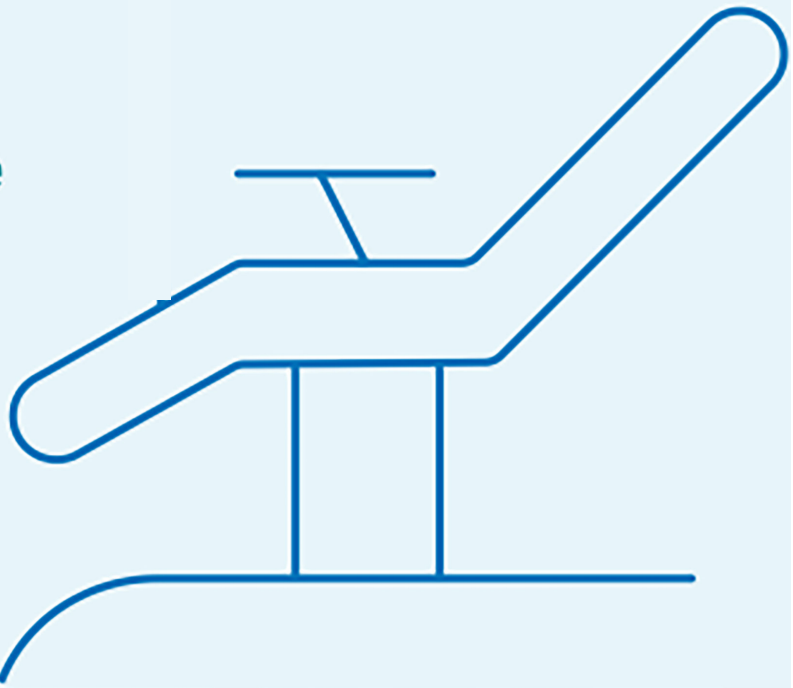

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