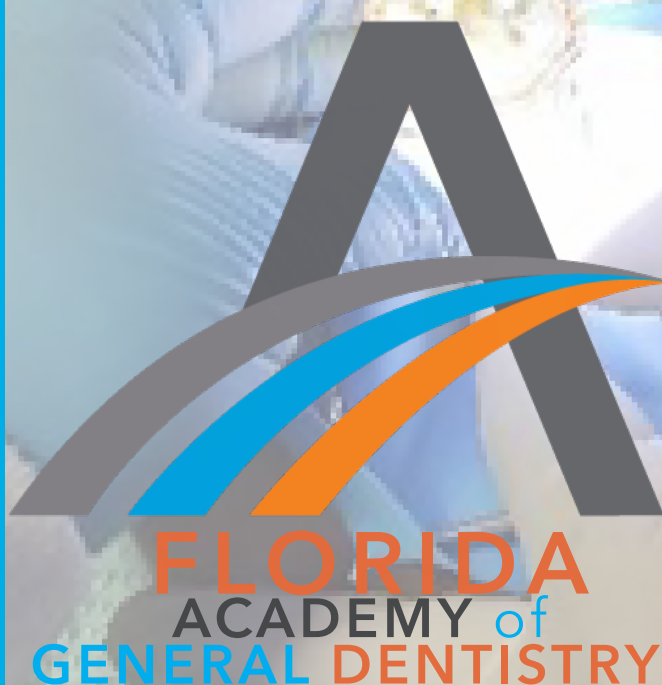


July, 2021

# FLORIDA FOCUS

*The publication exclusively for the general practitioner*



The Use of Platelet Rich Fibrin in Facial Esthetics

Microscope Endodontics in 100% of cases: Workflow and Ergonomics

OSHA and COVID-19: OSHA Launches New Program

A COVID-19 Side Effect: Hygiene Labor Shortage and the Impact on the General Dental Practice

Patient Success Begins on the Phone

Neuropeptides in the Mechanism of Pain

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# A Message from your FLAGD President

Hello All,

Welcome to our 2nd edition of the Florida Focus, 2021. I cannot believe it is already June. Time flies when things are going well.

Our office has never been as busy, and the same sentiments are being reverberated by the colleagues that I've talked with. 42% of Floridians have so far received at least one dose of the Covid-19 vaccine, according to public health data compiled by the New York Times. Hence, our Florida Governor signed a bill and an executive order on May 3rd that immediately ceased all local Covid-19 emergency orders in the state, citing the widespread availability of vaccines as a key reason behind the new directive. Hope all of you doctors are inside the 42% cited above. So now, let us stop fearing Covid and PLEASE ignore the bad news on Social Media.

I have more good news to share. I get an email every week from AGD headquarters with the list of many new members joining AGD that sends a tickle through my spine. To those new members who have joined for the first time, I heartily welcome you on behalf of Florida AGD Board. To those who are rejoining, welcome back! The dark lining to this good news is we are also losing older members, who are not rejoining, which we call attrition in any business except the practice of dentistry. Anyhow, let us focus on the good news. The more members we have, the stronger our organization gets and the better deals we can cut. I don't know if everyone is aware that AGD still has the 'Refer a Colleague' program, where when a colleague whom you refer joins AGD as an active member, you each get a \$50 coupon that can be applied toward a future purchase with AGD. And now they have added a new AGD2021 Grand Prize, for the chance to win a trip for you and your new member guest to attend AGD2022.

I am also happy to announce that the Nova Southeastern University students are blessed to have started a new AGD Student Chapter of NSU. I want to personally thank Dr. Lippman, Dr. Slingbaum, and Dr. Gordon of NSU.



Now, let us get to the main business we are known for – Quality CEs. We are planning exciting CE programs for all our members. Implant Dentistry is the most sought-after subject this year. We are also trying to include most of the mandatory courses in our CE offerings. Please look out for emails from the Florida AGD.

Finally, I want to share a tip with you all. Whenever I come across a difficult job, which can be as silly as opening a sealed super-tight bottle top, all I do is remember Ms. Arunima Sinha. You can google her and get inspired by her story. When she resisted being robbed on a train, the robbers threw her out of the train, and she got run over on a parallel track by another train. She had to get one of her legs amputated below the knee in April 2011. After this incident, she was surprised that she survived and, while recovering in the hospital, she decided 'to do something' with her life. In spite of her disability, she resolved to climb Mount Everest, and 25 months later, in May 2013, she became the first female amputee to scale Mount Everest. After this victory, her next goal was to climb all the seven highest peaks in all seven continents. Guess what? In January 2019, she completed her vision successfully. Inspired by her amazing attitude and successes in spite of her handicap, my small challenges pale into insignificance when I remember her, and then I am able to proceed with my mission.

See you guys next time. Till then please stay safe and don't worry.  
BE CONFIDENT. You can achieve anything you set your mind on.  
JUST HAVE FAITH IN YOURSELF.

Humbly  
Naresh A Kalra, BDS, DDS

## EDITORIAL



During my first year of dental school, one of my classmates commented that if he'd known how much time we'd be spending with wax, he might have chosen a different career. He said that, prior to dental school, he'd thought that a dentist drilled a hole, filled it, and got paid. As we all know, much of the joy of being a general dentist involves the multiple skills we need to master and the variety of patients and situations we encounter. As your editor, one of my goals for the Florida Focus is to include a diversity of topics in each issue. As you read our June issue, you'll find content ranging from facial esthetics to telephone communication, ergonomics to biochemistry. Although vaccinations have eased pandemic restrictions, unfortunately COVID-19 is still a factor in our lives and practices; and we hope that you'll find the two articles about its effect on dentistry to be both informative and helpful. To include content which reflected the many facets of general dentistry, we reached out to the AGD's PACE providers in Florida and are grateful to the individuals and organizations who responded with such enthusiasm!

We look forward to hearing from both our members and additional CE providers who would like to share their knowledge and experiences, especially any you have during the AGD National Convention in Austin this month.

In April, we described our goal of including a student-authored article and two hours of free continuing education in each issue. We hope you'll be intrigued by UF student Maria-Flora Jacobs' article on neuropeptides and will benefit from the credit provided by the two CE articles.

Finally, congratulations to the Florida AGD on being awarded a \$750 grant from the national Academy of General Dentistry! The grant will be used for student activities at the new Nova Southeastern University student AGD chapter. Much of the credit for securing this grant goes to our Treasurer, Dr. Harvey Gordon, who will also be serving as Nova's new Fellow Track Director. Thank you, Dr. Gordon! Have a wonderful and healthy summer!

## MEET OUR CONTRIBUTORS

Linda Harvey, MS, RDH a nationally recognized healthcare risk management and compliance expert, helps dentists and teams navigate regulatory requirements. She is the founder and president of the Dental Compliance Institute as well as a compliance consulting firm. Her career in dentistry began as a dental hygienist. Since that time, she has worked in corporate risk management and has been recognized as a Distinguished Fellow in the American Society of Healthcare Risk Management. In addition, she was honored to consult with the ADA on three separate occasions regarding compliance. Page 5.

Dr. Richard Miron is currently lead educator and researcher at Advanced PRF Education and an Adjunct Visiting Faculty in the department of Periodontology in Bern, Switzerland where he completed his PhD studies since 2009. He has currently published over 300 peer-reviewed articles and lectures internationally on many topics relating to growth factors, bone biomaterials and guided bone regeneration. For the past 5 years, Dr. Miron has been recognized by Dentistry Today as being one of the top 100 CE providers in the country and the youngest to ever make the list. He is also the top ranked researcher on Platelet-Rich Fibrin therapy as per Expertscape independent review. He has recently been awarded many recent international prizes in dentistry and is widely considered as one of the top contributors to implant dentistry, having won the ITI Andre Schroeder Prize and the IADR Young Investigator of the Year in the field of Implant Dentistry, as well as the IADR Socransky Research award in the field of Periodontology (2020). He has written 5 textbooks widely distributed in regenerative dentistry, including his best-seller in 2019 titled: "Next Generation Biomaterials for Bone and Periodontal Regeneration" and "Understanding Platelet Rich Fibrin" in 2021. Dr. Miron is in practice at Lakewood Ranch Dental and the Center for Advanced Rejuvenation and Esthetics in Sarasota, Florida. Page 6.

Juan Carlos Ortiz Hugues, DDS, MAMED, CEAS. Dr. Ortiz Hugues is an endodontist in private practice in David, Panama, and a Fellow of the Academy of Microscope Enhanced Dentistry. He is also a Certified Ergonomics Assessment Specialist. Dr. Ortiz Hugues lectures throughout the world on endodontics, microscope dentistry, and advanced ergonomics, and currently serves as the Vice-President of the Academy of Microscope Enhanced Dentistry. We are grateful to Mr. Todd Goldman for sharing Dr. Ortiz Hugues' article with the Florida Focus. Mr. Goldman is the President of Goldman Association Management in Lutz, Florida. [www.microscopedentistry.com](http://www.microscopedentistry.com). Page 10.

Mary Hughes, RDH, BS, is Dental Education Partners CEO, Founder, and Instructor. Her passion for dentistry, training, and helping individuals achieve their full potential is a hallmark of her career and is the foundation of Dental Education Partners. With a proven track record of consulting and coaching dental teams to immediate success, Mary inspires owner dentists and their dental teams to achieve the highest standard of comprehensive patient care that translates into hygiene and the restorative sides of the practice. She is a recognized dental lecturer, has been published in dental journals, and is a member of the ADHA. Page 13.

Alex Nottingham, JD, MBA, is the Founder and CEO of the All-Star Dental Academy in Plantation, Florida. Page 15.

Maria-Flora Jacobs is a first-year dental student at the University of North Florida. A special thanks to Dr. Elizabeth Stotz-Potter at the University of North Florida for her mentorship in molecular-cellular neuroscience in preparation of this literature review. Correspondence concerning this article should be addressed to [mariaflorajacobs@unf.edu](mailto:mariaflorajacobs@unf.edu). Page 17.



## PRACTICE MANAGEMENT

# OSHA and COVID-19: OSHA Launches New Program

By Linda Harvey, MS, RDH

On March 12, 2021, OSHA announced its National Emphasis Program (NEP) for COVID-19. The focus of the NEP is to protect high-risk workers from SARS-CoV-2 and to protect workers against retaliation for expressing safety concerns. The NEP applies to employers in all OSHA-covered industries including dentistry.

OSHA compliance is nothing new for dental practices, but complying with OSHA's Respiratory Protection Standard is new. Last year, through several memorandum and guidance documents, OSHA categorized dental workers as high-risk for exposure to SARS-CoV-2 due to aerosol-generating procedures.

Since that time, a number of dental practices across the country have been inspected and fined for non-compliance with OSHA's Respiratory Protection Standard as well as non-compliance with other OSHA standards. For example, OSHA inspected a Florida office for complaints that they did not have a written respiratory protection program that included employee use of N95 respirator masks — and that employees had not been fit tested nor given a medical evaluation prior to using an N95 respirator mask. Fortunately, the practice was able to provide those documents to the inspector.

Primarily, the NEP includes unannounced inspections, training, and outreach programs. The highest priority will be given to fatality inspections related to COVID-19 involving deaths due to occupational exposures to COVID-19, and then to other unprogrammed inspections alleging employee exposure to COVID-19-related hazards, including hospitalizations. In lieu of onsite inspections or face-to-face employee interviews, OSHA may at times use phone and video conferencing to reduce potential exposures for the inspector. However, as much as possible, all inspections will be conducted in a manner to achieve expeditious issuance of COVID-19-related citations and abatement.

OSHA has specifically stated that, "As supplies of health and safety equipment have increased to meet the high demands of the early and peak stages of the pandemic, shortages are becoming less of a barrier to compliance".

It's important to note that if deficiencies not addressed by OSHA standards or regulations are discovered relative to controlling occupational exposure risk for SARS-CoV-2, and if guidance is available through other agencies such as the CDC, the inspector may cite a General Duty Clause violation.

A violation of the General Duty Clause must include four required elements:

- (1) The employer failed to keep the workplace free of a hazard to which employees were exposed;
- (2) The hazard was recognized;
- (3) The hazard was causing or was likely to cause death or serious physical harm; and
- (4) There was a feasible and useful method to correct the hazard.

As Benjamin Franklin once said, "An ounce of prevention is worth a pound of cure". Here are six strategies based upon OSHA's NEP instructions for the inspectors that will help you become inspection ready.

Review your written safety and health plan. Per OSHA, it should include contingency planning for emergencies and natural disasters, such as the current pandemic. This plan could be an extension of your existing Exposure Control Plan that is required by the Bloodborne Pathogens Rule or an office-specific infection control plan.

1. Review and update your hazard assessment and protocols for PPE use.
2. Review your measures to facilitate physical distancing (e.g., barriers or administrative measures to encourage 6-foot distancing) and to ensure the use of face coverings by employees (including business office staff), patients, and the public.
3. Identify whether any employees have contracted COVID-19 or have been hospitalized as a result of a work-related exposure to COVID-19. If so, ensure your employee medical records related to these exposures, along with the OSHA-required recordkeeping, are up to date.
4. Review your respiratory protection program and any modifications due to shortages of respirators, such as recommendations by the CDC or the U.S. Food and Drug Administration (FDA) for healthcare employers, and assess your compliance with OSHA's Respiratory Protection Standard. Document your efforts to address any PPE shortages, i.e. notices of back orders, etc.
5. Ensure your employee training records are up to date for new hires and existing employees, including any records of training related to COVID-19 exposure prevention.

OSHA seeks to identify exposures to COVID-19 hazards, ensure that appropriate control measures are implemented, and address violations of OSHA standards as well as the General Duty Clause. So take time to review the six strategies above and read more about the National Emphasis Program.

<https://www.osha.gov/memos/2021-03-12/updated-interim-enforcement-response-plan-coronavirus-disease-2019-covid-19>

# The Use of Platelet Rich Fibrin in Facial Esthetics and the Center for Advanced Rejuvenation and Esthetics

By Richard J. Miron, DDS, BMSC, MSc, PhD, Michael S. Kanter, DMD

Facial esthetics has become one of the fastest growing industries in the world. While historically, a number of minimally invasive procedures have been utilized effectively in facial esthetics (including Botox, Hyaluronic Acids, and PDO threads), more recently platelet concentrates and lasers have gained momentum owing to their more natural regenerative approach. The main advantage of both is that they offer a safe, easy-to-obtain, and completely immune-biocompatible method for the 'healing/regeneration' of aging skin. This differs significantly from previous modalities which aim to act as 'fillers/paralyzers' and which may initiate a foreign body reaction once implanted within living tissues. As the population continues to age and is more concerned with esthetic appearances, it becomes apparent that dentists play a pivotal role in this domain. The smile has been deemed the number one esthetic feature on an attractive face in key studies on the topic, and the ability to further provide facial rejuvenation/esthetic procedures in a safe and effective manner using platelet concentrations and lasers both minimizes risk to patients and further provides an ability to maintain long-term healthy regenerated skin. This article highlights the recent expansion of a dental office into one offering facial rejuvenation procedures at the Center for Advanced Rejuvenation and Esthetics (CARE Esthetics) and explains the technology offering various before/after photos and videos highlighting their use.

## Introduction: Aging skin

Aging skin is an inevitable process that occurs as we gradually get older.<sup>1,2</sup> Several factors have been associated with this process which include both genetic and environmental factors.<sup>3</sup> Exposure to sun, pollution, and various chemicals have been known to cause skin and/or DNA damage speeding the aging process.<sup>3</sup> In general, skin changes and aging skin are more pronounced here in Florida owing to higher exposure to sun. A number of changes to the skin may occur as a result including skin atrophy, telangiectasia, fine and deep wrinkles, yellowing (solar elastosis) and dyspigmentation.<sup>3</sup> Furthermore, a number of additional physical/environment factors including poor diet, lack of exercise, caffeine intake, smoking and drug use are additional factors known to speed the aging process.<sup>4</sup> Obvious signs of aging skin include depressions in the corners of the mouth, cheeks, forehead, eyebrows, eyelids and nose.<sup>5</sup> Based on visible differences that occur with aging, a variety of treatment options have been proposed accordingly to favor a more youthful appearance. Hydration and collagen/elastin production are both key features.



Figure 1: Following the use of a centrifugation spin cycle, whole blood is separated into a plasma component rich in growth factors, platelets and leukocytes that may be utilized as a regenerative agent in facial esthetics. (QR code links to video explaining the advancement from PRP to PRF).



A variety of treatment options have been proposed over the years for the aging skin to improve esthetic appearance. This article will focus primarily on platelet concentrate technology. Importantly however, several techniques heavily rely on normal protective mechanisms of the epidermis which can be altered or disrupted following their use. For example, the use of Botox has known secondary effects that may cause a cascade of reactions with potential consequences.<sup>6</sup> While they generally advise repeated injections every 4-6 months or so to maintain facial appearance by temporary denervation and relaxation of muscles by preventing the release of neurotransmitter acetylcholine at the peripheral nerve endings,<sup>7</sup> it may also lead to secondary effects associated with an increased granular layer or thinning of the epidermis as a result of a foreign body reaction to this material.<sup>8,9</sup> Other reported secondary effects include cases of muscle paresis including muscle weakness, brow ptosis, upper eye-lid ptosis, lower eye lid ptosis, lateral arching of the eyebrow, double or blurred vision, loss or difficulty in voluntary closure, upper lip ptosis, uneven smile, lateral lip ptosis, lower lip flattening, orbicularis oris weakness, difficulty in chewing, dysphagia, altered voice pitch and neck weakness. On the other hand, dermal fillers have been associated with over 40 cases of blindness! While it is used practically every day in facial esthetic spas and plastic surgery offices worldwide (as well as within our Center), it is clear that such cases are sure to create some fear within the community, and proper training from the provider is an absolute requirement. It also becomes clear that safer modalities (such as those presented within this article) are constantly being investigated and developed as potential alternatives without bearing pronounced secondary side effects.

## Platelet Concentrates

Based on these obvious changes associated with aging, it was proposed several years ago that platelet concentrates could be utilized in facial esthetics to improve collagen synthesis and restore facial tissues.<sup>10-12</sup> Platelet rich plasma (PRP) was the first heavily utilized platelet concentrate shown to specifically favor wound healing and utilized effectively in combination with micro-needling.<sup>10-12</sup> The main function of platelet concentrates is to increase recruitment and proliferation of cells and to further speed revascularization/blood flow towards defective areas. Since the first-generation platelet concentrate (PRP), which was proposed over a decade ago, many advancements have been made.<sup>13</sup> Many devices and isolation kits have been fabricated based on the concept of isolating platelets for regenerative purposes. Their main drawback remained their inclusion of anti-coagulants and their somewhat lengthy preparation protocols. Today, advancements in centrifugation protocols and centrifugation tube characteristics have made it possible to utilize platelet concentrates without anti-coagulants. This second generation platelet formulation, termed platelet rich fibrin (PRF), has formed the basis of over 1000 scientific publications on the topic and has now extended into the field of facial esthetics (Figure 1).<sup>14</sup> This article addresses this topic and introduces the concept of PRF as a safer, more effective regenerative platelet concentrate that circumvents eliciting a foreign body response, owing to its 100% natural composition. Today, basic research studies have demonstrated the better ability for PRF produced utilizing horizontal centrifugation and its superiority over conventional fixed-angle devices (Figure 2).<sup>13</sup> PRF can then either be injected subdermal by creating papules or utilized with micro-needling as highlighted below.

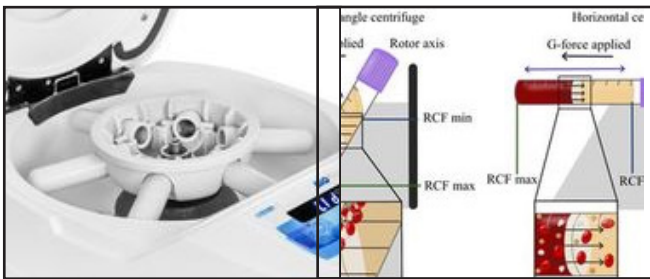


Figure 2: Horizontal centrifugation of PRF leads to up to 4 times greater accumulation of cells and growth factors. (A) Image of a horizontal centrifugation device, while tubes are placed in vertically, upon the spin cycle the tubes gradually rotate horizontally that allows for better layer separation. (B) Illustrations comparing fixed-angle and horizontal centrifuges. With fixed-angle centrifuges, a greater separation of blood layers based on density is achieved owing to the greater difference in RCF-min and RCF-max. Following centrifugation on fixed-angle centrifuges, blood layers do not separate evenly and as a result, an angled blood separation is observed. On a fixed-angle centrifuge, cells are pushed towards the back of centrifugation tubes and then downwards/upwards based on cell density. These g-forces produce additional shear stress on cells as they separate based on density along the back walls of centrifugation tubes. In contrast, horizontal centrifugation allows for the free mobility of cells to separate into their appropriate layers based on density allowing for more optimal cell separation as well as less trauma/shear stress on cells. (QR code explaining horizontal centrifugation).

## Subdermal Injections of PRF

In general, PRF can be administered using a skin surface regenerating augmentation (SSRA) technique via three different modalities of injection which treat the skin at three different levels: 1) epidermic level, 2) superficial intradermal level known as papules and 3) intradermic level which is below the dermis and supra-periosteal known as deep mesotherapy (point by point technique). These three techniques serve different purposes as they reach different depths of the skin. Depending on the patient and on the quality of the skin, multiple combination modalities can be applied. Figure 3 demonstrates the use of intra-dermal papule injections that highlight the ease of such a technique which delivers PRF in a very safe modality using a 30 gauge 4 mm needle (Figure 3). These injections allow for a higher delivery of growth factors to specific troubled areas (such as Crow's feet, glabellar lines and deep nasolabial folds).



Figure 3: (A) Use of liquid PRF for facial injections utilizing a tiny 30 gauge 4mm needle. This small needle can then be introduced into fine lines and wrinkles to provide growth factors within (B) the nasolabial folds, (C) crow's feet or any area showing superficial wrinkles. (QR code demonstrating injection techniques with PRF into crow's feet).

Figure 4: (A) Picture of the small handheld DermaPen micro-needling device. (B) Illustration of the DermaPen micro-needling tip. Note that 12 small micro-needles exist in such a device which repeated penetrate within 0.25 to 2.5 mm in depth within facial tissues at roughly 3-5000 RPMs. (QR code demonstrating microneedling with PRF)



## Use of PRF with micro-needling

One of the simplest procedures that can also be performed by dental assistants in the office (with proper certification) is that of micro-needling with PRF. In 2005, Fernandes et al. proposed the concept of 'minimally invasive percutaneous collagen induction' ie micro-needling.<sup>15</sup> As the term implies, a number of 'microneedles' (typically 12) are utilized to create minimally invasive, nonsurgical and nonablative therapy of facial tissues. Micro-needling relies on the principle of neovascularization that occurs as a result of minimal trauma causing rapid neocollagenesis and tissue repair. This is performed in an automated fashion with a micro-needling device, ie the 'Dermapen' (Figure 4). The Dermapen is an electrically-powered medical device that delivers a vibrating stamp-like motion to the skin resulting in a series of micro-channels. It is spring-loaded with an adjustment ring allowing for alteration of the heights of the micro-needles at penetration depths ranging from 0.25 to 2.5 mm. These micro-channels are then filled with platelet rich fibrin (PRF) and the device may also be utilized to 'push' a product (in our case PRF) at specific depths within skin to facilitate facial rejuvenation via autologous growth factor release.<sup>16</sup>

The advantages of micro-needling are that it is an extremely safe skin resurfacing therapy and results in minimal damage to the skin. The down time is usually approximately 24-48 hours. This method of facial rejuvenation has a much shorter down-time when compared to other comparable methods and lower risk of side effects such as hyperpigmentation and scarring (when compared to lasers, for instance), making it a more ideal treatment choice for all individuals and especially those with thin, sensitive, or ethnic skin types (skin types >III).<sup>17</sup> It is also effective for smokers and other individuals having been exposed to external pollutants.<sup>18</sup>

Several reported advantages have been discussed in the literature for micro-needling.<sup>19</sup> These include:

- Short healing times when compared to other modalities (typically 24-48 hours)
- The technique is easy to master.
- Can be utilized on all skin types where lasers and deep peels cannot always
- Convenient office procedure with minimal overhead cost
- Well tolerated by patients
- Minimal risk of post-inflammatory hyperpigmentation or bruising since the needle depth penetrate the skin a maximum of 2.5 mm.

Before and after pictures are presented in Figure 5 with an accompanying short video highlighting the use of micro-needling with PRF for neck tightening.



Figure 5: (A) Clinical photo demonstrating older female patient with pronounced deep facial wrinkles. (B) Results following 4 treatment procedures 1 month apart. Note the substantial reduction in depth of each wrinkle post-op. (C) Male patient (cigarette smoker) with substantial forehead wrinkles. (D) Following 4 micro-needling treatments, note the substantial improvement in facial harmony and reduction in deep forehead wrinkles. (QR code demonstrating micro-needling to tighten the neck).

## Adapting Facial Esthetic Procedures in a Dental Practice

One of the key questions commonly asked has been the ability to adapt facial esthetic procedures within a dental practice. Owing to our perceived need to separate both dental and facial esthetics components within our practice, we have successfully re-branded our facial esthetic procedures under the "Center for Advanced Rejuvenation and Esthetics" (CARE Esthetics) to support our growing marketing effort towards the community specifically in facial rejuvenation as opposed to our standard dental office name "Lakewood Ranch Dental".

By doing so, greater efforts could be placed on understanding the procedures with a dedicated website and marketing material describing their regenerative potential. Owing to the growing success within our practice in Sarasota, many colleagues have shadowed within our office where we have training programs geared towards teaching/facilitating other dentists and colleagues who wish to adapt similar procedures within their offices ([www.prfedu.com/followtheexperts](http://www.prfedu.com/followtheexperts)). Following completion of adequate training, dentists in other cities are able to join CARE Esthetics and perform similar all natural and safe facial esthetic procedures within their cities and join our national branding efforts at [www.care-esthetics.com/locations](http://www.care-esthetics.com/locations).

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## Florida Focus -Self-Instruction

### Exercise 06211, Esthetics

### Subject 780-- 1 CE Credit

1. Changes to the aging skin due to genetic and environmental factors include all the following except one. Which is the exception?

- A. Yellowing
- B. Cyanosis
- C. Telangiectasia
- D. Atrophy

2. Secondary effects of Botox can include a decreased granular layer of the epidermis due to a foreign body reaction. Other reported secondary effects include upper or lower eyelid ptosis, double vision, uneven smile, dysphagia, and altered voice pitch.

- A. Both statements are true.
- B. The first statement is true; the second is false.
- C. The first statement is false; the second is true.
- D. Both statements are false.

3. Dermal fillers have been associated with \_\_\_\_\_ cases of blindness.

- A. 15
- B. 30
- C. 40
- D. 60

4. Platelet rich plasma (PRP) was the first heavily utilized platelet concentrate shown to \_\_\_\_\_.

- A. specifically favor wound healing
- B. be free of anticoagulants
- C. allow for rapid preparation
- D. All of the above

5. Advantages of Platelet Rich Fibrin include all the following except one. Which is the exception?

- A. No foreign body reaction
- B. Increased ability to regenerate tissue
- C. Free of anticoagulants
- D. Long-term use in facial esthetics

6. Today, PRF utilizes vertical centrifugation and has demonstrated its superiority over conventional rotational devices. PRF has been studied in over 1000 scientific articles.

- A. Both statements are true.
- B. The first statement is true; the second is false.
- C. The first statement is false; the second is true.
- D. Both statements are false.

7. Papule injections deliver PRF safely using a \_\_\_\_ gauge \_\_\_\_ mm needle.

- A. 30; 2
- B. 30; 4
- C. 32; 2.5
- D. 32; 4

The 10 questions for this exercise are based on information presented in the article, "Use of Platelet Rich Fibrin in Facial Esthetics and the Center for Advanced Rejuvenation and Esthetics." Reading the article and successfully completing this exercise will enable you to:

- review the factors which affect aging skin;
- understand the advantages of using platelet rich fibrin to improve esthetic appearance;
- understand the differences between intradermal papule injections and micro-needling.

Please email your answers with your name and AGD number to [flagdeditor@gmail.com](mailto:flagdeditor@gmail.com). In future issues, we hope to enable members to submit their answers online. 80% of the answers must be correct to receive credit. Answers for this exercise must be received by September 30, 2021

8. There are four different modalities of subdermal PRF injections. The first step is to determine which type is most ideal for each patient.

- A. Both statements are true.
- B. The first statement is true; the second is false.
- C. The first statement is false; the second is true.
- D. Both statements are false.

9. Micro-needling typically uses \_\_\_\_\_ needles at penetration depths of \_\_\_\_\_ mm.

- A. 12; 0.25 to 2.5
- B. 16; 0.5 to 2.5
- C. 20; 1.0 to 2.0
- D. 24; 0.5 to 1.0

10. All of the following are advantages of micro-needling except one. Which is the exception?

- A. With proper certification, it can be performed by a dental assistant.
- B. It has a short healing time of 1-2 weeks.
- C. Minimal trauma stimulates rapid collagenesis.
- D. It can be utilized for all skin types.

Continued from page 8

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## Microscope Endodontics in 100% of cases: Workflow and Ergonomics

Juan Carlos Ortiz Hugues, DDS, MAMED, CEAS

Thanks to the relevant improvements developed by Dr. Gary Carr since the early 1990's, the use of the microscope and its incorporation into practice greatly changed the rules of the game in contemporary dentistry. Endodontics was the first specialty to incorporate the microscope and the first to mandate its use in the various endodontic programs in dental schools across the United States in 1998.<sup>2</sup>

During my exclusive practice of endodontics in my private practice office, I have verified that dental practice, not only in endodontics, cannot be performed as efficiently or with the quality of care, and above all, in a comfortable way without the optical microscope.

In my experience presenting and developing training programs in North America, Central America, and South America, I have observed that even specialists with many years of experience with the microscope use it incorrectly and intermittently. This leads to discomfort, pain and even medical disability due to musculoskeletal disorders. It is incredible that we have this precision instrument, but we use it in an incorrect and inconsistent way.

The first thing to know is that we must be systematic when positioning ourselves and be aware that there are four pillars for ergonomic dental practice:

- The optical microscope
- Knowledge of body biomechanics
- The ergonomic stool
- The dental assistant / 4-handed workflow

In this article, we will focus on how, when performing endodontic treatment, we can enhance the use of the microscope, so that everything that is involved in the microscope-operator relationship can flow systematically.

Within dental specialties, endodontics is possibly the most static of all. One of the most critical postural challenges is prolonged static posture, especially of the head and lower back, which function as fulcrum and lever points against the head weight and gravitational forces.

The primary objective is to use the microscope from start to finish, 100% of the working time. In endodontics, the operator generally remains in a single position, the most ideal being between 11 and 12 o'clock. The closer we position to 12 o'clock, the less we will experience fatigue of our extremities, especially in the wrist, elbow, and shoulder. Generally, in endodontics, the most complex challenge at the postural level is during the shaping of the canals. Given the entrance angulation of the canals, there is always a tendency to abduct (separate the limb from the midline of the body) the arm with which the canal is shaped, and this arm abduction becomes much greater the further away we are from the 12 o'clock position.



The constant abduction of the arm also implies an elevation of the shoulder, which if performed frequently during working hours and with durations of more than a minute of constant bad posture, can produce painful situations such as impingement of the rotator cuff, trapezius myalgia, or tension neck syndrome. Image 1

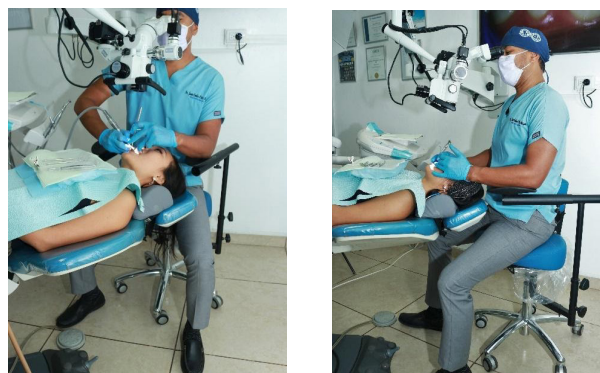


Image 1: A- Arm abduction due to positioning far from 12 o'clock position, a classic problem when shaping canals. B- Neutral posture at 12 o'clock creates body symmetry.

Systematizing the position is extremely beneficial to working comfortably. The sequence when positioning is first the operator, then the patient, and then the microscope.

The operator must be aware of the benefits of magnification, and at the same time understand that the higher magnifications of the microscope should be used for a close view in a "deep" way to observe specific details of the endodontic treatment. These details include the location of the MB2, location of a separated instrument inside the canal, analysis of the pulp floor, observation of pulp nodules blocking the canal orifices, analysis and sealing of perforations, inspection of sealing margins, and analysis of fracture lines, as examples.

High magnification reduces the field of view, and references can be easily missed. Movements become more sensitive and require greater precision. When we are working actively on the tooth, from the access to the pulp cavity, wall rectification, cleaning and shaping of the canals, placement of materials inside the canals, and removal of instruments or posts, the use of low to intermediate magnification generates a consistent, comfortable flow with the use of the microscope. This allows a greater field of view and better observation of the axial, lateral, posterior, and anterior references with direct and indirect vision.

Many of the errors and frustrations that cause the endodontist to not use the microscope 100 percent result from a misunderstanding of when to use low magnification or high magnification. This creates an interruption in its use, generating ergonomic problems or loss of quality in our endodontic treatments.

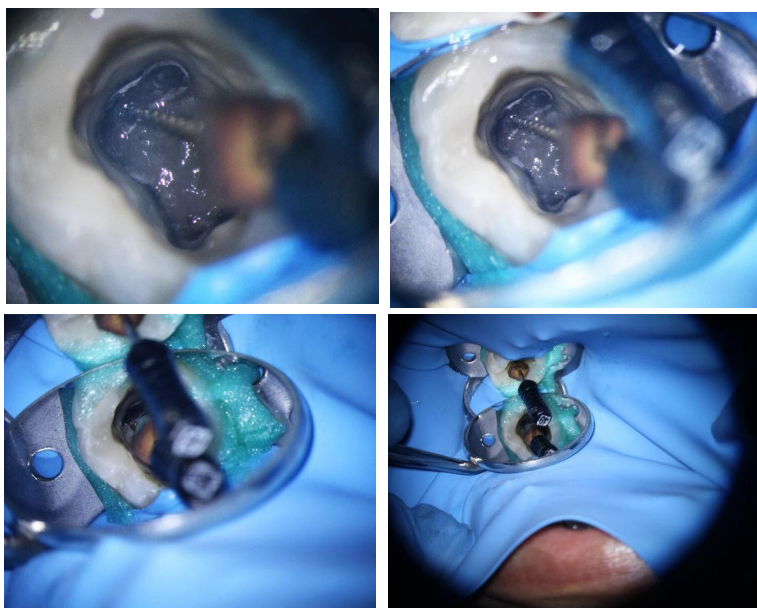


Image 2: Endodontic treatment under a microscope. Passive steps are carried out with high magnification, including examination, superficial or deep diagnosis, and analysis of structure, color, and shape. Active treatment is carried out with low and intermediate magnification.

The dental assistant plays a leading role in endodontics. Those who have performed root canals without an assistant know that the work will be uphill, since it implies that the operator must leave the neutral work position frequently to reach the instruments, generating mental and physical fatigue. In endodontics, given the number of instruments and supplies used, all the instruments of constant use (tweezers, mirror, endodontic explorer, explorer, file setup, measurement rulers) must be within the assistant's horizontal reach, from elbow to fingertips. Other frequently used items, such as syringes with hypochlorite, endodontic handpieces, and apical locators, need to be placed within horizontal reach at a distance from shoulder to fingertips. The assistant needs to transfer all instruments directly to the operator's hands and fingers with the microscope at low magnification. In this way, the operator will be able to easily receive them, thanks to the greater field of view of the minimum magnification. The key is for the operator to be able to use the microscope constantly without removing his eyes from the binoculars, a major goal in the laws of ergonomic movements.<sup>3</sup>

Another great advantage of the microscope, not only for endodontics, is that the assistant will be able to interpret movements, control the suction, and transfer instruments by being able to see live videos of the treatment being performed on the monitors.<sup>4</sup>

Endodontics is a specialty that requires a lot of patience, and the demands of light and depth vision are extreme. In addition, the dentist's posture can be continuously static for hours. If used correctly, the microscope will correct the need for light, magnification, and the placement of the operator in the best posture. Understanding that the microscope offers us these advantages and integrating our workflow with the assistant to guarantee the efficient use of time are essential benefits of using the microscope in 100 percent of all cases.

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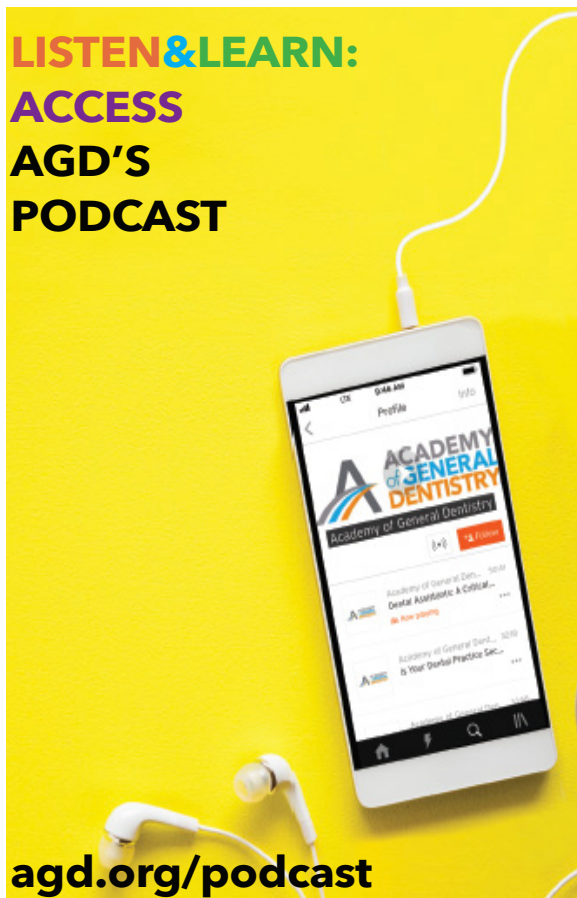
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We are grateful to Mr. Todd Goldman for sharing Dr. Ortiz Hugues' article with the Florida Focus. Mr. Goldman is the President of Goldman Association Management in Lutz, Florida. To learn more about Microscope Dentistry, please go to [www.microscopedentistry.com](http://www.microscopedentistry.com).

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## Florida Focus -Self-Instruction

### Exercise 06212, Endodontics

### Subject 070-- 1 CE Credit

1. Microscopes were first incorporated into dental practice in the 1990's. Oral surgery was the first specialty to mandate its use in postgraduate programs.

- A. Both statements are true.
- B. The first statement is true; the second is false.
- C. The first statement is false; the second is true.
- D. Both statements are false.

2. The four pillars of ergonomic dental practice include all the following except \_\_\_\_\_.

- A. The optical microscope
- B. 4-handed workflow
- C. A dual-unit delivery system
- D. Knowledge of body biomechanics

3. In endodontics, the dentist generally remains in a single position, the most ideal being between \_\_\_\_\_ o'clock.

- A. 9 to 10
- B. 10 to 11
- C. 10:30 to 11:30
- D. 11 to 12

4. Generally, in endodontics, the most complex postural challenge is during \_\_\_\_\_.

- A. diagnosis
- B. instrumentation
- C. obturation
- D. post preparation

5. Arm abduction \_\_\_\_\_

- A. is arm movement above 150 to 170 degrees.
- B. can result in rotator cuff impingement.
- C. can cause biceps tendinitis.
- D. lowers the shoulder.

6. To establish a comfortable working position, one must first position the \_\_\_\_\_.

- A. patient
- B. assistant
- C. dentist
- D. microscope

7. High magnification \_\_\_\_\_ the field of view, and references can easily be \_\_\_\_\_

- A. increases; detected.
- B. increases; missed.
- C. reduces; detected.
- D. reduces; missed.

The 10 questions for this exercise are based on information presented in the article, "Microscope Endodontics in 100% of cases: Workflow and Ergonomics."

Reading the article and successfully completing this exercise will enable you to:

- appreciate the advantages of working with a microscope;
- understand when each level of magnification is appropriate; and
- understand the principles of ergonomic dental practice.

Please email your answers with your name and AGD number to [flaggeditor@gmail.com](mailto:flaggeditor@gmail.com). In future issues, we hope to enable members to submit their answers online. 80% of the answers must be correct to receive credit. Answers for this exercise must be received by September 30, 2021.

8. When actively working on the tooth, the use of \_\_\_\_\_ magnification generates a consistent, comfortable flow.

- A. low to intermediate
- B. intermediate to high
- C. low to high
- D. high

9. In endodontics, all the instruments of constant use must be within the assistant's horizontal reach, from elbow to fingertips. The assistant needs to transfer all instruments directly to the operator with the microscope at intermediate magnification.

- A. Both statements are true.
- B. The first statement is true; the second is false.
- C. The first statement is false; the second is true.
- D. Both statements are false.

10. Correct use of the microscope has all the following advantages except \_\_\_\_\_

- A. allowing the dental assistant to watch live videos.
- B. correcting the need for light.
- C. reducing the number of instruments required.
- D. placing the dentist in the best posture.

## PRACTICE MANAGEMENT

# A COVID-19 Side Effect: Hygiene Labor Shortage and the Impact on the General Dental Practice

By Mary K Hughes, RDH, BS



The year 2020 presented many global challenges, and dentistry was no exception. In March, 2020, the CDC defined “essential” work in dental offices, putting hygiene visits and routine dental care on hold. Eliminating all but emergency and urgent care had a double-punch impact on the dental practice. The first blow was a drastic reduction in production, followed by a second blow in experiencing labor shortages when the CDC and state dental boards allowed dental offices to return to hygiene visits and routine dental care. And for owner dentists nearing their retirement, the pandemic was a near knock-out with the pandemic devaluing practices and the value of a sale.<sup>1</sup>

Owners and team members working for them felt the initial blow of the ‘non-essential’ label issued in March of 2020. While some owners scrambled to take advantage of the government Paycheck Protection Program (PPP) loans to alleviate the financial impact to the practice and employees, many owner dentists were not clear on how to use the monies or if it pertained to paying themselves. Additionally, the government put out stimulus packages boosting state-funded unemployment benefits and providing one-time payments to those that found themselves furloughed or laid off. The ones who did take out PPP loans and retained team members on staff often struggled to remain profitable, and in most cases, minimize their losses.

In addition to its clinical side-effects, the business impact was unprecedented and lingering. COVID-19 has demonstrated severe business side-effects initially and some that continue to the present day, including:

- Confusion in the news and industry related to the virus and aerosols in dentistry.
- Offices unable to perform “unessential” services.
- Difficulty obtaining required PPE and added safety supplies and equipment.
- Patients will not schedule or no-show for multiple reasons:
  - a. Reappointment and recall systems are broken, or there is not adequate staff to work the system.
  - b. Patients have been exposed to COVID-19 and cannot be seen.
  - c. Patients are fearful and will not schedule.
  - d. Patients are unemployed and do not have the money or insurance.
- Challenges retaining or hiring staff for multiple reasons:
  - a. Former team members are afraid to return to work. Unfettered hygiene social media boards may have contributed to irrational fear during the pandemic.
  - b. Potential labor pool unincentivized to work.
  - c. States/dental schools are not able to provide new graduates/licenses.

Working with dental business owners across the country, many of them see promising changes in the business rebounding. It has come with investment, hard work, persistence, systemization, and a bit of timing and luck too. However, one of the seemingly most significant challenges for smaller corporations or single-practice owners is recruiting and retaining skilled staffing.

### Hygiene and Provider Labor Shortages

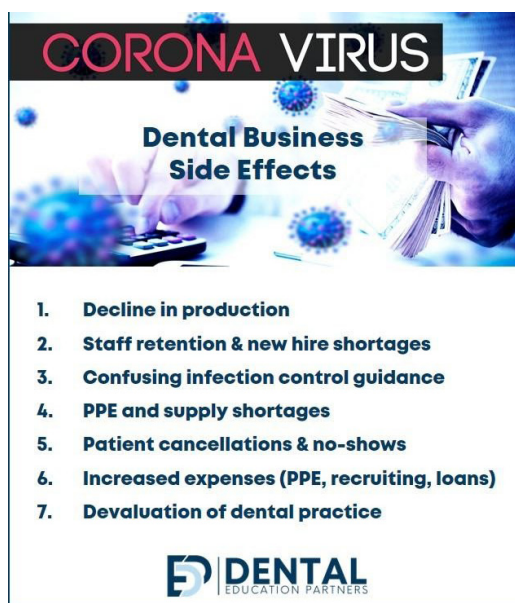
The shortage of dental professionals was felt immediately and continues to this day. As recent studies have highlighted, COVID-19 has profoundly impacted the labor supply in many industries, including dentistry. In a time of high unemployment when labor should be readily available, paradoxically, there has been a reduction in hygiene employment.

A recent study published in February 2021 showed an 8% decline in employment of dental hygienists in the United States.<sup>2</sup> That same study found 59.1% of the decline was voluntary

(concerns over office safety protocols and contracting the virus), and 48.3% cited other issues surrounding child/family member care. This study also concluded that some of those that have left the hygiene workforce were age 65 and over and departed the profession permanently and voluntarily. Surprisingly, it was found that more hygienists have not returned to work when compared to their nursing counterparts.

Ironically, in this same study,<sup>2</sup> only a 3.1% COVID-19 infection rate was found among dental hygienists in the United States, even though other studies of the profession demonstrated it was high risk with aerosol-producing instrumentation and procedures.<sup>3</sup> The low infection rate for dental hygienists was a similar infection rate to that of dentists, but far below the contraction and transmission rate of their healthcare counterparts, which ranged from 5% to more than 25%.<sup>4</sup> Dentistry has long had rigorous infection control practices regulated by OSHA. There has long been diligent use of PPE in dentistry as well as universal precaution. Since the onset of the pandemic, additional measures were implemented based on CDC guidance, state mandates, and provider preference.

Just when we should be celebrating the low infection rates among dental professionals working in a high-risk profession, many owner dentists find themselves in an uphill battle attempting to find qualified hygienists and other providers. Many are relying on expensive temporary agencies to ensure proper staffing for patient care. Sharing this evidentiary and notable triumph with our hygiene candidates might normally be enough to bring them back to their chosen profession of dentistry; however, other obstacles remain in the way.



One obstacle is financial incentive. The increased unemployment compensation and federal stimulus payments have, in many cases, further disincentivized the dental labor force already fearful of the labeled “high-risk” profession. Many dental business owners speculate that the hygiene labor shortage will continue until the pandemic passes and government stimulus returns to pre-pandemic levels to provide the financial pressures on the labor force to return to work.

Compounding the issue is the path of soon-to-be dental hygiene graduates who are either finding it hard to achieve licensing or may entirely leave the profession. A recent study of dental and dental hygiene students found that more than 10% of all respondents felt anxious about the future of dentistry. Further, more than 40% of dental hygienists in their final year are choosing to change their post-graduation career plans.<sup>5</sup> The good news is that many (if not all) states have now adopted new licensing tests using manikins instead of live patients. Many students in the May, 2021, graduating classes are looking for jobs providing exceptional patient care. They navigated the end of their schooling and patient care during the pandemic and are eager to work in their chosen field and pay off their student loans. The 2021 graduating class will be welcome indeed.



### Related Rebound Challenges

Working with private practices and DSOs across the nation, I have witnessed the challenging effects of the reduction of labor within the dental practice. The offices have so many patients that need to get scheduled but limited providers to see them. The recare system in many offices has been neglected for lack of scheduling space. And yet, offices are reporting a higher than the standard no-show rate of 30% daily. There is also the dental patient to consider. How has this impacted dental practices to date, and what does this mean for the dental patient? Reduction in dental providers has added to the already tenuous worsening of dental access to care, especially in Medicaid populations. The additional wait time for appointments is also causing more adult patients to delay dental care and needed dental examinations altogether. In many cases, dentists have had to perform dual roles as the preventative and the restorative clinician to serve their patient base effectively. While it is a work-around remedy, it is not sustainable. Many owner doctors find themselves at the crossroad of enduring the situation until graduating classes enter the workforce in the summer or simply sell and exit their practice prematurely.

### How Successful Practices Have Responded

While the impact and consequence may seem bleak for some offices, other dental practices have thrived and shown tremendous growth during this same time frame. I surveyed multiple practices and owner dentists across the country to inquire

what their best practices have been that have brought them so much success, and the following are my top 10 tips:

1. Add patient communication and new patient marketing to ensure your current patients know your COVID-19 protections, and so that new patients can find you.
2. Post your jobs on multiple platforms to cast the widest net for dental providers – there are many low-cost options available.
3. Include signing bonuses and generous compensation – I recommend setting goals and expectations to match the generous compensation.
4. Ensure job descriptions are in place and clearly define the responsibilities – I recommend accountability measures are also in place.
5. If you are short hygienists, manage your schedule to include a hygiene column for you or your associate dentist.
6. Hire additional supporting dental assistants to allow for increased patient care access.
7. Restructure the schedule to accommodate more patients.
8. Schedule monthly 'oral health days', highlighting the oral and overall health link. Occupy each room with hygiene patients and provide the necessary preventative services and the much needed periodic/comprehensive examinations to yield an increase in the diagnosis of dentistry.
9. Create an accelerated hygiene schedule and provide an assistant.
10. Outsource to a consulting firm to help with training, onboarding, and refining the systems that make a dental office prosper.

The pandemic has brought about significant change in our industry. However, with change comes growth. As a dental hygienist for more than 25 years, I have watched our profession ebb and flow. It seems unimaginable on the heels of COVID-19, but my clinical mentors practiced without gloves and masks. I practiced during the unknown of the AIDS epidemic before we understood it was a blood-borne pathogen. There may not have been the extremes we see today in dentistry; however, we can still learn from history and evolve with each new change.

What I have seen over the last year is that for hygienists and other dental professionals who are willing to change and grow as professionals, there is a deeper commitment to our patients, our practices, our profession, and the healthcare industry. I counsel hygienists on understanding the owner dentist's perspective of proprietorship and striking a balance between compensation and delivering on value to not just patients but also the practice.

Most owner dentists I know would willingly compensate hygienists for:

- Bringing in production in addition to exemplary care.
- Bringing solutions to the table instead of problems.
- Being a partner in diagnosing disease instead of being a subordinate team member.

And most owner dentists would also be willing to add extra safety precautions and provide for flexible scheduling to meet the needs of hygienists and their families during this time.

It is time we move away from the COVID-19 messages of fear and “non-essential” and focus our attention on the necessity of providing the much-needed patient care. We should take a moment to celebrate our safety rating as a profession and lean into collaborating with our hygienists as the healthcare providers they are educated to be. Encourage them to become the guardian of the oral health foundation of your patients and deliver the profitability your dental practice needs and deserves.

References on page 16

# Patient Success Begins on the Phone

By Alex Nottingham, JD, MBA

Engaging effectively on the phone is the first step in providing memorable patient service



Coronavirus/Covid-19 has dramatically impacted the degree of comfort people feel in going to any appointment where they are in close physical contact with someone. However, life is gradually returning to some sense of normalcy with a desire for self-care, non-emergency medical, and dental appointments. The result is a huge wave of demand from a year's worth of deferred care. But problems with customer/patient service that existed before Coronavirus are sure to still exist even as things are settling down a bit.

## Ineffective Phone Skills

To illustrate this issue, I'd like to tell you a tale of woe and distress. Before the pandemic, work and life had made it difficult to find time to get some maintenance done on my car. Indeed, it had been many months since I was last able to have a professional look it over. But finally, I had some breathing room. So, I searched online and called several convenient shops, hoping to get in before a weekend trip coming up. After a few calls with no luck for a quick appointment, I finally found a place that seemed competent and had online booking with available appointments. But they didn't have a phone number on the website (uh oh). I decided to give them a shot, so I entered my details, received a confirmation email, and sighed with relief that I would be able to get in before my trip.

**Strike #1** – not sharing a contact phone number. I can't imagine that a dental practice would make this blunder, but it's not outside the realm of possibility.

**Strike #2** – As nice as automated systems can be, I'd like you to really think before using one. Automated or robot answering services can appear to save money and improve the caller's experience when dialing into the practice, but many studies (plus a lot of anecdotal experience) reflect the opposite. Nothing can replace an engaged employee on the other end of the line, and automations tend to leave callers frustrated.

Website appointment scheduling services also tend to be a weakness in the patient journey as they generally don't collect all the needed information you'll need to prepare for the patient's visit. These appointment scheduling services also fail in another critical area – beginning the rapport-building process. Rapport is the trusting and warm relationship between patient and provider and is critical for a memorable patient experience. A couple days after making the online appointment, I received a mumbled voicemail from the shop. I could barely make out the word "reschedule," and I began to feel a bit anxious about getting my car looked at.



"Illustration courtesy of All-Star Dental Academy."

## Poor Service and Lack of Accountability

When I called the shop back no one picked up, so I left a message. And the same again the next day. Finally, the day of my appointment arrived. I had not received another return call, so, with no one answering the phone yet again, I decided to roll the dice and go to my appointment. I uneasily walked into the shop, waited for a few minutes to be noticed, and eventually one of the mechanics paused in their work and came over to help me.

After taking my name, the guy hit a few buttons on the computer but then dismissed me with a mumbled "glitch in their system and couldn't fit me in." After asking about rescheduling, I was told they were unusually busy and actually didn't have any appointments until late the next week – after my trip.

**Strike #3** – When your team is stressed with an overwhelming number of calls and patients coming in, it's easy to let patient service slip. When you're overwhelmed, answering the phone is difficult if you are not prepared. You must acknowledge this and take steps to avoid a team member allowing stress to affect how calls are handled. Also, try not to let calls go to voicemail, because the caller will likely just hang up and go to the next number on their Google search.

People are impatient and won't like having to wait for a return call. If your front office is overwhelmed by patient or call volume and you see your phone service declining, the best solution is to hire someone to help with the increased demand. The money spent on salary will be returned in the increased number of happy new patients. It's important to consider that each new call has the potential to create a relationship with a patient. You have the power and the responsibility to ensure that interaction goes well.

## The Silent Treatment

In my situation, there was no apology, and no genuine concern at the inconvenience to me, a new client at their shop. And if it had gone well, I likely would have continued to visit them every couple of months.

The thing that upset me wasn't that I couldn't get in, or even that there was a glitch on their site. Those things happen, and I knew all of the shops in the area were incredibly busy. When I first booked that online appointment, I felt lucky that I could even get in. What was troubling was the lack of empathy for the inconvenience and disappointment they'd caused, their dismal effort in communicating with me by failing to call back, and the awful experience I had when I showed up to my appointment. Just one of those issues was enough to make me never want to go to them, let alone all of it.

It occurred to me that there were clear parallels between my mechanic's appointment and what a lot of people may be experiencing as they schedule dental appointments. With all the extra demand overwhelming your front office, it would be easy to lose focus on phone skills and the time spent with each potential patient. It is critical that patient service remain a top priority, even when the phone is ringing off the hook for appointments that might not be available, and your team isn't large enough to handle the demand. If service suffers, you will miss opportunities to build up your patient base.

## Our First All-Star Dental Practice

I first became involved in the business of dentistry when my father, a dentist, recruited me to help with his troubled practice. Patient numbers and insurance payments had been steadily declining, and his practice was at real risk of going under. I had earned a law degree and an MBA and was working as one of Tony Robbin's top consultants. When I went into the dental practice, I immediately implemented an aggressive marketing plan, and the phone began to ring with more and more calls. But something was still off. Even though a lot more calls were coming in, they weren't converting into actual appointments. That's when I got Heather involved. Heather and I were dating at the time (we're married now!) and she was working in sales, management, and service training for high end retailers like Bloomingdales and Theory. We figured that with all the calls coming in, the problem was converting interested callers into new patients. Heather began answering calls using what evolved into her All-Star GREAT Call® process. She leveraged her experience in high-end sales to really engage with callers. While I ran the business side of things, Heather worked with callers on the phone. And the combo succeeded. We more than doubled the practice in just 18 months to over \$2.3 million in revenue.

This revenue came from a hugely improved call conversion rate (converting an interested caller into a new patient appointment improved from around 30% to 85%), Heather's new patients kept their appointments, and because she had built a foundation of trust between the practice and the patient, they also accepted treatment recommendations at a higher rate than before. These happy patients also went on to refer friends and family.

The huge shift, and what ended up helping save the practice, began with how the phones were answered. It was eye-opening to see the enormous impact of the first experience between the office and a potential patient. And just like with my mechanic's issue, if the ball is dropped at the beginning, you'll likely never recover that client. By building a relationship with each patient that calls, you instill a foundation of trust and accountability. Patients are less likely to cancel or show up late to their appointment. In fact, if you are performing at the highest level, they are probably looking forward to it. Your patient is relieved to finally find a dental practice that genuinely cares about them, and they know they'll feel safe and comfortable in their visit. They'll trust your recommendations and accept treatments more readily, improving their health as well as your bottom line. You can work fewer hours with better patients for more profit. Win - win - win!

### Avoid The "Get 'Em In Attitude"

The typical phone training program doesn't focus on service and rapport. Instead, they teach that success is achieved by playing the numbers. Try to convince every caller to make an appointment, assuming that a high enough percentage of them will show up and then accept treatment. There are many problems with this approach, the first being that important questions from the patient to the practice are often ignored, brushed off, or answered in misleading or dishonest ways. For instance, if a caller asks if you accept their insurance (and you know you don't), the "Get Em In" approach dictates that you still need to "sell" an appointment. So you say, "Just come on in and we'll figure that part out!" But you're going to have a very dissatisfied patient when they come in and are surprised with a huge bill they weren't expecting. They'll likely not accept treatment, lose faith in your practice, get upset at the wasted time, and tell ALL their friends about the bad experience. By sheer numbers, you'll probably increase your revenue for the short term, but in the long run, this approach will have a profoundly negative impact on you, patients, and team members, and can ultimately lead to failure.



Alex Nottingham, JD, MBA, is the Founder and CEO of the All-Star Dental Academy in Plantation, Florida.

### The All-Star Way

Instead, employ a more patient-service-focused approach. Take the time to engage with your callers, answer all of their questions, allay their fears, and set them up with an appointment that meets their needs. Give this method of building genuine relationships with your patients a try - you'll likely see an improvement in call conversion. And those patients will become lifetime clients that you can rely on year after year. We'd love to talk with you about our experience on the phones working with new patients and how All-Star Dental Academy can help you with practice management training for the whole team. You can reach Heather Nottingham, All-Star's Co-Founder and VP of Training at 866.280.1343 or at [heather@allstardentalacademy.com](mailto:heather@allstardentalacademy.com). In the meantime, go out there and be an All-Star!

## A COVID-19 Side Effect: Hygiene Labor Shortage and The Impact on The General Dental Practice

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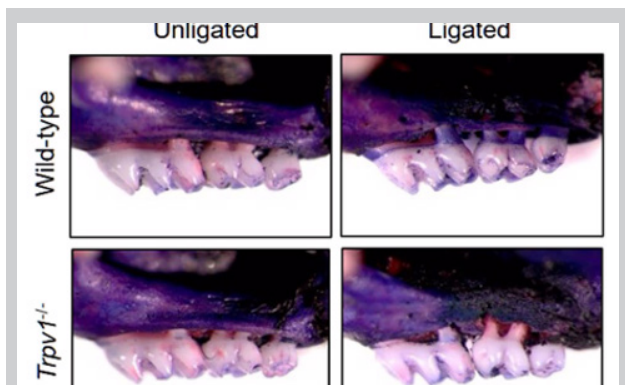
# The Role of TRPV1 and the Neuropeptides Substance P and CGRP in the Mechanism of Pain Arising from Pulpitis and Periodontitis

By Maria-Flora Jacobs, MS

Periodontitis occurs when significant gingival infection spreads to deeper periodontal tissues, resulting in an inflammatory response that can lead to alveolar bone loss from increased osteoclast and decreased osteoblast function.<sup>1</sup> Pulpitis is the inflammation of dental pulp tissue, which is densely innervated by sensory trigeminal nerve axons responsible for nociception.<sup>2</sup> Afferent A and C sensory nerve fibers travel from the trigeminal nerve via the superior and inferior alveolar nerves to innervate periodontal and dental pulp tissue.<sup>3</sup>

Myelinated and unmyelinated afferent axons constitute pulp tissue innervation; 20-25%, and 75-80% respectively.<sup>2</sup> A $\beta$  and A $\delta$  myelinated fibers are in the peripheral pulp and inner dentin of the tooth. In healthy teeth, A $\beta$  fibers are responsible for the sensation of sharp pain. A $\delta$  fibers are only active in the presence of pulpitis.<sup>4</sup> Pulpal and periodontal unmyelinated C fibers are polymodal and contain many receptors that respond to noxious stimuli. Abundantly expressed in these C fibers is the transient receptor potential vanilloid 1 (TRPV1) channel, which responds to heat above 43°C, pH levels less than 6.0, capsaicin, and several other inflammatory mediators.<sup>2</sup>

The axon terminals of alveolar C fibers innervating periodontal and pulp tissues that express TRPV1 channels release the sensory neuropeptides calcitonin gene-regulating peptide (CGRP), and Substance P.<sup>2</sup> High levels of Substance P,<sup>5</sup> and CGRP,<sup>6</sup> are associated with pain, inflammation, and local vasodilation in response to dental pathology, invasive dental procedures, and the progression of pulpitis and periodontitis. This literature review delineates the roles and integration of TRPV1, CGRP and Substance P in the mechanism of dental pain arising from pulpitis and periodontitis.



**Figure 1.** Defleshed and stained maxilla of wild type and TRPV1<sup>-/-</sup> mice after seven days of ligated or unligated conditions.<sup>7</sup>

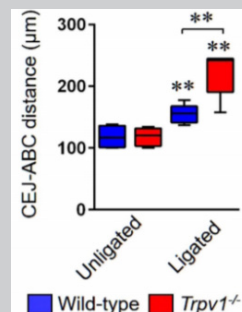
TRPV1-CGRP Signaling Axis in the Development of Periodontitis

Takahashi et al.<sup>7</sup> performed several experiments in wild type, TRPV1<sup>-/-</sup> mice, and TRPV1 chemically ablated mice. The functional absence of TRPV1 in TRPV1<sup>-/-</sup> mice and TRPV1 chemically ablated mice was confirmed via a capsaicin-induced eye-wiping test.

Only mice that showed significantly reduced eye-wiping counts after chemical ablation of TRPV1, compared to the saline control, were used in the experiment.

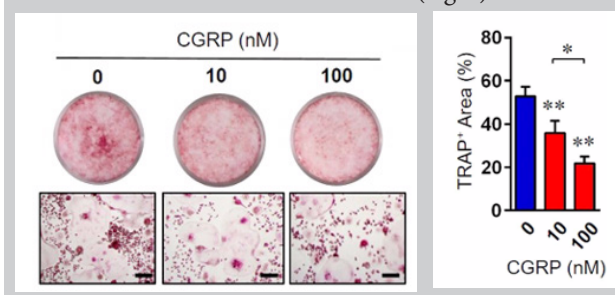
A ligature was fastened around maxillary second molars of wild-type, TRPV1<sup>-/-</sup>, chemically ablated TRPV1, and control mice to induce bacteria-mediated periodontitis and bone loss over a seven-day period. The mice were sacrificed, and the maxillae were defleshed and stained with 1% methylene blue to distinguish the cemento-enamel junction (CEJ) from the alveolar bone crest (ABC) (Figure 1). Alveolar bone loss was determined by the increased distance between the CEJ and ABC of the mesial roots of maxillary second molars. The degree of alveolar bone loss in ligated TRPV1<sup>-/-</sup> mice was significantly greater than in unligated TRPV1<sup>-/-</sup> mice and in both ligated and unligated wild-type mice (Figure 2). In ligated chemically-ablated TRPV1 mice, the degree of alveolar bone loss was significantly greater than unligated ablated TRPV1 mice and ligated and unligated vehicle mice. This suggests that in the murine model, the absence of TRPV1 intensifies induced periodontitis.<sup>7</sup>

Takahashi et al.<sup>7</sup> also hypothesized the existence and release of TRPV1-mediated calcitonin gene-regulating peptide (CGRP) in periodontal nerves projecting from the trigeminal nerve.<sup>7</sup> Trigeminal ganglia of wild type mice were excised 24 hours after injection of 4% Fluoro-Gold™ retrograde nerve tracer into the palatal and buccal gum line of maxillary molars and were observed under fluorescence microscopy. In Fluoro-Gold™ positive neurons, there existed a large overlap of CGRP and TRPV1 expression, suggesting periodontal tissue expresses both TRPV1 channels and the neuropeptide CGRP.



**Figure 2.** Measurement of alveolar bone loss by CEJ-ABC distance of wild type and TRPV1<sup>-/-</sup> after seven days of ligated or unligated conditions, \*\* indicates  $p < 0.01$ .<sup>7</sup>

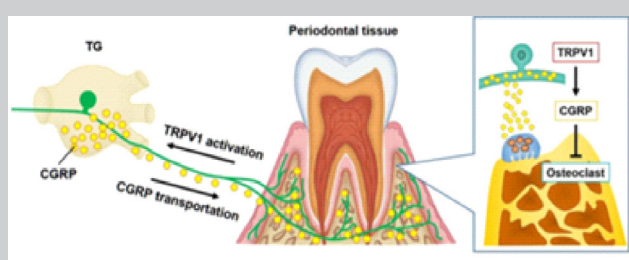
**Figure 3.** TRAP staining osteoclast-like cells treated with mouse RANKL and *P. gingivalis* for five days with 0nM, 10nM, and 100nM concentrations of CGRP (left). Percent area of TRAP staining osteoclast-like cells corresponding to CGRP concentrations (right).<sup>7</sup>



To determine the relationship of CGRP to periodontitis bacterial-related osteogenesis, osteoclast precursor cells were incubated for seven days with mouse RANKL (100ng/ml), a potent stimulator of osteoclast formation, and *Porphyromonas gingivalis* LPS layer (1 µg/ml), with 0 nM, 10 nM, or 100 nM of CGRP. Cells were then stained with a tartarate-resistant acid phosphatase (TRAP) to determine formation of osteoclast-like cells in vitro. Increased CGRP decreased TRAP staining osteoclast-like cells in gram-negative LPS conditions related to those that cause periodontitis<sup>7</sup> (Figure 3).

Distribution of CGRP-immunopositive axons in periodontal tissue was determined using immunofluorescent staining for CGRP and neuronal marker PGP9.5, in addition to TRAP staining. CGRP-immunopositive axons were near TRAP staining osteoclasts. This suggests that these axons might affect osteogenesis by releasing CGRP into proximal periodontal tissue.<sup>7</sup>

TRPV1 activation in sensory neurons innervating periodontal tissues sends afferent input to the trigeminal ganglia, resulting in synthesis of CGRP which is delivered to periodontal tissue, where it inhibits osteoclasts in the alveolar bone. An interesting component of this result is that the expression of TRPV1 inhibits bone loss through upregulation of CGRP, corresponding to inhibition of osteoclastogenesis (Figure 4). Thus, TRPV1 expresses an anti-inflammatory function in response to activation by its agonists.<sup>7</sup>



**Figure 4.** Model of TRPV1 activation, CGRP transport, and osteoclast integration in periodontal tissue.<sup>7</sup>

### Bacteria-induced pulpitis upregulates TRPV1 in trigeminal nociceptors

Chung et al.<sup>8</sup> investigated TRPV1 expression in response to lipopolysaccharide (LPS)-induced pulpitis. Mice were anesthetized and cavities were drilled to the dentin in left first maxillary molars. Either LPS or saline was applied to the cavity and sealed with light-cured resin. The mice were sacrificed, and PCR was performed on the trigeminal ganglia to obtain ratios of mRNA expression of TRPV1 and glyceraldehyde-3-phosphate dehydrogenase (GAPDH), an enzyme involved in glycolysis (used as a control in this study). The results indicate that mRNA expression of TRPV1 is significantly upregulated with LPS treatments compared to saline treatments (Figure 5)<sup>8</sup>. LPS-induced pulpitis significantly increases the expression of TRPV1 in nerve fibers of the trigeminal ganglia, which could contribute to the pain experienced in pulpitis and periodontitis.<sup>7</sup>

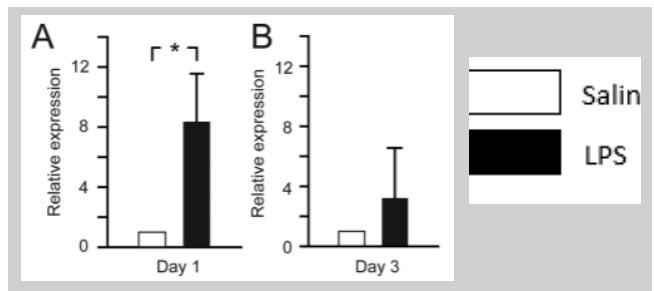
### Substance P Concentrations in the Saliva of Patients with Dental Pain

Ahmed et al.<sup>3</sup> collected the neuropeptide Substance P from saliva in patients reporting dental pain and from those reporting no dental pain.<sup>3</sup> The levels of pain were ranked on a 0-10 scale, with 0 reflecting no pain and 10 reflecting severe pain. Substance P concentrations were determined with an enzyme-linked immunoassay kit. In patients that reported dental pain, the average salivary Substance P concentration (869.4 ± 30.7 pg/ml) was significantly higher than the average salivary Substance P concentration (462.9 ± 39.6 pg/ml) in patients that reported no dental pain (Figure 6). There was no relationship between degree of pain and salivary Substance P concentration.<sup>3</sup>

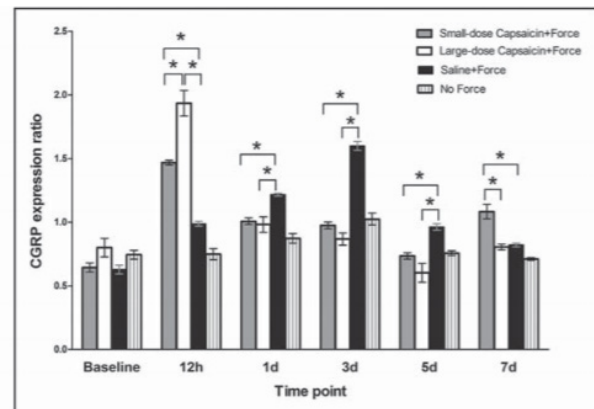
### CGRP Expression Following Nociceptive Tooth Movement

Capsaicin-agonized TRPV1 receptors under bacteria-induced inflammatory conditions of periodontitis upregulate CGRP release.<sup>7</sup> To determine if experimental tooth movement in healthy pulpal and periodontal tissue has the same effect on TRPV1 and CGRP regulation, Zhou et al.<sup>6</sup> subjected rats to treatments of either small dose (20 µL) capsaicin and applied force, large dose (100 µL) capsaicin and applied force, no capsaicin and applied force, or control group of no capsaicin or applied force.

CGRP release from trigeminal ganglia is regulated by mechanical stimulation of TRPV1 channels via experimental tooth movement. This study showed that increasing TRPV1 activity via capsaicin increases CGRP expression, especially in response to large dose capsaicin and applied force within twelve hours of administration (Figure 8)<sup>6</sup>.



**Figure 5.** Expression of TRPV1 to GAPDH mRNA ratio in trigeminal ganglia of mice, one (A) and three (B) days after treatment with saline or LPS; \* indicates  $p < 0.05$  for Mann-Whitney rank-sum test.<sup>8</sup>



**Figure 6.** Expression of CGRP normalized to  $\beta$ -actin from the corresponding sample in four treatments over a time course: small dose capsaicin + force, large dose capsaicin + force, saline + force, and no force, \* indicates  $p < 0.05$ .<sup>6</sup>

### Conclusions

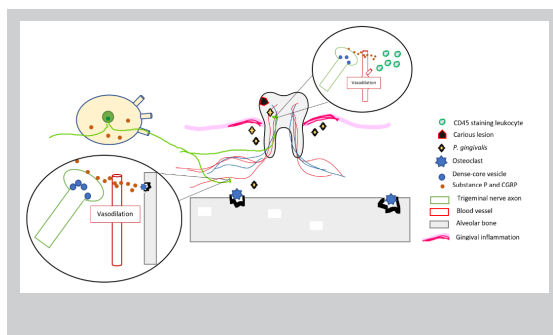
TRPV1 responds to inflammation which upregulates CGRP release from the trigeminal ganglia, resulting in a decrease of osteoclast activity. Thus, alveolar bone is not resorbed in gram-negative LPS conditions related to those that cause periodontitis.<sup>7</sup> The upregulation of TRPV1 mRNA after LPS-induced pulpitis further supports the role of TRPV1 in inflammation due to bacterial LPS-induced inflammation.<sup>8</sup> CGRP release from trigeminal ganglia is additionally regulated upon mechanical stimulation of TRPV1 channels via experimental tooth movement.

Increasing TRPV1 activity via its agonist capsaicin increases CGRP expression.<sup>6</sup> This is in keeping with findings that show capsaicin agonized TRPV1 receptors under inflammatory conditions of periodontitis upregulate CGRP.<sup>7</sup> Thus, it is likely that there is no difference in the role of TRPV1 and CGRP in bacterially induced inflammatory conditions, such as pulpitis and periodontitis, versus mechanical nociception that may arise from orthodontic procedures, such as the adjusting of dental braces.

Substance P is a neuropeptide that responds to TRPV1 activation in a similar manner as neuropeptide CGRP under inflammatory conditions, as it increases in concentration upon incidence of dental pain as a result of pulpitis and periodontitis,<sup>3</sup> though its effects on pain and inflammation are not as widely studied as CGRP. Figure 9 proposes an original integrated model of the findings of the literature analyzed in this review.

Further research is needed to characterize the role of Substance P as it relates to pain resulting from pulpitis and periodontitis and its integration with TRPV1 and CGRP. Future research in capsaicin as a modulator of CGRP expression could lead to further understanding of the pain resulting from pulpitis and periodontitis, and perhaps methods of treatment for those who suffer from these infections, in addition to those who suffer dental pain following orthodontic procedures.

Figure 7. Integrated roles of TRPV1, Substance P, and CGRP in pulpitis and periodontitis. TRPV1 in trigeminal axons is upregulated in response to bacterial-induced LPS inflammation<sup>8</sup> (*P. gingivalis*), resulting in pulpitis and periodontitis.<sup>7</sup> This upregulates CGRP release,<sup>6</sup> resulting in a decrease in osteoclast activity and inhibition of alveolar bone resorption.<sup>7</sup> Substance P is additionally upregulated.<sup>3</sup> Both Substance P,<sup>5</sup> and CGRP contribute to vasodilation.<sup>6</sup>



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Maria-Flora Jacobs, MS

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LOCATION: Four Points By Sheraton,  
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CEUs - 8 - Lecture

AGD Members: \$189  
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