



SAO NEWS

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The Voice of the New Orthodontists



The AAO wants to remain a strong and vibrant organization that provides value to its membership. In order to maintain its strength, the AAO needs to continue to have a high percentage of orthodontists as members.

There is a national trend for people in their 20's and 30's to be less involved in organizations, and the percentage of membership in many organizations is declining. Unfortunately, the ADA's membership reflects this trend. The AAO recognizes the pivotal role that the newer members have in maintaining the AAO as the premier organization in orthodontics.

The AAO established the New and Younger Member Advisory Committee in 1999 to advise and to inform the AAO of the concerns of younger members. This committee was made into a permanent Council in 2004 and is known as CONYM (Council on New and Younger Members). The council is composed of one representative from each constituency, two residents, and has a Trustee who acts as a liaison. The purpose of the Council is to represent and promote the interests of orthodontic residents and orthodontists who are within the first ten years of their graduation date. ■



AAO Trustee Highlights

Gary Inman

I would like to personally thank President Richard Williams for his leadership this year. Richard has used outstanding leadership skills on behalf of the SAO. I have enjoyed our many discussions regarding numerous issues. Additionally, we all extend many kudos to Heather Hunt who serves as our SAO Executive Director. She works tirelessly on our behalf to keep the SAO headed in the right direction. She is an invaluable asset for our members. Lastly, many thanks to the entire SAO Delegation and our Delegation Chair, Robert Moss, who helped run what was quite probably the smoothest House of Delegates meeting in recent AAO history. All of the resolutions brought before the House of Delegates had been thoroughly discussed beforehand so the house could function in an efficient way. Compliments to all of the delegates and alternate delegates for their hard work and time devoted to make this year's House a success.

In this report I thought that I would defer to the House report from Dr Moss. However, I have included highlights of the Post Annual Session Board of Trustees (BOT) Meeting:

➤ The BOT is planning to conduct the November BOT meeting virtually to see if we can accomplish what we have asked our councils to do. Some challenges are expected. However, with the advent of our online collaboration tool - Causeway - much more of the work can be completed electronically prior to the meeting. Hopefully it will run smoothly and create savings for the AAO.

➤ The Council on New and Younger Members (CONYM) and the American Board of Orthodontics (ABO) have been asked to work together to develop a mentoring program to match recent graduates with experienced orthodontists. The idea is to utilize electronic means to facilitate the process.

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- The AAO has formed a new committee which is to meet quarterly with the ABO to exchange ideas and work to benefit both organizations.
- As many of you know, the Council on Governmental Affairs (COGA) and the AAOPAC have recently gone through significant changes. After an RFP earlier this year a new lobbying firm, Arnold and Porter, was selected to replace Squire Patton & Boggs (SPB), the AAO's lobby firm in Washington DC. Because many of the SPB team have moved to Arnold & Porter, these folks will help maintain continuity. The AAO has also realized significant savings with the restructure.
- The AAO has entered into a contract with Republic Strategies to help with fundraising efforts. The goal is to increase PAC contributions in order to reach a more effective level of influence and access to members of Congress. The team is already making a positive difference for us.
- AAO Assistant Legal Counsel Sean Murphy was hired earlier this year. Part of Sean's duties involve monitoring our PAC and developing a component program to bolster PAC contributions, as well as monitoring issues that may affect AAO members that arise from individual states .
- AAO President DeWayne McCamish has been directed to form a Strategic Planning Committee that will include a larger group of stakeholders. The goal is to address alignment of strategy and goals for AAO and it's constituents/components.
- The Loyalty Research Company has been hired to provide an independent assessment of the CAP program.
- The SAO's own Dr William Proffit was selected as the inaugural recipient of the AAO's new Lifetime Achievement Award in Research. Dr Proffit will receive the award at the 2017 AAO San Diego Annual Session.
- The SAO's Dr Jerry Clark will receive the AAO Humanitarian Award at the San Diego AAO Annual Session.
- The BOT is considering licensure issues in order to make it easier for orthodontists to relocate. The BOT has been asked to support the ADA and ADEA in this matter. The issue has been referred to the Council on Education (COE), CONYM, and the Council on Orthodontic Practice (CCOP). These councils are to study the issues and give a report at the August BOT meeting.
- The BOT discussed ways to ensure that councils are demographically diverse in order to better serve all members of the AAO. The AAO staff plans to work with the Executive Directors of the constituencies on this initiative.
- The AAO finalized its communication audit. Dr McCamish has appointed a task force to work with the staff to review the audit and provide a report to the BOT, along with an action plan for implementation.
- Earlier this Spring, Drs Poole (AAO Past President) and McCamish along, with AAO Executive Director Chris Vranas, attended the Association of Dental Service Organizations (ADSO) meeting. The goal was to determine how the AAO can remain relevant in the professional lives of orthodontists who work for dental service organizations (DSOs). Approximately 20% of AAO members who are 5 years or less out of residency now work for a DSO. The ADA estimates that by 2020, as many as 50% of dental graduates will work for DSOs.
- The AAO Education Department has been charged with developing a white paper on private practice vs corporate practice models.

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> The current distribution of AAO membership by generation is 14% Silent Generation (1925-1942), 28% Baby Boomers (1945-1960), 40% Generation X (1961-1982), and 18% Millennial (1982-).

Lastly, I want to thank our AAO President, the SAO's own Dr DeWayne McCamish, for his service to our specialty.

The work that he is doing for the AAO is truly outstanding. DeWayne is an amazing leader who works tirelessly on our behalf. He has been an invaluable resource to me in my transition as Trustee, as well as a trusted friend. The AAO and SAO are indeed fortunate to have DeWayne. Please join me in thanking him for his service when you see him at the 2016 SAO Destin Annual Meeting in Sandestin this October. ■

Your Government Affairs Team is Working Hard During this Historical Election Year

Since the AAO's Professional Advocacy Conference earlier this year, the RAISE Act has gained momentum in the House and the Senate. Within the weeks following the Conference, 21 bipartisan House Members agreed to sign onto the House bill (H.R. 1186), bringing the current total to 75 cosponsors. Senator Kelly Ayotte (R-NH) has agreed to lead the bill in the Senate, and plans to introduce the bill later this summer. The AAO's legislative counsel has had conversations with targeted Senate Democrats with the hope of securing a co-lead to introduce the bill on a bipartisan basis in the senate as it was introduced in the House. ■

AAOPAC Update

The AAO Political Action Committee (AAOPAC) has raised more than \$70,000 since January 1, 2016. By comparison, AAOPAC raised approximately \$7,750 during the same time period in 2015.

Since January 1, 2016, the Constituencies have raised:

- | | |
|---------------------|--------------------|
| 1. SAO \$16,241.00 | 5. NESO \$6,131.00 |
| 2. PCSO \$11,625.00 | 6. RMSO \$6,020.00 |
| 3. MSO \$7,075.00 | 7. GLAO \$5,050.00 |
| 4. SWSO \$6,308.32 | 8. MASO \$2,575.00 |

During this two-year election cycle, AAOPAC has already contributed over \$200,000.00 to more than 50 federal candidates and plans to contribute even more. (continued on Page 5)

"AAOPAC contributes to policy makers whose views are consistent with the goals of the orthodontic specialty," says Jennifer Butler, the AAOPAC Board Member who represents the Southern Association of Orthodontists.

Decisions on which candidates to support are made by the AAOPAC Board of Directors. This board is composed of representatives from the constituent organizations and liaisons from the AAO Board of Trustees and the Council on Governmental Affairs. The Board reviews policy

positions, votes taken on issues of importance to the AAO, as well as leadership roles and committees of jurisdiction.

AAO leaders, staff, and legislative counsel work to educate legislators about the economic importance of the orthodontic specialty and how policies and proposed legislation impact orthodontists and orthodontic patients.

The repeal of the medical device tax and the RAISE Act are just two examples of the impact the orthodontic specialty is having on Congress. ■



AAO Delegates Report

June 17, 2016

The 116th annual session of the American Association of Orthodontists convened in Mickey's Orlando backyard in April 28 through May 2, 2016. Ironically, AAO special functions were held at Sea World and Universal Studios. While Orlando is always bustling with lots of fun activities for members and families, the House of Delegates had to meet and deal with our association's business.

Many in our delegation expressed the concern, prior to traveling to Orlando, that the business at hand this year was light, and there really were not any major issues. Before it was all wrapped up early on Monday afternoon and your delegation was able to get some well deserved pool time, we considered 25 resolutions and the budget!

Most of the resolutions this year were adopted by consent, because many were simply housekeeping concerns that dealt with our by laws and policies. The two resolutions which commanded attention were: 1) change the current definition of an active member and 2) a resolution submitted by the SAO to create a task force to do a comprehensive study of the future workforce needs of our specialty.

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The resolution to alter our membership criteria originated in the Council on Membership (COMEJC). Its purpose was to address a concern which reportedly affected about 17 current members. Before we packed to go to Orlando, the BOT and PCSO had put forth their own versions of an active member definition proposal. This was interesting, since the COMEJC chairman and the PCSO delegation chair are one in the same. As we began discussing many unintended consequences, particularly the affects on states with a specialty licensure requirement, (there are 7 in the SAO) the final resolution that passed directed President McCamish to appoint a committee of the HOD to thoroughly research this issue and to resubmit a report to the BOT in November.

The SAO resolution, to study work force needs after some modification, was adopted. This resolution on orthodontic workforce and distribution will seek to get the most up to date information on the number of orthodontists in active practice, where they are practicing, population trends, retirement plans, update information on residency programs, number of grads and their plans (research, teaching, private practice, corporate, etc.) class size changes, and proposed new programs. This information will hopefully prove valuable in assisting our members, our association and our specialty as we move forward in the 21st century. All agreed that taking a comprehensive look, not only at graduate orthodontic education, but the entire workforce, was long overdue.

In 2015 the SAO presented a resolution to the AAO House of Delegates which sought to modify the AAO Clinical Practice guidelines. The House referred their resolution to a task force which studied the issue and reported back to the 2016 HOD. As a member of that task force, I am proud to report that the SAO's 2015 resolution, as well as a complete overhaul of this document including updating the references, was adopted. Also, language was added that clarifies the fact that appropriate diagnostic records are a standard of care for our members.

For the second year in a row, a surplus budget with no dues increase was adopted . The budget is \$24,557,325, with an expected surplus of \$74,700.

Again, it was a pleasure and a privilege to serve as a GAO delegate, and again this year as the SAO delegation chair. I was also honored to serve as chair of the delegation chairs, an experience I found to be very rewarding. Our association is represented by many dedicated individuals who have the Association and the specialty we love at the forefront at all times. I look forward to representing you again and to working with our own DeWayne McCamish during his year as AAO president, and representing you again.

Respectfully submitted:

Robert B. Moss, Jr., D.M.D.

GAO AAO Delegate

A Member Who Has "Branched Out"

MEET ROSE SHEATS



It all started in 1997 at Mayo Clinic, Rochester, Minnesota. Rose Sheats, DMD, MPH had just relocated to the world-famous medical center to join the Department of Dental Specialties as one of four orthodontists.

Dr. Sheats had completed her orthodontic education in 1993 at the University of Florida and was faculty in the Department of Orthodontics at Virginia Commonwealth University when she accepted the offer to become the first female dentist in the Department at Mayo Clinic.

"I didn't even know that Mayo had dentistry at the time", Dr. Sheats declares. "The department consisted only of four dental specialties: Oral Maxillofacial Surgery, Periodontics, Prosthodontics, and Orthodontics, as well as an orofacial pain practice. No general dentistry was provided, and no other dental specialty was represented."

Not long after arriving at Mayo, Dr. Sheats began to notice that a "different" kind of patient was being referred to Orthodontics. Referrals of adult patients from the Mayo Clinic Sleep Disorders Center were frequently sent to the orthodontists for treatment for a condition unfamiliar to Dr. Sheats at the time: obstructive sleep apnea (OSA). She could not fathom what orthodontics had in common with OSA.

It turns out that when one more deeply explores the association between orthodontics and a treatment option for OSA, the overlap is an obvious one. Mandibular advancement devices for OSA are similar to the functional appliances that Dr. Sheats had learned to use in her residency to treat Class II malocclusions in growing patients. Of the greater than 130 sleep apnea oral appliances that have been approved by the FDA for commercial distribution, many are variations of the Herbst appliance.

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Prior to Dr. Sheats' arrival, Mayo Clinic orthodontists had been collaborating with Mayo sleep physicians to provide adult patients with mandibular advancement devices to prevent the tongue from collapsing into the posterior airway during sleep and causing airway obstruction and cessation of breathing. In the 1990's few dentists had experience providing what came to be called "oral appliance therapy" for OSA patients as a more desirable treatment alternative for many patients than continuous positive airway pressure. "Dental sleep medicine" dentists were pulling themselves up by their bootstraps. Dr. Sheats discovered a small but burgeoning group of dental pioneers who had formed a society that was initially christened the Sleep Disorders Dental Society. She began attending their annual meetings which in the beginning were little more than small gatherings. In 25 years, that small society has evolved into the American Academy of Dental Sleep Medicine (AADSM) whose membership now exceeds 3,000 dentists.

Dr. Sheats advanced to leadership positions in the American Academy of Dental Sleep Medicine and is currently a member of the Executive Committee of the Board of Directors of the AADSM. She has chaired the AADSM Education Committee and numerous AADSM courses, has participated in several Academy task forces, and is an associate editor of the academy's professional journal, the Journal of Dental Sleep Medicine. The AADSM is closely aligned with the American Academy of Sleep Medicine, and together these organizations work to support oral appliance therapy as an effective treatment option for OSA patients.

As the field of dental sleep medicine advanced, it also became clear that one of the common side effects of mandibular advancement therapy was a change in the occlusion. Decrease in overjet, proclination of mandibular incisors, and a loss of posterior occlusal contacts were frequently seen, much to the alarm of many dentists. Based on case reports in the mid-2000s, sleep physicians became enamored with rapid maxillary expansion as a treatment option for pediatric patients diagnosed with obstructive sleep apnea. Once again, orthodontists were being called to action. Physicians saw RME as the solution to childhood OSA with little appreciation for the challenges and limitations of rapid expansion in the primary dentition.

Because mandibular advancement devices and RME are common orthodontic procedures, some have argued that oral appliance therapy for OSA, coupled with the frequent side effect of occlusal changes, falls firmly in the realm of orthodontics. Indeed orthodontists have been at the forefront of research into the precise characterization of occlusal changes that occur with sustained use of OSA oral appliances over time. Furthermore, orthodontic residents and faculty have used their analytic skills to evaluate lateral cephalograms and 3D images of the craniofacial structures to describe the effects of oral appliance therapy on the size and shape of the posterior airway space. And likely it will be orthodontists who conduct the additional research that is critically needed in the pediatric arena, especially with respect to RME outcomes.

Dr. Sheats left Mayo Clinic in 2006 to join the Department of Orthodontics at the University of North Carolina as its graduate orthodontic program director. She retired from full-time academics in 2013, but her contributions to dental sleep medicine continue to draw on her orthodontic knowledge and experience. ■

THE SAO ACTIVELY SUPPORTS STUDENT RESEARCH. THE RESEARCH DESCRIBED IN THIS ISSUE IS A REFLECTION OF THE RESEARCH EFFORTS THAT TAKES PLACE AT ALL SAO SCHOOLS

**Nick Maddux DDS, MS, Peter Ngan DMD, Tim Tremont DMD MS,
Chris Martin DDS, MS, Rick Jurevic PhD, Erdogan Gunel PhD**

(West Virginia University Department of Orthodontics, Morgantown, WV)

Objectives: To determine 1) if there is a correlation between soft and hard tissue chin measurements using lateral cephalometric radiographs; 2) the change in chin prominence on perceived facial profile attractiveness.

Materials & Methods: A total of 105 lateral cephalograms of patients 12 years or older in the permanent dentition were included in the study. A customized cephalometric analysis was used for hard and soft tissue chin measurements. The sample was also divided into skeletal groups (Class I, II and III) for analysis. Data were analyzed using pair-wise correlation and stepwise regression analysis. To determine the perception of facial attractiveness with changes in chin position, facial profile photograph of a female subject with a general attractive profile was utilized. The chin prominence was morphed in 1mm increments forward and backward to create 14 new images (15 total). A second group was created by cropping these 15 images to only include the chin and lower lip. A total of 19 orthodontists and 20 non-orthodontists were asked to rate the attractiveness of the two series of images.

Results: The chin soft tissue thickness, Pog-Pog', showed weak correlation with N-Me ($R=0.24$), Sn'-Me ($R=0.21$), Pog'-GALL (-0.42), Pog-GALL (-0.29), and TVL-Pog' (-0.40). There was no significant difference in average chin soft tissue thickness when the samples were grouped by skeletal category. For rating of the chin profile, no significant differences were found in the ratings of chin profile alone or the whole face profile between the orthodontists and the non-orthodontists. When comparing male versus female raters, there was no significant difference in rating the whole face, but there was significant difference in the ratings of the chin alone. There was also no significant difference when comparing ratings of the chin alone to the corresponding whole face images.

Conclusions: 1) There is only weak correlation between chin soft tissue thickness and skeletal measurements. 2) Chin soft tissue thickness is highly variable. 3) There is no difference in soft tissue chin thickness based on skeletal category. 4) Perceived attractiveness of the profile is sensitive to millimeter changes in chin prominence. 5) Orthodontists and non-orthodontists agree on attractiveness. 6) Males and females agree on profile attractiveness but differ on chin attractiveness. ■

Travis Tomblyn DDS, Peter Ngan DMD, MS Mike Rogers DDS, Lee Andrews DMD, Timothy Tremont DMD, MS, Chris Martin, DDS, MS, Erdogan Gunel, PhD.

(West Virginia University, Department of Orthodontics, Morgantown, WV)

Objectives: Orthopedic functional appliances have been shown to be effective in correcting Class II malocclusions with mandibular deficiency. However, most of the studies reported in the literature could not substantiate the effect of the appliance on mandibular growth because the appliance was worn for a short time and few studies followed the patients after fixed appliance therapy. The objective of this study was to investigate the skeletal and dental changes of patients treated with the reinforced banded Herbst appliance during orthopedic treatment and after completion with fixed appliance therapy. The results of this research should provide additional information on the mode of action and the length of treatment when using the Herbst appliance.

Methods: Thirty patients with Class II division 1 malocclusion (mean age = 12.3 yrs) treated by one investigator (M.R.), with Herbst followed by fixed appliance were compared to a control sample obtained from the Bolton-Brush study that was matched closely in age, sex and craniofacial morphology. Cephalometric radiographs were taken before treatment (T1), at the completion of Herbst treatment (T2), and following the removal of fixed appliances (T3). The average Herbst treatment was 1.5 years and the average fixed appliance treatment was 1.8 years. Data was analyzed using a combination of ANOVA and Tukey-Kramer Test.

Results: Treatment with the Herbst appliance resulted in a reduction in overjet of 7.2 mm after subtracting changes due to growth. The skeletal contribution was 2.5 mm (35%), with maxillary backward movement of 1.2 mm and mandibular forward movement of 1.3 mm. The dental contribution was 4.7 mm (65%), with maxillary incisors moving back 4.0mm and mandibular incisors moving forward 3.2 mm. The molar relationship was improved by 7.5 mm, due to skeletal and dental changes. The anteroposterior jaw relationship was improved with a decrease in Wits by 4.2mm. Vertically, the maxilla moved downward 1.2mm and the overbite was decreased by 3.3mm due to incisor intrusion. The combined treatment effect of the Herbst and fixed appliances resulted in an overjet correction of 4.4mm after subtracting changes due to growth. The skeletal contribution was 1.3mm (30%) and the dental contribution was 3.7mm (70%). The molar relationship was improved by 5.0mm. The anteroposterior jaw relationship was improved, with a decrease in Wits by 3.2mm. Vertically, the maxilla moved downward by 1.2 mm and the overbite was improved by molar extrusion.

Conclusions: Orthopedic treatment with the reinforced Herbst appliance for an average of 1.5 years followed by fixed appliances was effective in correcting Class II division 1 malocclusion with an excess overjet and overbite. The changes included a restraint in the forward growth of the maxilla, additional forward growth of the mandible, and rotation of the occlusal plane. The reinforced Herbst design allows clinicians to lengthen the orthopedic phase of treatment resulting in a more stable and favorable skeletal and dental response after fixed appliance therapy. ■

Jennifer Tomblyn DDS., Timothy Tremont, DMD.,MS, Chris Martin, DDS, MS, Richard Jurevic, DDS, PhD, Erdogan Gunel, Ph.D.

(West Virginia University Department of Orthodontics)

Background and Objectives: Andrews's Six Elements of Orofacial Harmony™ incorporates a frontal facial plane identified as GALL as a useful landmark for diagnosing and treatment planning AP jaw positions. A GALL is a constructed frontal facial plane based on a patient's forehead inclination relative to a frontal facial plane (FALL) passing through the center point of a forehead (FFA point) with a patient in an adjusted natural (upright) head position. This study investigated the reliability of GALL construction.

Methods: For Part I: Three judges made the following measurements on 23 subjects on two occasions (T1 and T2) one month apart: a clinical judgment of a FA point of a maxillary central incisor distance from a FALL (F); a measurement of the same FA point and FALL using a Facial Plane Gauge™ (FC); a clinical judgment of the maxillary central incisor FA point distance from a glabella vertical (G); a measurement of the same FA point and glabella vertical using the Facial Plane Gauge™ (GC). For part 2: A total of 105 lateral cephalograms were traced and the distance between a constructed GALL and a glabella vertical was measured. For part 3: A total of 26 judges (13 orthodontists and 13 non-orthodontists) clinically judged an adjusted natural (upright) head position of a same patient with varied AP chin positions.

Results: For part 1: ANOVA showed significant differences for the means of all measurements among the three raters. However, the intra-rater reliability was high with Matched Pairs Test coefficients ranging from 0.76 to 0.93 for both T1 and T2. The inter-rater reliability was found to be good with coefficients greater than 0.73. For part 2: The mean GALL was found to be 0.22+0.48mm from a glabella vertical. The T-test showed statistical significance ($p < 0.001$) but the difference was not clinically significant. For part 3: ANOVA showed significant differences ($p = 0.0133$) among the mean angles for the adjusted natural (upright) head positions for Class I, II and III AP chin positions. However, Tukey Kramer showed significant differences between Class II and III but not between Class I and II and between Class I and III. The mean angle differences were not clinically significant with the maximum difference between Class II and III being 1.519 degrees. There were no differences in mean angles between males and females or orthodontists and non-orthodontists.

Conclusion: FALL and glabella vertical judged clinically by trained persons are reliable and reproducible frontal facial planes. A clinically judged glabella vertical with a patient in an adjusted natural (upright) head position is a reliable method for constructing a GALL. Variation in AP chin position does not have a clinically significant effect on judgment of a FALL or glabella vertical and therefore GALL construction. ■

Mentor: Dr. Wellington Rody

Alyssa Emory, DDS

University of Florida College of Dentistry Department of Orthodontics

Exosomes are small vesicles of endosomal origin that are released by different cell types. Due to their protein, lipid and RNA contents, exosomes are considered an important source of biomarkers. Our preliminary data at the University of Florida suggest that cells resorbing bone ('osteoclasts') and cells resorbing tooth ('odontoclasts') secrete exosome-related proteins that would allow for distinction between odontoclastic and osteoclastic activity. Therefore, the aim of this study is to identify exosome markers that are unique to odontoclasts, which will drive interrogation and validation of root resorption biomarkers in future clinical studies. In summary, cell culture supernatants from resorbing osteoclasts and odontoclasts will be analyzed for proteomic differences in exosome composition using mass spectrometry (MS). Ideally, once exosome markers are identified to distinguish between bone and dentin resorption, non-invasive methods of screening for these markers can be achieved. The results of this study may serve a diagnostic purpose, as well as fundamental knowledge for future development of target therapies for root resorption. ■

By: Laura Bowden, D.M.D.

Research Mentor: John Neubert D.D.S., Ph.D

University of Florida College of Dentistry Department of Orthodontics

Introduction: Studies have shown that flavonoids, polyphenols derived from fruit, vegetables, cocoa, green tea, red wine and many other foods, suppress the production of cytokines that promote inflammation and have many beneficial effects on health. Inflammation is one of the main causes of pain sensation/sensitivity, therefore, if inflammation is reduced then pain sensation, in an acute inflammatory state, should also be reduced/diminished. There is limited research available to quantify pain sensation and if certain supplements help reduce the perception of pain. Using the Orofacial Pain Assessment Device (OPAD), we assessed pain sensation in a group of experimental rats that have been fed a 10% cocoa diet for 2 weeks before pain induction to test if their pain sensitivity decreases.

Material and Methods: 20 male hairless Sprague-Dawley rats (250-300 g, Charles River, Raleigh, NC) were trained at non-aversive temperatures (ex. 33-37 °C), for approximately for 2-4 weeks until animals achieve a minimum of 500 reward licking events on average per session. Outcome measures included reward licking events (lick), facial contact events (face), and lick/face pain ratio. Following behavioral training, baseline training introduced aversive temperatures of 44 degrees Celsius and the same outcome measures were recorded. The animals were randomly divided into 2 groups of 10 with an experimental group receiving a 10% enriched cocoa diet (Research Diets, New Brunswick NJ) and the other 10 control animals receiving an isocaloric diet for 2 weeks. Inflammation was induced by Capsaicin cream on the animal's buccal region and the TMJ region. All animals were tested at 44 degrees Celsius following acute inflammation induction.

Results: **Animals fed a 10% cocoa-enriched diet demonstrated inhibition of capsaicin-induced hyperalgesia when tested on the OPAD at 44 °C. There was a significant increase (*P<0.05) in the pain ratio (an indication of pain-relief) for the cocoa treated animals. Capsaicin inflammation produced a significant decrease in this pain ratio for the control-diet animals (P = 0.001). ■**

How would you treat this patient?

This 12 ½ year old female presented for orthodontic treatment. The medical history was insignificant. The patient’s chief complaint was the protrusion and crowding of the maxillary anterior teeth.

The facial photographs (Figure 1) exhibit a reasonably balanced face with mild lip protrusion. The casts (Figure 2) exhibit the protrusion of the maxillary dentition, an end to end dental relationship, well aligned mandibular anterior teeth and irregular maxillary anterior teeth. No deciduous teeth remain. The maxillary and mandibular second molars have erupted.

The panoramic radiograph (Figure 3) reveals a healthy dentition with the presence of the developing maxillary and mandibular third molars. The cephalogram, its tracing and the tracing values (Figure 4a and 4b) confirm a relatively flat mandibular plane angle, upright mandibular incisors and a good relationship of the profile line to the nose. All cephalometric values are within normal range.



Figure 1



Figure 2



Figure 3



Figure 4a

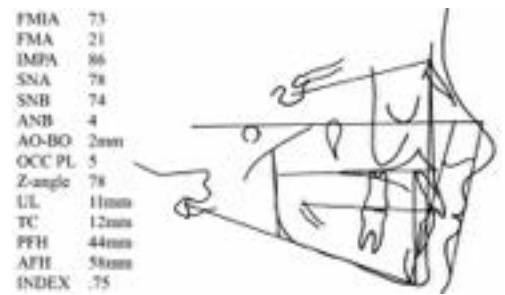


Figure 4b

The Treatment Plan

When devising the treatment plan for this patient, the clinician must decide how the occlusion is to be corrected and how the maxillary anterior teeth are to be aligned and retracted. Is one going to attempt to distalize the entire maxillary arch in order to secure a Class I dental relationship? Another option would be to remove maxillary premolars and treat the patient to a Class II molar relationship, Class I canine relationship. With either of the above treatment plans, mandibular anchorage has to be preserved because one does not want to flare the mandibular incisors with Class II elastics or some other maxillary distalization appliance that requires mandibular anchorage.

The clinician also has to be careful about leveling the curve of Spee and without flaring the mandibular incisors if no teeth are to be removed from the mandibular arch. When all of these things are considered, the treatment plan for this patient will require some thought and careful deliberation. The option that will achieve the best result in the shortest amount of time with the least potential for failure is the best option.

The Treatment Plan Options

The options for treatment of the patient were:

- (1) Attempt to treat the patient without premolar extraction. If this is the option of choice, the entire maxillary dentition has to be distalized with some sort of maxillary distalization appliance. Quite a bit of space would have to be gained in the distal part of the maxillary arch to achieve a proper occlusion. Maxillary arch distalization would have to be done without taxing the position of the mandibular anterior teeth. When one carefully looks at the cephalogram, it is obvious that the third molars are developing in the maxillary arch. Space in the posterior dentition area might be a problem.
- (2) Extract maxillary premolars and treat the patient to an Angle's Class II molar relationship with a Class I canine relationship. The advantage to this option is that it would eliminate the problem with distalization mechanics, but it would have the potential for taxing mandibular anchorage if a significant amount of Class II elastics had to be used. Treating patients to a Class I canine relationship after maxillary premolar removal without taxing the mandibular anchorage is, at times, a difficult thing to accomplish.
- (3) Extract maxillary first premolars and mandibular second premolars. This option would allow the clinician to retract the maxillary anterior teeth and to protract the mandibular posterior teeth into an Angle's Class I relationship. This option would necessitate careful maintenance of mandibular incisor position while the mandibular molars were protracted.

The Treatment Plan Chosen

The plan chosen was - remove the maxillary right and left second premolars. This option was chosen because the patient was a disciplined young lady who promised that she would wear a headgear and do what was asked of her in order to get a nice treatment result. The patient wore the headgear to the maxillary arch to help with distalization of the maxillary first premolars and canines so that mandibular tooth position was not altered. Mandibular incisor position was also protected with lingual crown torque and a large (0215 x 0275) mandibular archwire. After maxillary first premolar and canine retraction the maxillary incisors were retracted with an 020 x 025 closing loop archwire which was supported with headgear. The patient never wore Class II elastics.



Figure 5

The pretreatment/posttreatment facial photographs (Figure 5) reflect maintenance of the patient’s facial balance and harmony. The face was not appreciably changed by orthodontic treatment.

There might be a little less protrusion of the lips, but the face exhibits nice balance and proportion. The posttreatment views of the casts (Figure 6) confirm the creation of a Class II molar, Class I canine dentition with a canine protected occlusion. The maxillary premolar extraction spaces were successfully closed. The mandibular anterior teeth alignment was maintained.

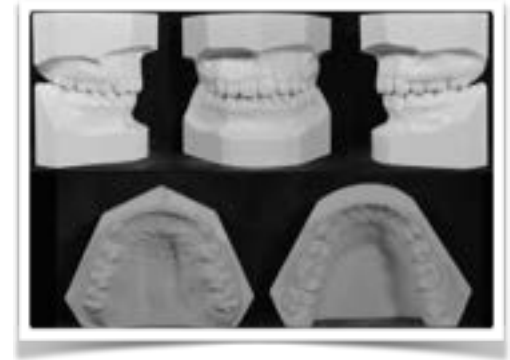


Figure 6

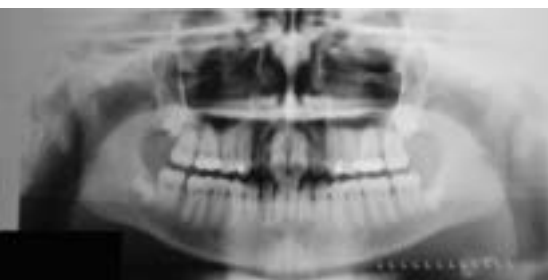


Figure 7

The posttreatment panoramic radiograph (Figure 7) confirms uprighting of the maxillary teeth into the extraction site and further development of the third molars which will need to be extracted. The posttreatment cephalogram, its tracing and the cephalometric values (Figure 8a and 8b) confirm maintenance of pretreatment mandibular incisor position. The pretreatment/



Figure 8a

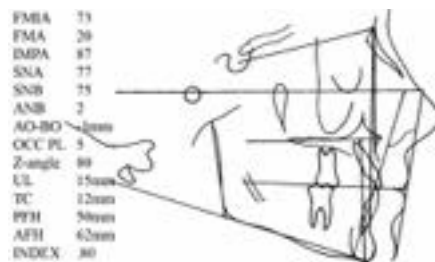


Figure 8b

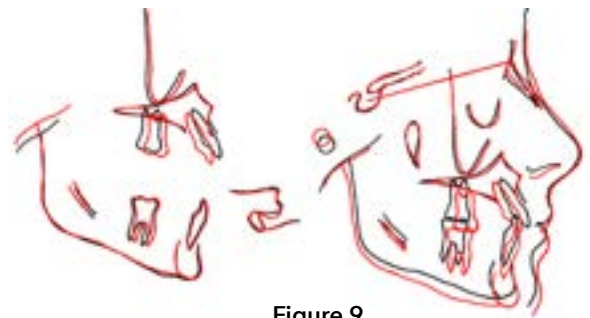


Figure 9

posttreatment superimpositions (Figure 9) exhibit downward and forward skeletal change with vertical control of the molars during treatment. The maxillary incisors were moved distally with proper third order control. Mandibular incisor position was protected.

The pretreatment/posttreatment smiling photographs (Figure 10) confirm a great smile, maintenance of a good smile arc and a successful conclusion to active treatment.



Figure 10

Many clinicians may have treated this patient differently. The case report is presented to illustrate one way of correcting this young lady’s problem. It was felt that the patient could best be treated in this manner because it was simpler, required less mechanics and was much more predictable than trying to treat the patient without removing teeth. ■

Practice-Based Research Network – Anterior Openbite Study



In the Fall of 2015, the National Dental PBRN study on Anterior Openbite was launched. Dr. Greg Huang, Chair at the University of Washington, is the principal investigator for the study.

This study calls for approximately 100 orthodontists to enroll 300 adult anterior open bite patients who are in active treatment. Currently 80 practitioners have already completed their study training, and 34 orthodontists have enrolled patients into the study.

Why Is Participating in the Openbite Study Important?

- (1) The openbite study is the first orthodontic study that is being conducted on a National scale. It is extremely important that the profession embrace this type of research and that orthodontists demonstrate their willingness to participate so that we can compete for future network funding from the National Institute of Dental and Craniofacial Research.
- (2) By participating in this study, you will be helping with a comprehensive and rigorous assessment of current methods to treat openbites and to retain the correction. All patient and practitioner data will be submitted and analyzed in an anonymous manner.
- (3) In the course of conducting the openbite study, we will train a large number of orthodontists on practice-based research methods. This group of practitioners will gain valuable experience, and they can be invited to participate in future orthodontic studies. This network of orthodontists will be an invaluable asset to our profession for years to come.

"It is very exciting that the Openbite study is underway, and that doctors are actively enrolling their patients. Practitioner enrollment will end on June 30, 2016, so please make it a priority to complete the training as soon as possible. We need your participation now!"

Dr. Greg Huang

The AAO PBRN committee is actively recruiting orthodontists who want to join this national PBRN effort.

Each study has specific requirements and every clinician must complete mandatory HIPAA and human studies training. For more information on the open bite study, please visit the AAO PBRN webpage.

If you are interested in participating in the Anterior Openbite Study, please contact any of the AAO PBRN Committee members: Jaime DeJesus-Vinas, Veerasathpurush Allareddy, John Callahan, Jeff Erickson, Greg Huang, Brent Larson, Bhavna Shroff, Flavio Uribe, or the support staff of the National Dental PBRN, Deborah McEdward and we will make it happen. ■