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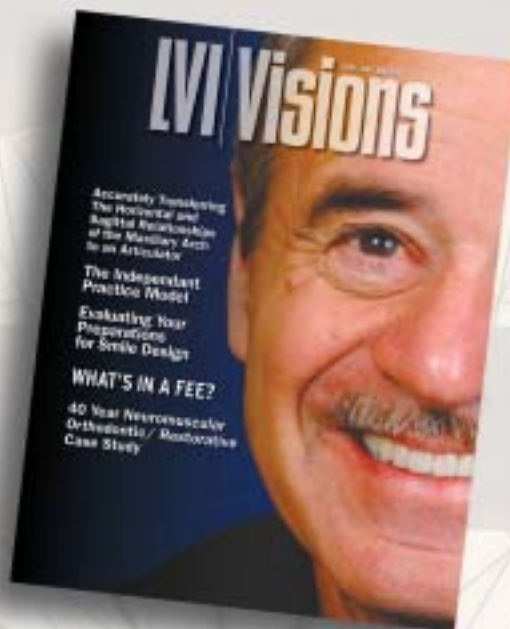
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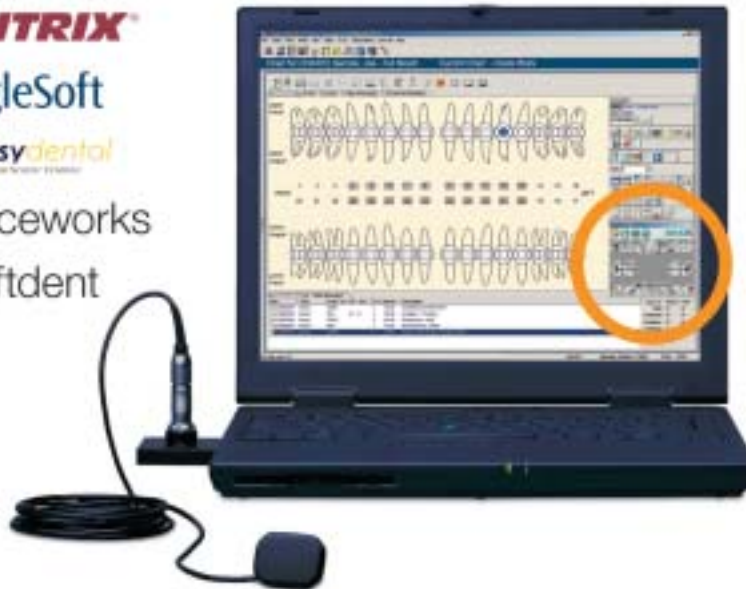


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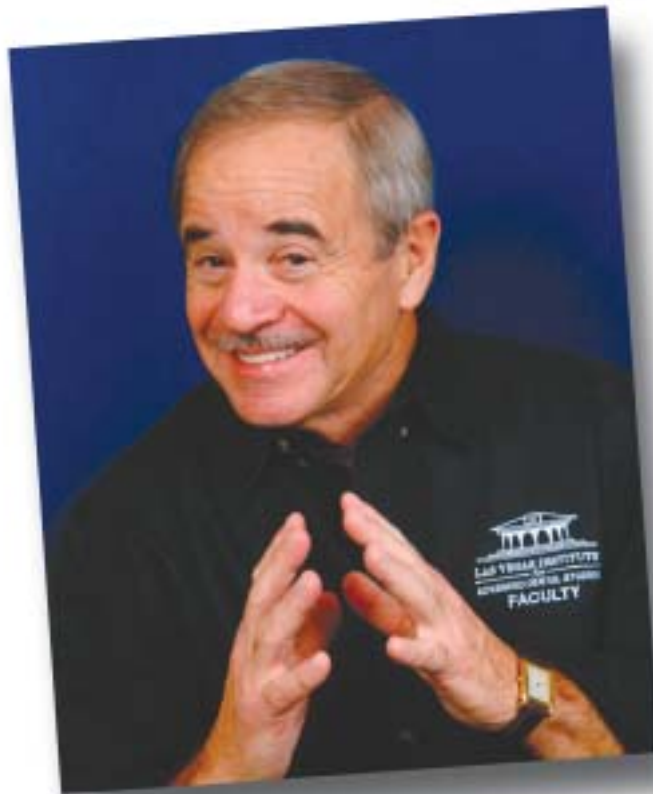
THE LVI VISIONS INTERVIEW WITH

BOB



JANKELSON





You've had a long and successful career that has not only encompassed wonderful accomplishments in dentistry, but the battles with those who tried to slow down progress. It must have been so stressful when you knew you were right to experience such resistance.

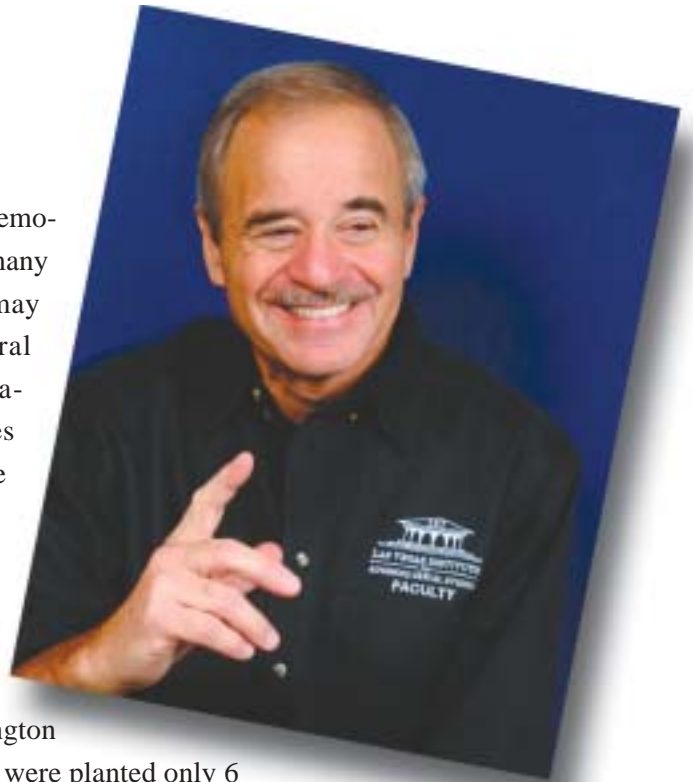
Can you explain to our readers what drove you on when others would have just quit?


First, the serendipity of choosing dentistry as profession cannot be overlooked. The pleasure and passion of getting up in the morning, changing patients' lives and the lives of my fellow colleagues is a gift that overshadows the battles with naysayers, Luddites and self-appointed guardians of old dogma. My father was an iconoclast who was not afraid to challenge old dogmas if he thought the world would be better for his efforts. His intellectual and professional integrity was unquestioned. He never backed down or wavered when the truth or the welfare of patients were at risk. I only hope I have carried that legacy with dignity, honesty and conviction. It never seemed like a burden. Logic, reason and scientific truth have been the armamentarium of neuromuscular dentistry. Thanks to defenders of these values such as Drs. Bill Dickerson, Barry Cooper, Jim Garry, Clayton Chan, Norm Thomas, Rainer Schottl (Germany), Atsushi Yamashita (Japan), Maurizio Bergamini (Italy) and countless other neuromuscular colleagues around the world, the neuromuscular walls of science are as inviolate as they were 35 years ago.

Watching you lecture is so great, as you are so knowledgeable and passionate about what you teach. Why are you retiring from this when you are so good at it?

It is an incredibly emotional decision. As many of your readers may know I had several serious hospitalizations and surgeries last year. Also, I have been very busy the past 5 years designing and developing a world class winery and vineyards in Northcentral Washington

State. The vineyards were planted only 6 years ago and the winery production, tasting and event amphitheater facility was completed only 2 years ago. The winery is Tsillan Cellars which means deep water in native American. However, most of the materials for the winery were imported from Italy. The 135-acre vineyard property and winery are along the shores of 55-mile-long, 1500-foot deep, Lake Chelan. Mountains rise 6000-8000 feet from the shores of the lake. Most folks think of rainy Seattle, but Lake Chelan is on the dry side of the Cascade Mountains, and is more similar to Las Vegas than Seattle. Our wines won over 25 medals in International competitions last year, and was also selected as one of the 30 most beautiful destination wineries in the Pacific Northwest (out of 800 wineries). I have directed the same passion to this project that I gave to my profession for 43 years. I am now planning the next phase of the project which will include an Italian spa resort, Italian marketplace and shopping venues, restaurant, additional entertainment venue, and clustered Italian hillside villas. But it is still very hard to realize I am nearing the end of a 43-year journey in dentistry.





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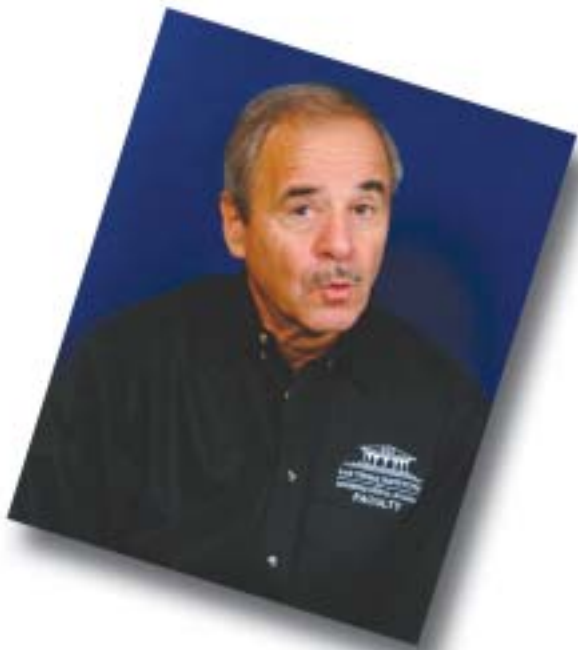
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You've had such a rich and rewarding life. What do you consider the greatest event of your life?

Which professional accomplishment(s) do you value most?

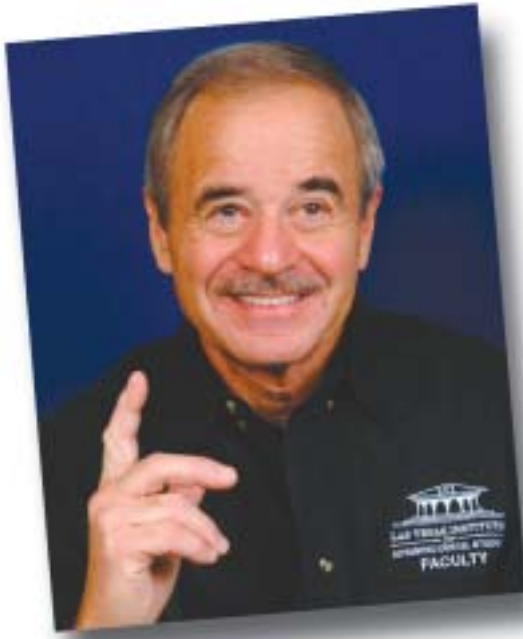
Your dad was the father of Neuromuscular Dentistry, and I'm sure you wish he could see the progress it has made today. Are you surprised at the overwhelming embracement of those who actually take the time to listen to the logic and science of NM dentistry?

I truly cannot answer that question. Every day is a gift. I appreciate that gift, and take great pleasure in sharing my passion for life with colleagues, friends and strangers. I thank Bill and his vision for allowing me to share my passion and knowledge with friends and colleagues at LVI. Awakening tomorrow will be the greatest event of my life.

The joy of daily restoring quality of life for patients long suffering from severe TMD is a clinical high. The look on a patient's face when restoring a smile that had been a source of embarrassment for years is another clinical high. The joy of sharing my knowledge with fellow colleagues around the world the past 40 years is a gift I will always cherish. The "learning high" and the teaching environment at LVI the past 6 years is near the top. Carrying on my father's research and writing the seminal definitive textbook on neuromuscular diagnosis and treatment was most rewarding. Successfully defending the scientific validity of neuromuscular dentistry before the American Dental Association and the FDA was among the most trying, yet rewarding accomplishments. I am fortunate to have been given these challenges and opportunities.

First, I wish he had been alive to see the thirst for knowledge and the open-minded reception of NM dentistry at LVI. The environment for learning that Bill has created at LVI is unrivaled anywhere in the world. Secondly, the logic and scientific basis of neuromuscular dentistry is so compelling that any doctor exposed to these precepts with an objective mindset embraces the clinical rationale of NM dentistry. No, I'm not surprised, as I'm sure your readers who have been exposed to NM dentistry are not surprised. The only barrier to embracing the neuromuscular principles and clinical applications is a closed mind.

***Who do you
admire and why?
Who are your mentors?***



***Why is that there
seems to be some
resistance to what
you know is the truth
about occlusion,
and the benefits
neuromuscular
dentistry offers
to our profession?***

Of course, my father was the dominant mentor in my career. Because of my father's association I knew the giants of our profession dating from the 1940's. I remember meeting the great anatomist Dr. Harry Sicher when I was in high school. Many of the gnathologic legends visited our office and would watch the young "kid" operate in the early 60's. How would you like to operate with Charley Stewart and Peter K. Thomas looking over your shoulder? Even then I was confident of my clinical skills and techniques and was too dumb to be nervous. I began studying with legendary Dr. Janet Travell, Myofascial Trigger Point Manual, in the 1960's, and began a 30-year association with this amazing lady. She was a great mentor. Her knowledge of anatomy, physiology and differential diagnosis was inspiring. I had the honor of teaching with her many times. Who else do I admire? Every one of my colleagues who searches for ways to better help their patients and deliver optimal care. They are the doctors I have had the honor to mentor the past 6 years at LVI. Hopefully, we are both richer for the experience.

"Obstinacy and vehemency in opinion are the surest proof of stupidity." Bruce Barton in Medical Mavericks. The resistance to what appears to us as obvious TRUTHS regarding occlusion and other neuromuscular principles is merely a repeat of the history of science and medicine. It's not new! Ignaz Semmelweis, a physician practicing during the nineteenth century in Vienna, insisted his colleagues wash their hands between autopsies and attending patients in the obstetric ward. When the incidence of puerperal fever and death declined dramatically after instituting his ideas in the paupers clinic, he was fired and vilified by his colleagues. His professional life was destroyed and he committed suicide shortly after his dismissal from the hospital.. While I'm sure some of the adversaries of neuromuscular dentistry may have wished my father and I an early demise, I can assure you my father and I were never tempted. I take great pleasure in the admonition of the philosopher Santanyana who said: "There will come a day in which you will regret the death of your enemy more than the death of your best friend, because your enemy will not be there to witness your success." The stridency and vehemency of protest will increase proportionally to the opposition's weakness of scientific validity and erosion of their credibility. Do not be surprised by the inane arguments you will hear from the reigning "deities" of dentistry. Their professional life, credibility and legacy are threatened. Patient welfare be damned. Throwing stones from a wall of arrogance and ignorance will not, and has not for 35 years, destroyed defenders of neuromuscular dentistry. Whether it involved battles with the American Dental Association or the FDA, the scientific shield was impregnable and the neuromuscular forces prevailed. But make no mistake, as the adversaries' position becomes more indefensible and desperate, the rhetoric escalates. This is the history of science and medicine.

I know your article in this issue refutes the longevity question of NM dentistry, but why do you believe it is that some make up negative things like that about the truth of NM dentistry?

What is the biggest problem in dentistry today? What bothers you the most?

How can an average dentist, who is nowhere near as smart as you, apply the principles that you teach in their practices?



The answer lies in the history of human nature and particularly the history of medicine. “Innovators are rarely received with joy, and established authorities launch into condemnation of newer truths, for...at every crossroads to the future there are a thousand self-appointed guardians of the past.” MacQuity in *Medical Mavericks*. Barton commenting on the nature of resistance to change in medicine, “Obstinacy and vehemency in opinion are the surest proofs of stupidity.” Considering the history of science and medicine the story of neuromuscular dentistry and the resistance to it are to be expected.

At this age, not much bothers me. However, it is bothersome that the egos of a few may keep patients from receiving relief of pain and suffering. Becker in *The Body Electric* explains the professional process: “As the conflict escalates, the muzzled freethinker often goes directly to the public to spread the pernicious doctrines. At this point the gloves come off. Already a lightning rod for the wrath of the Olympian peers, the would-be Prometheus writhes under the attacks on his or her honesty, scientific competence, and personal habits. The pigeons of Zeus cover the new ideas with their droppings....Sometimes during or after the battle, it generally becomes obvious that the iconoclast was right. The counterattack then shifts toward historical revision. Sounds familiar doesn’t it.

I do not consider myself any smarter than my colleagues. I had the genetic fortune of being the son of a true visionary and iconoclast, with the character to always defend his moral and intellectual position. While my father was an extremely strong personality, he always respected my professional and intellectual abilities. I also greatly respected his professional insights and knowledge which he freely shared. He loved to teach. I think I was one of his better students. I also was given an opportunity to be involved in research and corroborate with researchers around the world. A busy 10-hour clinical day was often followed by 2 hours immersed in the scientific literature or in the research laboratory. It was my role to take his big visions and find the most efficient, effective technique to achieve clinical success. He was interested in the big picture and I complemented his vision by developing simple clinical techniques to complement the underlying science. My advice is “Keep It Simple”. While there is an enormous body of basic science supporting the neuromuscular techniques, the clinical dentist doesn’t have to know the literature and scientific formulas that form the foundation of the neuromuscular principles. Trust your own intellect and intuition. How many of the readers questioned centric relation concepts in dental school? It was only peer pressure and dental school “institutional brain damage” that kept them tied to the old CR paradigm. For most, the training they receive at LVI only confirms what most already knew or suspected about occlusion. You will find the neuromuscular techniques taught there will reaffirm their professional logic and observations.

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If you could give one piece of advice to all the dentists out there, what would it be?

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What do you think the future of dentistry is and why?

Read the January, February, March LVI VISIONS article: *Creating an Esthetic Niche Dental Practice with a Focus on Total Health* by Dr. Joe Barton. If you read it, read it again. I couldn't provide a more concise clinical model of where dentistry could and should go.

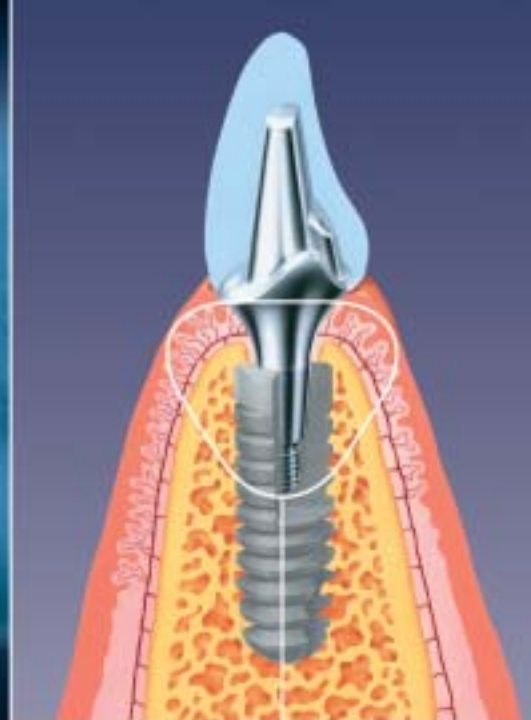
Do you have any final thoughts you would like to share with the readers?

Thanks for the memories.



No, THANK YOU.

You truly have been an inspiration to everyone who has studied under you. We are all better dentists because you entered our profession.



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Accurately Transferring The Horizontal and Sagittal Relationships of the Maxillary Arch to an Articulator



William G. Dickerson,
DDS; FAACD; LVIM.



Norman R Thomas,
DDS; Ph.D; FRCD.

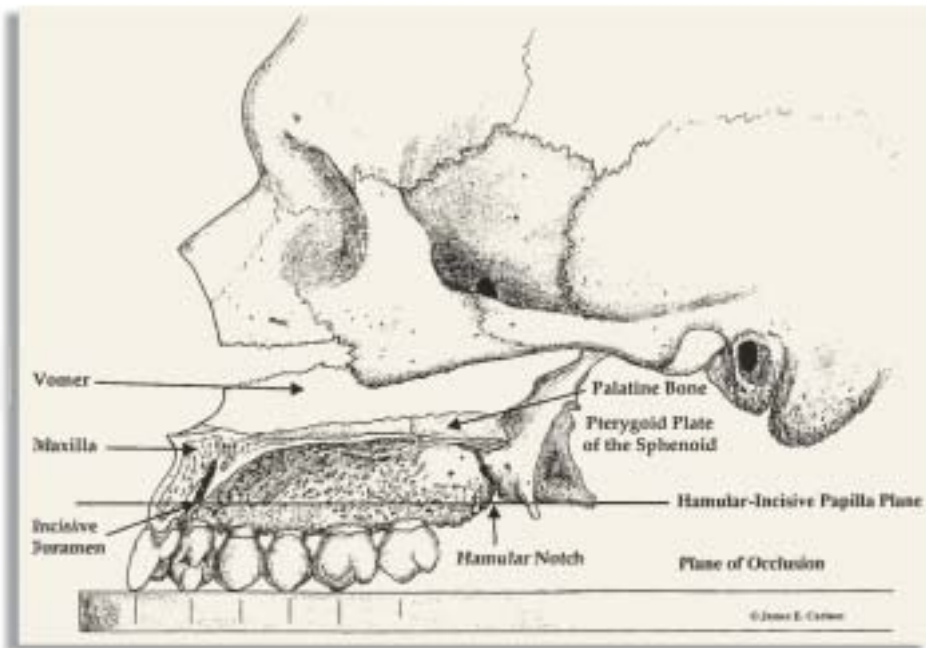


Figure 1

Note parallelism between H.I.P. and occlusion plane. Auditory meatus to nares is more than ten degrees tilted to plane of occlusion (Alar/tragus or Camper's Plane).

Discussion of Problem With Subjectivity

For decades, dentistry has used various ways to transfer the relationship of the maxilla to a working articulator. It is imperative that the models mounted on the articulator accurately represent the way the arch appears in the mouth in relationship to the pitch (sagittal), the yaw (horizontal) and the roll (frontal). This allows the dentist and technician to accurately determine how to build the case for full mouth reconstruction, rehabilitation of the edentulous and for aesthetic cases.

For ideal reconstruction it is important to create an occlusal plane that is horizontally and sagittally perpendicular as well as frontally parallel to the gravitational plane and hence to the long axis of the correctly postured body and jaws (Figure 1).

The latter will ensure that the occluding forces act along the long axis of the teeth and the physiologically relaxed and untorqued masticatory musculature is resolved ergonomically with the gravitational force acting upon the jaws as well as the torso. If the gravitational and musculoligamentous forces acting on the jaws should prove to be unbalanced due to a canted occlusal plane then the system destabilizes with ensuing resulting postural imbalance, muscle hypertonicities, degeneration of the masticatory system and eventual chronic pain.

The most common method used in dentistry for constructing prostheses that conform and equate with the muscular and gravitational forces has been the 'Face Bow Transfer' technique. The problem with the Face Bow Transfer is the involved subjectivity in deriving the facial planes

due to asymmetry of the auditory meati, and soft tissues of the face and nose. In Temporomandibular Disorder the ear canal on the disc displaced side can differ in angulation from that on the unaffected side. This may be verified by placing the little finger (digit minimus or pinky) in the ear canal while the mandible is moved from side to side or by tilting or rotating the head. Camper's plane extends from the superior border of the tragus of the ear to the inferior border of the ala of the nose is even more problematic in that the soft tissue points are highly variable particularly in the TMD condition from associated paresis and soft tissue inflammation. Also if one uses specific bony points of a skull it is readily seen that the meatus and the nares from several skulls is usually pitched at an angle of ten or more degrees downwards and forwards relative to the occlusal plane which gives some idea how grossly inaccurate the corresponding soft tissue points may prove to be. The Fox Plane which runs between the tragus and alar process is even more subjective as I (Dr Dickerson) soon learned during denture training at Dental School. The Fox Plane is subjective and can be a serious source of error when surface anatomy is used to produce head position or reference points used for determination of what is "level".

Given that the patient for cosmetic dentistry usually has TMD signs and symptoms it really begs the question of how reliable can the Fox Plane be in cases of facial paresis as in Bell's palsy from compression of the facial nerve posterior to the neck of the

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condyle as it emerges from the styloid foramen to enter the face. Relaxation of the mandibular musculature by TENS and hence decompression of the condyle will likely introduce a further error in the subjective assessment of the bilateral levelness of the Fox plane. This is not meant to be a criticism of the use of the Fox Plane by experienced NM clinicians who develop a feel for what is probably correct when subjectively deriving the plane of occlusion by the Fox plane but for the novice NM dentist it has no place in developing his skills at NM practice where bony reference points can be readily confirmed from cephalometric x-rays and/or skull catscan images which have to be taken for diagnostic purposes and where metallic reference points may be easily applied to an oral stent or the skin for comparison with bony references. (See figures 2, 3, 4, 5 & 6)

The students from Vancouver BC, Canada will bear out the following story.

On the back wall of the Sherrington Museum at UBC library is a wall hanging produced by an artist who

developed a postural problem half way through the procedure. The early part of the hanging was RELATIVELY well balanced but the later half was unbelievably distorted. The artist personally HAD NO IDEA that his subjectivity was affected. The reason the hanging was placed there is to remind us that subjectivity is 'a plague upon our house'.

We in neuromuscular dentistry strive for excellence by reducing subjectivity to the absolute minimum and apply objective constructs wherever possible.

The HIP Plane

Another option has been the use of the HIP plane (See Figure 2). This plane by virtue of three underlying bone reference points define the coordinates of the horizontal, frontal and sagittal relationships of any point on the skull, maxilla, mandible and dental occlusion. This is particularly significant because the bone references arise by growth extension from the base of the skull or sphenoid bone which is the only skull bone that connects with every other bone of the

skull. The two posterior reference points are the hamular notches just behind the tuberosity of the maxilla while the third is found at the anterior edge of the maxilla at the midline known as the incisive canal or the nasopalatine canal. The HIP is essentially objective because it depends upon the fitting of the three reference points to the horizontal, sagittal and frontal planes of gravity which are by definition perpendicular to each other thus fully describing the facial and mandibular coordinates relative to the gravitational field.

The hamulus (H) is formed by the fusion of the downward and posterior extension of the sphenoid bone, the pterygoid plates, with the tuberosity of the posterior extension of the maxilla. The incisive or nasopalatine canal (IP) begins at the upper end of the line of fusion of the pterygoid plates with the sphenoid and palatal bone at the sphenopalatine fossa and runs across the roof of the nasal cavity and then follow the nasal septum down to the incisive canal at the fusion of the palatine process and the premaxilla immedi-

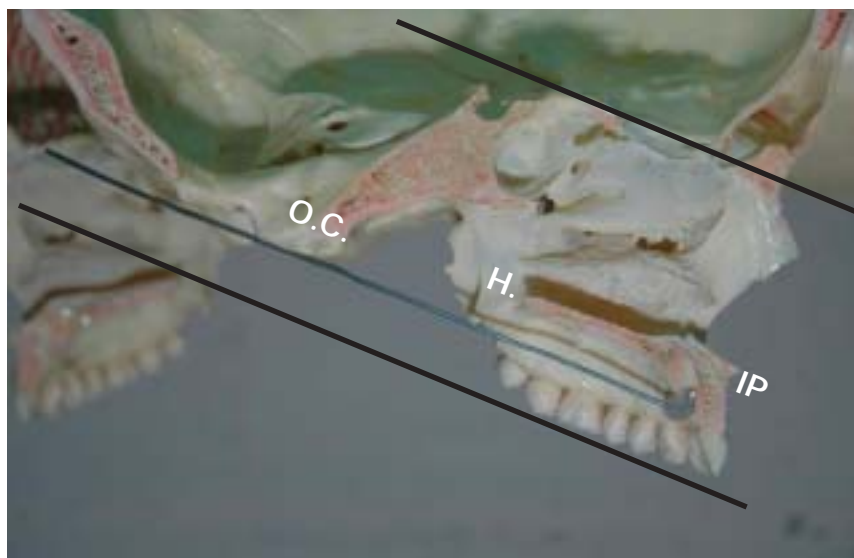


Figure 2

A firm wire is placed in the incisive canal and is readily seen to line up with the hamular notch and occipital condyle. Note the H.I.P. plane parallelism with the occlusion plane and the superior surface of sphenoid bone.



Figure 3 & 4

Placement of metallic markers on the H.I.P. reference points for incorporation into stent worn by patient in catscan or cephalometric X-ray images.

ately posterior to the maxillary central incisors. Thus the incisive or nasopalatine nerve is the superior and anterior analogue of the posterior palatine nerve, which passes inferiorly and anteriorly. Thus these two nerves form the boundaries of the maxilla, and delineate the downward and forward extension of the maxilla from the base of the skull and pterygomaxillary fissure therefore logically act as satisfactory bony references for the occlusal plane. Posteriorly the sphenoid bone extends through the spheno-occipital synchondrosis to the base of the occiput to form the joint between the cranium and the vertebral spine; the atlanto occipital joint. Thus the HIP extends posteriorly to include the occipital condyle.

In a related study by Dr. Thomas, 140 patients were subjected to I-Cat scans at LVI to assess the reliability of HIP for mounting casts on an articulator. It was found that when the orientation of the strained neck/skull posture is corrected by an inbuilt goniometer the reference points Hamular Notch

(bilaterally) and the incisive canal (IP) fitted a horizontal plane that passed through the clinically obtained H and IP as well as the base of the skull approximating the occipital condyles of the skull (See Figure 2).

Using this HIP plane as the base horizontal reference the plane through the inferior surface of the occipital condyle was generally placed at the horizontal level of the alveolar crest of the anterior maxillary teeth. The height and width of the maxillary incisors corresponded with the width and length of the anterior facet on the odontoid process superior to the upper surface of the axial vertebra and verifies the use of the LVI Golden Vertical for purposes of occlusal reconstruction (See Figures 7 & 8).

This corrected frontal or coronal occlusal plane conforming to the maxillary occlusal line fits a horizontal plane that passes through the atlantoaxial joint parallel to HIP plane. Thus the HIP is a stable reference plane for deriving the occlusal diagnosis and for purposes of occlusal reconstruction. Since the HIP plane

has been repeatedly shown in the literature to differ from Camper's, Frankfurt and alar tragal planes the latter should rarely be used and always with caution in reconstruction.

Finally using a maxillary stent with metallic BBs fixed to the H and IP points with the H point at the most depressed point posterior to the buttress of the maxilla and at the most inferior point of the palatal papilla catscans demonstrated that the reference points lined up perfectly on an horizontal plane with maximal error of less than 0.3 mm (See Figures 3,4,5 & 6). It is therefore clear that HIP provide excellent reference points for mounting the maxilla. No other reference points or symmetry planes are required unless the dentist and the technician wish to make changes in order to obtain aesthetic symmetry with the face but it should be understood that when the symmetry plane is favored over the HIP alignment that functional artifacts are being introduced that could have effects upon the posture of the maxilla ,mandible and neck.

Foundation of Study

For the past 6 years we have evaluated the HIP mountings of the diagnostic casts using a Symmetry Bite (Clinicians Choice). This involved over 500 cases. What we have found is that about 95% of those cases showed a level Symmetry Bite when placed on the HIP mounted diagnostic models, indicating that the ROLL aspect of the HIP mounting was correct (or matched the Symmetry Bite) 95% of the time. What was not clear for the other 5% is whether the HIP was inaccurate or the Symmetry Bite was not done correctly do to its subjective nature. However, this continual study did not measure if the PITCH aspect of the mounting was correct. It was just assumed that if the ROLL aspect was correct, then the PITCH aspect should be correct.

The problem with determining the accuracy is that one verifies it with a subjective bite. Trying to align the horizontal plane increases the element of human error due to head position, eyes being off, etc. However,

*We in neuromuscular dentistry
strive for excellence
by reducing subjectivity
to the absolute minimum
and apply objective constructs
wherever possible.*

using a vertical component of the Symmetry Bite – Clinicians Choice all the doctor has to do is make sure the vertical component runs down the long axis of the face (between the eyes, center of nose, and middle of chin). Because of the automatic 90 degree components of the Symmetry Bite the horizontal plane will always be 90 degrees to the long axis of the face, which is exactly where it should be. Verifying the horizontal axis is easier with any device that has two perpendicular arms and the doctor makes sure the vertical one is centered down the long axis of the

face. The problem with using only a horizontal plane is the patient's posture position can distort the reality of what level. This is why bubble levels won't work when used with horizontal components. The bubble level is dependent on the head being perfectly level with no head tilt, a subjective decision. One can level the Fox Plane and bubble but if the head is slightly tilted, the horizontal aspect (roll) of the mounted case will not be confirmed.

However the question with the HIP plane has been the sagittal aspect (pitch) of the occlusal plane that has not been quantitatively verified. The HIP plane helped eliminate the element of human error for the horizontal (roll), but no study that we know of has been done to verify the sagittal aspect when the horizontal aspect was verified as level.

Basis of Study: After completion of restorative treatment in LVI's Full Mouth Reconstruction Program, sagittal and frontal views of the patient were taken with the Fox Plane placed

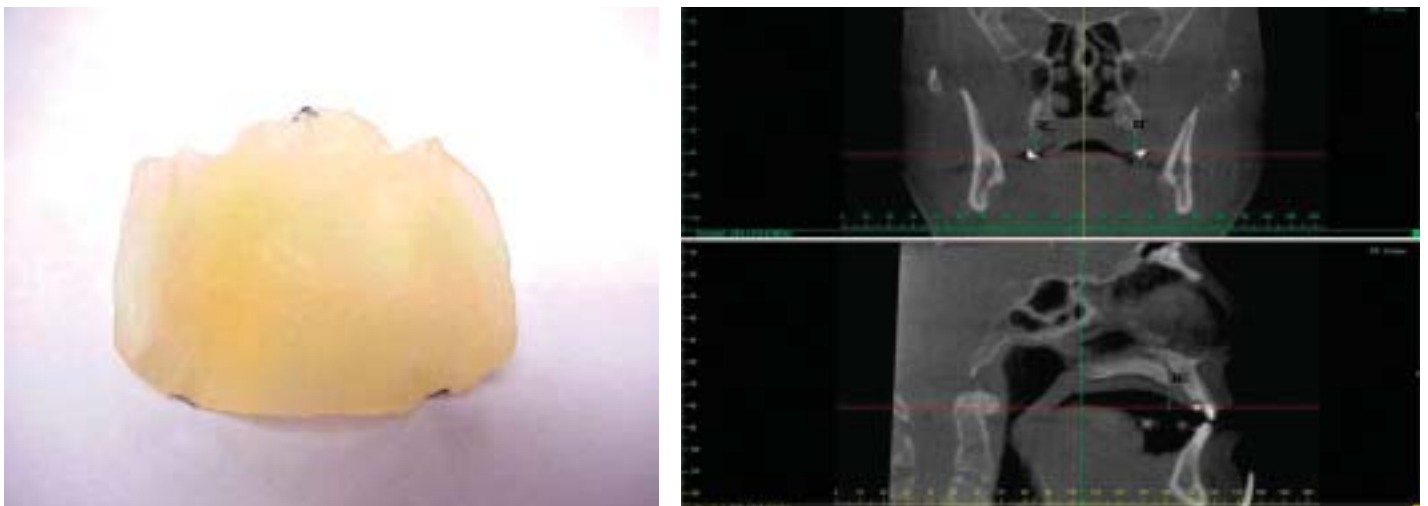


Figure 5 & 6

Trimmed BBs in stent as seen in relation to incisal canal and hamulus.
Note correspondence within fraction of mm.

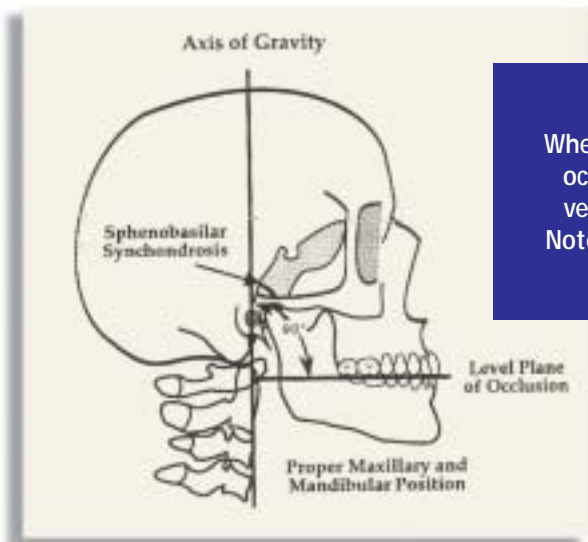


Figure 7
 When the H.I.P. plane is aligned with the horizontal plane of gravity the occlusal, optic, and otic planes are parallel and at right angles to the vertical axis of gravity passing through the external auditory meatus. Note the H.I.P. plane continues through the atlanto occipital joint while the occlusal plane passes through the atlanto-axial joint.



Figure 8
 Mounting of the dental cast on an articulator using a pin on the incisal point and a fence on the hamular notch.



Figure 9
 Frontal clinical view of occlusal plane (roll).



Figure 10
 Cast mounted on articulator corresponds to the clinical view of occlusal plane (roll).



Figure 11
Sagittal clinical view of occlusal plane (pitch).



Figure 12
Cast mounted on articulator corresponds to the clinical view of the occlusal plane (pitch).

against the maxillary teeth to verify final pitch and roll of the maxillary arch. Impressions were then taken of the patients' finished cases, making sure the hamular notches were verified in the impression. The models were poured and mounted on an occlusal plane analyzer using the HIP to mount the models. It was a blind study where the technician mounting the cases, using the HIP landmarks only, did not see the pictures of the patients from which the models were taken. 70 cases were evaluated.

This study undertaken in the Full Mouth Reconstruction Program at LVI was directed towards confirmation of a match between the occlusal plane (pitch and roll) on the articulator with that of the occlusal plane in the mouth using HIP references. This would thus indicate that the HIP is a viable method of transference of the maxillary model to the articulator. The accuracy of knowing how the finished case would appear is contingent on an accurate transfer of the models to the articulator. The study

was NOT intended to evaluate results of the cases. How the doctor and the technician build the case is irrelevant to the mounting procedure.

Because of the subjective nature of the person taking the photographs, some of the pictures were rotated to create a horizontal level plane as determined by the horizontal plane on the articulator or long axis of the patient's face.

It is noted that some of the cases had been constructed wrong, at least in the authors' opinion. It is also understood that there are aesthetic preferences and in reality no right or wrong answers. There are cases where they have pitched the cases up and others where they have pitched the cases down. Some of this is due to the lab's decision to pitch the occlusal table to divide the distance between the arches. Understand that none of those cases is a fault of the use of the HIP, as the latter's purpose is restricted to accurately transferring the model to an articulator accord-

ing to what is observed in the patient's mouth. How the labs and dentists built the cases after that is their decision.

Results

- Sixty-six (66) cases were evaluated. In sixty-two (62) cases the HIP mounting accurately represents the Pitch and ROLL aspect of the maxillary arch that exists in the patient. In four (4) cases the results are very close but inconclusive as it appears the Fox plane plate was not accurately placed against the occlusal plane on the models. This does not mean that these four were wrong or did not match the HIP, it just meant that an EXACT determination could not be made either way. In the author's opinions the model's pitch and roll did match the pitch and roll in the patient's mouth.

- In conclusion, with these 66 subjects, the HIP mounting procedure is an accurate way to transfer the models to the articulator and represent the pitch and roll that exists in the patient's mouth.

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Evaluating Your Preparations for Smile

DESIGN



TRISH JONES, RDH, BS,
is the Technical Advisor for Aurum Ceramic[®] LVI. She assists dentists, hygienists, and team members in advanced laboratory communication in aesthetic dentistry. She is a graduate of Southern Illinois University with an Associate Degree in Dental Hygiene and Bachelor of Science Degree in Health Care Administration.

There may be no greater predictor of success in a 'Smile Design' case than its preparations. Preparation-design affects the shade, thickness, shape and contour of the restorations, and therefore, the final result. Is it any wonder that one of the most common questions we get in the laboratory from dentists is "So how do my preps look?" Of course, we have the advantage of being able to view these preps from all angles on your models--360 degrees plus; without obstructions you face intraorally, such as saliva, lips, cheeks or tongue, to hinder our view.

How does the Laboratory look at a final impression model?

While actually fabricating a case will tell us where it may begin to fail, our prior evaluation of the preparations, after completion of the model work, allows us to trouble-shoot those challenges sooner rather than later. Our first step is to see if the arch is prepped—did the doctor reduce tooth-structure positioned labially or lingually outside of the desired arch? Second, we evaluate the overall reduction of each tooth relative to the diagnostic wax-up or model of the temporaries. Third, with matrices (taken from the wax-up or model of the temps), we can determine the actual amount of reduction that has taken place versus what is optimal (Figures 1 and 2).

It is actually quite simple for the dental team to follow the same protocol in your own office. It is standard protocol for all of you to have the patient come back 24-48 hours after prepping for a post-operative check-up. With that in mind, make sure you take a preliminary impression during the prep appointment. That initial impression can be poured and mounted in your office, so you can see what the lab would see. This allows you to modify the preps during the post-op check-up appointment before taking your final impression. While this involves a bit of extra work, it certainly makes the case more predictable for your patient, for the lab and for you, relative to scheduling and completing the seat appointment in an efficient fashion.

All-ceramic preparation guidelines for smile designs (8-10 units)

When preparing teeth for all porcelain restorations, it is important to follow a predictable protocol. For instance, when prepping, ensure even reduction of tooth structure according to desired anatomic form. This allows for proper thickness and adequate strength when designing and fabricating the restoration. If the preparations are left with enamel tags, sharp transitions or sharp internal line angles, be sure to remove them or round them off. Should undercuts be present, be sure to block them out. Sharp internal line angles left on the prep eventually become rounded or abraded as the smile design is being fabricated – as it is tried on and off the model. Ultimately, this causes the restorations to fit more passively on the model than in the patient's mouth. In addition, sharp internal line angles can affect the structural integrity of the restoration as it's being fabricated.

Margins should be definitive with a pronounced chamfer/shoulder (minimum depth of 0.7mm). Please avoid tapered margins, feathered margins or beveled shoulders as this poses great difficulty when fabricating all-ceramic restorations. Most margins for smile designs can be kept supra gingival. Sub gingival margin preparation becomes important for those cases where instant orthodontics is necessary; specifically for diastema closures or 'tooth repositioning'. It is critical for the margins to continue circumferentially (through the interproximals to the lingual) existing just gingival. The technician can then build the porcelain from the lingual

and reduce the possibility of black triangles as much as possible.

Please note, overall thickness of a restoration is indicative of how the chroma, hue and value is perceived. If minimum reduction is done, and the stump shade of the preparation is dark, show-through may occur. Thus, it is important not only consider preparation design, but color of the prepared tooth. If this does occur, there are several options that can be taken, such as ditching out the tooth or modifying the prep.

Utilizing the ACCES System

Aurum Ceramic offers its exclusive ACCES system (Advanced Cosmetic Communication and Esthetic System) to assist you in your smile design preparation. ACCES begins with a diagnostic wax-up of the case to your desired teeth and smile design shape. A stint of this wax-up is also included (so you can duplicate the wax-up as temporaries in the mouth) along with an incisal reduction matrix guide and a labial reduction matrix guide. Upon request, a demonstration prep model can also be fabricated. This model reveals how we would like you to prep for us to give you the results you have requested. (Figures 4, 5, 6, 7, 8, & 9)

If a demo prep model is not requested, please review the wax-up before preparing the teeth, as it will guide you as to whether a veneer preparation or a crown preparation is appropriate. If a case is returned to us, and is not prepped as the wax-up has indicated, it may be difficult for us to replicate the shape of the smile design in the wax-up to the

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final restorations. The wax-up is intended to be a template for final restorations.

Good Impressions

Clear, concise, distortion-free full-arch impressions are extremely critical. Review and evaluate your final impression before sending it to the laboratory and before your patient is released from the appointment. Bubbles, pulls or distortions are not desired. It is easier for you to re-take the impression while the patient is at the prep or post-op appointment, rather

than us calling you to get the patient back in for a new impression if we are not able to work with the original one.

Reduction copings can be requested if you are unsure that a tooth/teeth has not been prepared adequately. We will call you if we have any concerns with your impression and/or preparation design.

Being Predictable

It is easy for us in the laboratory to be critical of your preparation design. But, if you follow a general

protocol on each case, and take a preliminary impression, you will become more familiar with your own prepping techniques and get the results that you want. More accurate preparation means a more predictable case will be returned to you from the laboratory. And, best of all, that means that the try-in fit will be predictable; shade, shape, and contour will be as desired; and the case will seat with minimal adjustments--saving you time and enhancing your patient's dental experience.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8

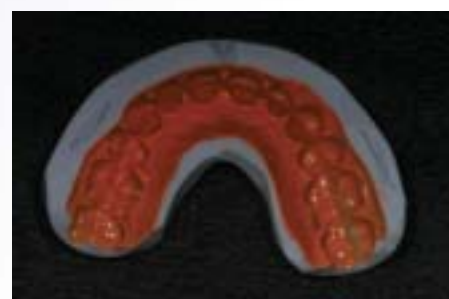


Figure 9

LIFE-CHANGING THOUGHT #14

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Michael Miyasaki DDS, LVIM

Dr. Michael Miyasaki is LVI's Vice President of International Operations. A 1987 graduate of USC School of Dentistry, he developed a highly successful reconstruction practice in Sacramento, CA. Following his passion to teach and mentor other dentists, he became associated with LVI in 1996 where he now works full time. Michael practices in the LVI faculty practice, lectures and publishes articles on the latest aesthetic, occlusion and materials available.

2006 LVI Courses featuring Michael Miyasaki include:

- Advanced Functional Aesthetics
 - Occlusion I
- Comprehensive Aesthetic Reconstruction
 - Full Mouth Reconstruction



PRODUCT REVIEWS

Coagulation And Cementation Made Easy

One of the benefits we extend to our qualified LVI attendees is an internet forum, and from the exchange of ideas and questions on this site there are two issues that I repeatedly see asked. The first one is how do you stop tissue bleeding without ending up with dark margins when placing aesthetic non-metal restorations, and the second one is how do we cement in restorations fabricated from zirconia.

One of the benefits we extend to our qualified LVI attendees is an internet forum, and from the exchange of ideas and questions on this site there are two issues that I repeatedly see asked. The first one is how do you stop tissue bleeding without ending up with dark margins when placing aesthetic non-metal restorations, and the second one is how do we cement in restorations fabricated from zirconia.

Let's begin to answer the first question about bleeding by saying that we should first try to avoid bleeding tissues. How do we do that? Here are two suggestions. First, have a proactive hygiene program in place in your practice. This means you and your hygiene team should not allow active periodontal disease to progress in your patients. You need to constantly look for the signs of periodontal disease and understand the various modalities of treatment. I see many doctors treating patients whose tissues bleed as soon as an instrument touches the gingiva. In the case of adhesive dentistry, this is going to surely make the case more difficult. The second way to avoid bleeding tissues is to keep your margins above, or at the level of the gingiva. How is this possible? With non-metal, all ceramic restorations there is no need to carry the margins sub-gingival to hide

dark metal margins, except in the case of space closure, decay or old sub-gingival restorative work that must be replaced. Imagine that, no sub-gingival margins, no cord packing, no bleeding, no hygiene problems. This is truly possible and is being done everyday by LVI doctors placing single or multiple units of restorations.

Okay, but there will be times when we have tissue that bleeds so let me offer two solutions. Typically we would use our soft tissue diode laser, the LVIase, which I've written about in a previous issue, to stop the bleeding, but what if you don't have a laser? UltraDent has a great new product: ViscoStat Clear. Over the years many of us have become familiar with ViscoStat, a 20% ferric sulfate viscous solution, and its effectiveness with bleeding tissue. One concern many had was when bonding. Did the use of the ViscoStat lead to the darkening of the margins of our aesthetic restorations? This had been reported to me by various competent clinicians. The use of ViscoStat does leave a dark coagulated precipitate that has to be rinsed off thoroughly, and the solution itself is quite acidic—meaning that leaving it on the tooth for prolonged periods could act just like over-etching a tooth compromising

the bond. Could this cause the discoloration through microleakage, and, therefore, discoloration at the restorative margins? I don't know, knock on wood, I never experienced the discoloration problem.



Figure 1.
ViscoStat Clear with syringe
and Dento-infusor tip

This brings us to this month's product, ViscoStat Clear, a 25% aluminum chloride hemostatic agent (figure 1), designed for use whenever there exists the chance of bleeding, such as: during the preparation of the teeth, while making the impressions, and during the placement of the restorative materials. Its viscosity allows for controlled application and there is no dark residue left after rinsing, making it ideal to use when creating aesthetic restorations.



Figure 2.
Bleeding tissue

ViscoStat Clear works well, and in this example I'll show what happened during the bonding of a fractured root. Figure 2 shows the use of the ViscoStat Clear in a situation where there was a very deep fracture of the root of a tooth with bleeding.

In order to bond we need to have a field clean of moisture and blood, so figure 3 shows the application of the ViscoStat Clear with the Dento-Infusor tip. I expressed the gel and with firm pressure rubbed the gel into the area that was bleeding until the bleeding stopped. The mechanism of action stated by the manufacturer is that the



Figure 3.
Application of ViscoStat Clear

ViscoStat Clear causes the collagen in the capillary ends to swell, thereby, closing them--avoiding the formation of coagulum and any hemostatic residue adhering to the tooth. This process means ViscoStat Clear will not stain the hard or soft tissues.

When Hemostasis was achieved, I rinsed the area with a heavy air/water spray, and was happy to observe that the tissue remained blood free for the remainder of the procedure (figure 4).

Those of you who find yourself packing cord during impressioning or restorative procedures, I recommend using ViscoStat Clear with



Figure 4.
Tissues without bleeding

Ultrapak knitted cord.

As we mentioned earlier, be sure to rinse off all traces of this hemostatic agent to ensure the best adhesion of the restorative resins to prevent the microleakage problems. And do not use this product on patients who report any known allergies to aluminum chloride, (which is this product's active ingredient), or other chemical hypersensitivities.

ViscoStat Clear comes in a 4-syringe trial pack, so if tissue bleeding is something that you see try this product by calling UltraDent for a free sample (800)552-5512.



MULTILINK AUTOMIX CEMENT

The second product we'll look at in this issue is Ivoclar Vivadent's Multilink Cement. At LVI, we prefer using aesthetic restorative materials, and for bridges we often use a zirconia-type restoration. Like a porcelain-fused to metal restoration there is a very strong zirconia oxide framework that is fabricated, and the laboratory places an aesthetic material over the top. I've had great success with zirconia-based bridges, but the question has been how to cement the restorations. Unfortunately, with zirconium being so hard, it is not etchable and this means the advantages of an adhesive resin cement is lost. Many doctors who have placed these restorations on short preparations, have reported the restorations have come off. But now there is a relatively new material, Ivoclar Vivadent's Multilink Automix cement. What makes this cement unique is the bond strength being

exhibited to both the zirconia oxide in the framework and the tooth structure. It is a dual-cure cement ensuring complete curing even in areas where a curing light cannot penetrate, and its self-etch design helps to simplify the cementation process and reduces the chances of post-operative sensitivity by reducing the technique sensitivity.

Although at LVI we still recommend the total-etch technique with a light-cured veneer-type cement for our porcelain restorations, Multilink Automix fills a need when cementing metal, metal-free ceramic, metal-free zirconia or aluminum oxide, and composite indirect restorations.

We have found Multilink very easy to use. In the zirconia restoration, Multilink Primer, using phosphonic acid technology, is applied to the internal of the restoration and dried. Multilink A/B primer is applied to the tooth, and the Multilink Automix ce-

ment is placed into the restoration which is sat and cured for 2-3 seconds allowing for the excess material to gel and this excess is removed before final curing, either with the curing light or by self-curing. With a film thickness of 18 microns you shouldn't have to worry about seating the restoration and with three different colors (transparent, opaque and yellow) you should be able to find a cement that allows your margins to disappear.

I hope this installment has helped with the two challenges many of us see everyday. These are two materials We've been using with great success, and I hope you find that they help you everyday in your practice. After the last issue of VISIONS, I was glad to answer your many questions that came by phone, letters and e-mail, and hope you keep them coming. Remember, if there is a problem you're having let me know and I'll try to find an answer.



*Take a look at these products.
After you do I'd love to hear your comments.
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mmiyasaki@lvglobal.com*

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THE WEATHERS' REPORT

IDEAL ENDO ACCESS PART 2



Arthur "Kit" Weathers, Jr. DDS

In part one of *Ideal Endo Access*, I said, "I believe improper access is the leading cause of rotary file breakage." I then suggested removing all full coverage restorations prior to entering the pulp chamber. And on teeth planned for a full coverage restoration, I further recommended reducing the occlusion to facilitate obtaining ideal straight-line access. Finally, I said that a good access opening should allow you to see all canal openings with one eye closed and without having to move your head or the mirror.

In this article, I will build on these concepts and introduce the "Guidance Groove" technique for further refining the endodontic access in order to simplify the preparation and obturation of multiple canals. Figures 1 and 2 illustrate the position of occlusal access grooves that are the corner stones of this technique.

When obturating teeth with multiple canals, excess sealer and gutta-percha often cover adjacent canals making their location and their obturation difficult. Use of the "grooved" access provides positive location and ease of entry into canals, even when visibility is compromised.

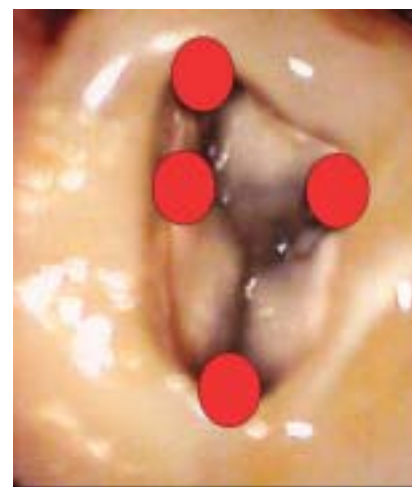
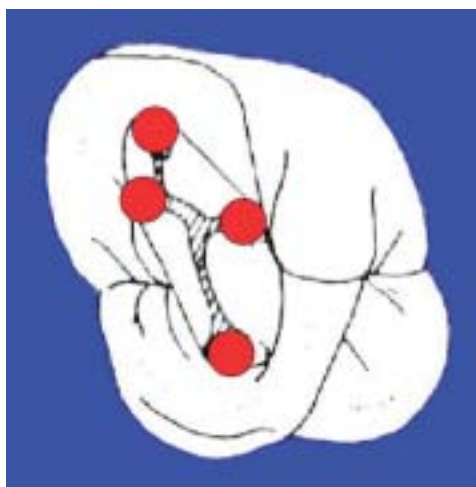


Figure 1 and 2
The red dots illustrate the position of the access "Guidance Grooves." These grooves cut into the sidewalls guide files, paper points and gutta-percha cones directly into canal openings.

THE GUIDANCE GROOVE TECHNIQUE

Use a bur with a safe-ended “pilot” tip such as the LA Axxiss bur by Kerr/Sybron (available from EndoSolutions) to create grooves that will guide preparation instruments and gutta-percha cones directly into canal openings. These grooves not only pinpoint the canal orifice, they ensure straight-line access into the upper portion of the canal. Creation of “Guidance Grooves” is quite easy, and makes the remainder of the endodontic therapy faster and safer, and more than compensates for the slight additional preparation time.

With the pilot tip of the LA Axxiss bur inserted in the canal opening, it is a simple matter to pivot the bur away from the furcation to create a groove that defines straight-line access into the canal. This groove is especially important when working with small, hard-to-locate canals such as the MB2 canal on maxillary molars (see figure 3).



Figure 3 – Locating the MB2 canal can be difficult, and consistently dropping into this elusive canal can be especially frustrating. Cutting a groove in the access wall using the techniques described in this article will make instrumenting and obturating all canals much easier.

Step One

Locate canal openings in the pulpal floor. (Helpful Hint: There are natural depressions in the pulp floor; and if you look carefully, you can see fine lines connecting the canal openings.)

Step Two

Place the guide tip of the LA Axxiss bur into the canal opening and using the tip as a pivot, cut away from the furcation until the groove points straight into the canal.

Step Three

Enjoy the easiest and safest endodontic access you have ever produced.



Figure 4– Note the separate grooves in the upper right hand corner of this access opening leading into the mesio-buccal and the MB2 canals. These distinct grooves simplify instrumentation and obturation, as they provide positive differentiation between canals.



Figure 5 – Shows a file in the canal prior to creating a straight-line approach by grooving the access wall.



Figure 6 – Illustrates straight-line access into the mesial canal

TECHNIQUES FOR LOCATING ELUSIVE CANALS

Before you can apply the Guidance Groove technique to root canals, you must first locate the canals. This can be the most difficult phase of endodontic treatment; second only to obtaining and measuring proper working length. To keep life simple, I recommend being very selective in your choices of cases to treat. (At our Root Camps, Dr. Michael Goldstein recommends referring all cases where the canals cannot be located and probed in less than 10 or 15 minutes.)

One of my favorite techniques for visualizing canal openings involves using the Oral Light from EndoSolutions to transilluminate the pulp chamber. Turn off the dental light and place the tip of the Oral Light at the gingival level beneath the rubber dam. This will cause the pulp chamber to “glow” and the canal openings will appear as small black dots. (After the canals are instrumented and cleaned, they will appear to “glow” even brighter than the pulp chamber during transillumination.) The use of magnification with loupes or a microscope is also highly recommended to help locate canal openings.



Figure 7 – The Oral Light from EndoSolutions (800-215-4245), greatly facilitates canal location. It's also useful for diagnosing cracked teeth.

ULTRASONIC TIPS HELP LOCATE ROOT CANAL OPENINGS

Locating the illusive MB2 canal can be extremely challenging, but the use of ultrasonic tips such as the BUC-2 and BUC 2A (Kerr/Sybron) greatly simplifies the process. There is an art to using ultrasonic instruments to uncover tiny canals. It's most important that you don't push hard on ultrasonic tips or cutting will be compromised. Too much pressure will rapidly dull the tips, so a smooth, gentle, wiping motion works best. I also like to cut dry for better visibility during the canal location phase. Finally, you can look for the natural grooves on the pulp floor, and follow “nature's roadmap” to facilitate locating the canals.



Figure 8 – Ultrasonic tips such as this series from SybronEndo (800) 346-3636, make locating and initial penetration into root canals fast and efficient.



Figure 9 – Tissue between canals is easily removed by lightly wiping the isthmus between the canals with an ultrasonic tip until sound dentin is reached.



Figure 10 – Tissue between canals has been removed exposing the sound dentin.

ARTHUR “KIT” WEATHERS, JR. DDS

For more than thirty years, Dr. Kit Weathers has lectured and published papers on technologies, products and processes designed to simplify the practice of endodontics. Dr. Weathers pioneered a simplified system of nickel titanium files to enhance patient comfort with a single visit endodontic procedure. His popular Endo Root Camps presented at the Las Vegas Institute and at the C.E. Magic! Multi-media learning center in Griffin, Georgia, offer multi-day, hands-on training to improve dental techniques while explaining the theory of “Endonomics”, the economics of endodontic case management. Dr. Weathers is the Director of Endodontics at the Las Vegas Institute, and he may be reached at:

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PASSION

ARROWS

Patients



AND YOU!

MATT BYNUM, DDS



PART 2

ARROWS

They come in a lot of different sizes, and they come from a lot of different directions. Some of them hit and bounce off, while others hit and stick. Seldom will they fly at you from the front, and predominately they will fly out of nowhere and hit you in the back. No matter which direction they fly from, the one single constant with each and every arrow is that you have done something to deserve it.

That's right, I said deserve it! Now it doesn't take much to make one fly, and by no means am I saying that you may have done something wrong. Understand that it takes only one action beyond status quo to peak the curiosity and the intent to shoot. If you are reading this article, I would venture to guess that you have had your fair share of arrows shot your way. You see, status quo in dentistry doesn't lend itself to progressive thinking nor does it encourage advances in progressive procedure and education. LVI Visions and its readers are searching for answers through perpetual education and development. So by definition, if you are reading this you are not in any way considered status quo.

Arrows come from basically two sources: Dentists and patients. Each of them has their own types of arrows, so let's evaluate them individually. Dentists have basically three types of arrows they shoot: jealousy, anger, and fear.

JEALOUSY

This is the arrow that stings the most while being the one which is most often released. It is also the arrow that makes the least amount of sense. Why would anyone be inclined to tear down another colleague for the simple and mere fact that they are doing something different or better than another? After all, each of us controls our own destiny and success, don't we? It is to be taken upon each of us as individuals to desire change and self-improvement. Yet, those around us only see what is happening with others more than themselves, that they cannot help be overcome with the feeling of jealousy.

This defeatist attitude surrounding our inherent nature leads to the dissemination of the profession and the camaraderie that should surround us. I always thought our profession was supposed to be different. My exposure to LVI and those who choose to learn and teach there has always been positive. In my seven years of exposure to this place, I have yet to come across this traditional mindset. My encounters have always been filled with encouragement and offers of assistance from those who have "been there and done that". There is no casting of stones or shooting of arrows. Maybe it's just that those who come here hold themselves in higher regard than others; or maybe it is just that they have open minds and hearts as they search to find their way on this journey.

So how do you counter the arrows of jealousy? Well, in my opinion you really can't. Those that choose to shoot in this manner really cannot be reached by someone such as you. It really must be found by an act of attrition. What I mean is that those individuals

... maybe it is just that they have open minds and hearts as they search to find their way on this journey.

must realize that they too can have what you have or do what you do if they only want to. Remember that no matter what you think, you are always right. If you think you can't do something than you can't, and if you think you can, you can. What usually happens to those individuals is that they begin to see and hear more of what it is they are jealous of, and they begin to change themselves. Along this path they soon realize that the result is that all who participate, benefit in some form or fashion.

ANGER

This type of arrow can come from the front, but more often than not comes from the side. There are very few people in the world who address confrontation directly, rather, they would insist on talking to others and shooting their arrow indirectly through other parties. The anger arrow usually stems from a break in core philosophy or belief. Take for instance, the camps of occlusion. You basically have three types of followings: Centric Relation, Neuro-Muscular, and Centric Occlusion. Due to the nature of their individual belief, the feelings and emotions that stem from this belief are strong. When faced with alternatives or a tendency to stray from tradition, one becomes defensive and angry.

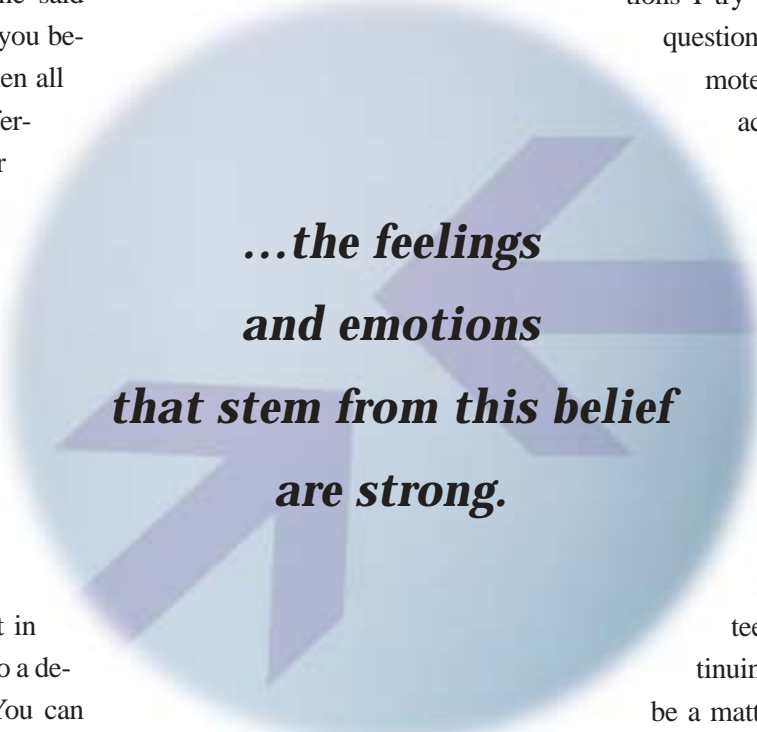
The Centric Occlusion people can't really feel one way or another because they have chosen not to participate in this higher form of learning or education. They have chosen to play safe and take the approach that "if it's not broke, don't fix it" and if it needs fixing beyond the current bite condition, than refer it out. The Centric Relation people are more inclined to be emotionally distressed and angry over core philosophy because this has been the mainstay in teaching and higher occlusal education. These individuals have far more at stake emotionally, than those who seem to free their thinking and open themselves up alternatives.

Think about this: All of your teachings and knowledge has been placed in an occlusal philosophy that has been set by tradition as “the way it is to be done”. The explanation given by the educators is that “this is always how it has been done” and from that teaching you put your faith and your reputation on the line. Because someone said that was the way it was to be, you believed and you performed. Then all of a sudden this buzz of a different philosophy comes to your attention and you have to face the information as it is handed down to you. Let’s say you try to implement it and let’s say you see changes in people beyond what you ever had seen before. Excuse it as anecdotal, but the fact that you see it works is proof positive.

Now the anger begins to set in because you are now forced into a decision which is unpleasant. You can make the change and face the reality that you may have been doing it wrong all along, or you can continue treating as you have been taught knowing that it may be wrong. Either way you are forced to decide and admit to yourself one way or another that there is something different and potentially better for you and your patients. Admitting you may have been wrong is never tolerated well. This is where I believe the anger arrows to fly. It is a fight or flight kind of scenario. Few choose to fight on the front lines, but many choose to fight and shoot from the side. The next thing you know, “he

said, she said” ensues and the anger and gossip begin to fly from most directions without merit.

So how do you handle the anger arrows? Well, in my opinion you have three choices: fight back and encourage the anger; fight back through education



*...the feelings
and emotions
that stem from this belief
are strong.*

and performance; or do absolutely nothing! Fighting back and aggravating the situation never leads to amicable agreement. In fact, anger is never conducive to learning so to further aggravate a situation as this would be futile. Doing absolutely nothing is the path of least resistance, yet brings no further resolution to any known struggle. However, I do understand getting to the point where turning the other cheek to such arrows becomes more prevalent simply because the fight and the message often falls on deaf ears. Be-

cause of this, sometimes doing nothing is just easier.

What I choose to do is to fight the good fight with those who choose to listen and engage. I always do my utmost to discuss and converse as opposed to finger pointing and argument. During any and almost all conversations I try to educate by referencing questions and answers that promote thought as opposed to reaction. More importantly, I continue to do what I do best. I continue to build relationships, do great dentistry, and promote health through modern, progressive technique. The message is being heard. Sometimes the message takes a bit to be heard by the right people, but I guarantee it will be heard. By continuing to do this, it is and will be a matter of time before those in opposition come around and have to confront what is the keen obvious.

FEAR

The arrows of fear don’t really come from the front or the back or even the side. Fear strikes a lot of people, and the reaction is to run and hide. Just like in the movies, when running and hiding doesn’t quite work, one has to lie down and die or fight. For this reason, the arrows of fear are often shot up in the air in reckless abandon and left to fall where they may. When they

strike, they often hurt, but the reality is that they often miss and land around us causing those near to take notice of their proximity.

People fear the unknown and as dentists and professionals, we probably fear the unknown even more than most. I'll give you a few examples. Consider when monthly numbers aren't quite what they should be. Who is the first to be blamed? Do you blame you first? Doubt it! The team member in charge of the schedule is usually who first gets the implication. But the reason the blame gets cast is because of the fear of expenses not being met. So the arrow is cast in the direction of the team member right? So now let's apply that to the profession.

Dentists, by tradition, are fairly closed minded people who do not like change. What we were taught in dental school is more often than not, considered gospel by many. While the majority of those reading this magazine know this not to be true, it is rampant in the profession. Why? Because of the unknown. What will happen to all that porcelain? How will it stay on there? Is there such a thing a too white? How can you open someone's vertical like that? These are all questions and examples of the unknown that we fear. All that we truly have at our disposal is the word or the performance of someone else's expertise. If it has been done before, it can probably be done again!

After all, isn't that what the nay sayers have to back their justification? The fact that someone else has done it, and done it successfully, means that it can be done. Yet, the fear of failure or the fear of rejecting what is considered normal sets in. Once it has a chance to

take hold, anything out of the range is considered unknown. As a result, fear comes next and the arrow is shot up as one runs away not knowing what will happen. Can you imagine the number of arrows someone like Bill Dickerson or Ron Jackson has taken for speaking out loud about what they do and have been doing for so long in adhesive dentistry? How is one to handle these arrows of fear?

Well, as has been discussed, the fear comes from the unknown. One way to eliminate the unknown is to expose it! We at LVI are consistently trying to expose as many as will listen to the concepts and teachings so it is not this elusive idea that others think is make believe. The methods and teachings are real. They are also supported with actual clinical experience, success and research. Just the sheer numbers of individuals who have passed through the doors and opened themselves up to learning and listening have allowed a break in the dam. Opposition stands to scare others into believing that alternatives do not exist. Lend a hand and do your part to expose those people to the alternatives. Encourage others to put down the bow and not shoot the arrow based on fear of the unknown.

Arrows fly from others who are not in the profession as well. Those we have contact with everyday, the ones we hold so dear to our hearts are also guilty of shooting arrows. We deal with these arrows differently as they are shot more frequently and directly at us. The arrows I am referring to are from patients. Patients have an entirely different set of arrows they shoot: blame and appreciation. How we choose to deal with these may make or break our success and reputations in the community.

BLAME

The arrows of blame that patients shoot often stem from poor dental work or poor dental health. Either way, there is seldom acceptance from the patient that they had anything to do with it. More often than not, you are the recipient of the arrow. If its poor dental work and the patient has been in your practice for some time, the question is why you didn't see it sooner? If the patient is new, the question of how are you going to fix it comes in. Let's face the facts here. Dentistry is done differently all over the world. It's not so much a regional event or teaching, but strictly a skill level issue based on office performance and atmosphere. The average dentist sees about 20-25 patients a day, and expects there to be more waiting. While there is never intent to do bad dentistry, the fact that time does not allow one to perform optimally always exists. As a result, the dentistry is not perfect or even sound.

I am by no means saying I am perfect, as I too have had to replace some dentistry. However, I can always go back to the compromise which put me there in the first place, every single time!

Another thing that patients seem to forget is the state of dental health they had when they received the dentistry or even now. How compromised was the situation? Were they able to have the proper procedure performed to best suit the situation? Were there circumstances beyond what we currently see now? These are all questions that arise when we see this in the office. However, the arrow still flies be-

cause most will not accept any responsibility. So how do you deal with this? What do you say?

Certainly one avenue that I see all too often, is for another dentist to place blame on the previous dentist. What we cannot ever do is judge someone for the work that was done without truly knowing the situation that surrounds the event. If the dentistry is poor and was placed under duress from the patient or for time, than I have no sympathy for the previous dentist, just as I have no sympathy for the dentist who refuses to learn about treatment alternatives. Now if the poor dentistry was placed as a compromise to a situation and was knowingly performed in this fashion, than everyone had their eyes open at that time! While I still am not too appreciative, I can understand how it might have been done.

To answer with finger pointing is wrong! We cannot point at the dentist because this is what plagues our profession currently. We also cannot point at the patient for fear of the patient denying treatment and leaving the office. However, using correct verbal communication and phrasing that is non-threatening and non-directive, we can accomplish the desired result with minimal scathing and interruption to progress. It is easier to point out “potential” or “possible” events that have lead to the current state, but it is even more beneficial to point out that the direction you are currently heading is upward! Do not take the arrow for the team; instead use the arrow as a means of education and enlightenment for treatment acceptance and procedure.

APPRECIATION

This type of arrow is actually very fun to play with. I know we all have had this scenario come up before: “Hey doc! I bet I paid for that Mercedes out there in the parking lot, huh?” Before the patient can stop his sentence, the majority of us begin this long dialogue about value and worth and hard work. Come on! We’ve all done it. But no more! These are the arrows that patients shoot from the hip to gain recognition, acknowledgement and appreciation from you for them giving you their business. While we all should believe that we are indeed the best around, the fact that there are about 150,000 dentists brings the reality home that people have a choice. Often dentists feel guilty about these arrows and feel the need to defend their success by going into discourse.

You would die if you heard some of my responses to these arrows. I used to think the same way that so many do, but I realized that they are just “jabbing” at you and poking a little fun your way for taking their money. Everyone wants to feel wanted, and even though you had nothing to do with the dental scenario that lead to your intervention to restore and fix the situation, you are reaping the benefit financially. This arrow comes right at you and in your face also. I mean, no sooner could you be resting the patient back when all of a sudden they shoot that arrow right at you as they stare into your eyes! What do you say? What do you do? Do you turn red with anger or do you laugh it off and ignore it?

I’ve come to realize that while money or perceived success is the main target of this arrow, that

***Here is the reality of life:
There are those that can,
and there are those that can't.
There are those that try,
and there are those that don't.***

patients have needs as well. Rather than avoid it or fight it next time, acknowledge them by saying “thank you” or “you bet you did”. Watch as the moment turns to laughter and the relationship is moved from business acquaintances to a certain level of friends instead. Have fun with this arrow, because it may be the only one you encounter that doesn’t really stick or hurt!

Here is the reality of life: There are those that can, and there are those that can’t. There are those that try, and there are those that don’t. No matter what happens, destiny lies in the hands of the person who searches for it. The blame game will always be present and the arrows will always be in flight. If and when they land or stick, and how you choose to react to them will dictate the course of events. I say “fight the

good fight”, but fight it with energy and enthusiasm and not anger. Fight not so much to come out the victor, but to come out as the one to influence others. And never, ever be ashamed of your stance, your selections or your success. Arrows are only short lived and quite often easily combated. Stay positive, stay the course, and stay yourself! In the end, the spoils always come to the victor!

Dr. Matt Bynum is a 1995 graduate of the University of Iowa, College of Dentistry. He lectures internationally on various aspects of aesthetic and reconstructive dentistry, practice management, personal and practice motivation, and team building; and has published numerous articles on these subjects. Dr. Bynum is a member of the South Carolina Dental Association, American Dental Association (ADA), the American Academy of Cosmetic Dentistry (AACD), and the IACA. Dr. Bynum is a clinical instructor and featured speaker at the Las Vegas Institute for Advanced Dental Studies. Dr. Bynum is currently Co-Director and Co-Founder of the “Achieving Extreme Success” lecture series. He is a consultant to a number of dental manufacturers and laboratories in the area of new product development and clinical testing of materials, and serves as a coach/ consultant to dentists and dental offices across the United States in practice development and success. Dr. Matt Bynum maintains a full-time private practice in Simpsonville, South Carolina emphasizing aesthetic and restorative dentistry.

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Ask Heidi

Dear Heidi,

Q

I am really hoping you will answer my question in your column! I am a hygienist in a very high tech, cosmetic dental practice. Our doctor has created an office atmosphere that is hard to top. When our patients come in they always comment on how beautiful the office is, and how we have the “very best of everything”. We truly do. Our doctor has every gadget and device you can think of on the market today. But (you knew there was a “but” coming, didn’t you?) I have some antiquated equipment. I am not talking about my operatory...that is just perfect. I am talking about my instruments. It just seems to me that the dental industry forgets about all the hygienists out there when it comes to everyday scalers and basic hand instruments. Ok, so you are wondering where this is going...well, I am tired of spending so much time sharpening my instruments. They get dull so fast and the handles are not very comfortable. Yes, I use ultrasonics, but hand instruments are still a necessary part of my regimen. Can you make any suggestions? I will put this article on my doctor’s desk (if you print it...no pressure!) so that he is sure to buy them for me!

Thanks in advance for your advice,
C.K.
Dallas, Tx.

Dear C.K.,

A

I decided to answer your question because the pressure was too great! Actually, it is a great question. I know it seems sometimes that dental products are all marketed to the dentist...perhaps this is because the “buck stops with them” figuratively and literally in your dental offices. They usually are the ones to put the brakes on or off when it comes to what is or is not spent in the office. The reality is there are many new and improved products and instruments that come out each and every year for hygienists. If you are really interested in seeing some of those products, you should attend a large dental meeting that has many exhibitors. Then you could walk around and see all the products first-hand.

It is very true that hand instruments are well utilized every day in the dental office and that you need ones that last long. Problem is, it is not good “business” for manufacturers to make a product that lasts forever. If you had a scaler that lasted forever, the company that made that scaler would only reap the financial benefit of the initial purchase. You would never need to order from them again.

Well, you know the old saying, “nothing lasts forever”? That’s true...ALMOST! I have found a company that has just what you are looking for. They carry a line of instruments that have amazing strength, are extremely comfortable, and do not need to be sharpened. The company is American Eagle. They carry a line of instruments called XP Gracey Currettes...and they are out of this world. In fact, I think they are seriously made from something that is “out of this world” because they are so strong and sharp. I am not sure what the coating is on these instruments (it’s a big secret), but they sure work! We took 2 sets of scalers and put them through the autoclave 200 times and used them over and over again on root planeing(?????? spelling?) and scaling patients visit after visit. It was 8 months before sharpening was necessary! They are extremely sharp, light-weight and the handles are comfortable. My suggestion is that you purchase a set and see how you like them. Go online and check them out at www.am-eagle.com. I think you will be as surprised as I was.

Let me know what you think,
Heidi



Dear Heidi,

I am very proud of our office in that we all, myself included, stay on time and keep to our schedule. I personally feel that time is the most valuable thing each of us has. Our policy is that we will not make a patient wait more than 10 minutes from their appointment time. Truthfully, this works out 90% of the time. The only time we have issues is when a procedure takes longer than the time allotted or when an emergency arises in the office. What do you suggest that we do for our patients when these things come up? I want to show them that we sincerely care about their time.

Respectfully,
Dr. G
Chicago, Il.

Dear Dr. G.,



I loved reading your question because it showed me some wonderful things about you and your office. You really seem to care about your patients and how important their personal schedules and time are valued.

You are absolutely right, there are times when we just can not help but run late in our offices. Sometimes a patient just needs some extra time with us. Whether it is because we are doing a procedure or just talking to them, it does not really matter. Fact is, we try to create an ideal schedule but that does not always fly.

I think your patients probably are already grateful that you do not make them wait when they arrive on time for their appointments. It is nice that you want to go the extra mile for them when things “happen”.

I have a few suggestions for you. First off, verbally acknowledge that you respect their time and are sorry for any inconvenience of being late. Either you or a team member can do this. Just the acknowledgement can mean a lot.

Second, if you are going to be running really late you may want to offer to reschedule their appointment. Have one of your team members let them know how much longer they will have to wait and offer them \$50 credit on their account if they decide to reschedule. This is a win-win situation for both of you. For you, you will get back on track with your schedule by not “squeezing them in” and for them, they will get the appropriate time for their procedure, not feel like you are rushing, plus the \$50 goes a long way in showing them that you think their time is valuable.

Third, if it is a short delay and you know you can still work the appointment in...give them something small to show how you value their time. What I do in my office is give a \$10 Starbucks gift card. There is a Starbucks very close by, and if we tell them how long the wait will be, they can go right over, have a latte, read the paper, etc. and then come back for the appointment.

Hope these few suggestions help. You are already on the right track!
Heidi



Dear Heidi,

We have weekly team meetings and I dread going to them. My team seems to complain about everything and everyone. When I leave the meeting, I feel little is resolved and sometimes, quite frankly, they get me down. I try to keep the atmosphere positive, but I am outnumbered by my team that sometimes gangs up on me with things they are frustrated with.

Any suggestions for making this a better situation would really be appreciated as I am about to stop having them.

Dr. M
Houston, Tx.



Dear Dr. M.,

A

I have been there and I feel your pain!! Whatever you do, try not to give up on these meetings. These weekly meetings are so important for all of you to get in sync. They need to be informational, productive, and fun as well.

I'll share a personal story with you. I was going through the same thing at my office. Every meeting was a session to complain and no solutions were offered. Then one day, my hygienist complained at the meeting that the "meeting itself was upsetting her because it cut into her productive time"...I was at my wit's end. So, I thought about it and decided to do something about it or I would go crazy!

The following week I held the meeting at 1pm (our lunch time), salads and pizzas were brought in and I informed the team that once a week we would have a "team lunch"...I would pay, and the only rule was, come to the meeting with a written itinerary for the meeting. In the back lab of our office we hung a piece of paper that had three columns: Date, Name, and Topic. If you filled out the topic, you were responsible for leading the discussion on it and you had to offer at least one solution as well. If any "problems or complaints" were stated and there were no solutions given, they would not be addressed.

Man, this changed our team meetings big time. Not only did everyone give a second thought about what they wanted to complain about, but if it was a valid concern, they came up with solutions and presented them. Talk about productive...these meetings got better and better. Not only did everyone take a part in active discussion, but the menu seemed to improve over time as well! We did more bonding together in those meetings than ever before.

You don't have to follow what I did, but just think of creative ways to get your team thinking in a positive direction.

Your meetings will definitely have a change of pace,
Heidi

Dr. Heidi S. Dickerson is the Vice President of North American Operations. She is a 1994 graduate of the University of Illinois School of Dentistry. She had a private restorative practice in Philadelphia, PA before relocating to Las Vegas to accept her full-time position at LVI. Due to her commitment to excellence, spending countless hours mastering aesthetic and restorative dentistry, including the LVI curriculum, she changed her aesthetic-restorative dental practice into a neuromuscular based practice. Dr. Dickerson instructs, lectures, and motivates LVI students through their curriculum, enhancing their educational experience. She also practices in the LVI Faculty Practice.

Send any of your clinical questions to her at:

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The Life-Affirming Practice


How committed are you?
Are you ready for the first step?

Affirming



by David Philip

The journey that we undertake as dentists varies from individual to individual. As dental practitioners, we make a commitment to providing our patients with quality treatment in an ethical manner as we exercise the skills we have acquired along the way. The knowledge that we glean from continuing education, postgraduate studies and exposure to leaders in our profession inspires us and lets us see the extent of our potential and gives us the ability to grow as human beings. Our profession provides us with major satisfactions: financial security, if we handle our affairs properly, diagnosing and treating pain, providing our patients with healthy mouths, and increasing our patients' feeling of self-worth by using the many techniques at our disposal -- particularly cosmetic interventions.



Twenty years ago after a major health breakdown, I made a commitment to becoming as skilled as I could possibly become in the field of cosmetic dentistry. This required a re-evaluation of the kind of dentistry that I was practicing and the satisfaction that I was deriving from it. I resolved to discontinue placing "black restorations" and sought to arm myself with as much knowledge in the field of adhesive dentistry as was available, then to apply this knowledge for the benefit of my patients.

The Greek philosopher Socrates said 2400 years ago, "The unexamined life is not worth living." We should be prepared to re-examine our own lives periodically. There are times when the necessity of this re-examination is thrust upon us. The examination of my own life and the way I practiced dentistry occurred after a second bout of open-heart surgery. Shortly after this came the death of our precious son, John, who was a helicopter pilot. He was 26 years old and was killed as a result of being caught in bad weather on a mountainside in northern British Columbia. The soul-searching that occurred for my wife, Chris, and me in looking for meaning during this existence that we all share was extensive and intensely painful. I would not wish this tribulation on anyone. We wrestled with many options and decided that we should open a boutique office limited to cosmetic dentistry. It has proved to be our salvation. Chris

retired last year as our office manager but during her time in the office she created a welcoming atmosphere and a friendly business-like approach that our patients appreciated. Their ready acceptance of treatment plans accrued from this.

I share this with you as a preface because I have practiced dentistry for almost half a century. The winds of change in our profession are blowing stronger and the necessity for acquiring knowledge that can be applied to provide us with a life-affirming philosophy towards our profession is becoming increasingly intense.

How committed are you? No one can, nor should, second-guess anyone else. Are you prepared to re-examine your life and your attitude towards your profession? This is a vital personal, philosophical question. It is one that must be asked.

When we graduate from dental school we have an information overload and approach our patients with some trepidation as we offer them treatment plans with the knowledge that our decision-making processes may be limited as well as our skill level. Are we prepared to examine our goals and skills and increase our knowledge and invest in our education?

When we have been practicing for a few years the process may be a little easier. We have acquired and honed skills with which we are comfortable. Can we say honestly, however, that we are prepared to re-examine our lives? Are we prepared to increase our skill levels by seeking quality education?

When we are in the twilight of our careers our comfort level may be mis-

placed. We should be prepared to continue to acquire further knowledge and hold it to the light and scrutinize with the knowledge of the many years we have had in practice. Are we prepared to accept change and apply it in our offices and, if possible, share it with our younger colleagues?

The Life-Affirming Practice demands, then, the re-evaluation and re-examination of our lives periodically. Our goals change, our financial situations may change for better or for worse or our life experiences may dictate to us the direction in which we must proceed.

Are you committed? How do you prepare yourself? Get a game plan. Write down your goals. Here are some ideas that you might find stimulating.

Many of our colleagues seldom open a book after they graduate. Start a library with an emphasis on books that will inform you in the specific area of dentistry in which you are most interested. In my case it was Cosmetic Dentistry. Subscribe to journals. Learn to use the Internet.

It is important to join an organization dedicated to the education of the membership. The International Academy of Comprehensive Aesthetics (IACA) is worth considering. They will be holding a major meeting in Montréal Canada in the fall of 2006 which will be well worth attending. Another organization of note, with a large membership is the American Academy of Cosmetic Dentistry. They will be holding their annual meeting in San Diego in May of 2006. Join a study club or organize your own study club.

Many of you who are reading this will be very familiar with the Las Vegas Institute and will have implemented many of the recommendations that you have acquired in the course of your education there. You are the lucky ones. The skills you have acquired, however, have set you apart. You are already well down the road to enjoying a Life-Affirming Practice.

I would like to share with you some observations and truisms that will allow you to build and enjoy this Life-Affirming Practice.

In any profession there are small minded individuals and it is unfortunate when professional jealousy rears its ugly head. Be prepared for it.

Keep an open mind and do not allow restrictive forces to dictate to you and stop you from achieving your goals. This is particularly important with your outreach to the public when you advertise and use the media to help disseminate your skills and philosophy.

Beware of dental politicians. There are a few members of our profession who go beyond reason in attempting to justify their existence at the expense of other members. They become politicians or pundits and delight in trying to stop or slow down legitimate progress in the acquisition and dissemination of knowledge and its application.

Do not be afraid to tackle the authority of the dental politician. They will destroy you if you let them.

My first visit to LVI was an epiphany. I can still recall the glow when I returned to my practice knowing that my experience had been affirming with the increased confidence that I had in tackling patients with complex problems. It is also affirming watching the success of the LVI graduates.

The pursuit of knowledge is a life-time experience; the application of the sum of the knowledge acquired provides a satisfaction beyond measure. The sharing of this knowledge is life-affirming.

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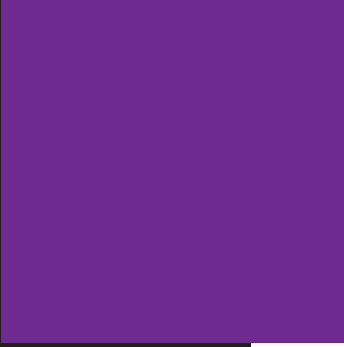

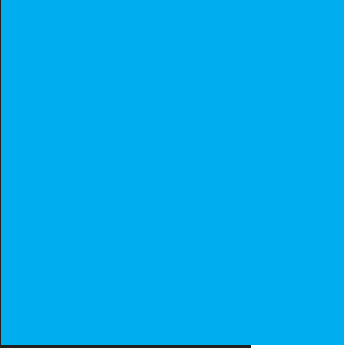
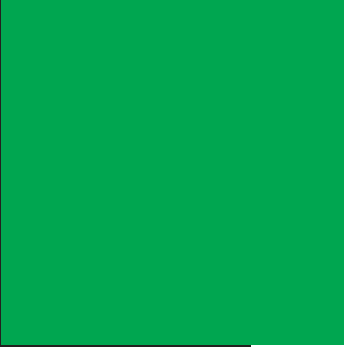
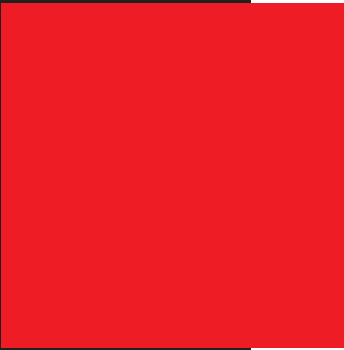
is an ongoing

experience.

Dr. David Philip graduated from St. Andrew's University Dental School with honors in Prosthetic Dentistry, and began his journey with LVI in 1999. Dr. Philip lectures to dentists on Cosmetic and Appearance Dentistry across Canada and has also lectured in Europe and the U.S. He and his wife, Chris, the practice's office manager, reside in Victoria, B.C. They have two sons, David, a teacher, and Blair, a golf professional in Japan.

*The unexamined life
is not worth living.*

Socrates



SURFACE ELECTROMYOGRAPHY
OF LATERAL PTERYGOID
AND ITS SIGNIFICANCE
IN NM DENTISTRY.



Norman R Thomas BDS; B.Sc; Ph.D; O.M.D; Cert Oral Path/Med; MICCMO; F.R.C.D.
Director Neuromuscular Research Las Vegas Institute Nevada, USA
Professor Emeritus University of Alberta Canada.

Introduction

We would all probably agree that from the standpoint of Neuromuscular Dentistry, surface electromyography of the lateral (external) pterygoid (LP) muscle would prove more significant than any other, because it functions in relation to the maxilla and the mandible by way of its origin from the cranial base (lateral pterygoid plate of the sphenoid bone) and its attachment to the mandibular condyle and intra articular disc. The pterygoid plate is a caudal extension of the sphenoid bone and gives origin to the pterygo-mandibular raphe that connects the buccinator muscle of the oral cavity with the constrictors of the pharynx providing form to the upper airway and alimentary tract as well as relating to the spinal column by virtue of its attachment to the prevertebral fascia.

Surprisingly, despite the importance of the lateral pterygoid muscle, the NM clinician never undertakes electromyography of the lateral pterygoid although it has provided important data of clinical concern. In this paper it will be demonstrated that electromyography of the lateral pterygoid muscles provides important information as to their role in Temporomandibular Disorders.

Functional Anatomy

The lateral pterygoid muscle consists of both superior and inferior heads. As noted above, both heads take their origin from the infratemporal crest and lateral pterygoid plate. The superior head principally inserts into the intrarticular disc with secondary slips at-

taching into the neck of the condyle. It has been shown by intramuscular recording from the LP that the superior head is active only when the jaw moves into or out of clenching posture of the mandible (Hiraba K, Hibino K, Hiranuma K and Negoro T (2000) *J Neurophysiol* 83: 2120-2137). Unfortunately, intra muscular studies do not provide a clear assessment of the integrative and differential actions of the lateral pterygoid at rest and during function. Furthermore, no fatigue studies have been undertaken on the lateral pterygoid for which spectral analysis of the surface electromyography of the lateral pterygoid is essential. From the above quoted studies of Hiraba et al., as well as others, it is clear that the superior head of the lateral pterygoid acts on the intra-articular disc and condyle during jaw closure and posterior translation or retrusion, while the inferior head serves to open and anteriorly translate or protrude the mandible.

Scapino observes in "Science and Practice of Occlusion" (2004 ed. C.H.McNeil) that jaw opening, hence jaw closing, is divided into three phases. In the early phase of jaw opening (final stage of jaw closing) the disc and condyle move in concert for a short period (first 3mm. (Hiraba et al.)) In the intermediate stage of opening, the condyle and disc continue to move anteriorly, but the condyle moves at a greater rate, thus explaining disc recapture during jaw opening (disc derangement during closure) which by extrapolation from Hiraba et al. indicates that it is in the interval between the change from superior to inferior head activity that disc recapture

occurs, and vice versa for disc displacement during jaw closure. In the final phase condyle and disc move forward at the same rate, presumably under the influence of the tightening disco-condylar ligaments. He also confirms that there is no evidence to support the view that the freely moving condyle rotates about an axis that passes through it. In the intermediate phase, the condyle and disc continue to move anteriorly, but the condyle moves at a greater rate. In the final phase, both condyle and disc move forward at the same rate. It is therefore reasonable to infer that disc displacement is due to fatigue contraction of the superior head of the lateral pterygoid that serves to displace or pull the disc anteriorly over the head of the condyle as it retrudes into the glenoid fossa. Clearly, assessment of the fatigue properties of the lateral pterygoid is central to understanding pathology of temporomandibular disorders. Unfortunately, there are no surface electromyography studies of the lateral pterygoid to answer this question. It is therefore the purpose of this paper to analyse fatigue events of the lateral pterygoid muscle.

Methodology

Scans of jaw motion in three spatial planes (horizontal, vertical and frontal) were undertaken by following the Hall effect induced between a small magnet applied to the labial surfaces of the mandibular incisor teeth by a sensor array attached to the head and lead to the input of a Myotronics K7 computer. Bipolar silver/ silver chloride electrodes were applied bilat-

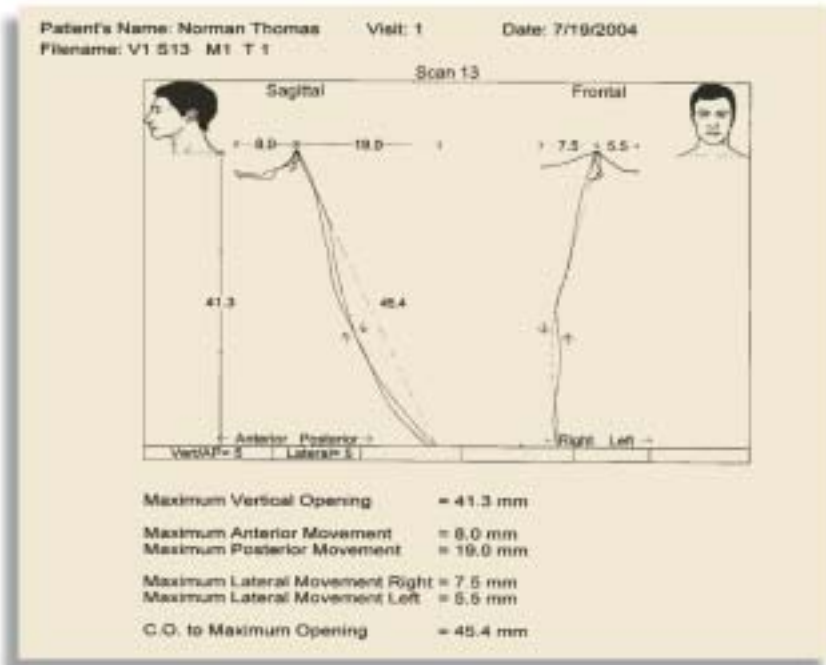


Figure 1

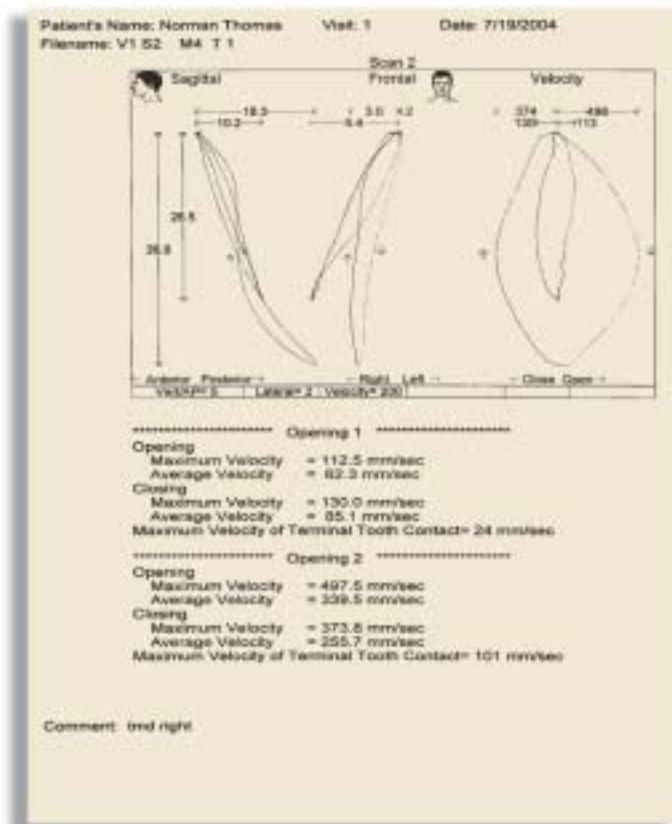


Figure 2

erally to the lightly abraded ethyl alcohol cleaned skin overlying the anterior temporalis, masseter and anterior belly of the digastric muscles. Similarly, bilateral electrodes were applied intraorally to the thoroughly dried mucosal tissues overlying the lateral pterygoid muscles bilaterally. The electrode recordings were plugged into a preamplifier and lead into a Myotronics K7 preamplifier. Motion of the jaw was compared to the resting and centric occlusal position was made during opening, closing and lateral jaw excursions. Masticatory muscle activity was recorded during jaw opening, closing, protrusion, retrusion and tooth clenching. The fatigue status of the jaw muscles pre- and post-Tens was analyzed by spectral analysis according to the protocol formulated by Thomas in *Frontiers of Physiology* (1990): vol 7 162-170.

Results

In figure 1, the position of the mandible in the mouth closed position is observed to have been vertically raised by 41.3 mm from the wide opened position corresponding to 45.4 mm along the jaw trajectory indicates that the mandibular incisor retrudes distally by 19mm at the maximum opening gives an A/V (antero to vertical) ratio of $19/41.3=0.46$ or 25 degrees. Utilizing these measurements it can be shown that if the condyle opened by a hinge movement only the distance from the incisor to the condyle should be 88mm which by measurement is 40mm too short. Therefore, condylar translation overall is calculated as 1mm for every

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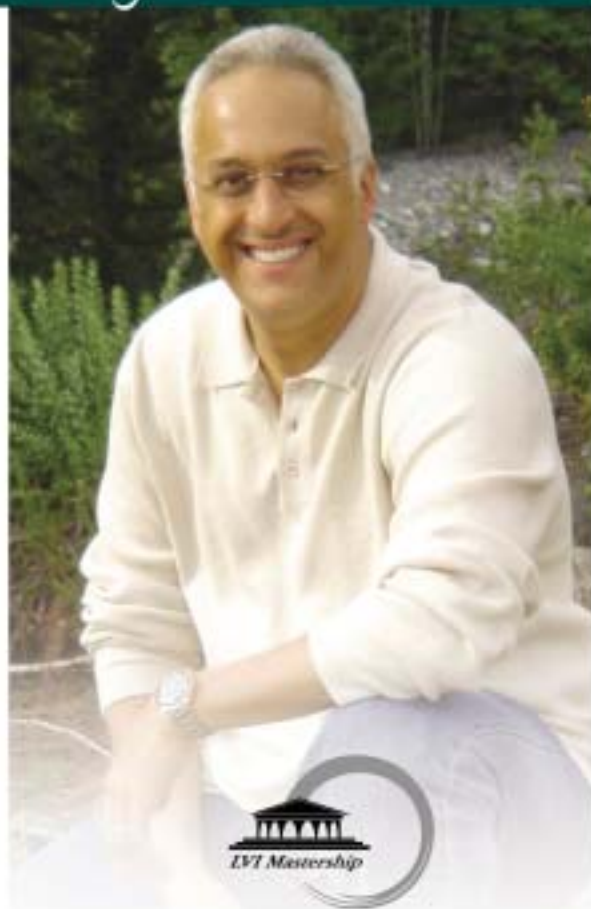
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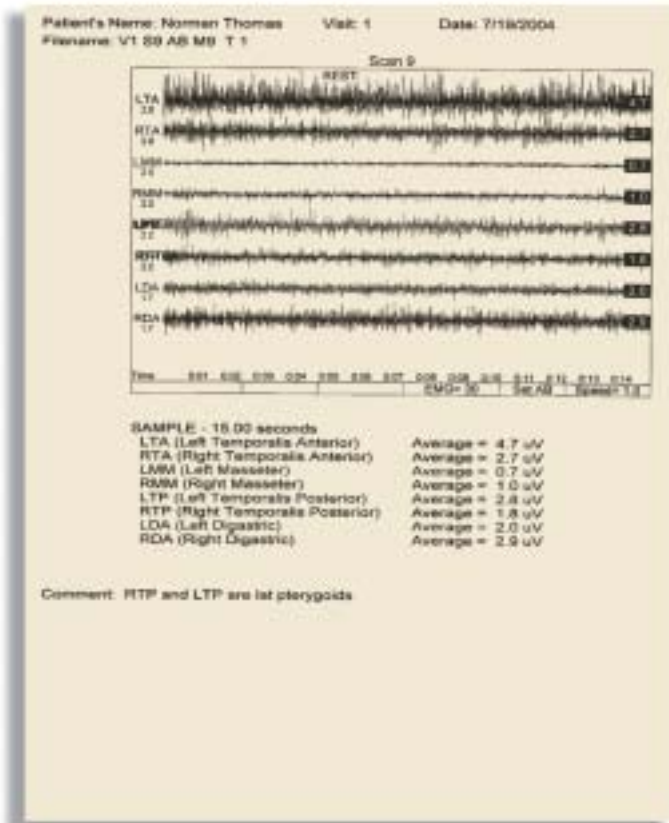


Figure 3

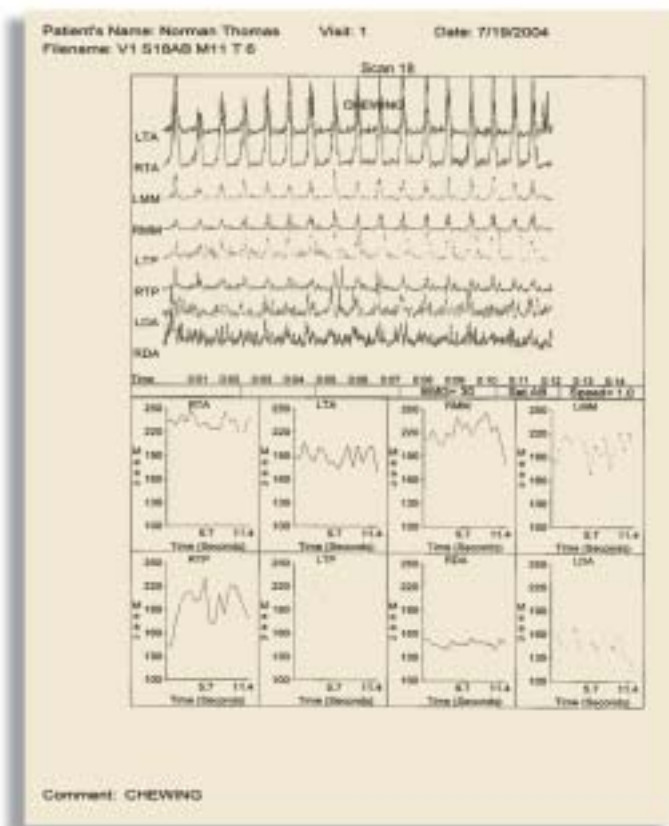


Figure 4

4mm of opening due to rotation, or in this example, 10mm which is longer than the 8mm obtained by protrusion due to the nature of the curved pathway. Thus given that the condylar translation is due to the function of the lateral pterygoid we readily understand that the contraction of both the upper and lower lateral pterygoid is 10 mm, which is at least twenty-five percent of its total length. We also observe in this example that the jaw joint is displaced to the right. This could occur if the lateral pterygoids are differentially active at rest and/or during function. The displacement of the condyle could result from overactivity and /or fatigue of either lateral pterygoid with resulting displacement of the disc.

Relative overactivity of the lateral pterygoid could result in forward displacement of the disc and condyle on the same side. Alternatively, under activity or fatigue on the opposite side could be accompanied by posterior displacement of the condyle. It is anticipated that electromyography of the lateral pterygoid will confirm the former explanation.

In figure 2 though, there is displacement of the condyles at rest and during function. There is no clear evidence from the velocity tracing that there is disc displacement or recapture, although the possibility is not excluded.

In figure 3, electromyography of the masticatory muscles during rest appears to reveal that the left lateral pterygoid is relatively hyperactive, while the right lateral pterygoid is functioning at healthy levels.

In figure 4, it is seen that clenching/chewing is accompanied by synchronistic activation of the elevator muscles including the anterior temporal, masseter and superior lateral pterygoid muscles bilaterally. It should also be noted that the digastric muscles are active during jaw opening (primary function) as well as during jaw closure (secondary function).

In figure 5, we note that during repetitive jaw protrusion the inferior head of the lateral pterygoids are primarily coactive with the digastric muscles. The left lateral pterygoid is relatively hyperactive. It should also be observed that the left lateral pterygoid is also active in the intervals between the forward jaw thrusts while the right lateral pterygoid is not.

In figure 6, we see the explanation for the differential effects of protrusion on the inferior heads of the later-

al pterygoid by obtaining a spectral analysis which reveals that the inferior head of the right lateral pterygoid is fatigued in concert with all of the other muscles elevators. That the left temporalis anterior is markedly fatigued in concert with the masseters but more especially that on the right side indicates that there is also contact in the cuspid region particularly on the right side.

In figure 7, recorded during jaw protrusion against resistance provided by the subject's fist and while the teeth are separated, both temporalis are inactive and neither the lateral pterygoids (superior heads), nor temporalis, are fatigued.

In figure 8, obtained during voluntary jaw retrusion, it is left lateral pterygoid that is more active than that on the right, which spectral analysis reveals to be fatigued.

Figure 9 provides evidence that TENS of the motor division of the trigeminal nerve does relax the lateral pterygoid musculature but that they are rapidly fatigued in tooth clenching.

Conclusion.

From the above it is evident that surface electromyography of the lateral pterygoids provides diagnostic information not always observable by direct or indirect electromyography of other masticatory musculature. Furthermore it is noted that while other muscles might show fatigue during clenching, one or other lateral pterygoids might not, and could be a factor in continued jaw clenching after TENS. In brief, there is no substitute for obtaining lateral pterygoid electromyography.

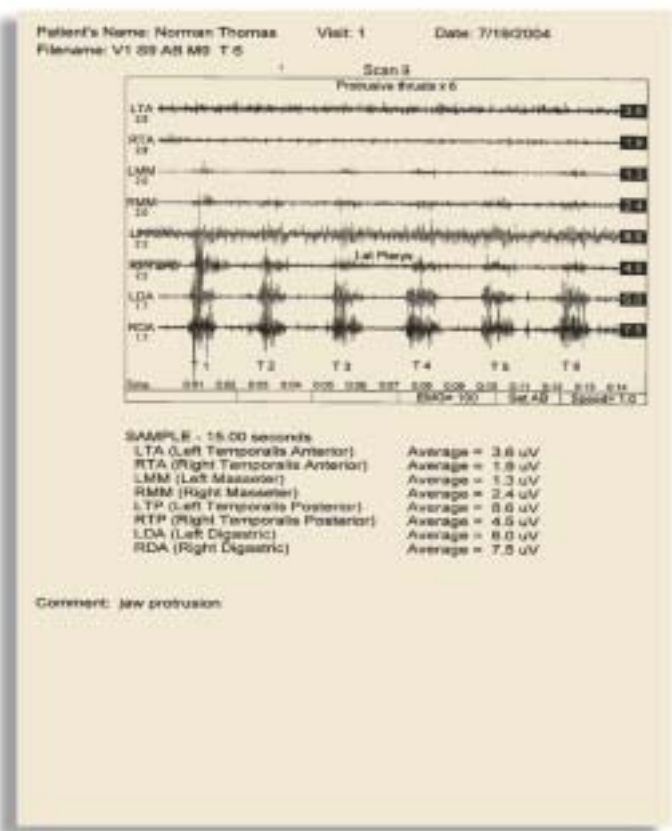


Figure 5

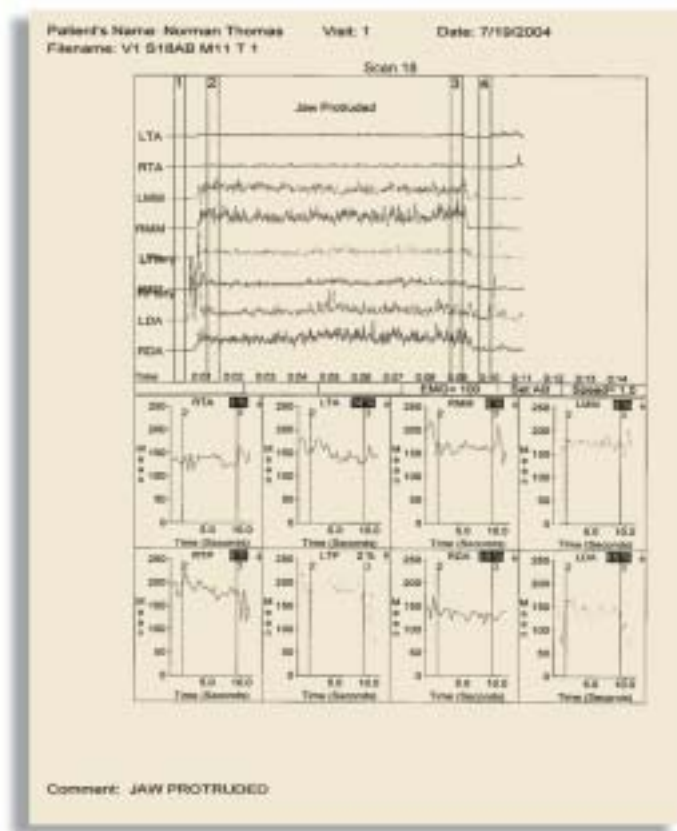


Figure 6

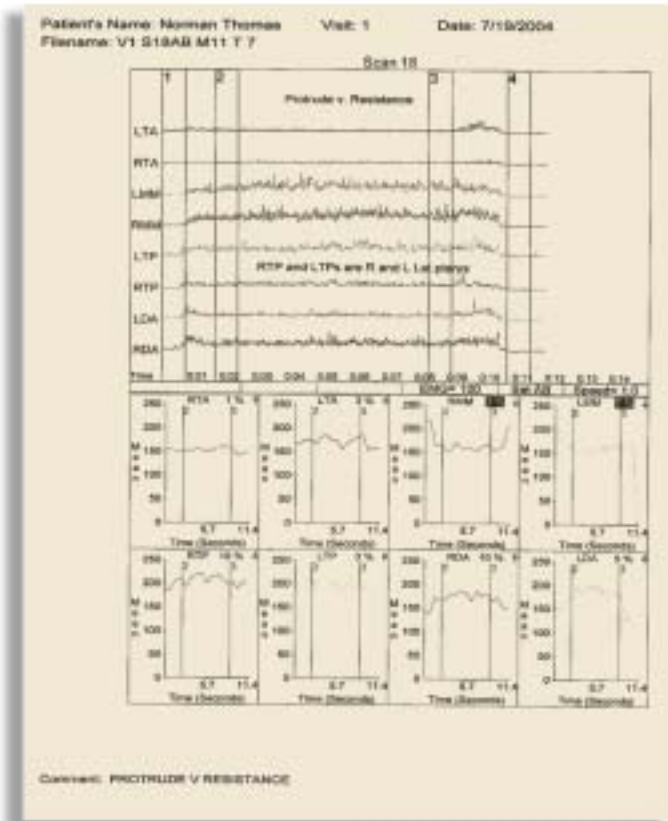


Figure 7

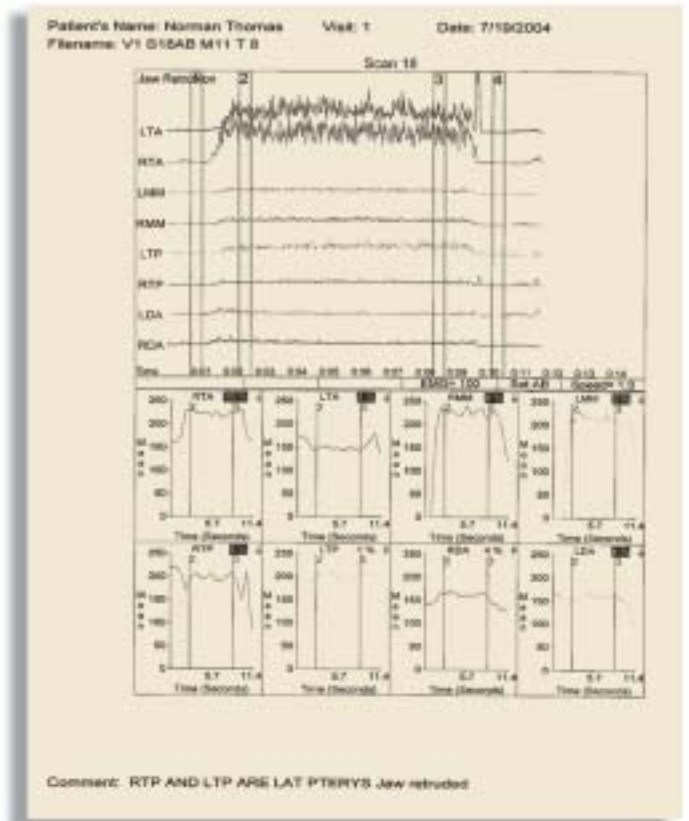


Figure 8

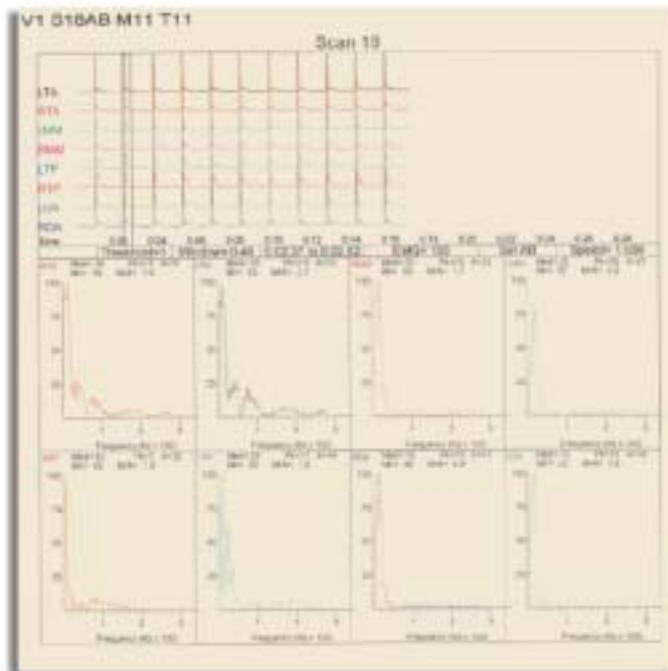


Figure 9

Norman Thomas graduated as a Doctor of Dental Surgery with honors and double Gold Medals in 1957. Dr. Thomas was awarded a Nuffield Fellowship (Oxford) to complete an honors degree in medical sciences in 1960. Between 1960 and 1974, he pursued residency and research programs at the Bristol Royal Infirmary, The Royal College of Surgeons of England, the Medical College of Virginia, and the University of Alberta, where he is now Professor Emeritus.

From 1970 to 2002, Dr. Thomas served on the Medical Research Council of Canada, the National Institute of Health, USA, and the Canadian Dental Association, gaining a Certificate of Merit from the latter and several Fellowships in medical sciences and dentistry. He is a Life Member of the Alberta Dental Association and retired from dental practice in 2002. In 1998, he was appointed Chancellor of the International College of Head and Neck Orthopedics and, in that capacity, has lectured in the U.S., Europe, Australia, and Asia. He was awarded a Ph.D. degree in Oral Medicine for research on the process and mechanism of tooth eruption.

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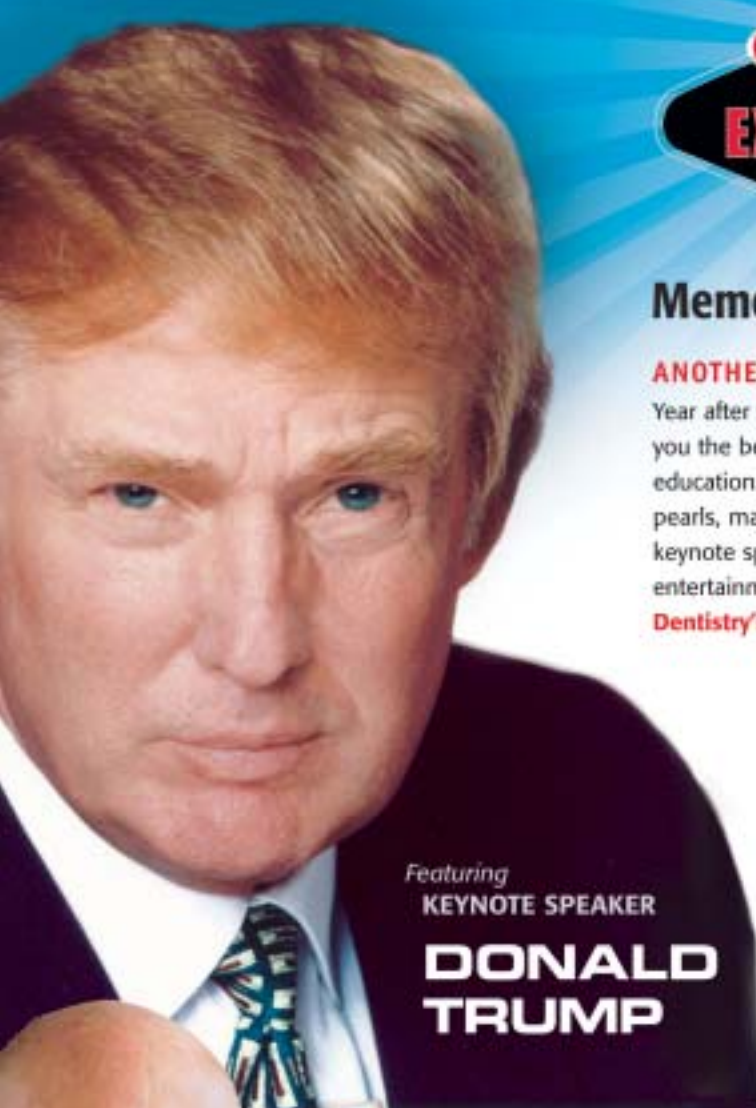
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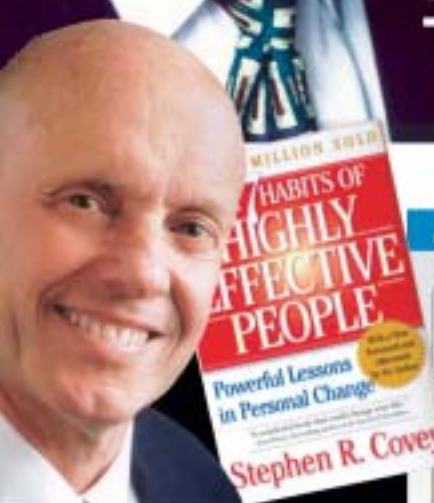
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Thank you again, Bill Dickerson!

I am writing this without the knowledge of my wonderful husband, Jack. But I just had to tell you the IACA meeting in San Diego was SUPERB! What a great list of speakers and the attitude of the meeting and everyone there was so positive and uplifting. I haven't been

to LVI since the second year of Jack's continuing education with LVI. The IACA meeting was a tremendous success – at least for Jack and Judy Semmens, it was! This time I attended with Jack, and I'm glad I did. We came home even more excited than from any meeting we have ever been to.

What Jack displays is that age doesn't matter when you are getting into your senior years. Although Jack is 68, he is more excited now than he ever was in the years before attending LVI. When people ask him how long he will be practicing, he says "as long as I enjoy what I am doing and continue to learn and implement the highest standards of esthetic and comprehensive dentistry." It is that excitement that keeps us "young".

Growth is the key. Growth on a continuing basis is what brings about excitement and enthusiasm, and sustains the pursuit of excellence to the highest level. LVI has provided us with that opportunity of continued growth. Jack continues to spread the good news of LVI to all the doctors, young and old that he knows. He encourages them and tells them that IT IS NEVER TOO LATE!

When Jack attended his first LVI course in Las Vegas back in 2000, I attended with him and came home and wrote you a letter letting you know what a great impact it had on Jack and his Dental Practice. Since then, he has changed his practice completely, striving to and implementing about everything in a dental practice that LVI teaches. Here is a list of just some of them.

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WHAT'S IN A FEE





BY OMER REED

Much as I hate to start out with a joke...
this one seems apropos...

This guy sits down at a hotel bar next to this gorgeous female person. He has been eying her from across the room for quite some time...he gets her attention and says, "Excuse me miss, I can't get over how gorgeous you are...will you go to my room for \$100,000?" She says, with no hesitation, "Of course, hand me your key...let's go." "Hang on...will you go to my room for \$10?" he asks. She is exasperated, "Of course not! What do you think I am?" "Well," he replies, "we have already established what you are, we're just talking price!"

What are your standards?

Can they be delivered well at a discount?

Can anyone else set your fee?

In my rambling and ranting about fees over the years, I have encouraged autonomy and self-determination...for a lot of things...as well as for fees. Some do...the majority seems to want to let someone else dictate what a fee should be. As a result: Profit = Fee – Cost is what must be accepted.

Let's talk about some other, more subjective things you lose too!

CONTROL

Most professionals are control freaks! There, I said it! Most of us got to be professionals because we hate to give up an essential part of working for an other (you know... being an employee)... CONTROL!!

If this is true, then why was (and in some cases, still is) dental insurance so effective? Why would so many accept what a stranger said about what you need and I do so well? Is it because they know and use the minutia better than I? Can I fix that?

Some have made the gargantuan leap in thinking, and have realized that an insurance company will usually only pay \$1,500 a year (as seldom as they can and with as much resistance and paperwork as they can muster); others won't admit this but have become "cosmetic dentists so the insurance won't cover my fee." So, what do they do? Ask another dentist what their fee ought to be!!

INCREDIBLE!!

There is something terribly wrong...what control do they have if they let the fee be set by someone else?

QUALITY

There is a theory that suggests if you are not paid what you are worth, you become worth what

you are paid. Like the joke at the beginning of this article, we have established what you are, now we are just talking price. The fact is...we are dentists...it is what we do...whether we do so consciously or subconsciously...our standards tend to change with the fee. When someone else sets the fee we go about finding what corners we can cut to have something left after cost...you know—profit--what we are supposed to be in business for.

One only has to feel the relief expressed by so many when a person pays for what they think they deserve; to know that performance and standards are affected by emotions. The chatter one hears when there is no one limiting the fix is remarkably different than the chatter heard when we did just what the insurance company will pay for.

Of course, the glee expressed when someone comes along and makes your mouth and is soon forgotten in the cacophony that is present in most societies (HMMM... kinda reminds you what it is like to be the tall poppy when the tax man cometh...but that's another story)...this can lead to a lack of...

SELF ESTEEM

OOO!! That ugly two-faced thing we hate to talk about. On the one hand we feel that we are worth more than a person will

ever express with a fee, and, on the other hand, we let the one who ahs the most data win and prostitute our wares at someone else's fee. Please, I am not just talking about the insurance company here. Anytime we ask; it is an admission that the answerer may have more data than we do. I am not sure I fully understand the duality of this issue, and am sure we will spend loads of time on it. Suffice, for this issue, to say that when we bow to a master, even though we curse them under our breath, we admit their strength and control over us. This discord can lead to the bitterness and lack of self esteem we display...even when the master is different.

SANITY

Then there are those who try and oppose the "SYSTEM" by thinking they can deliver a quality product and offer impeccable service at someone else's fee. Now unlink the example of allowing the standard to slip, this poor sap goes insane trying to provide the best at rock bottom prices. Having seen this many a time, I have to look on it with humor and laugh because it makes me want to cry. They both do about as much good...laughing just does not make my eyes all puffy.

Many issues have extolled you that if Service is high and Quality

is high then Price must be high. This is true of most products. There is no proof that the basic components of a Yugo and a Mercedes are any different. They are each made of the same basic metal, plastic, rubber, etc., what sets them apart is the service and quality.

Now there are some products that are less expensive than they used to be. A look at computers and their prices would suggest that like books, they are an anomaly. Then concept of supply and demand or rarity can help understand why they are really the same.

Books used to be hard to come by, bulkier and more expensive. As more were made, smaller and less expensive means of distribution were available, the price fell. Unlike gold, books were not rare anymore and were not worth as much, hence their price went down. Now, I don't think the value of books went down; it was just easier to get and have them.

The insanity of the communism of thinking or trying to supply or enjoy the best without a cost is...well, simply that...insanity. One knows and accepts that to get treated that well and to obtain the best quality components, one must pay a higher price. The madness of trying to offer great service and the best components at a low fee...well, quite frankly, I have seen the results and they are not pretty.

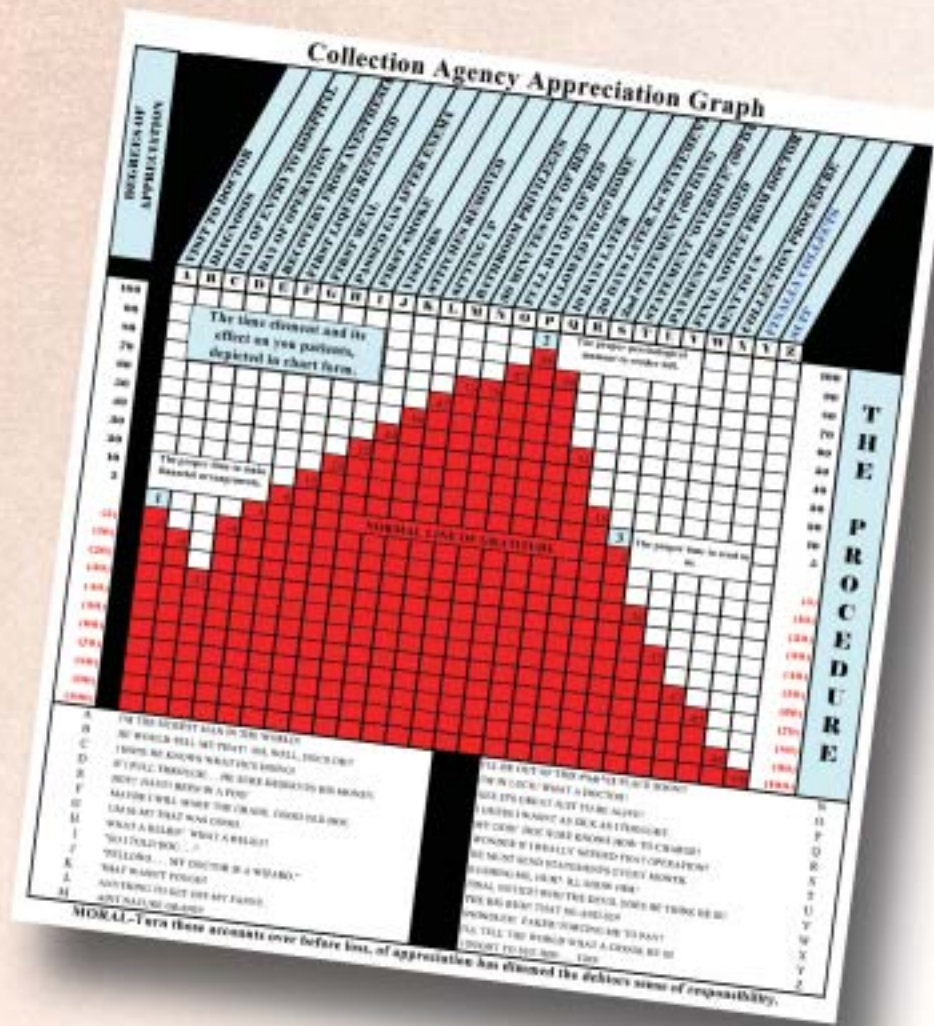
COST + PROFIT = FEE

Although, unlike gravity, this thinking can only affect you if you choose and how you choose--gravity tends to treat us all about the same. We are all capable of knowing our Cost. Our Profit can also be found out or expressed. So, why is it that so many ask an other (whether it be an insurance company, the ADA, or another dentist) to set the fee?

TIME

Another related subject is the time we receive the fee. When we look around for something to do we have a tendency to do that which we have been paid for. We tend to ignore those things for which we see no reward.

As consumers, we also lose our appreciation over time, as evidenced by a graph I saw on my wall from a collection agency:



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40 YEAR

**NEUROMUSCULAR
ORTHODONTIC / RESTORATIVE
CASE STUDY**

Bob Jankelson



T

here have been recent statements by certain gnathologic gurus implying that the neuromuscular cases always fail in a few years because of molar bone loss due to occlusal forces. Lacking scientific evidence and scrutiny, this flippant ad hominem remark is designed to discourage inquiry by their disciples into neuromuscular science. As the data, evidence, and clinical observation continues to confirm the long term success of neuromuscular dentistry, the grasping at straws and stridency of the guardians of the past increases. History tells us that this is not a unique evolution of science and medical progress. Take comfort in the words of Professor Tyndale: *A great theory has never been accepted without opposition. Such must always be the course of things so long as men are endowed with different degrees of insight; when the mind of genius discerns the distant truth which it pursued, the mind not so gifted often sees nothing but the extravagance which it avoids.*

The following case was restored 40 years ago, using an early prototype J2 Myomonitor. The occlusion, orthodontic and restorative principles used 40 years ago still apply. Materials and techniques have improved dramatically in the past 40 years, but the scientific foundations of neuromuscular dentistry represented in this case are as valid now as they were then. The patient has been completely asymptomatic and had only one restoration since completion of the orthodontic/restorative work in 1967. We will let the evidence stand on its own. I would like to thank my good friend and fishing partner, Dr. Brian Faber, and his wife Sandy, for taking photos, radiographs, and K7 data to document this case history. This assured an unbiased collection of data to assure validity of all records.

CASE HISTORY

A 20 year old female patient presented with severe Class II Division 1 dental arch relation. The right maxillary lateral incisor was congenitally missing and the cuspids were partially erupted due to severe anterior crowding. Repeated endodontic treatment of the upper right central incisor had been unsuccessful. The right central incisor was extracted after completion of orthodontic treatment. The posterior teeth had extensive amalgam fillings with recurrent decay. Clinical signs included collapsed dental arches, depressed Curve of Spee, bicuspid drop off, anterior crowding, deep anterior overbite, lingually tipped lower posterior teeth, and narrow arches. Clinical symptoms included temporomandibular joint sounds, and cervicalgia.

TREATMENT

Orthodontic treatment was completed in 1965 by Dr. Paul Lewis, orthodontist, Seattle, WA. The dental arches were expanded to make room for the right lateral replacement and the partially erupted cuspids were brought into arch alignment. Post-Restoration coronoplasty was done in 1966-67, using a prototype J2 Myomonitor to refine the MYOCENTRIC occlusion. The J2 Myomonitor was the only technology available at that time to capture the myocentric position and refine the occlusion. However, the concept of moving the mandible involuntarily within a neutral tunnel of closure using the Myomonitor had already been postulated by my father. The accuracy of ultra-low frequency TENS, J2 Myomonitor, to record the myocentric position on this patient was not definitely confirmed until the neuromuscular trajectory was displayed using Scan #4/5 on the Cathode Ray Tube of the K-5 Kinesiograph Jaw Tracker in 1974.

FIG. 1 Frontal Smile

The upper and lower arches were restored with full gold crowns, gold onlays and inlays using "C" gold which was the standard at this time. The only impression materials available for multiple restorations in 1965 were reversible hydrocolloid and Thiokol rubber base. After temporization, the anterior maxillary bridge was fabricated using Ceramco "O" porcelain and gold. Ceramic materials 40 years ago left a great deal to be desired, and it was very difficult to make each bridge abutment and pontic appear natural. To over-

come this problem, we would cast and bake each unit individually, assemble each unit in the mouth with Duralay as if we were setting denture teeth, then invest the assembled units and post solder the entire bridge. It really makes one appreciate the materials and techniques we have today. The slight color discrepancy is due to 40 years of change in the adjacent natural teeth. The bridge itself is the original from 1967.

FIG. 2 Frontal Intra-Oral

This intra-oral view illustrates the stability of the case over a 40-year period. The vertical index from gingival to gingival is 17mm--consistent with an ideal Golden Proportion of 17.75mm. The only restoration placed after 1967 is the upper right first molar Ceramo metal crown. This crown was placed by an associate in 1986. The stability of arch width and maintenance of tooth long axis should also be noted.

FIG. 3 Intra-Oral Lower Arch

This intra-oral view illustrates the stability of the post orthodontic arch expansion and space for tongue containment typical of a well-treated neuromuscular case. The bicuspid drop off and depressed Curve of Spee has not recurred. The patient has never worn retainers, and the lack of lower anterior crowding or relapse attests to the stability of the Myocentric position. There has been no collapse of the cuspid to cuspid width.

FIG. 4 Intra-Oral Upper Arch

Opps! Where did that 40+ year old DO amalgam come from? I bet every



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

LVI grad is dying to replace it with a beautiful esthetic restoration. Just don't forget to adjust with the TENS. To repeat, all restorations other than the Ceramo metal crown on the upper right first molar have been placed prior to 1968. The anterior bridge replaces the right central and lateral incisors.

FIG. 5 Full Mouth Radiographs

Radiographs taken February 2006, 40 years post treatment, reflect the healthy periodontal condition typical of patients restored to the neuromuscular position. Contrary to the laments of certain Gnathologic gurus, also known as Pigeons of Zeus, my 40 years of clinical experience and radiographic evidence confirms that the neuromuscular myocentric position, in fact, facilitates bone maintenance and regeneration. See long term cases in my text, Neuromuscular Dental Diagnosis and Treatment, R. Jankelson. See page 573. A certain gnathologic guru has recently been preaching that all neuromuscular restored cases fail after a few years because of molar bone loss. While these Pigeons of Zeus deposit only ad hominem scatologic residue resulting from personal ignorance and intransigence, the evidence speaks for itself.

FIG. 6 K7 Resting EMG Scan #9

The scientific literature regarding EMG profiles in normal versus TMD patients is well established. The Electromyographic (EMG) activity at rest 40 years post restoration is normal and characteristic of "happy" muscles. All four paired muscles are well within normative standards. This is quantitative evidence that the

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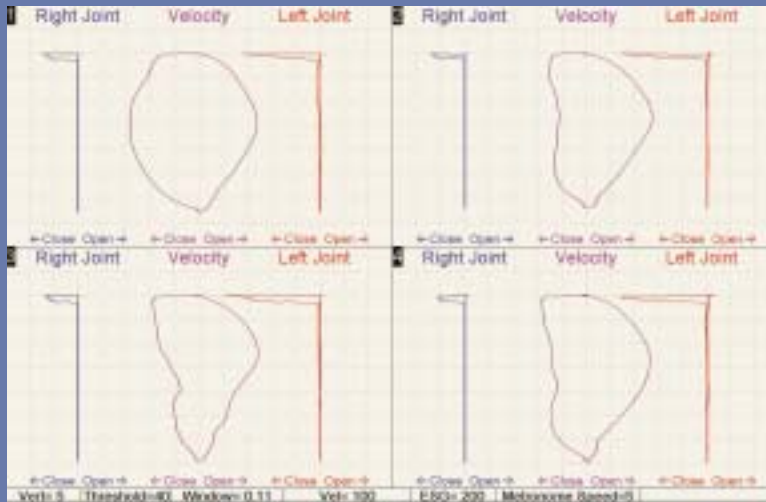


Figure 7

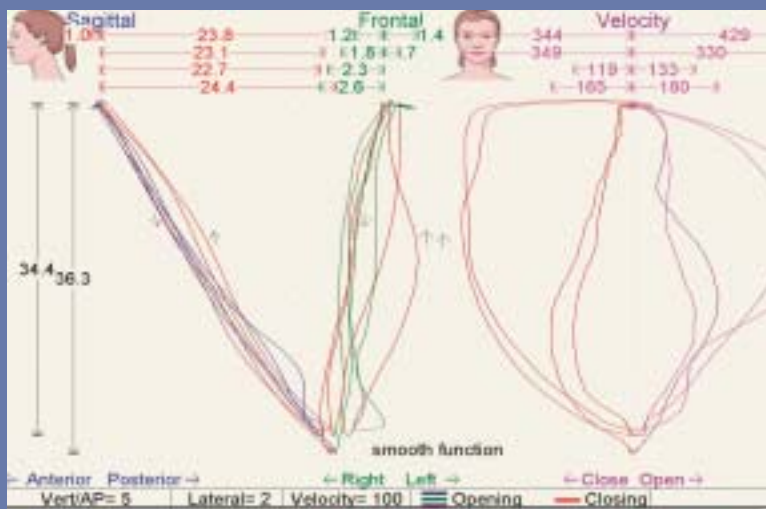


Figure 8

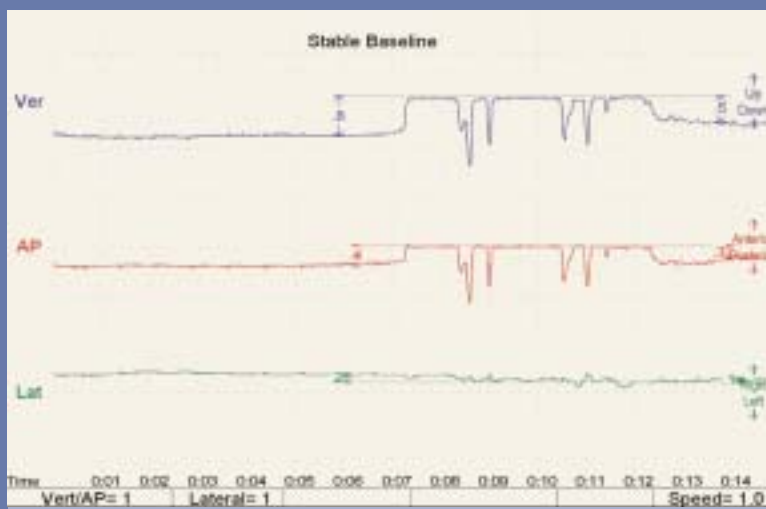


Figure 9

MYOCENTRIC position established 40 years ago is compatible with healthy muscle function.

FIG. 7 K7 Joint Sonography Scan #15

The patient had significant temporomandibular joint sounds prior to orthodontic treatment. In 1965, the standard of documentation was the stethoscope and manual palpation. The K-7 Scan 15 sonograph documents the lack of TMJ sounds 40 years after orthodontic and restorative treatment to the neuromuscular MYOCENTRIC position. The lack of joint sound is indicative of healthy joints. The advances in joint sound recording and analysis since 1965 are dramatic.

FIG. 8 K7 Open/Close Scan #2

The open/close sagittal and frontal movement patterns are normal. Velocity and terminal velocity patterns are excellent. These patterns confirm other data suggesting normal masticatory function.

FIG. 9 K7 Habitual Rest Scan #3

The K-7 Scan 3 suggests a normal accommodative freeway space prior to any TENS application. This is consistent with the Scan 9 resting EMG data that is also normative.

FIG. 10 K7 Swallow/Tongue Position Scan #6

The K-7 Scan 6 illustrates that the patient swallowed with the teeth together. There is no evidence of an aberrant tongue habit. This can only be achieved with adequate arch development that allows containment of the tongue within the lower arch. This

tongue containment within the lower arch form is necessary for long term arch and vertical dimension stability.

FIG. 11 K7 Function EMG Scan #11

The K7 EMG Scan, using the cotton role control versus maximum clench in the MYOCENTRIC position, again documents the optimal function of the neuromuscular position 40 years after completion of the restorative work. Total function is excellent even though there is an asymmetry between right and left sides. This asymmetry is also evident in the control test using cotton rolls. This demonstrates that the patient is able to maximally recruit all four muscles during maximal clench into the MYOCENTRIC intercuspal position. The scientific literature is definitive that patients with occlusal dysfunction have reduced ability to recruit maximal motor units. Maximal recruitment as seen in this case is characteristic of an optimal intercuspal occlusal position.



Figure 10

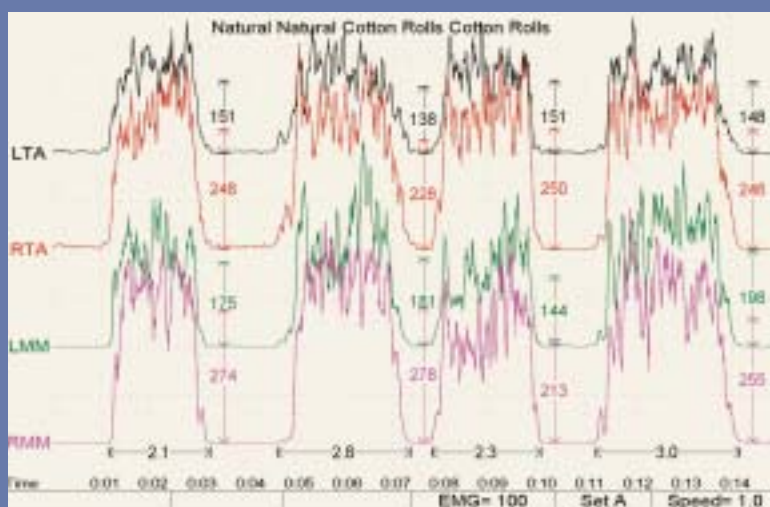


Figure 11

FIG. 12 K7 Sagittal/Frontal Range of Motion Scan #13

The K7 Scan 13 confirms good range of motion consistent with the normal masticatory function. This is also compatible with the other K7 data for this patient.

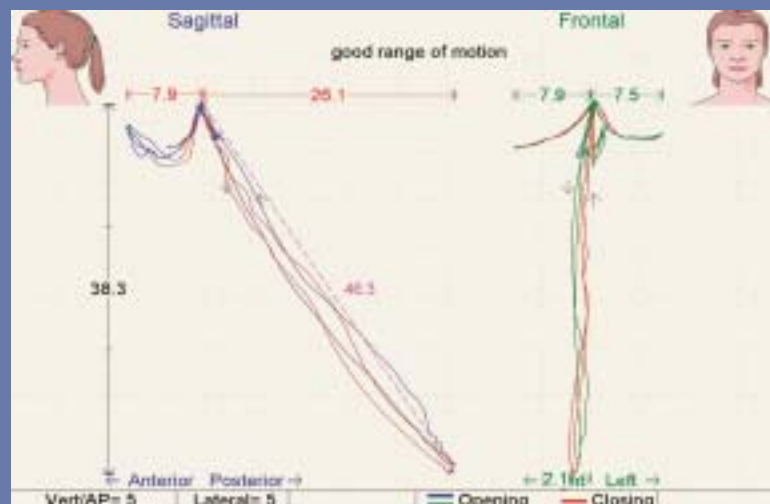


Figure 12

FIG. 13 K7 Sagittal/Frontal Neuromuscular trajectory Scan #4/5

As our LVI Aussie friends, Brett, Fred, et al, would say: "Spot On!" The K7 Scan 4/5 confirms that the patient's HABITUAL and NEUROMUSCULAR paths of closure are

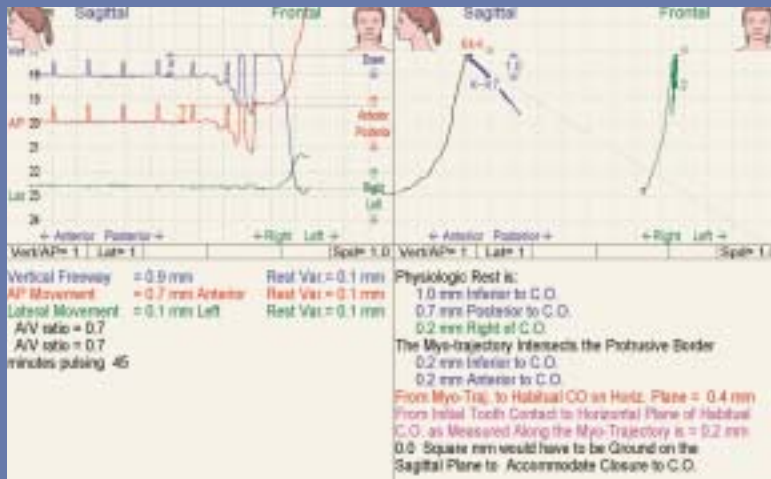


Figure 13

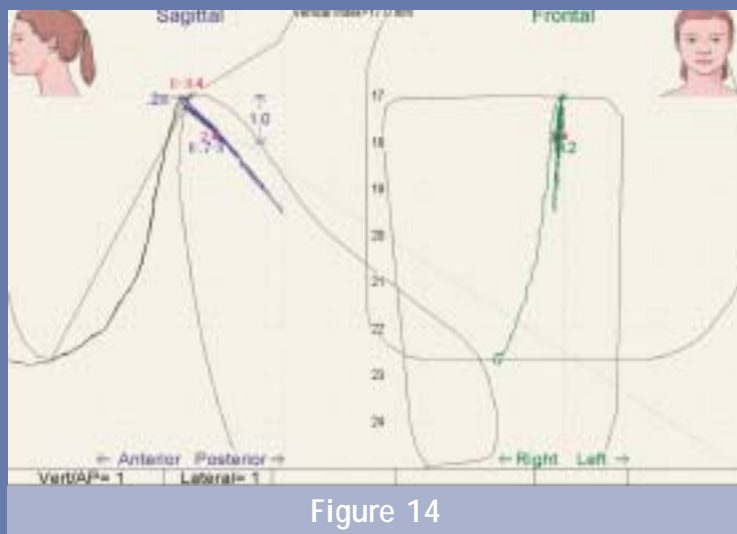


Figure 14

coincident and reproducible 40 years after orthodontic and neuromuscular restoration. The data also confirms that the MYOCENTRIC position has produced measurable physiologic compatibility of the teeth, TMJ and masticatory muscles.

FIG. 14 K7 Sagittal Scan #5

The physiologic data, the radiographic evidence, and the asymptomatic patient history the past 40 years is not unique to this case. The MYOCENTRIC intercuspal occlusal position is compatible with tooth and bone preservation while optimizing masticatory muscle health.

As Becker in *The Body Electric* points out, the Pigeons of Zues may cover new ideas with their droppings, but measurable data and factual evidence will ultimately prevail. We can eventually be assured of the admonitions of Max Planck: “An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: it rarely happens that Saul becomes Paul. What does happen is that its opponents gradually die out and that the growing generation is familiarized with the idea from the beginning.”

LVI alumni represent the growing generation. The next time you hear a gnathologic guru make a ridiculous, unsubstantiated statement about neuromuscular dentistry, of which they have not a clue, challenge and ask them for measurable data and take comfort in Planck’s insights into the nature of scientific progress. You will not convert them but you may hasten their demise and validate Planck’s observations.

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Robert H. Maccario, MBA

PRACTICE MODEL

Leading practices in the new era of entrepreneurial dentistry have long left behind the “traditional model” of practice success. This makes traditional practice management meaningless, or even at cross purpose to their long term vision of success.

The Independent Practice Model- *getting out and staying out from under the insurance burden.*

Today there are new exciting opportunities for practice success that have not existed previously. These opportunities are unlimited when the constraints of insurance dictates are eliminated. The idea of having to send statements and having an excess accounts receivable (over 50% of your average monthly production) is a historical concept. No longer does a practice need to have a “third party” interfere with clinical care. No longer is it necessary to have some one else’s profitability model dictate your fees, procedures and cost of business. The practices that are no longer held back by these constraints are the practices of the future. They are implementing the Independent Practice Model.

One Size DOES NOT fit all

On the other hand, many practitioners recognize and respect the knowledge and position of the highly specialized aesthetic practices. They also realize those systems and techniques may not be appropriate for implementation in their high end general practice with an integrated occlusal aesthetic philosophy. The “one size fits all” model does not work. Think Lego. You can build Lego’s in many different ways and if you follow good form and function they will work. Your practice is no different, you can build it many different ways and if it based on a sound philosophy, Independent Practice Model, it will work. When

working the Independent Practice Model, successful practitioners need to set the vision for the size and style of their practice based on their values and skills - both clinical and business with consideration for where they are on the journey.

Leading Practices

Some of the leading practices;

1. Yes to the best--and more. For years in the Dental Concierge[®] program, we have taught the concept of “Yes to the Best”. You give all your patients/guests a chance to buy the best care you can provide. Today, consumers’ dental I.Q. is higher than ever. They are now being marketed (educated) to understand there is more to dental care beyond the insurance company’s limitations and restrictions. Thanks to national branding campaigns, the internet and professional practice marketing at the local level, consumers are now gaining an entire new appreciation for what dentistry has to offer. Leading practices give all of their guests a chance to say “yes to the best”. They do not burden the patient/guest with historical values of insurance-based thinking. They have learned not to underestimate the consumer’s understanding and willingness to buy the best.

2. Recognize you are in the Lifestyle Business. It is no longer just about teeth. “Yes to the Best” care can

change an individual’s life. Now in most cases the patient/guest doesn’t come in and say “Hey, Doctor--change my life.” They do come in looking for the benefits of your care based on their motivators, i.e., a beautiful new smile (appearance being the motivator). They do not buy features – laminate veneers. Leading practices create a “seamless chain of events” in this buying process to create real differentiation from other practices. It starts with the perceptions of your practice--do you look, smell and act like “just a dental practice? This obviously must be tied to clinical excellence. Are you and your entire team exceptionally skilled, and is your practice state of the art? Ok, so you have the skills and the customer service to influence the guest perceptions, but are they integrated into a “seamless chain of events”? The best clinical care will not overcome poor service skills. Keep them waiting an hour and you diminish the value of a beautiful new smile. It works similarly for clinical skills. You may see them on time, complete the care on time, but if the restoration continues to fail, all the service in the world won’t overcome their displeasure. It is only when you put the entire clinical/service package together, customized to their motivators, will you tap into the guests’ emotional connections. Many times these emotional needs are unspoken or even unknown to the guests themselves.

Leading practices recognize when they put this all together, they can change/improve their guest's lifestyle--they are now in the lifestyle business.

3. It's a Journey. Never stop improving, never rest on your historical successes. Leading practices always think in terms of cannibalizing their own business. What does this mean? Become the new competition before new competition takes your business? Business innovation as a competitive advantage has a shorter and shorter lifespan. What you thought was state of the art yesterday is now commonplace, providing you with little or no differentiation from the other practices. This applies to both the service factor and the clinical commitment in your practice. Leading practices aggressively pursue this journey. This need for creativity and commitment to clinical excellence and guest services is also one of the most glorious and fun aspects of the journey. Leading practices understand this. They are not held hostage by change--but rather embrace it as part of the excitement in the journey.

There has never been a better opportunity than right now to implement The Independent Practice Model in your practice. You have an entire generation of patients/guests looking for you--the famous Baby Boomers. They have the money, the time, and the desire for lifestyle care. With a solid commitment to clinical excellence and forward thinking management, you can have the practice of the future.

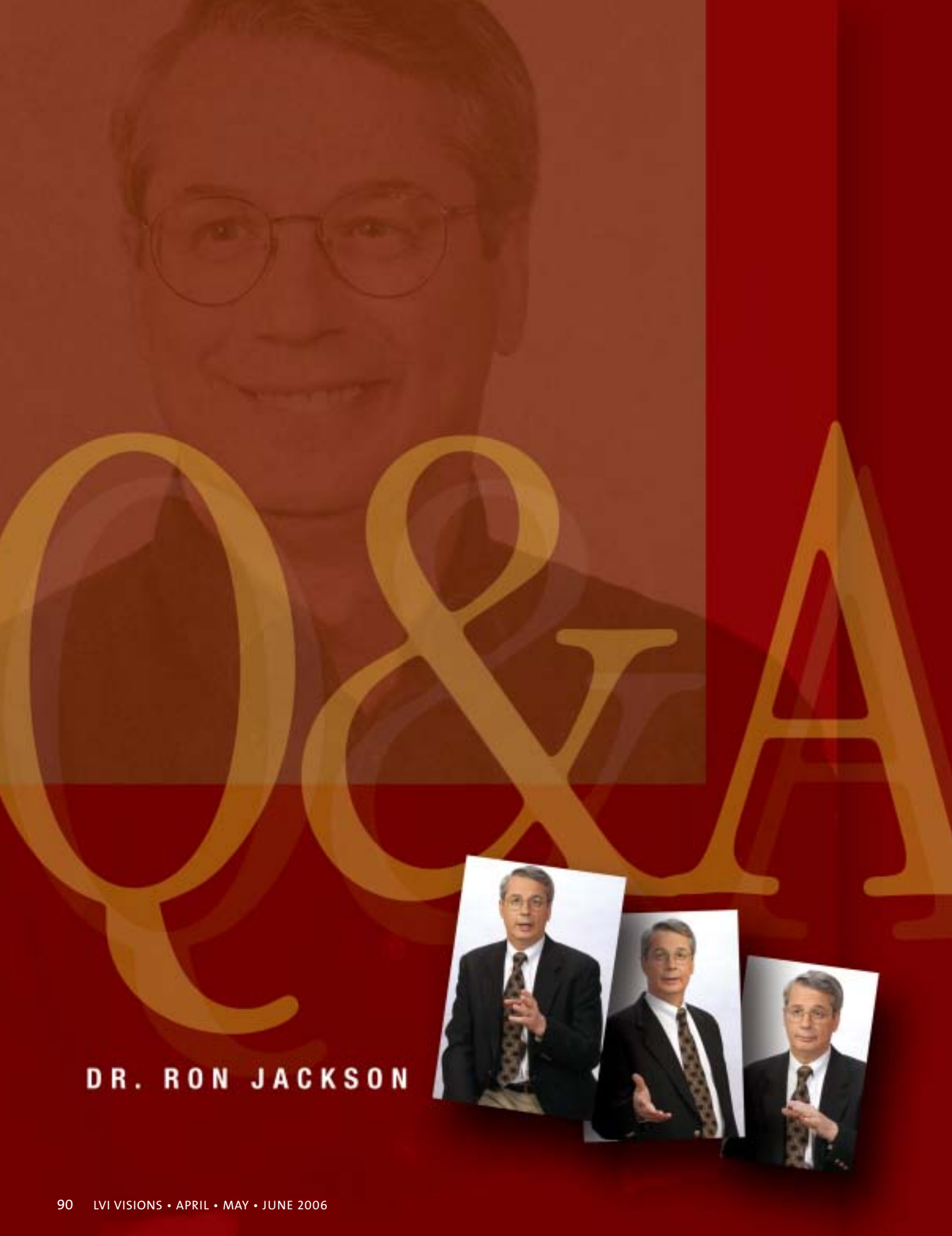
Recognize you are in the Lifestyle Business.



Mr. Bob Maccario, MBA has 35 plus years background and experience in the dental field. In 1982, Bob graduated from Pepperdine University with a MBA degree. He transitioned his career into practice management and in 1985 opened his own practice management company, Professional Management Sciences, Inc. (PMSI). As a private practice consultant, Bob has evolved a marketing and management program based on proven customer service skills and sound patient financial arrangements. He is a popular and entertaining lecturer on a national basis. Bob teaches the "Dental Concierge - How to Turn Your Patients into Guests" program at LVI.

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Q&A

DR. RON JACKSON



ADHESIVES and ADHESION

Dear Ron:

I have the following situation:

I have a patient with a full upper roundhouse PFM bridge on seven abutment teeth (4, 5, 6, 7, 11, 12 & 13) which has been repeatedly placed with Tempbond per the patient's request. The retention is questionable due to reduction requirements, especially with reduction copings, etc. I now want to place it permanently. My question is: What is the best bond that can be achieved? Would dual cure resin be better than RelyX glassionomer mix? If so, how would metal/tooth structure be treated prior to bonding?

Thanks,

G.L., DDS
San Francisco, California

Dear G.L.:

This question is not at all uncommon among dentists today considering there are over 75 adhesives in the marketplace with everything from three-step total-etch to one-step self-etch and recently, no-step self-adhesive cements touted as all anyone needs. This along with the fact that marketing and hype have surpassed science in the buying decision, its no wonder there's confusion and misunderstanding throughout dentistry. The result is, in my opinion, many dentists may unknowingly assume a lot of risk. This is why I have doubled the time spent on adhesion in my program at LVI known as Advanced Adhesive Aesthetic Dentistry: Practical Science, Predictable Techniques. Although the live-patient treatment consists of placing posterior direct resin restorations, esthetic inlays/onlays and metal-free crowns, these services provide the platform for applying state-of-the-art adhesive concepts for different procedures and different materials.

Now for the answer to the question. Since the abutment teeth are all full crowns, there is likely to be minimal or no enamel adhesion to be counted on. I can only assume that since the bicuspids were included as abutments in the bridge, something we wouldn't do if the canines had enough structure and weren't "tepee preps", that additional retention/resistance form was needed even though only 3 teeth were replaced (8, 9, 10). So let's look at what we have to work with:

- 1) You stated "Poor Retention due to reduction requirements". I'm not sure exactly what that means except that you seem to be saying there isn't much abutment tooth structure to retain the retainers via conventional macromechanical friction. What this means is that if you are thinking of an adhesively retained approach (etch & bond) versus conventional cementation (glassionomer or resinionomer), you would be bonding mainly to deep dentin. The challenge here is that we know that bonds to deep dentin are not nearly as good as bonds to superficial dentin.
- 2) The bridge has been on with temporary cement and repeatedly come off. What this means is that the quality of the dentin is severely compromised. All temporary cements leak but since this bridge has been on and off for sometime, the dentin has been severely contaminated. Even though you didn't say whether the TempBond (Kerr) you used was the one with eugenol or without (NE), both cements are zinc oxide based. Given the repeated re-cements, the dentin is very likely deeply embedded with zinc oxide – a contaminant. This amount of contamination which probably couldn't be adequately removed without some re-preparation of the teeth will reduce bond strength – possibly significantly.

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So, what you have now is deep, contaminated dentin that you are attempting to bond to. Whereas, you could try it, it's not possible to predict how well it will work out. If you were to proceed, I would use a self-etching resin cement such as Multilink (Ivoclar). It has a metal primer to treat the metal copings after sandblasting. Be sure to clean the teeth vigorously with flour of pumice or Consepis Scrub (Ultradent) before using the self-etch primers.

It is not possible in this column G.L., to explain why I prefer a self-etching resin cement system, in this case, and why and how it works. You will get this information and a lot more understanding by attending the Advanced Adhesive Aesthetic course.

If the above doesn't work, you will probably have to re-make the case. I doubt very much if the Adhesive Resin Cements such as RelyX Unicem (3M/Espe) or maxCem (Kerr) will work here either without adequate abutment height. Without knowing any of the clinical details, I can't advise further except to say that I would be looking to making a bridge from 6 – 11 and placing single units on the bicuspid. This might mean some crown lengthening of the cuspids if possible and if the 1st molars are to be replaced (it wasn't clear if they are cantilevered off the existing splint), consider implants in those locations. Replacing 8, 9 and 10 with implants and retaining esthetic papillas can be very tricky, which is why I suggested a fixed bridge 6 – 11.

Good luck and let me know how it works out in the long run.

Ron

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