

**California Dental Association  
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**THE NEW QUARTERBACK:  
*“A new Treatment Planning Playbook  
for the  
General Dentist”***

**Terry Tanaka, DDS  
Clinical Professor,  
Advanced Education in Prosthodontics  
University of Southern California, School of Dentistry**

Email: [ttanaka@usc.edu](mailto:ttanaka@usc.edu)  
Web Site [WWW.TERRYTANAKADDS.COM](http://WWW.TERRYTANAKADDS.COM)

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**California Dental Association, Annual Meeting 2010  
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**Terry Tanaka, DDS**

**“The New Quarterback:**

***“A New Treatment Planning Playbook for the General Dentist”***

**Synopsis:**

The current science of dental materials, and technology have changed the restorative and esthetic options available to restorative dentists in 2010. These options have been accompanied however, with an increasing rate of restoration leakage, breakage and failures. What is driving this change from “successful” restorations to “surviving” restorations? Is it the fault of the newer materials or should we be applying a different set of guidelines in treatment planning?

New guidelines that are presented in graduate restorative and prosthodontic programs will be presented here in this lecture/workshop with the new science. You already have the experience and skill, come learn more and raise your practice to an even higher level of excellence. “Your patients will appreciate it.”

**YOU WILL LEARN ABOUT THE “NEW SCIENCE” & OLD DENTAL MYTHS:**

- Why “balancing side tooth contacts” should not be removed in 90% of patients.”
- Why “the transverse, (side to side). occlusal plane should not be made parallel to a line through the pupils of the eyes.”
- How growth and remodeling of the face continue into later years (37-77), affecting the position of the anterior teeth, and contributing to crowding of the mandibular incisors.
- How facial growth, remodeling, and ethnicity affects your choice of dental materials for different patients and different wear patterns.
- How clenching and bruxing results in muscle shortening and changes the occlusion.
- Why most face pain does not originate in the face, but is referred to the face. How these patients are diagnosed and managed is critical to the success and longevity of the final restorations.
- Did you ever wonder why splints and occlusal adjustments are sometimes not effective? “Bruxing” is a CNS disorder and not respond to local occlusal adjustments.
- Learn when to adjust and “when not to adjust.” Better yet, learn how to diagnose first before adjusting the occlusion.
- Learn why splints are not effective for some clencher and bruxers. Learn how to use stabilizing splints as pre-rehabilitation appliances for complete rehabilitation.
- Learn why a stabilizing splint is recommended to protect your carefully made restorations, especially implant restored restorations.

**“BRING PAPER AND PENS, THIS IS A WORKSHOP.”**

**TERRY T. TANAKA, D.D.S.**  
**Clinical Professor,**  
**Advanced Education in Prosthodontics and Endodontics**  
**University of Southern California, School of Dentistry,**

Although the current emphasis in restorative dentistry has been upon esthetic procedures and the “cosmetic appearance” of restorations, leakage, wear and fracture of these restorations is a major concern in clinical practice. While it would be convenient to blame the materials, the reality is that the failure of restorations is more likely due to three major factors: (1) oral habits (clenching and bruxing), (2) inappropriate site selection, (3) a lack of understanding of masticatory function and dysfunction, and (4) a distant fourth is material failure.

Long-term clinical success of esthetic restorations requires a more thorough understanding of masticatory function, anterior guidance, and how and when occlusal forces are applied. Dr. Tanaka will present guidelines that will aid the clinician in diagnosing what constitutes a stable anterior and posterior occlusion and how they can become dysfunctional. Other important topics that will be addressed include, the recognition of guidance factors, vertical dimension and tooth loading habits.

Guidelines for the development of facial esthetics and occlusion will be presented that will aid the restorative dentist in determining the anterior tooth size and length in patients with worn dentitions. This information will be coordinated with the anatomical facial guidelines, and the alignment and positioning of the anterior teeth to allow for a functional anterior guidance.

When Temporomandibular Disorders are added to an esthetic system that lacks proper anterior guidance, tooth wear, restoration wear and the fracture of both anterior and posterior restorations result. The clinician usually blames the restorative material, however, a closer look at “how” the failure occurred, will reveal many interesting factors that were not taught in the undergraduate dental curriculum. These “critical factors” are the basis for the guidelines that were developed by Dr. Tanaka for the graduate prosthodontic program at USC and will be presented in this program.

**The purpose (goals) of this program are to present anatomical and clinical guidelines that will help the clinician to achieve the proper esthetic and functional goals in stable, and unstable, dysfunctional occlusions. This will require four important steps, 1) Diagnosis: determining the etiology of the existing problems and when and why the occlusion is not stable, 2) Treatment Planning: (clinical decision making), what steps should be taken and in what order to achieve a successful restorative result and stable occlusion,**

**\* 3) Practical applications: restorative procedures will be presented in a step by step manner from initial examination using the Tanaka examination questionnaires which are enclosed, how to improve the accuracy of centric relation records and mounting of casts, use of diagnostic wax ups, tooth preparation, selection**

**of dental materials, occlusal adjustment.**

**4) And maintenance procedures, (use of occlusal splints to protect your restorations).**

This lecture/workshop program will feature a series of “decision trees” developed by Dr. Tanaka that will aid the clinician in making decisions and in establishing comprehensive treatment plans and alternate treatment plans. Important restorative and prosthodontic guidelines will be presented that will help the clinician to recognize esthetic/occlusal problems and to make appropriate clinical decisions. Participants will be able to compare treatment plans and outcomes for each patient.

**This program series will address the following questions:**

- **How to to increase the success and longevity of your current restorations?**
- **Why is an understanding of growth and development of the face important in treatment planning?**
- **How does continued growth of the face and remodeling affect restorative decisions?**
- **How do these factors affect the alignment of the anterior teeth, by altering overbite and overjet?**
- **How do clenching and bruxing affect the occlusion and arch length?**
- **What should the general dentist know about pharmacology and the management of muscle pain?**
- **When changes in the occlusion are noted, or slides from Centric Relation to the Inter-Cuspal Position (ICP) are noted, what are the restorative implications?**
- **How and when are tooth loading forces related to TMDs, (TM Joint loading forces, and muscle pain?)**
- **When is remodeling of the condyle and fossa due to normal loading from aging and function (Woda), and when do the TMJ structures require stabilization before and after restoration of the dentition?**
- \* **When are occlusal splints indicated, and what types are recommended?**
- \* **When should splints be adjusted to Centric Relation and when is the Inter-cuspal position indicated?**
- \* **How do you manage the patient who continues to clench and or grind after he/she as been restored?, How can you protect your new esthetic restorations?**

**Treatment Planning Part III:  
Abstracted from the DVD by Terry Tanaka, DDS**

**General health review of systems:**

Cardiac, pulmonary, vascular, neurologic, musculoskeletal, cervical range of motion, range of mouth opening & side to side movements, centrally mediated problems

Medical disorders that affect occlusion:

**Bloom's Taxonomy: (how people learn)**

Thinking Skills:

Higher Order Thinking Skills - (Synthesis and evaluation)

Lower Order Thinking Skills – (Knowledge and Comprehension)

\*\*Use all four senses when possible: hearing, observing, sensory (tactile), “thinking”

**The Patient Interview:** relevant information (“When two people meet”)

The “hand shake”- systemic diseases-

The “Smile”- neurology – (12 Cranial nerves)

Mouth opening –(limited?)

Chief Complaint (CC) – Diagnosis – Recommended treatments – Prognosis

**Treatment Planning Decision Tree:**

**Two keys to Diagnosis: “Listen and Observe”** the patient carefully

Problem Solving Decision Tree

**4 Origins of Pain:**

-Vascular

-Neurogenic

-Neuromusculoskeletal- Muscle and Joint disorders

-Psychogenic or personality Disorders-

**-Differential Diagnosis:Critical questions:** \_\_\_\_\_

**The arthritidesa and Occlusion changes –**

Local (OA) –

Systemic (RA) –

**Tooth Wear:**

Intrinsic-

Extrinsic-

**Neuro-musculoskeletal pain-**

Muscle disorders

Joint disorders

Disc Disorders-

Joint Disorders-

“The Centric Relation position will change with time of loading and parafunction”

*Tanaka 1969; Celenza 1975*

“The hinge axis position on the outside of the face will change also, but mostly due to physical changes in the drooping of the skin.”

### **Perceptions and processing of pain-**

*Okeson 6th ed.*

### **Referred Pain-**

#### **Use of vapocoolant spray - “Stretch and spray technique”**

Clinical uses –

**Reflex Inhibition** and use of vapo-coolant spray – Travell and Simons (Trigger Point Manual)

\*\* Sustained muscle contraction, clenching and bruxing may lead to painful muscles at rest and during function - clinical significance? “Alteration of the occlusion and occlusal contacts.

Bite forces: day forces \_\_\_\_\_, Nocturnal forces \_\_\_\_\_

Clinical significance –

**Bite forces and oral habits:** -how do they affect the selection of the dental materials used for the occlusal of posterior restorative materials?

Criteria for splinting maxillary teeth –

Criteria for splinting mandibular teeth –

### **Muscle Disorders: that may affect the occlusion**

Myalgia

Protective muscle co-contraction-

Centrally mediated disorders-

Etiology of TMDs and their affect on occlusal contacts and anterior guidance –

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## **PART 1a: Restorative Guidelines cont.**

**RVTucker Study Clubs - [google rvtucker.org](http://google.rvtucker.org) for more information**

Longevity of dental materials: site selection –

**Take all mandibular impressions with the mouth as closed as possible** because the mandible bends when the mouth is open, resulting in a more narrow arch.” *Burch JPD*

**Bite forces and oral habits:** how do they affect the selection of restorative materials used for anterior and posterior teeth? *Gibbs, Lundeen, Mahan JPD; Nishigawa et al*

Diurnal (day time) bite force anterior teeth 68-85 lbs

Diurnal (day time) bite force posterior teeth 175-185 lbs.

Nocturnal bite force-(is 2x to 5x greater than the day time forces)- anterior teeth 200 lbs. to 425 lbs. *Gibbs, Lundeen, Mahan JPD*

Nocturnal bite force – (is 2x to 5x greater than the day time forces)- posterior teeth 925-1000 lbss. *Gibbs, Lundeen, Mahan JPD*

**Sleep bruxism studies** - *Nishigawa K Bando E. et al.; Lavigne G*  
Bite force with overdentures and attachments - *Sposetti VJ*

**Muscle Disorders:**

Sustained muscle contraction-

Myalgia-

Muscle co-contraction –(protective muscle co-contraction)

Muscle spasm – is rarely seen by dentists.

Centrally mediated myalgia -

Clinical effects of sustained muscle contraction from clenching or bruxing- shortened resting muscle length affects inter-occlusal records and OVD.

Use GC Pattern Resin for inter-occlusal records, the size of a green pea. Do not use Duralay.

Use Duralay for transfer impressions (pick-up impressions)and other lab procedures.

**Behavioral /Psychogenic (personality disorders) -**

Listen to the description, (adjectives), Tx. effects may be transient, legal problems occur at a significantly higher rate.

**Current Occlusion Controversies: where is the science?** *DVD Tanaka Dental Education Library*

Centric Relation-

**Dental Myths: Part 1a slide 38**

1. Balancing side tooth contacts - should they be removed? \_\_\_\_\_
2. Should the Transverse Occlusal plane be parallel to a line through the pupils of the eyes? NO.... log on to [panadent.com](http://panadent.com) to see the Kois facebow that was made specifically for this problem.
3. “Two fingers is 40+mm, do not use three fingers , 57-60mm for avg. mouth opening  
*Tanaka 1970 ADA, ACP 1985*
4. “Do not place any finger in the ear to “feel” for joint clicking. The finger will actually displace the ear cartilage forward and the disc, causing the click.” *Tanaka 1969 ADA*

**- Facial Morphology and facial planes (landmarks): their affect on dental occlusion:**

- Mandibular plane-

- Occlusal plane-

- Frankfort plane-

- Palatal plane –

- Naso-labial angle-

**\*\* Semi-adjustable Articulator settings:** *Lee, Clayton, Hobo, Tanaka*)

- ID Intercondylar distance – is preset on all articulators at 100mm
- Eminentia angle for unworn teeth 30° (*Clayton; Hobo; Lee; Tanaka*)
- Eminentia angle for worn teeth 20° (*Clayton; Hobo; Lee; Tanaka*)
- Progressive side-shift for unworn teeth 7-10° (*Clayton; Hobo; Lee; Tanaka*)
- Progressive side-shift for worn teeth 10-13° (*Clayton; Hobo; Lee; Tanaka*)
- Immediate side-shift (artifact) 0 for unworn teeth (*Clayton; Hobo; Lee; Tanaka*)
- Immediate side-shift (artifact) 0.0 to 0.5mm for worn dentitions (*Clayton; Hobo; Lee; Tanaka*)

\* Skeletal and facial contributions to Malocclusions - study this one very carefully, it is the basis for problem solving occlusal and facial disorders: (*Proffitt; Kokich Jr; Behrents*)

\* **Growth and development of the human face** – affects on the occlusion with age?

Male-

Female-

Facial Thirds –

Facial Mid-line-

Facial mid-line and chin-point-

Facial mid-line and mid-line of the teeth

**SKELETAL CONTRIBUTIONS TO MALOCCLUSION: ( very important)**

## **PART II FACIAL MORPHOLOGY AND GROWTH AND DEVELOPMENT**

*Woodside et al; Proffitt, Sarver*

-Female growth –

-Male growth –

-Angle Classification-

-McLaughlin Classification-

**- Growth and Remodeling changes and their effects on the aging skeleton and occlusion:** – *Behrents RG-*

-Facial growth, direction and effects on anterior esthetics –

-Significance of the inclination of the maxillary and mandibular teeth -

Facial growth cont. Clinical implications -



**\*\*Master Formula for determining anterior tooth length and function:**

Facial morphology, naso-labial angle, E-line, Highest Smile Line, Retracted Lower lip, Curve of Spee, Curve of Wilson, Transverse occlusal plane, Lips at rest, buccal corridors and midline of incisors

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Age of the patient and the “Rest of the Face”

**Treatment Planning Guidelines: Facial Morphology**

Brachyfacial

Mesofacial

Dolichofacial

**Genetic disorders and dysplasias:**

Facial asymmetry –

AP and lateral discrepancies –

Growth changes in adults from age 37 to 77: *Behrents RG*

*DVD “Treatment Planning Part III: A new Treatment Planning Playbook for General Dentists” Tanaka, available on the Tanaka website in June 2010.*

**Clinical significance of Behrent’s studies:**

- Occlusal Forces –

- Interproximal Forces –

- Aging and parafunctional effects on anterior guidance-

**Ethnic differences –**

**Esthetic Guidelines: Slide 36 Part 2**

Tooth size ratios -

Maxillary and mandibular dysplasias -

Dento-alveolar extrusion –

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**PART 2 a FACIAL ESTHETIC GUIDELINES cont:**

Significance of the “Inclination of maxillary and mandibular teeth:”

Clinical effects of improper anterior guidance,(“constricted anterior envelope”)

Splint Therapy for the management of worn incisors –

**Esthetic guidelines cont.-**

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**PART III THE WORN DENTITION AND TREATMENT PLANNING FOR IMPLANT DENTISTRY, ANATOMICAL CONSIDERATIONS**

**TOOTH WEAR:**

Erosion, abrasion, abfraction, attrition differential diagnosis:

**Abfraction etiology?**– bending forces or toothpaste?

Curve of Wilson, Curve of Spee –  
General Occlusal principles and rehabilitation-

**OVD –**

**Curve of Wilson –**

**Implants: precautions and recommendations** for restorative dentists and surgeons:

Slide # 42-78 *See DVD “Anatomy for Implant Dentists” Tanaka*

- \* Site selection is very critical-
- \* Understanding the anatomy of the site is very critical-
- \* Note the lingual inclination of the mandibular molars –
- \* Don’t always follow the mandibular ridge-
- \* Be careful of the lingual plate of bone at the lingual.anterior of the mandible when placing implants.
- \* Is implant selection critical?“ almost all of the current implants sold today will integrate.”

**OVD:**

Lab. waxing workshop- step/step treatment planning guidelines – *DVD “Treatment Planning Part II , 4 hr. program - Tanaka*

Slide # 88 L.S.: Rehabilitation – step by step rehabilitation-

Slide #101 L. C. Rehabilitation step by step rehabilitation-

**“Thank you for your kind attention”**

**Terry T. Tanaka, DDS**

[ttanaka@usc.edu](mailto:ttanaka@usc.edu) for questions

[www.TerryTanakaDDS.Com](http://www.TerryTanakaDDS.Com) to view QuickTime video clips of the videos in this program