Occlusal Disease Management System…

By Dr. Jose-Luis Ruiz

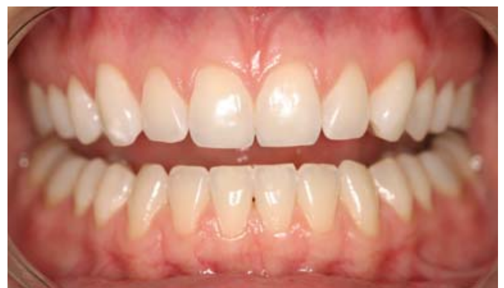
When & Why is Occlusion Important?

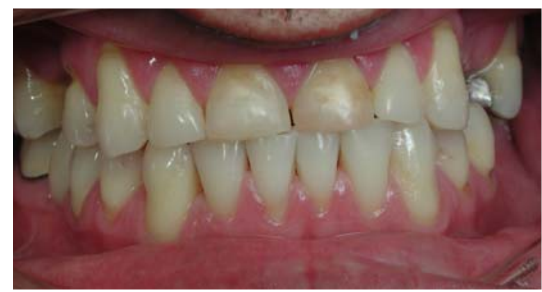
- When signs or symptoms of OD are evident
- When extensive restorative Dentistry is being planned!!!

Ruiz JL Achieving Longevity in Esthetics by Proper Diagnosis and Management of "Occlusal Disease". 2007 Contemporary Esthetics Vol 11 (6); 24-30

Occlusal Damage Occurs at Any Age?

Patients on Their 30's





If Occlusion is So Important? Why So Ignored?

- Too much of the focus on occlusion education is for "full mouth rehabilitation"
- "TMD".& occlusion mixed together.
- It is made to be too complicated.
- Population not educated about OD

Every Dentist Should be an expert in occlusion Because:

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Lecture Objectives:

- What is Occlusal Disease
- How to Diagnose OD
- How to educate the patient
- How to treat OD
- How to Maintain Patients with OD
- Practice Integration

What is Occlusal Disease?

Disease: "Abnormal condition of an organism as a consequence of infection, inherent weakness or environmental stress, that impairs normal physiological function."

The American Heritage Dictionary

Definition of Occlusal Disease:

A destructive process evident in any part of the masticatory apparatus (joint, muscles, periodontium or teeth), as a consequence of occlusal disharmony or parafuction.

JL Ruiz

Ruiz JL. Occlusal Disease:Restorative consequences and Patient Education. Dentistry Today 2007Sep 26(9):90-95

How To Diagnose & Implement OD?

New Paradigm in Health Care

"Unnecessary data gathering cannot be regarded as measurement of thoroughness."

McNeill C. Science and Practice of Occlusion

Quintessence Books

"Occlusal Disease Diagnosis System"

- Stage 1 Initial Occlusal Evaluation (all patients)
- Stage 2 Occlusal and TMJ Examination (as needed and accepted by patients)
- Stage 3 TMJ Examination or Referral to local expert

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The Initial Screening (Stage 1)

"Team Driven NP Examination System"

Important Data Is Gathered From Day 1

Team Driven Record taking &

Education____
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Dentists Exam

Dental History Form

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DENTAL HISTORY FORM

PATIENT NAME: (PREFERRED): DATE:

Please describe the primary reason for your visit (concerns):

1. ____________________

2. ____________________

3. ____________________

4. How long has this been going on and what would you like done?

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5. If you could rate your smile from 1 - 10, what would it be? ____________________

6. Would you like to improve your smile? Y N How? ____________________

____

Have you ever suffered from, or been told you may have any of the following?

7. Gum disease	Y	N	11. Malocclusion	Y	N
8. Bruxism or Grinding	Y	N	12. Bad Breath	Y	N
9. Jaw pain or TMJ	Y	N	13. Headacheds or Migrains	Y	N
10. Dental pain	Y	N	14. Tooth Secitivity to Hot/Cold	Y	N

DOCTOR'S NOTES: ____________________

INITIAL EXAM FORM

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PATIENT NAME: DATE:

Concerns	Solutions
1.	1.
2.	2.
3.	3.
4.	4.

Hygiene/Perio	Initial OD Examination	Medical & Dental Referral
Last Recall: Brush	Occ. Wear/FX:	Ref Endo: Ref OS:
Floss: Bleed w Flos:	CDH:	Ref Perio:
Tartar: Bone Loss:	Hypermobility:	Ref Ortho:
Inflam: Bleed U Prob:	Vert. Bone Loss:	Ref TMJ:
Esthetics	Abfractions:	Oral Cancer:
Smile Score:	Fremitus:	Medical Clearance:
Whitening:	Muscle or TMJ Pain:	
Diagnosis / Prevention	**TX PLAN #1 - BASIC**	**Records**
Periodonal:		MIP: CR:
OD:		OD:
Caries:		DFED:
EXISTING CONDITIONS		**TX PLAN #2 - IDEAL**
1	1	1
2	2	2
3	3	3

7 Signs and Symptoms of Occlusal Disease

- **Pathological tooth wear, chipping or fractures**

Ratcliff S. Becker IM. et al. Type and Incidence of Cracks in Posteror Teeth. J Prosth Dent: 2001;86:168

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- **Tooth hypersensitivity**

Coleman TA, Grippo JO, et at Cervical dentin hypersensitivity. Part III: Resolution following occlusal equilibration. Quintessence Int 2003:34:427-434

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- **Tooth hypermobility**

Greenstein G, Grenstein B, Cavallaro J. Prerequisite for treatment planning implant dentistry: Periodontal prognostication of compromised teeth. 2007 Compendium 28(8):436-447

- **Fremitus**
- **Abfractions**

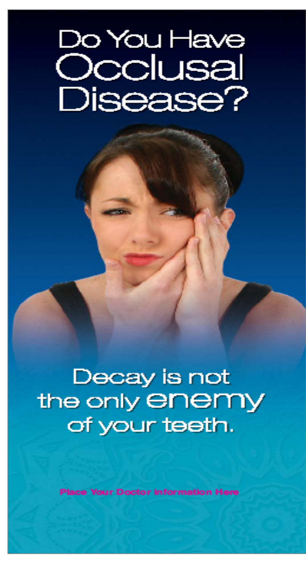
Grippo JO, Abfractions: A new classification of hard tissue lesions of the teeth. J Esthet Dent 1991 Jan-Feb;3(1):14-9

- **Severe localized bone destruction (secondary to periodontal disease)**

Harrel SK, Nunn ME, Hallmon WW. Is there an association between occlusion…Yes, occlusal forces can contribute to periodontal destruction. JADA; 2006; 137 (10): 1380-1392

- **Muscle pain and TMJ pain**.
- T Gremillion HA. The relationship between occlusion and TMD: An evident-based discussion.
- J Evid Dent Pract 2006;6:43-47

(Stage 1) Discovery & Education



Night Guard …Even if Patient Refuse Stage 2, when there are signs of OD.

No to treat symptoms of pain?
After extensive dentistry.
Don't over promise.

Patients Choose Direction

(Stage 2) Occlusal / TMJ Examination

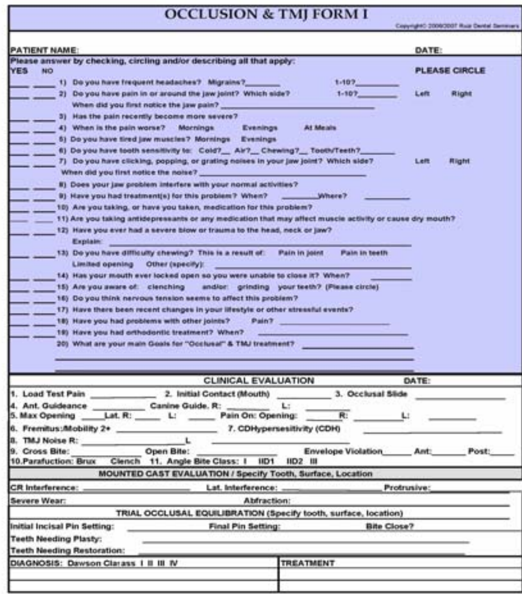
Purpose:

- To gather necessary information for final diagnosis.
- Permits an opportunity for communication of goals and limitations.
- Has 2 components…the occlusal portion (function), esthetic portion

Record Needed on second visit

1. Photos
2. Panorex
3. High Quality Cast
4. Face Bow

5 a).Lucia jig
5 b) Patient Fill Occlusion & TMJ Form



OCCLUSION & TMJ FORM I

PATIENT NAME: DATE:

Please answer by checking, circling and/or describing all that apply:

YES NO — PLEASE CIRCLE

1) Do you have frequent headaches? Migraine?____ 1-10?____
2) Do you have pain in or around the jaw joint? Which side? 1-10?____ Left Right
When did you first notice the jaw pain? ____
3) Has the pain recently become more severe?
4) When is the pain worse? Mornings Evenings At Meals
5) Do you have tired jaw muscles? Mornings Evenings
6) Do you have tooth sensitivity to: Cold?__ Air?__ Chewing?__ Tooth/Teeth?____
7) Do you have clicking, popping, or grating noises in your jaw joint? Which side? Left Right
When did you first notice the noise? ____
8) Does your jaw problem interfere with your normal activities?
9) Have you had treatment(s) for this problem? When? ____ Where? ____
10) Are you taking, or have you taken, medication for this problem?
11) Are you taking antidepressants or any medication that may affect muscle activity or cause dry mouth?
12) Have you ever had a severe blow or trauma to the head, neck or jaw?
Explain: ____
13) Do you have difficulty chewing? This is a result of: Pain in joint Pain in teeth
Limited opening Other (specify): ____
14) Has your mouth ever locked open so you were unable to close it? When? ____
15) Are you aware of: clenching and/or grinding your teeth? (Please circle)
16) Do you think nervous tension seems to affect this problem?
17) Have there been recent changes in your lifestyle or other stressful events?
18) Have you had problems with other joints? Pain? ____
19) Have you had orthodontic treatment? When? ____
20) What are your main Goals for "Occlusal" & TMJ treatment? ____

CLINICAL EVALUATION DATE:

1. Load Test Pain ____ 2. Initial Contact (Mouth) ____ 3. Occlusal Slide ____
4. Ant. Guideance ____ Canine Guide. R: ____ L: ____
5. Max Opening ____ Lat. R: ____ L: ____ Pain On: Opening: ____ R: ____ L: ____
6. Fremitus:/Mobility 2+ ____ 7. CDHypersesitivity (CDH) ____
8. TMJ Noise R: ____ L ____
9. Cross Bite: ____ Open Bite: ____ Envelope Violation____ Ant:____ Post:____
10. Parafuction: Brux Clench 11. Angle Bite Class: I IID1 IID2 III

MOUNTED CAST EVALUATION / Specify Tooth, Surface, Location

CR Interference: ____ Lat. Interference: ____ Protrusive: ____
Severe Wear: Abfraction:

TRIAL OCCLUSAL EQUILIBRATION (Specify tooth, surface, location)

Initial Incisal Pin Setting: ____ Final Pin Setting: Bite Close?
Teeth Needing Plasty: ____
Teeth Needing Restoration: ____

DIAGNOSIS: Dawson Clarass I II III IV	TREATMENT

“What is an Ideal Occlusion”? Joint Position…

- Natural bite
- Neuromuscular

CR:

- Gnathology
- Bioesthetics
- Pankey-Dawson

What We All Agree On: The 3 Golden Rules Of Occlusion

1. **Bilateral even contacts.**
2. **Posterior disclusion (anterior guidance & canine rise).**
3. **Unobstructed envelop of function.**

The Ultimate Goal!

1. Why Even Contacts?

Gibb C. Mahan PE. et al. Limits of Human Bite Strength. J Prosth Dent 1986 Aug;56(2):226
Sheikholeslam A. Riise C. Influence of experimental interfering occlusal contacts on the activity of the anterior temporal and masseter muscles … J Oral Rehab 1983; Vol. 10:207-14

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2 a. Why Anterior Guidance?

Manns A. Miralles R. Influence of variation in anteroposterior occlusal contacts on electromyographic activity . J Prosthet Dent. 1989 May;61(5):617-23.
Mansour RM, Reynik RJ. In vivo occlusal forces…Forces measured in terminal hinge position…
J Dent Res. 1975 Jan-Feb;54(1):114-20.
Williamson EH. Et al . Anterior guidence: effect on electromyografic activity of the temporalis and maseter J. Prosth Dent 1983; 49:816

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2 b.Why Canine Guidance?

Manns A, Chan C,et al. Influence of group function and canine guidance on electromyographic activity of elevator muscles. J Prosthet Dent. 1987 Apr;57(4):494-501

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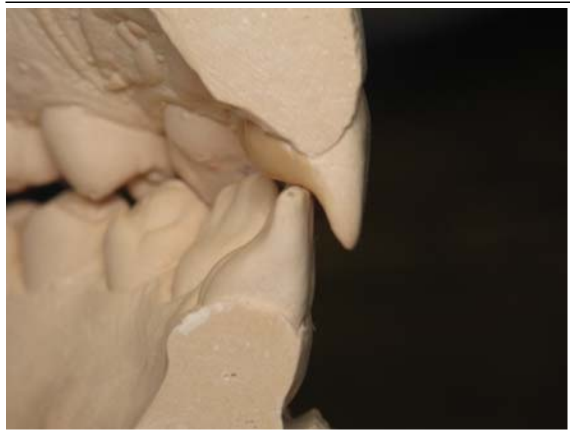
3. Envelop of Function?

Dawson PE. Evaluation, Diagnosis and Treatemnet of Occlusal Problems. 1989 Mosby



VDO

* Patient accommodation to changes in VDO, suggest than VDO can be modified with in reason without clinical consequences.

McNeill C. Science and Practice of Occlusion. Quintessence Books. 1997 Chapter 30; Pages409

The 11 Step Clinical Examination…

1. Load test

2. First point of contact

3. Occlusal slide

4. Clinical Anterior Guidance & Canine Guidance

5. Range of motion

6. TMJ noise

7. Frmitus/ mobility

8. Cervical Dentin Hypersensitivity (CDH)

On the Cast:
9. Cross/ Open bite

10. Parafunction

11. Angle classification

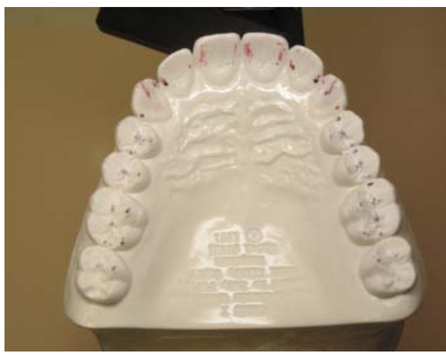
After Patient is Dismissed & before Final Diagnosis….
Cast Mounted on Semi-adjustable Articulator

- No articulator can repeat muscle variations & human asymmetry.
- It is impossible to avoid introducing error.
- Need to have fully adjustable brain

Cast Evaluation & Trial Equilibration

Cast Evaluation

- **Using Artifoil evaluate for Centric, lateral interferences.**
- **Tooth anatomy & wear.**
- **Evaluate occlusal plane.**
- **Evaluate to see if occlusion is close enough to ideal, or if subtractive or additive equilibration, or rehabilitation are needed.**
- **If discrepancy is extreme, assess if orthodontics or extensive restorations are needed.**



Trial Equilibration

- **Using Arti-Foil (Bausch)blue & Red. Always double sided.**
- **CO**
- **Occlude (Pascal)**
- **Canine Guidance**
- **Lateral & Protrusive**

____
____
____
____
____

Diagnose Before You Treat!

Diagnose First:

There can only be one correct diagnosis, but there can be many treatments for that diagnosis. Hippocrates

- **Pt. Goals**

- Diagnosis (Disease & Etiology)
- Treatment

(Stage 3) Advanced TMJ/TMD Examination

<u>When is the TMJ Unstable for Treatment?</u>

Clinical exam:

- Positive load test (1)
- Pain during and/or limited rage of motion (5)
- Sound on the joint (8)

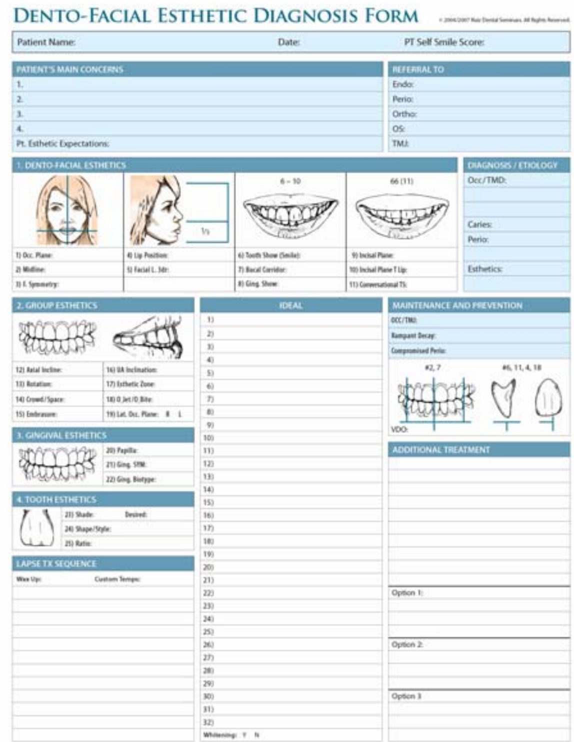
Questioner:

- Interfere w normal activities (8)
- Locked jaw ((14)
- Stress worsen condition (16)
- Do you fell your bite is changing (19)

And:

- No obvious occlusal etiology!

Esthetic Component:



DENTO-FACIAL ESTHETIC DIAGNOSIS FORM

Patient Name: Date: PT Self Smile Score:

PATIENT'S MAIN CONCERNS
1.
2.
3.
4.
Pt. Esthetic Expectations:

REFERRAL TO
Endo:
Perio:
Ortho:
OS:
TMJ:

1. DENTO-FACIAL ESTHETICS
1/3
6 – 10
66 (11)
1) Occ. Plane:
2) Midline:
3) F. Symmetry:
4) Lip Position:
5) Facial L. 3dr:
6) Tooth Show (Smile):
7) Bucal Corridor:
8) Ging. Show:
9) Incisal Plane:
10) Incisal Plane T Lip:
11) Conversational TS:

DIAGNOSIS / ETIOLOGY
Occ/TMD:
Caries:
Perio:
Esthetics:

2. GROUP ESTHETICS
12) Axial Incline:
13) Rotation:
14) Crowd/Space:
15) Embrasure:
16) UA Inclination:
17) Esthetic Zone:
18) O Jet/O Bite:
19) Lat. Occ. Plane: R L

3. GINGIVAL ESTHETICS
20) Papilla:
21) Ging. SYM:
22) Ging. Biotype:

4. TOOTH ESTHETICS
23) Shade: Desired:
24) Shape/Style:
25) Ratio:

LAPSE TX SEQUENCE
Wax Up: Custom Temps:

IDEAL
1)
2)
3)
4)
5)
6)
7)
8)
9)
10)
11)
12)
13)
14)
15)
16)
17)
18)
19)
20)
21)
22)
23)
24)
25)
26)
27)
28)
29)
30)
31)
32)
Whitening: Y N

MAINTENANCE AND PREVENTION
OCC/TMJ:
Rampant Decay:
Compromised Perio:
#2, 7
#6, 11, 4, 18
VDO:

ADDITIONAL TREATMENT
Option 1:
Option 2:
Option 3

Dento-Facial Esthetic Diagnosis System

1. Occlusal Plane:
2. Midline:
3. Facial Symmetry:
4. Lip Position:
5. Facial Lateral Thirds:
6. Tooth Show (Smile):
7. Bucal Corridor:
8. Gingival Show:
9. Incisal Plane:
10. Incisal Plane T Lip:
11. Conversational TS:

GROUP ESTHETICS

12. Axial Incline:
13. Rotation:
14. Crowd/Space:
15. Embrasure:
16. US Inclination:
17. Esthetic Zone:
18. Over jet/ Overbite:
19. Lateral Occlusal Plane:

GINGIVAL ESTEHTICS

20. Papilla:
21. Gingival Symmetry:
22. Gingival Biotype:

TOOTH ESTHETICS

23. Shade:
24. Shape/Style:
25. Ration:

____

____

____

____

How to treat OD?

Treatment Depends on The Etiologies of OD

- **Primary & Secondary Occlusal Trauma**
- **OverJet & Overbite**
- **Skeletal Asymmetries**
- **Excessive wear associated with chemical erosion.**
- **Parafuctions**

4 ways to treat OD:

1. **Night Guard or Occlusal Splint.**
2. **Simple subtractive equilibration + NG.**
3. **Subtractive and additive equilibration + NG.**
4. **Occlusal rehabilitation + NG.**

NG is the Most basic Treatment When?

Night Guard is preventative NOT therapeutic:

- **Made and adjusted on MIP**
- **Full coverage hard acrylic**
- **Equal contacts**
- **Anterior and canine guidance.**

Worn at night when there are signs of OD and when patient is aware of clenching or grinding.

Therapeutic Splints: When?

- **Patient is positive to load test.**
- **To do a reversible test of our planned occlusal changes before restorative work is done or OD treatment,** *when patient has symptoms of pain.*
- **NOT to treat TMD (in our system).**

Types of Splints…

- **Anterior flat plain (NTI, Lucia jig)**
- **Posterior Pivot (Gelb appliance & Aqualizer)**
- **Full coverage with Ramp.**
- **Full coverage CR; Maxillary or Mandibular.**

When do we start treating OD?

____

____

The Equilibration…When?

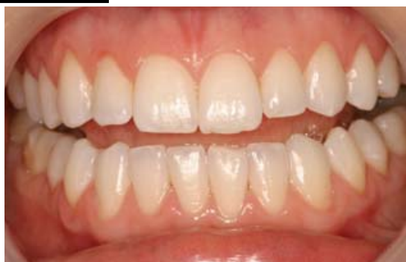
1. **Diagnose, Tx plan & Informed Consent.**
2. **Trial equilibration.**
3. **Using equilibrated cast as a guide…**
4. **Get equal centric stops on CR.**
5. **Lateral & Protrusive second.**
6. **Always finish with "posture adjustment'**
7. **Should be followed by at two retouch adjustments.**

Treatment is Always the Same, Force Control and Distribution **= The 3 Golden Rules Of Occlusion**

- Equal contacts
- Anterior Guidance & Canine Rise
- Unobstructed Envelop of Function

The Importance of Knowing the Etiology of OD

Cases

- 
- Primary & Secondary Occlusal Trauma____
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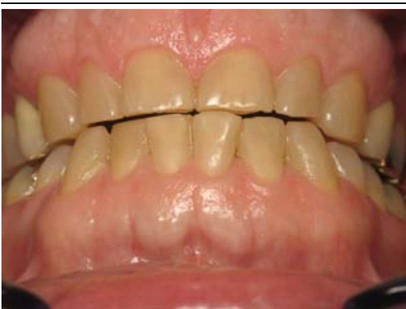
- 
- OverJet & Overbite
  ____
  ____
  ____

- Skeletal Asymmetries____
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- Excessive wear associated with chemical erosion.
____
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Parafuctions____
____

Psychological Component
Physiological Component
[Drug Related Component]

- ____
____
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Regardless of cause, the most effective treatment for the effects of bruxism is perfection of the occlusion. PE Dawson

"Heavy bruxers should be informed that restoring their teeth will not lead to cessation of bruxism. Patients must accept that their restorations will also be subject to wear and that the prosthodontic rehabilitation is an intermediate means that will have to be renewed at certain intervals"
Ekfeldt A. Karlsson S. Changes of masticatory movement characteristics after prosthodontic rehabilitation of individuals with extensive tooth wear. Int J Prosthodont. 1996 Nov-Dec;9(6):539-46.

How to Maintain Patients with OD

- Night Guard
- Patient Education
- The Perio Model, patients are never "cured"

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Integrating in to our Practice

- Dentist Education and Commitment
- Staff Education
- Patient Education
- But it is not and all or nothing approach, but plant the seed.

How to Educate the Patient

- Call it like it is "Occlusal Disease"

Using Analogies:

- Car:____Door:____

  Table____

LA Institute Occlusal Philosophy

- ***Occlusal Disease is far more than TMD or Pain***
- ***Occlusal Diagnosis must be practical if we are going to do it routinely***
- ***"Ideal Dentistry" is an illusion & leads to over treatment so There must be a realistic and definable end point for occlusal treatment, and it can't be perfection***
- ***Correcting occlusal disharmony should not be more destructive that the disease it self***
- ***Occlusal treatment doesn't require expensive instrumentation***

Thank You

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