

TMD for the GP 2023

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Annapolis, Maryland

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John R Droter DDS

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Hello. I am:

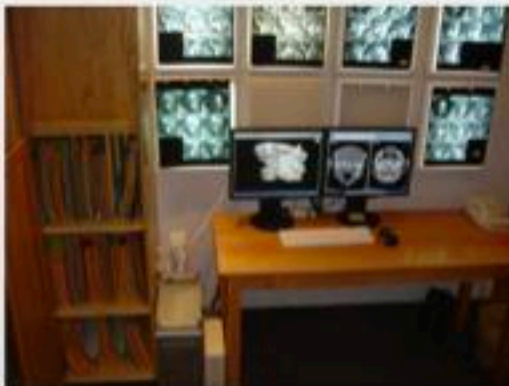
**John R Droter DDS
Annapolis, Maryland**

*Annapolis, Maryland
John R Droter DDS*

Dr Guy Haddix
had been taking CT
scans since 1990

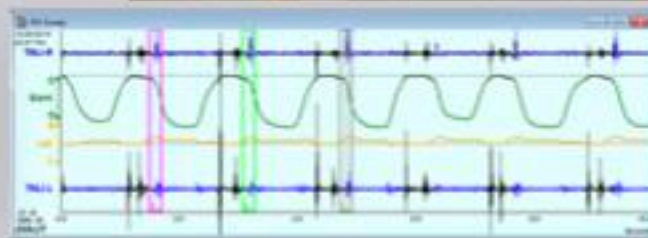
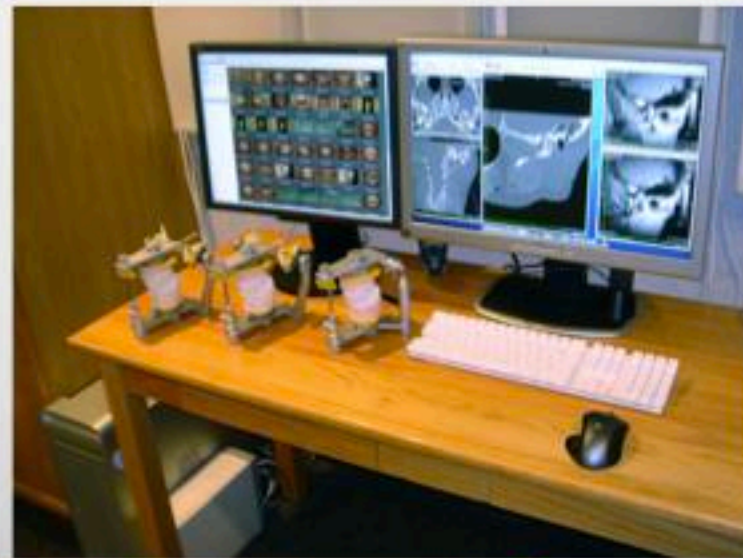


CT and MRI Scans in
my practice since 1992.



T-Scan since 1999

Compare CT, Mounted models, MRI,
JVA before and after a case.
What can I see now?



Joint Vibration Analysis since 2004

Lingual Light Wire- Crozat Arch Expansion

Age 29

Start



7 months LLW

Age 30



Anterior Openbite Non Surgical Treatment: Moving the Maxilla



Anterior Openbite with Active TMJ Bone Loss

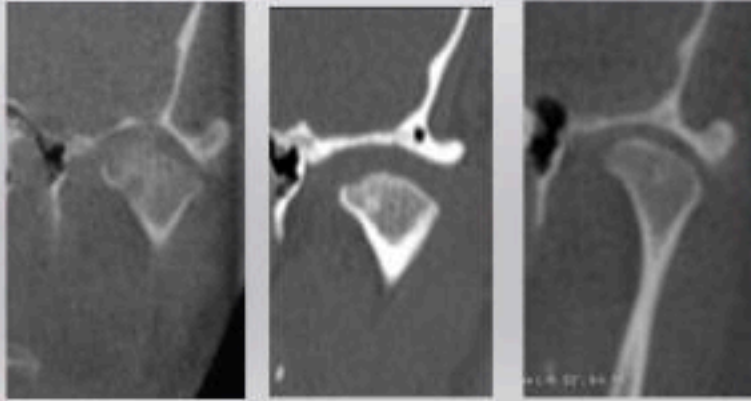
Non Surgical Therapies



Condylar Distraction



Anti Inflammatory Therapies



Restorative Dentistry

Pathological Occlusion

??Airway Related Bruxing?



Restore Function

Composite Trial Occlusion

AHI + 26 CPAP



Anterior guidance
or group function?



Disclosures:

Atomic Skis- Sponsored.
I got stuff.

LD Pankey Institute- I am paid
a small honorarium for lectures

Spear Education- Paid
honorarium for lectures

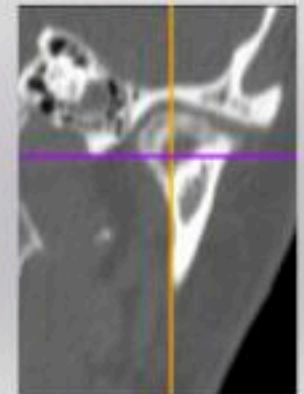
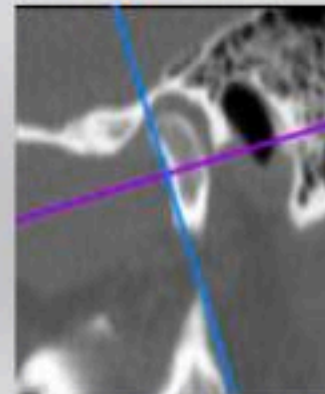
Patent on sleep device: LatBrux
Co-Owner of ArrowPath Sleep



Ski Coach for National Ski Patrol
Level 3 Certified Professional Ski Instructors of America

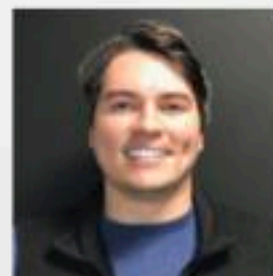


I have chosen the most representative slice of and MRI and CT
scans to best represent what you would see if viewing all images





Nate Brock, CDT
 (865) 509-4509
 connect@livingtreelab.com



D-PAS option:
 You can make your
 own out of acrylic.

Instructions at
drdroter.com

3D Printed
 D-PAS



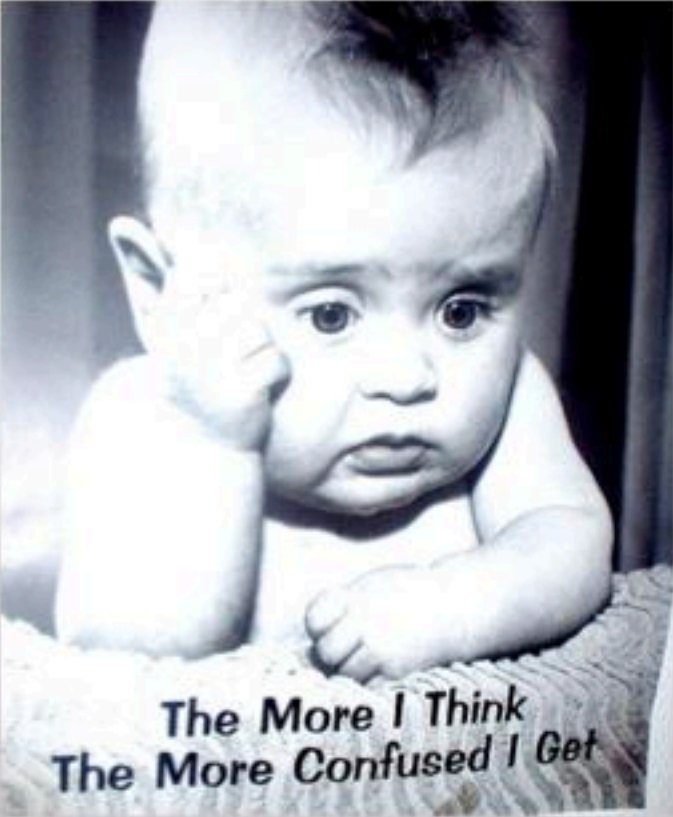
3D Printed
 Posterior deprogrammer
 with upper essix



3D Printed
 CR Orthotic



TMJ/TMD Confusion



Dogmatic
Arguments



TMDs- What are the choices? (190 Diagnoses, 7 Categories)

1. TMJ Damage

Adhesions and ankylosis of temporomandibular joint
Avascular Necrosis Mandibular Condyle
Cartilage Fibrillation, Mandibular Condyle, Fossa
Closed Lock, Jaw Cartilage, Acute
Closed Lock, Jaw Cartilage, Chronic
Closed Lock, Jaw Cartilage, Intermittent, Mechanically dysfunctional
Crush Injury Mandibular Condyle
Crystal arthropathy, unspecified, TMJ
Dislocation jaw cartilage due to injury, Sequela
Dislocation jaw cartilage with reduction, favorable adaptation, TMJ
Dislocation jaw cartilage without reduction, favorable adaptation, TMJ
Effusion, TMJ

Impingement Retrodiscal Tissue
Inflammatory Tissue Bone Resorption, TMJ Condyle
Loose Body (Joint Mice), TMJ
Malignant neoplasms of bones of skull and face
Open Lock TMJ, Recurring
Osteoarthritis TMJ, active degeneration
Osteoarthritis- Inactive
Osteochondritis Dissecans TMJ
Osteolysis Mandibular Condyle, Active
Perforation Mandibular, TMJ
Perforation Pseudodic, TMJ
Psoriatic Arthritis TMJ
Rheumatoid Arthritis Sero Negative TMJ
Synovitis

2. Muscles of the TMJ

Dystonia
Habitual posture forward mandible
Hemifacial Muscle spasm
Inhibitory Reflex Dysfunction, Periodontal Ligament Masseter Muscle
Muscle Atrophy, TMJ
Muscle Bracing Neck Stabilization
Muscle Bracing Pain Avoidance
Muscle Bracing TMJ stabilization
Muscle Bracing Airway Patency (with Tongue)
Muscle Contracture Fibrosis Lateral Pterygoid
Muscle Contracture Fibrosis Masseter, Medial Pterygoid, Temporalis
Muscle Fatigue Overuse
Muscle Hypertrophy TMJ Muscles

3. Cranial Alignment/Occlusion

Cranial Distortion / Misalignment
Hemifacial Hypoplasia
Hyper Occlusal Awareness
Idiopathic Orthotic Damage
Malocclusion Anterior Open Bite
Malocclusion Central occlusion Mx/C discrepancy
Malocclusion Deep Bite
Malocclusion due to mouth breathing
Malocclusion due to TMJ bone loss
Malocclusion due to tongue, lip or finger habits
Malocclusion insufficient anterior occlusal guidance
Malocclusion lack of posterior occlusal support
Malocclusion Posterior Openbite Bilateral
Malocclusion Posterior Openbite Unilateral
Malocclusion unspecified

Malposition/Misalignment: Maxilla, Temporal Bone, Mandible
Mandibular asymmetry
Mandibular hyperplasia
Mandibular hypoplasia
Mandibular Retrognathia
Maxillary asymmetry
Maxillary hyperplasia
Maxillary hypoplasia
Maxillary Retrognathia
Occlusal Adaptation, Favorable
Occlusal Dependency for Joint Stabilization/ Proprioception
Tooth Intrusion
Tooth Supereruption

4. Cervical Damage

Cervical Vertebrae Alignment Dysfunction
Cervicocranial Syndrome
Muscle Guarding due Neck Instability
Trigger Point Neck Muscle with Referred Pain
Trigger Point Neck Muscle, Localized Pain

5. Parafunction

Excessive Tooth Wear, Damage
Hypersensitive Occlusion
Parafunctional Clenching Teeth, Awake
Parafunctional Clenching Teeth, Sleep
Parafunctional Grinding Teeth, Awake
Parafunctional Grinding Teeth, Sleep
Parafunctional Clench/Grind Wiggle
Parafunctional Tongue Bracing avoiding uncomfortable tooth contact
Parafunctional Tongue Bracing Neck stabilization
Parafunctional Tongue Bracing to maintain Airway
Parafunctional Tongue Bracing unknown cause

6. Whole Body / Systemic

Lyme Disease Arthritis
Magnesium Deficiency
Obstructive Sleep Apnea
Osteoporosis without current pathological fracture
Pathological Habitual Movement Pattern
Postural Deformity Standing
Postural Deformity Walking
Postural Forward Head Position
Upper Airway Resistance, UARS

7. Other

Nerve Entrapment Masseteric Nerve due to Masseteric hypertonicity
Neurosensory Trigeminal Nerve
Obsessive-Compulsive Personality Disorder
Other
Otitis Ear Infection
Pain disorder exclusively related to psychological factors, Somatoform pain disorder
Pain disorder with related psychological factors
Peripheral Sensitization

1. TMD: TMJ Damage and Diseases

Adhesions and ankylosis of temporomandibular joint
Avascular Necrosis Mandibular Condyle
Cartilage Fibrillation, Mandibular Condyle, Fossa
Closed Lock, Jaw Cartilage, Acute
Closed Lock, Jaw Cartilage, Chronic
Closed Lock, Jaw Cartilage, Intermittent, Mechanically dysfunctional
Crush Injury Mandibular Condyle
Crystal arthropathy, unspecified, TMJ
Dislocation jaw cartilage due to Injury, Sequela
Dislocation jaw cartilage with reduction, favorable adaptation, TMJ
Dislocation jaw cartilage without reduction, favorable adaptation, TMJ
Effusion, TMJ
Fracture of subcondylar process of mandible
Gout, TMJ
Growth Disturbance Prepuberty due to TMJ damage
Hemarthrosis TMJ, Traumatic
Hyperplasia Mandibular Condyle,
Hypoplasia Mandibular Condyle
Hypoxia Reperfusion Injury, TMJ Cartilage Damage
Hypoxic Progressive Condylar Resorption

Impingement Retrodiscal Tissue
Inflammatory Tissue Bone Resorption, TMJ Condyle
Loose Body (Joint Mice), TMJ
Malignant neoplasm of bones of skull and face
Open Lock TMJ, Recurring
Osteoarthritis TMJ, active degeneration
Osteoarthrosis- Inactive
Osteochondritis Dissecans TMJ
Osteolysis Mandibular Condyle, Active
Perforation Meniscus, TMJ
Perforation Pseudodisc, TMJ
Psoriatic Arthritis TMJ
Rheumatoid Arthritis Sero Negative TMJ
Rheumatoid Arthritis TMJ
Sprain Discal Ligament TMJ, acute with joint edema
Subluxation on Loading, TMJ
Subluxation on Movement, TMJ
Synovial Cyst (Ganglion Cyst)
Synovial Hyperplasia
Synovitis

TMD Therapies: (70 therapies)

Physical

Ice
Hot Cold Hot
Cold Laser
TENS in office
TENS home use
Range of motion exercises
Active Stretching: Manual, Tongue Blades, Dynasplint
Refer to Physical Therapy: Rocabado mobilization
Refer to Physical Therapy: Postural Restoration Therapy
Refer to Physical Therapy: Various Muscle Therapies
Refer to Chiropractic: Atlas Orthogonist
Refer to Osteopathic MD: Body alignment
Breathe, Walk , Exercise

Dental Orthotics

In Office Trial Anterior Stop
Temporary home use anterior stop
Myobrace
Aqualizer
Diagnostic Palatal Anterior Stop
Lower full coverage CR
Lower posterior deprogrammer
Lower TMJ Rehab flat plane
Lower Indexed

Brux Checker
Upper full coverage hard CR guard
BiArch Posterior Deprogrammer
Mandibular Advancement Device
Lateral Bruxing Device

Medicinal

Anti Inflammatory:
NSAIDs,
Doxycycline low dose
CBD Topical
Glucosamine/Chondroitin MSM
Vitamins: Vit C, Vit D, Vit B12
Minerals: Magnesium, Electrolytes
Minerals: Iron
Refer to MD for Lyme therapies
Refer to MD Rheumatoid Arthritis therapies
Refer Botox Masseter injections
Refer Botox Lateral Pterygoid Injections
Food

Sleep/ Fatigue

Mouth taping
Diet Modification
Positional Therapy
Vitamins: Vitamin D, Vitamin B12, Vit C
Minerals: Magnesium, Iron
Lateral Bruxing Device guided plane
Lateral Bruxing Device Elastomeric
Mandibular Advancement Device
CPAP

Occlusal Orthopedic

Lingual Light Wire
Planas Tracks
Lower soft sectional orthotic
Sectional orthodontics
Expansion orthopedics/ orthodontics
Restorative Dentistry
Occlusal Adjustment with DTR, TekScan
Condylar distraction
Occlusal Adaptation

Tongue Parafunction

Refer for Cervical Alignment/ Stabilization
Myobrace
Upper Lingual light wire
Clear Brux Checker
Frenectomy
Myofunctional therapy

Surgical

Refer: Arthrocentesis w/ PRP
Refer: Discectomy w/ Fat Graft
Refer: Total Joint Replacement
Refer: Orthognathic Surgery

Different Diagnoses have Different Therapies

Specific Diagnosis

TMDs- What are the choices? (190 Diagnoses, 7 Categories)

1. TMJ Damage

Arthritis
 Ankylosis
 Condylar fracture
 Condylar hyperplasia
 Condylar resorption
 Condylar cyst
 Condylar dislocation
 Condylar displacement
 Condylar degeneration
 Condylar dysfunction
 Condylar infection
 Condylar neoplasm
 Condylar trauma
 Condylar tumor
 Condylar cyst
 Condylar degeneration
 Condylar dysfunction
 Condylar infection
 Condylar neoplasm
 Condylar trauma
 Condylar tumor
 Condylar cyst

Arthritis
 Ankylosis
 Condylar fracture
 Condylar hyperplasia
 Condylar resorption
 Condylar cyst
 Condylar dislocation
 Condylar displacement
 Condylar degeneration
 Condylar dysfunction
 Condylar infection
 Condylar neoplasm
 Condylar trauma
 Condylar tumor
 Condylar cyst

2. Muscles of the TMJ

Myofascial pain
 Myofascial pain dysfunction
 Myofascial pain syndrome
 Myofascial pain disorder
 Myofascial pain condition
 Myofascial pain disorder
 Myofascial pain condition
 Myofascial pain disorder
 Myofascial pain condition

Myofascial pain
 Myofascial pain dysfunction
 Myofascial pain syndrome
 Myofascial pain disorder
 Myofascial pain condition
 Myofascial pain disorder
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 Myofascial pain disorder
 Myofascial pain condition

3. Cranial Alignment/Occlusion

Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion
 Malocclusion

Malocclusion
 Malocclusion
 Malocclusion
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 Malocclusion
 Malocclusion

4. Cervical Damage

Cervical spondylosis
 Cervical spondylitis
 Cervical spondylolysis
 Cervical spondylolisthesis
 Cervical spondylomyelitis
 Cervical spondyloneurosis
 Cervical spondylorhachis
 Cervical spondylorhachitis
 Cervical spondylorhacholysis
 Cervical spondylorhacholysis

5. Parafunction

Bruxism
 Bruxism
 Bruxism
 Bruxism
 Bruxism
 Bruxism
 Bruxism
 Bruxism
 Bruxism
 Bruxism

6. Whole Body / Systemic

Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis
 Systemic sclerosis

7. Other

Other
 Other
 Other
 Other
 Other
 Other
 Other
 Other
 Other
 Other

TMD Therapies: (70 therapies)

Physical

Ice
 Hot Cold Hot
 Cold Laser
 TENS in office
 TENS home use
 Range of motion exercises
 Active Stretching: Manual, Tongue Blades, Dynasplint
 Refer to Physical Therapy: Rooted mobilization
 Refer to Physical Therapy: Various Muscle Therapies
 Refer to Chiropractic: Atlas Orthogonal
 Refer to Osteopathic MD: Body alignment
 Breathe, Walk, Exercise

Medicinal

Anti-inflammatory:
 NSAIDs,
 Doxycycline low dose
 CBD Topical
 Glucosamine/Chondroitin MSM
 Vitamins: Vit C, Vit D, Vit B12
 Minerals: Magnesium, Electrolytes
 Minerals: Iron
 Refer to MD for Lyme therapies
 Refer to MD Rheumatoid Arthritis therapies
 Refer Botex Masseter injections
 Refer Botox Lateral Pterygoid injections
 Feed

Dental Orthotics

In Office Trial Anterior Stop
 Diagnostic Palatal Anterior Stop
 Brux Checker
 Lower full coverage CR
 BiArch Posterior Deprogrammer
 Upper full coverage hard CR guard
 Temporary home use anterior stop
 Myofascial

Aqualizer
 Lower Soft Sectional
 Lower posterior deprogrammer
 Lower TMJ Rehab flat plane
 Lower postured indexed
 Lower CR Indexed
 Mandibular Advancement Device
 Lateral Bracing Device

Sleep/ Fatigue

Mouth taping
 Diet Modification
 Postural Therapy
 Vitamins: Vitamin D, Vitamin B12, Vit C
 Minerals: Magnesium, Iron
 Lateral Bracing Device guided plane
 Lateral Bracing Device Elastic
 Mandibular Advancement Device
 CPAP

Surgical

Refer: Arthrocentesis w/ PRP
 Refer: Discectomy w/ Fat Graft
 Refer: Total Joint Replacement
 Refer: Orthognathic Surgery

Occlusal Orthopedic

Lingual Light Wire
 Lower soft sectional orthotic
 Condylar distraction
 Sectional orthodontics
 Expansion orthodontics/ orthodontics
 Restorative Dentistry
 Occlusal Adjustment with OTR, TestScan

Tongue Parafunction

Refer for Cervical Alignment Stabilization
 Myofascial
 Upper Lingual light wire
 Clear Brux Checker
 Frereactory
 Myofunctional therapy

Specific Therapy

Diagnosis Treatment Flow Chart

From a patient perspective they want to go from symptoms to no symptoms



Symptoms

History

Signs

Doctor Exam

Differential Diagnosis

Diagnostic Tests

Specific Working Diagnosis

Treatment

No Signs

No Symptoms
Final Dx

Doctor Re-Exam

If not resolved

Symptom Dx

Tooth Pain
Arthralgia

vs
vs

Specific Dx

Irreversible Pulpitis
Osteoarthritis

Diagnosis Treatment Flow Chart

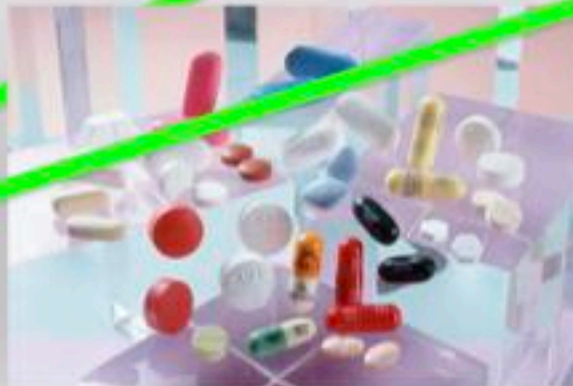
From a patient perspective they want to go from symptoms to no symptoms

No Symptoms

Less Symptoms



Symptoms

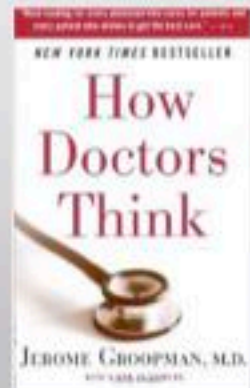


If you skip the exam, diagnostic tests, and diagnosis, you can give a therapy directed at symptoms. If you dull the symptoms the patient will perceive a benefit.

Differential Diagnosis

Diagnostic Boxes: Pattern Recognition

“My Tooth Hurts”



Differential Diagnosis

Diagnostic Boxes: Pattern Recognition

“My Tooth Hurts”

Reversible Pulpitis secondary to caries

Irreversible Pulpitis secondary to caries

Pulpitis secondary to split tooth

Pulpal necrosis

Referred Pain from Muscle
Trigger Point

Sinus Infection

Sympathetic Mediated Pain

Neuroma

Periodontal Infection

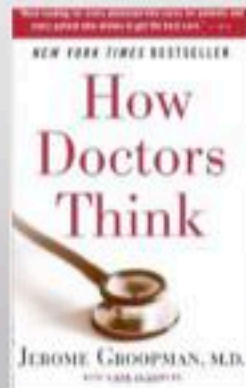
Inflamed Tissue secondary to
popcorn husk

Aphthous Ulcer

Periodontal ligament inflammation
secondary to Occlusal Trauma

Pulpitis secondary to Occlusal Trauma

Other

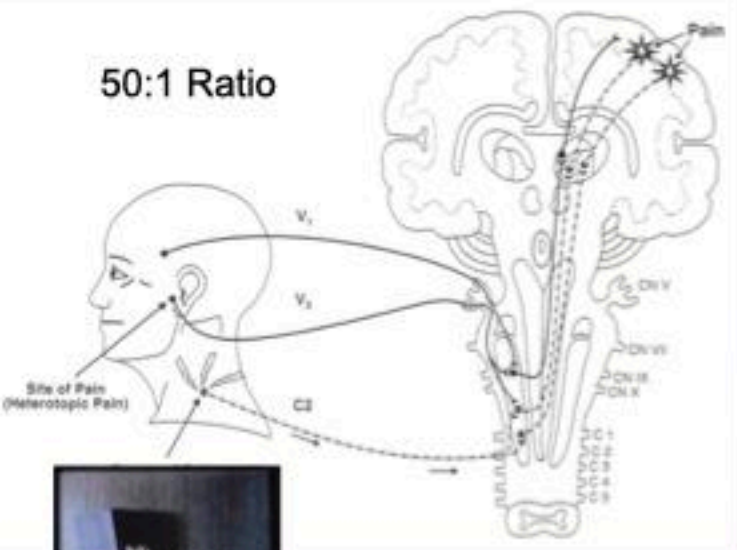


Referred Pain

Convergence

More primary sensory neurons than secondary neurons that travel to brain

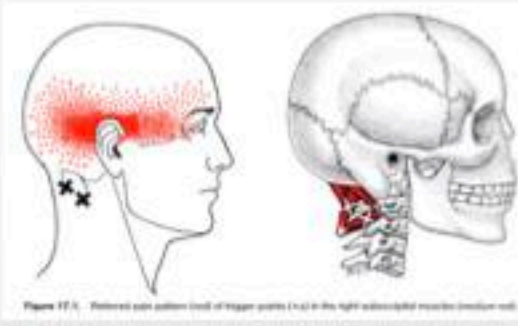
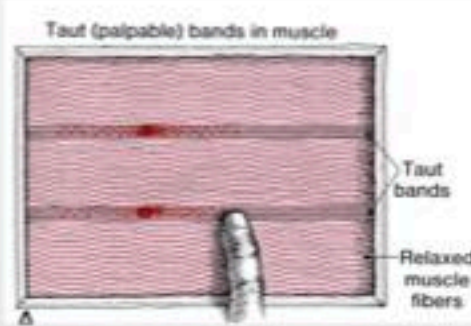
50:1 Ratio



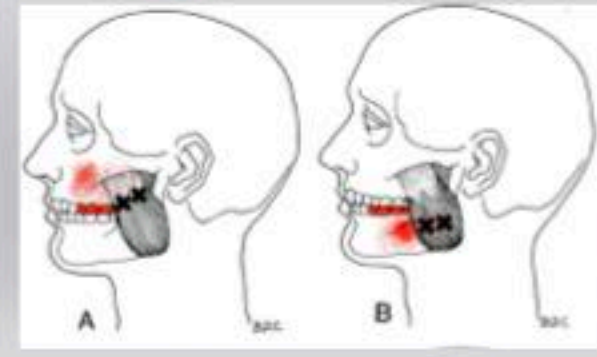
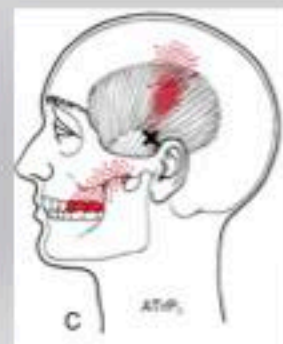
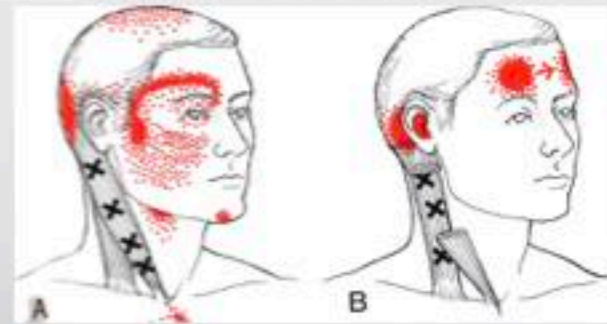
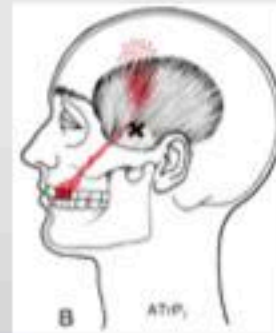
"Bell's Orofacial Pain"
Jeffery Okeson

Trigger Points

Contracted mass of actin, myosin and histamine



"The Trigger Point Manual"
Janet Travell, MD



Differential Diagnosis

Diagnostic Boxes: Pattern Recognition

“My Tooth Hurts”

Reversible Pulpitis secondary to caries

Irreversible Pulpitis secondary to caries

Pulpitis secondary to split tooth

Referred Pain from Muscle
Trigger Point

Periodontal Infection

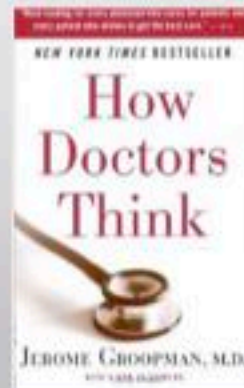
Inflamed Tissue secondary to
popcorn husk

Aphthous Ulcer

Periodontal ligament inflammation
secondary to Occlusal Trauma

Pulpitis secondary to Occlusal Trauma

Other



“How Doctors Think”, by Jerome E. Groopman

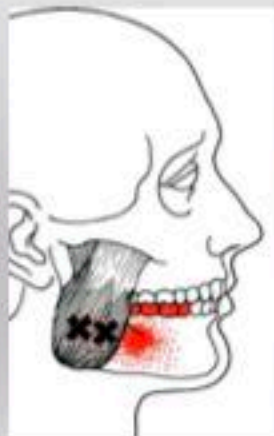
Diagnose by Pattern Recognition

Tendency to make patients fit what we know
Ignore signs and symptoms that do not fit

Always make a differential diagnostic list

Ask, “It appears to be this, but what else could it be?”

Be aware you are blinded by your beliefs



Differential Diagnosis

Diagnostic Boxes: Pattern Recognition

“My Tooth Hurts”

Reversible Pulpitis secondary to caries

Irreversible Pulpitis secondary to caries

Pulpitis secondary to split tooth

Referred Pain from Muscle Trigger Point

Periodontal Infection

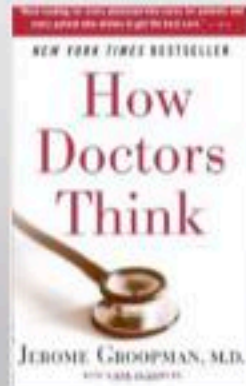
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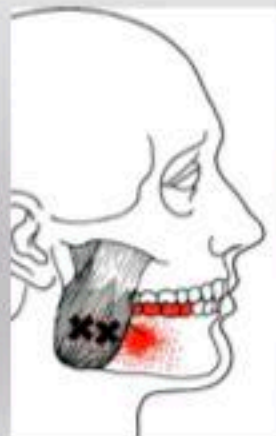
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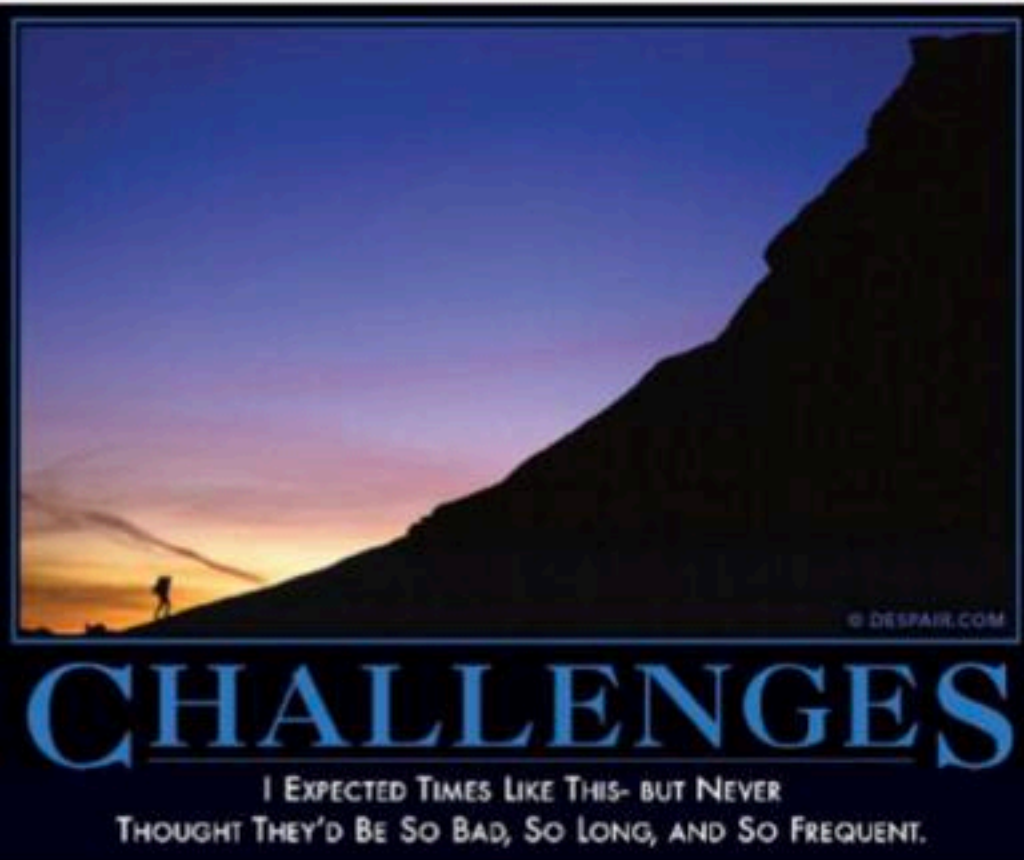
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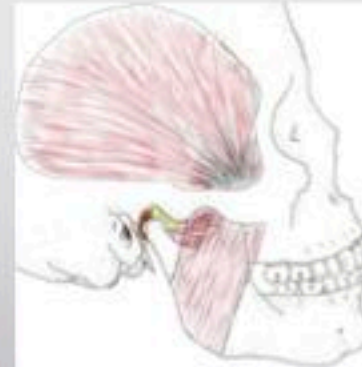
TMDs- What are the choices? 190 Diagnoses



despair.com

Don't **Despair**:

Learn a few new exam skills, a few diagnostic patterns, a few new treatments. Have a box called other.



Osteoarthritis

Acute Sprain of TMJ

Clenching

Occlusal Muscle Disharmony

Other

6 Common TMDs

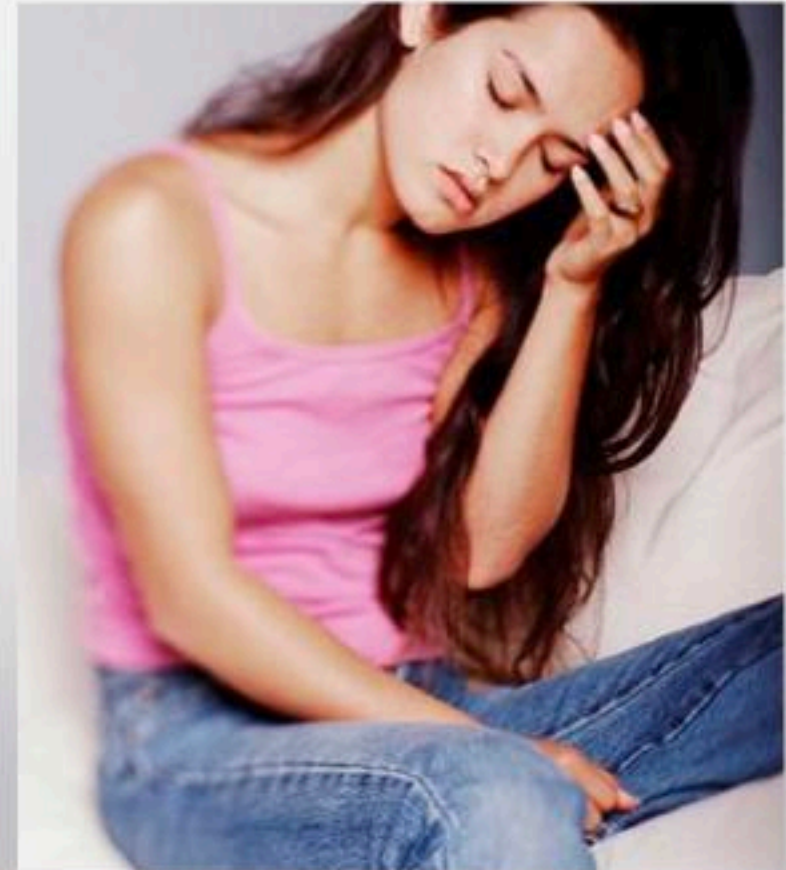
- Parafunctional Clenching
- Parafunctional Grinding
- Occlusal Muscle Dysfunction
- Osteoarthritis
- Acute Sprain
- Acute Closed lock of TMJ disc

5 Common Obstacles

- Neck and Postural Instability
- Wobbly TM Joint (Subluxation)
- Compromised Breathing/Airway
- Avascular Necrosis
- Referred Pain Muscle Triggerpoints

1 TMD that **usually** does not need therapy

- TMJ Clicking



6 Common TMDs

Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium hs
Sleep Grinding	Worn Teeth	Protective night guard Airway night night guard
Occlusal Muscle Dysfunction	Sore muscles when chewing Sore Lateral Pterygoid, Headaches Day D-PAS Relieves Symptoms	Occlusal Adjustment
Osteoarthritis of TMJ	Arthralgia CBCT shows worn bone loss MRI T2, STIR ++	NSAID for 6-12 weeks Occlusal Adjustment Do not put in a night guard
Sprain Discal Ligament TMJ, Acute	Sudden onset pain TMJ, sore TMJ Limited opening Soft end point active stretch	Cold Laser, Ice 15 min 3x a day Rest, Soft diet, NSAID 7 days Anterior Reposition Orthotic 7 days
Acute Closed Lock TMJ	Sore TMJ Limited opening Hard end point active stretch	Arthrocentesis with PRP

6 Common TMDs

Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium hs
Sleep Grinding	Worn Teeth	Protective night guard Airway night night guard
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Acute Closed Lock TMJ	Sore TMJ Limited opening Hard end point active stretch	Arthrocentesis with PRP

Parafunctional Clenching

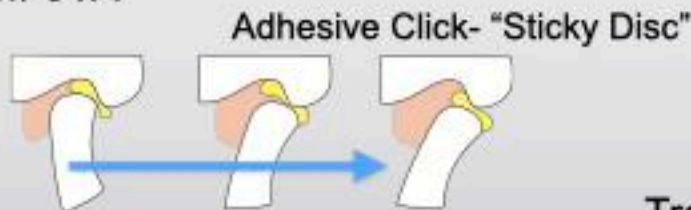
Signs

- Strong Masseters
- No major wear on teeth
- Slight wear around tooth contacts
- Fremitus
- Tori
- Slight scratch vibration doppler/ JVA



Symptoms

- Aware of clenching
- Sore muscles on waking
- Clicking on waking that goes away
- Headaches



Causes

- Uneven occlusion
- Neck stabilization
- SSRI

Diagnostic Tests

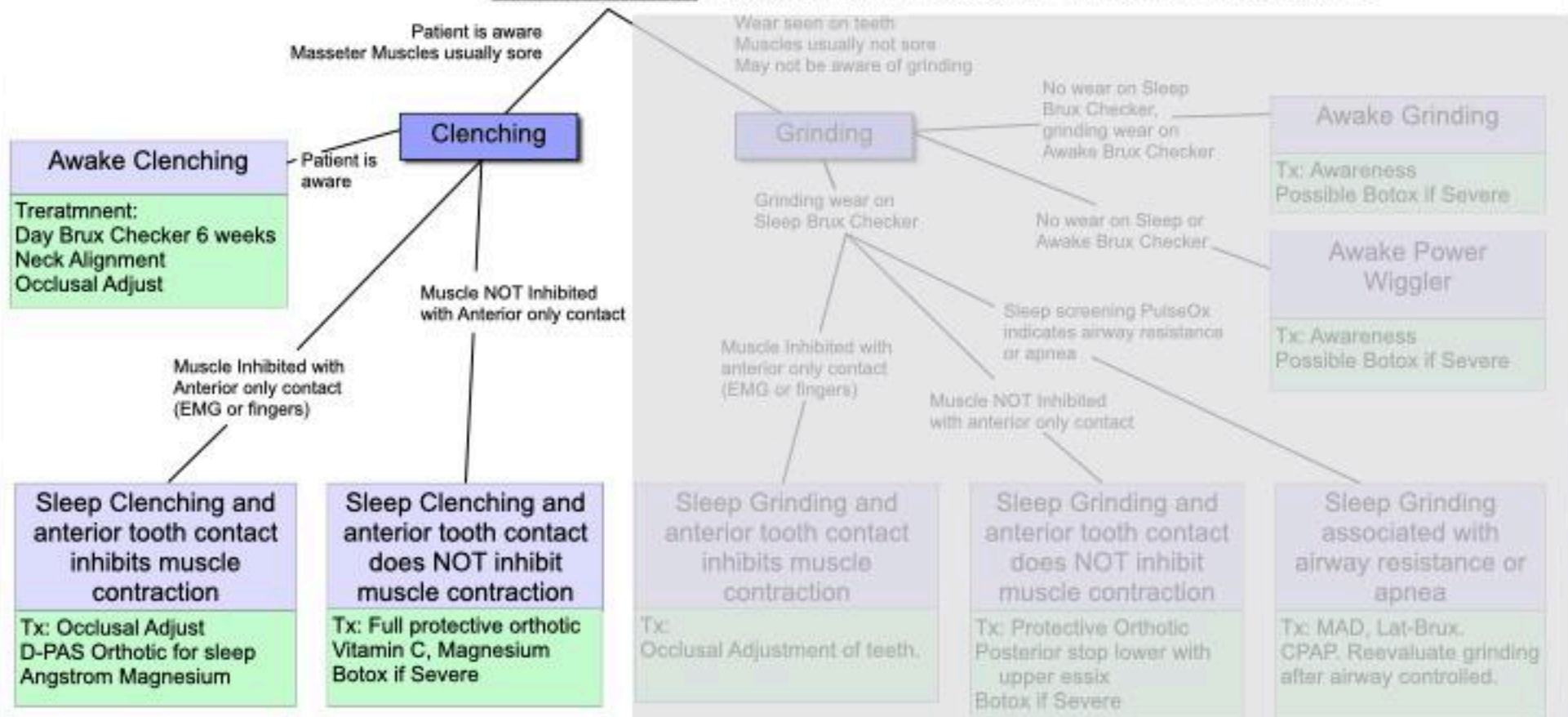
- EMG M-scan
- Determine if muscle inhibition
- D-PAS for sleep



Treatments

- Occlusal Adjustment
- Neck alignment/ stabilization
- D-PAS as night guard
- Time Release Vitamin C
- Angstrom Magnesium
- Clear Brux Checker daytime for 6 weeks

BRUXING: PARAFUNCTIONAL TOOTH CONTACT



Diagnostic Palatal Anterior Stop

D-PAS Test: Wear 2 weeks, Day and Night

Better- Decrease Symptoms

Sleep Clenching: Wear D-PAS as night guard
Occlusal Muscle Disharmony: Occlusal Adjust

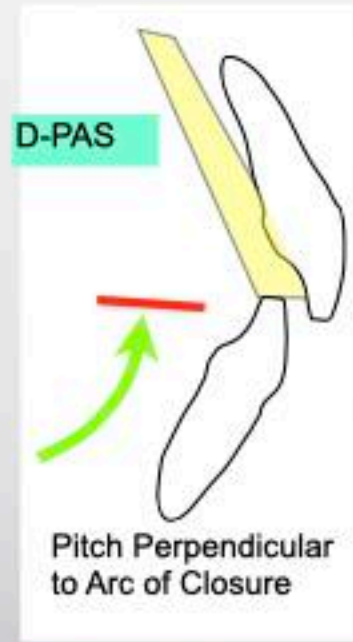
Worse- Increase Symptoms

Mechanically Unstable TMJ (Joint subluxation)
Intracapsular Problem TMJ

Stays the Same- No Change in Symptoms

Damaged TMJ are mechanically stable
Pain not related to occlusion

This is a diagnostic test, not treatment



D-PAS Diagnostic Palatal Anterior Stop Test

This is a diagnostic test, not treatment.

D-PAS Instructions:

For next 2 weeks wear for sleeping and as much during the day as possible.
You will need to remove to eat.

Keep track of what changes you notice.

When out of the mouth always put it in its case.

Top 3 ways appliance are lost or broken:

1. Placed in a paper towel while eating and thrown out.
2. Placed in pocket and set on.
3. Your dog finds it and uses it as a chew toy.

Clean by scrubbing off with toothbrush and toothpaste.

If facial tightness or muscle soreness increases for more than 2 days, you can stop wearing for 2 days and try again. If still sore stop wearing and contact us.

Symptoms will either get better, get worse, or stay the same.

If symptoms become worse you may have a more serious problem that will require further tests.

Diagnostic Palatal Anterior Stop

D-PAS Test: Wear 2 weeks, Day and Night

Better- Decrease Symptoms

Sleep Clenching: Wear D-PAS as night guard
Occlusal Muscle Disharmony: Occlusal Adjust

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Are the TMJ muscles inhibited from full contraction with anterior only tooth contact?

Detect with EMG or muscle palpation- Clench full power on posterior teeth and then with D-PAS orthotic.

BioResearch EMG

BioResearch mScan

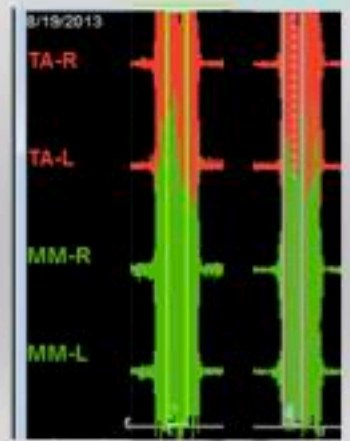
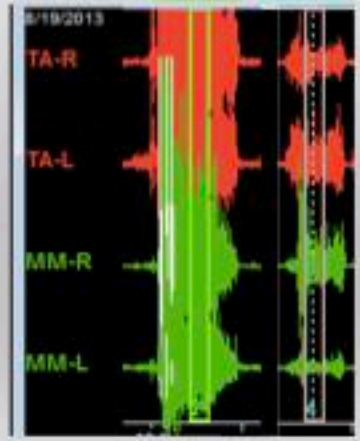


Patient with muscles inhibited by anterior only contact

Another Patient with muscles NOT inhibited by anterior only contact

	Clench MaxIC μV	Anterior Stop D-PAS μV
TA-R	100.6	15.7
TA-L	108.9	25.3
MM-R	115.4	25.5
MM-L	70.5	6.8

	Clench MaxIC μV	Anterior Stop D-PAS μV
TA-R	82.2	77.9
TA-L	124.6	103.6
MM-R	185.0	169.0
MM-L	79.9	86.6



Major decrease in muscle power with D-PAS

Muscle power same with D-PAS

BioResearch EMG



Diagnostic Palatal Anterior Stop



Daytime Clenching- Clear Brux Checker Increase awareness to break habit

Very thin: Similar to mylar used for composites
50 μm thick



Great Lakes Orthodontics
Platzhalterfolie by Scheu

Call Steve
1-800-758-1487
Scheu Ref # 3202.1



6 Common TMDs

Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium hs
Sleep Grinding	Worn Teeth	Protective night guard Airway night guard
Occlusal Muscle Dysfunction	Sore muscles when chewing Sore Lateral Pterygoid, Headaches Day D-PAS Relieves Symptoms	Occlusal Adjustment
Osteoarthritis of TMJ	Arthralgia CBCT shows worn bone loss MRI T2, STIR ++	NSAID for 6-12 weeks Occlusal Adjustment Do not put in a night guard
Sprain Discal Ligament TMJ, Acute	Sudden onset pain TMJ, sore TMJ Limited opening Soft end point active stretch	Cold Laser, Ice 15 min 3x a day Rest, Soft diet, NSAID 7 days Anterior Reposition Orthotic 7 days
Acute Closed Lock TMJ	Sore TMJ Limited opening Hard end point active stretch	Arthrocentesis with PRP



Clenchers destroy the joint,
Grinders destroy the teeth



Clenching
Painful Muscles
Patient is usually aware of clenching
Fremitus
Strong Masseters
See slight wear around tooth contacts
Damage TMJ cartilage

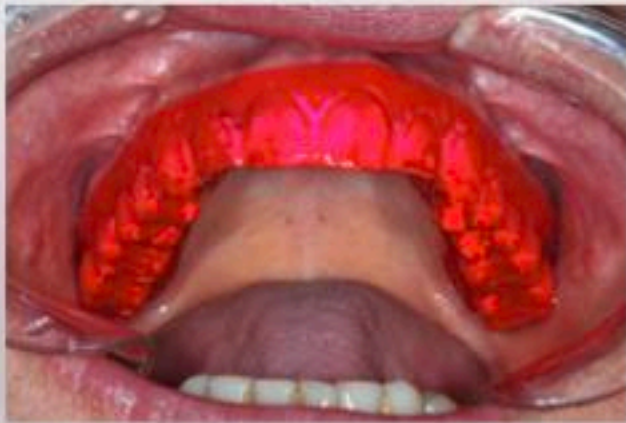
Grinding
See tooth wear
Patient is usually not aware
Buttressing bone if teeth are tight
If tooth mobility, on excursions
Strong Masseters
Slight if any soreness muscles
Usually no muscle pain

If patient is unaware of clenching-
Plant seed at hygiene visit
Do you clench?

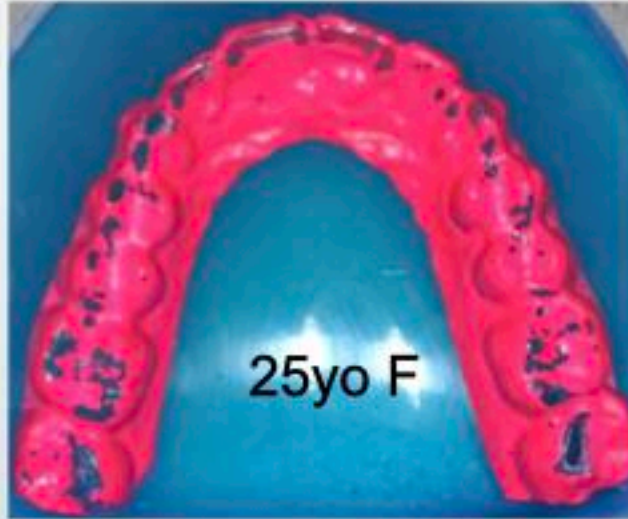
2. Does this occur awake or asleep?

Brux Checker
Great Lakes Orthodontics

0.1mm Mylar



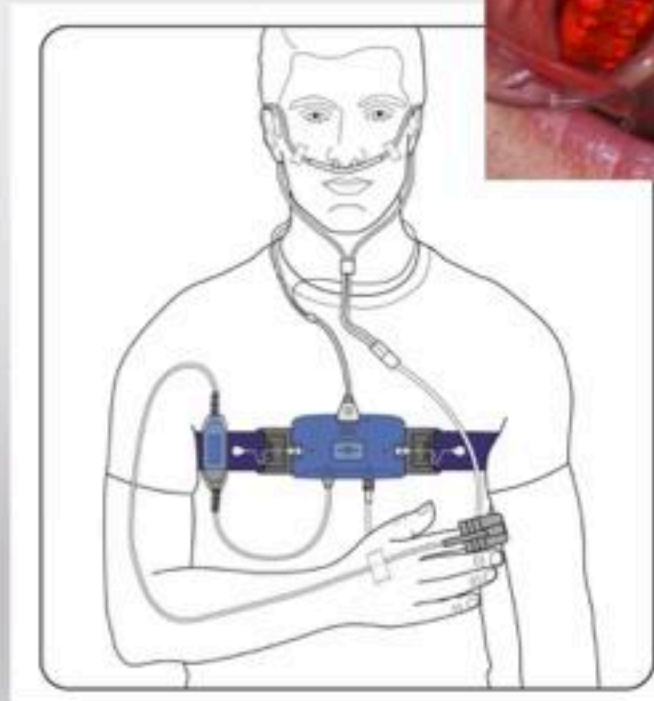
Made on Biostar Machine



zMachine

zMachine + Brux Checker
+ Snore Lab

GENERAL
sleep



Call (888) 330-4424
Use Code: DROTER to receive special offer
Also ask for access to Droter Modified Report

Treating Common TMDs in a General Practice

Management

Diagnosis

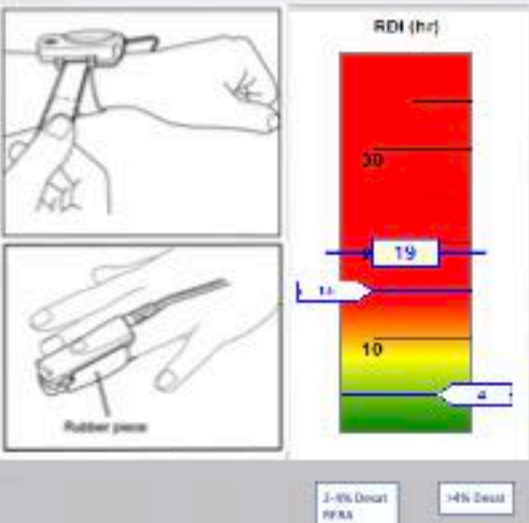
Sleep Grinding Airway Related

Pattern

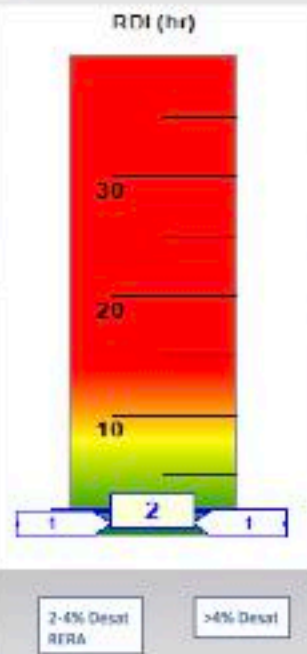
Worn Teeth
Upper Airway Resistance

Treatment

Mandibular Advancement
Appliance (after MD approves)



Pulse Ox Screening
 Refer to Medical Sleep Doctor
 Get approval for Mandibular Advancement Appliance
 Verify Airway Improves
 19 events/hr before
 2 events/hr with Orthotic



PULSOX 300i, Konica Minolta
with data analysis Patient Safety, Inc.

Narval CC
Great Lakes Ortho

Which Occlusal Orthotic for Grinding?



Lower Hard CR Orthotic

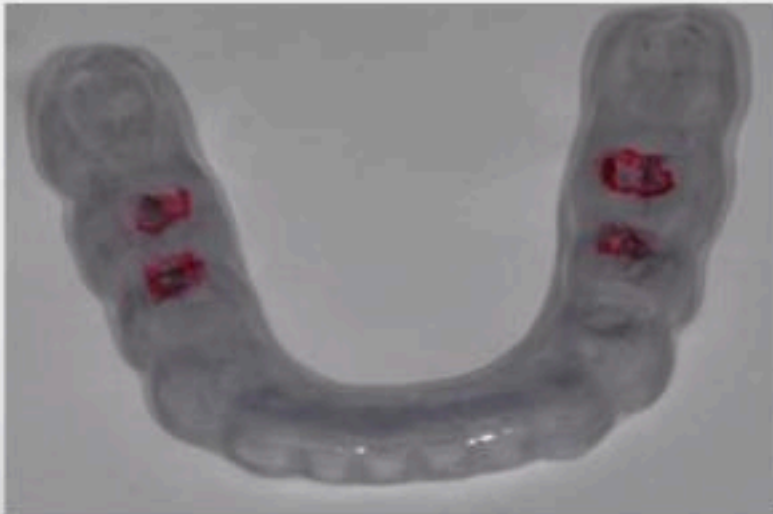


Upper Hard CR Orthotic



Mandibular Advancement Device

Lower Posterior Stop Night guard with upper Essix



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Occlusal Muscle Disharmony

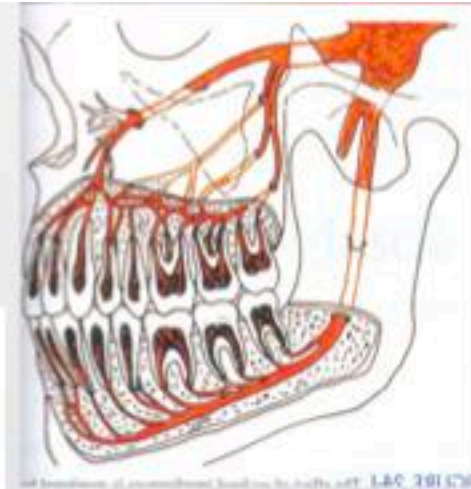
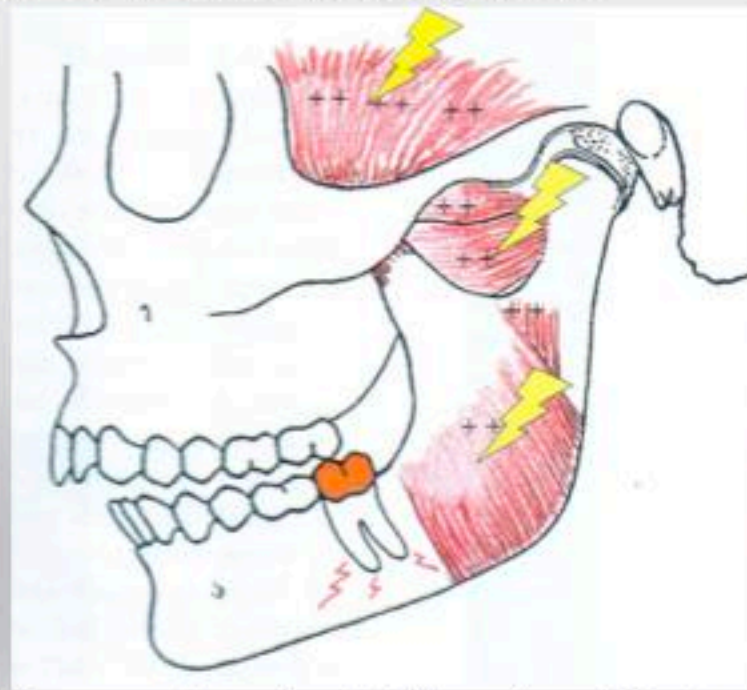
Uneven tooth contact with condyles fully seated triggers muscle activity

Lateral pterygoid fires out of sequence to create even tooth contact on closure

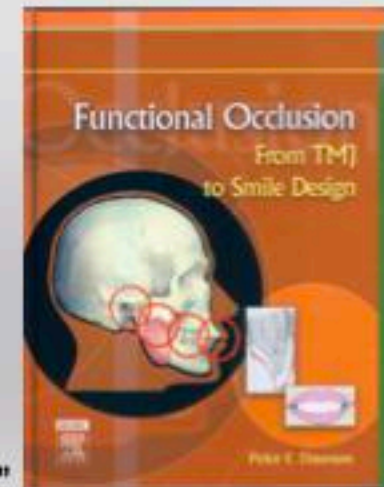
Disharmony in all muscles: Splinting/Bracing

Muscles sore from overuse

Muscles do not think- CNS input

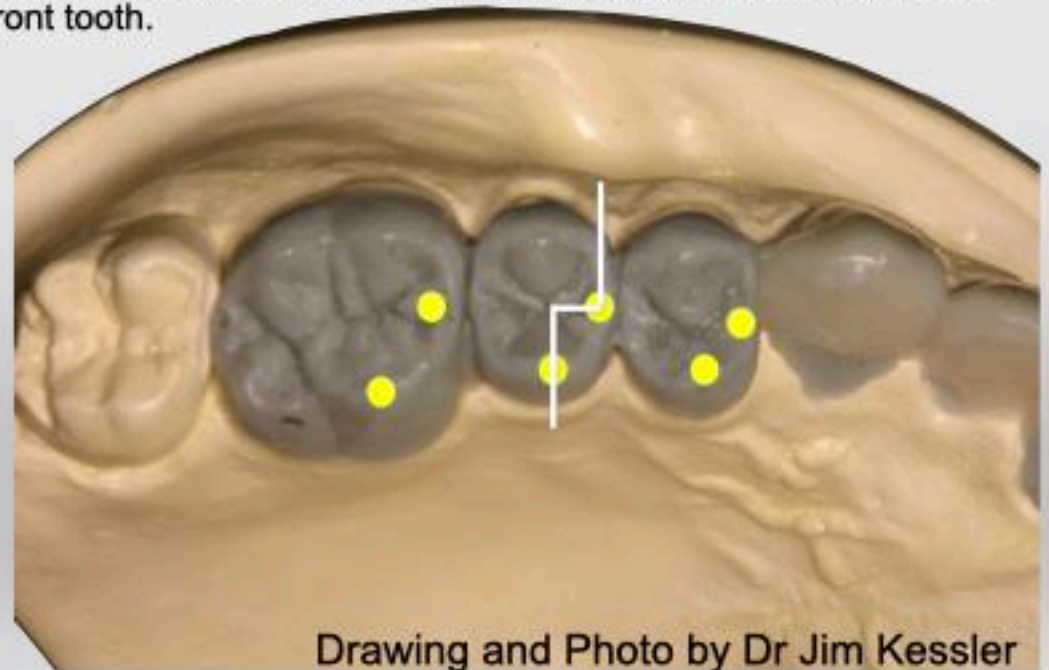
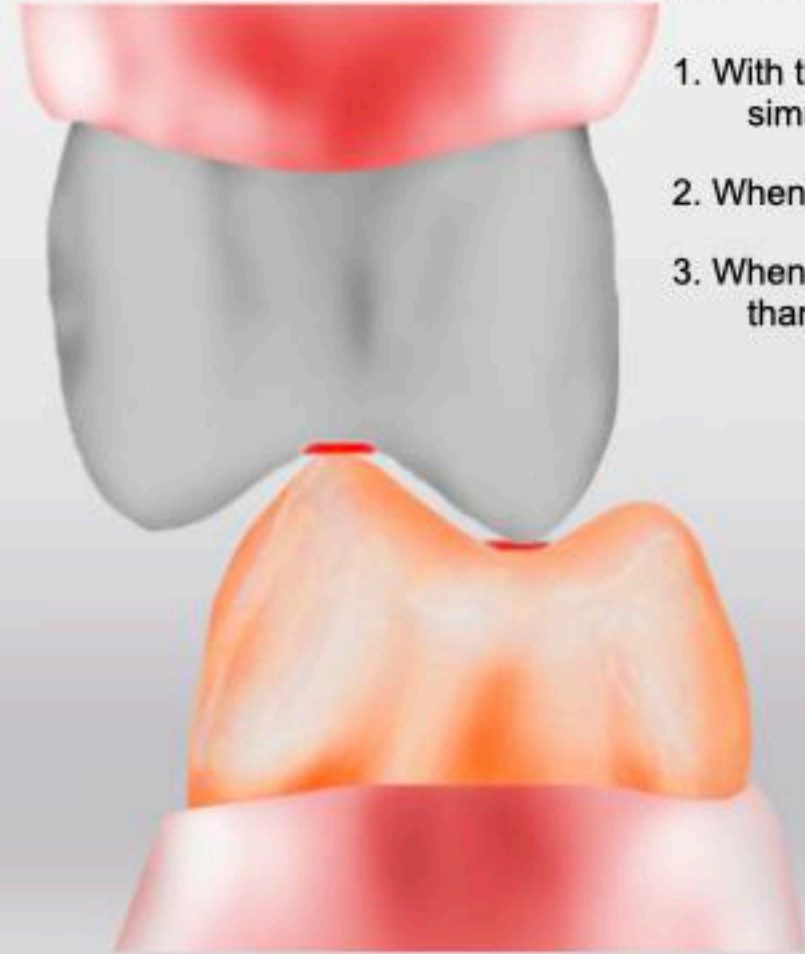


from Dawson's Textbook, "Functional Occlusion"



LD Pankey's 3 Rules of Occlusion (Clyde Schuyler)

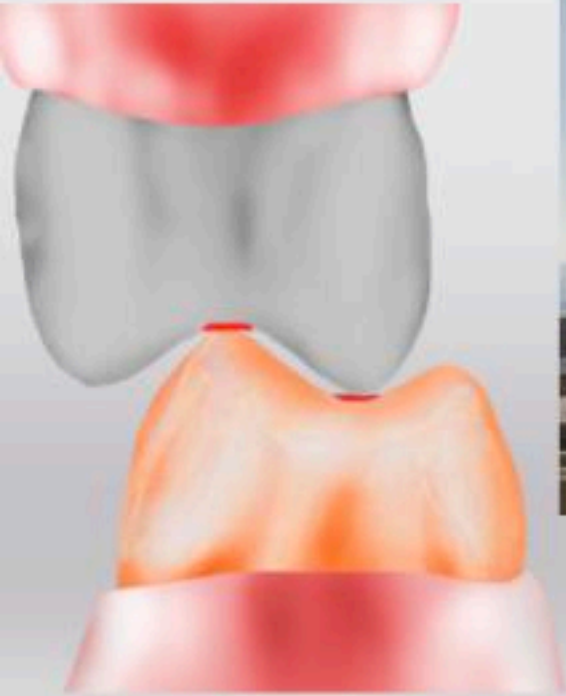
1. With the condyles fully seated in the fossa, all the posterior teeth touch simultaneously and even, with the anterior teeth lightly touching.
2. When you squeeze, neither a tooth nor the mandible moves (in a lateral direction).
3. When you move the mandible in any excursion, no back tooth hits before, harder than, or after a front tooth.



Drawing and Photo by Dr Jim Kessler

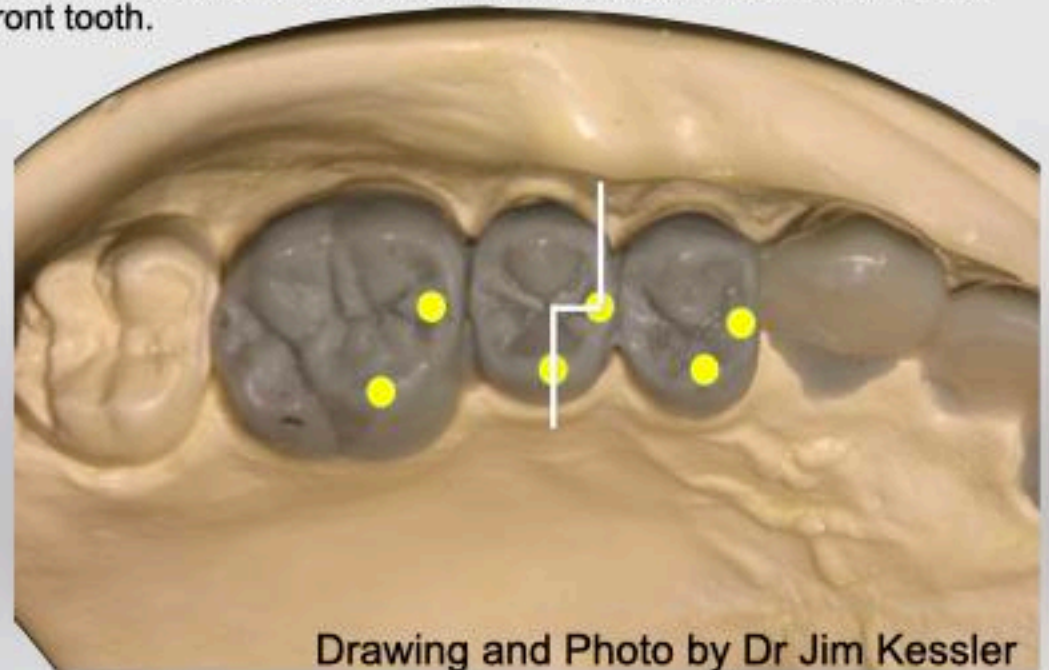
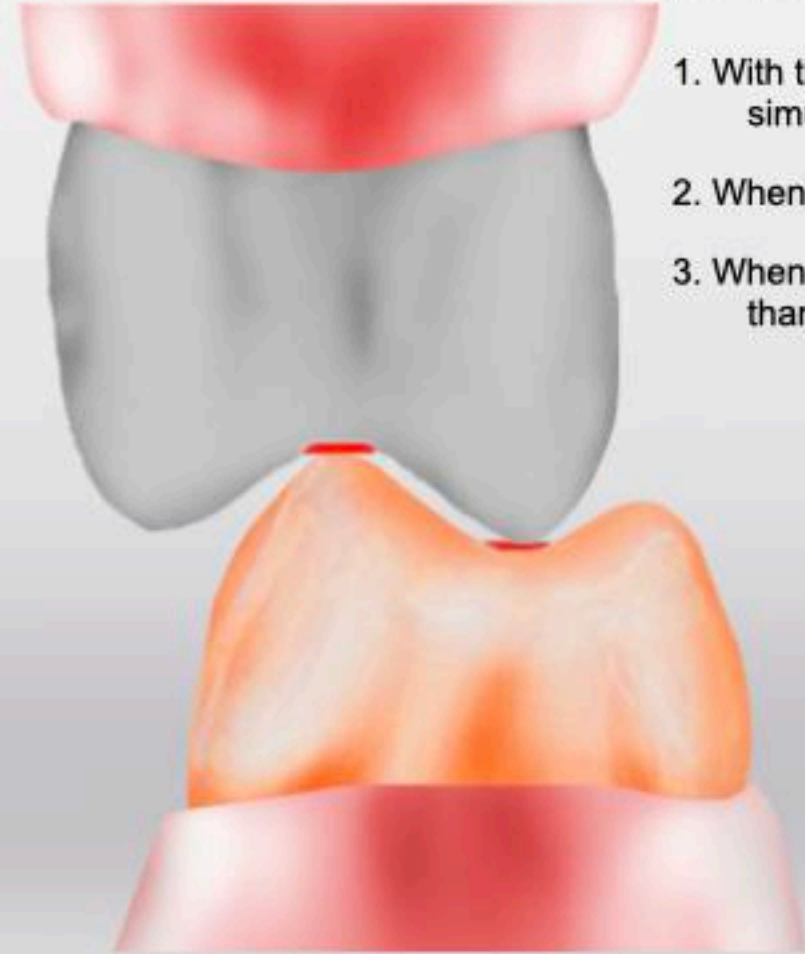
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Rule #2 = Flat Landing Area



LD Pankey's 3 Rules of Occlusion (Clyde Schuyler)

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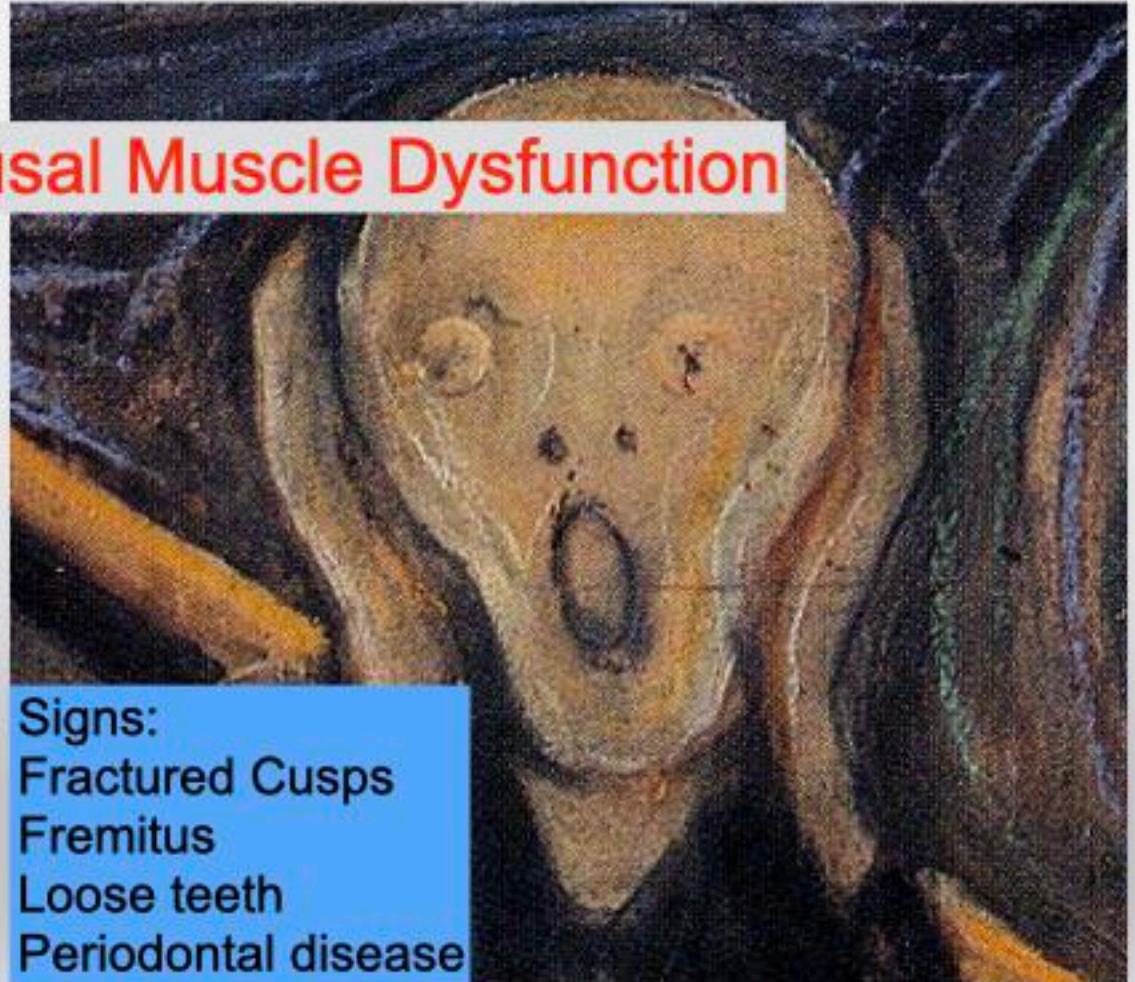


Drawing and Photo by Dr Jim Kessler

TMD Symptoms

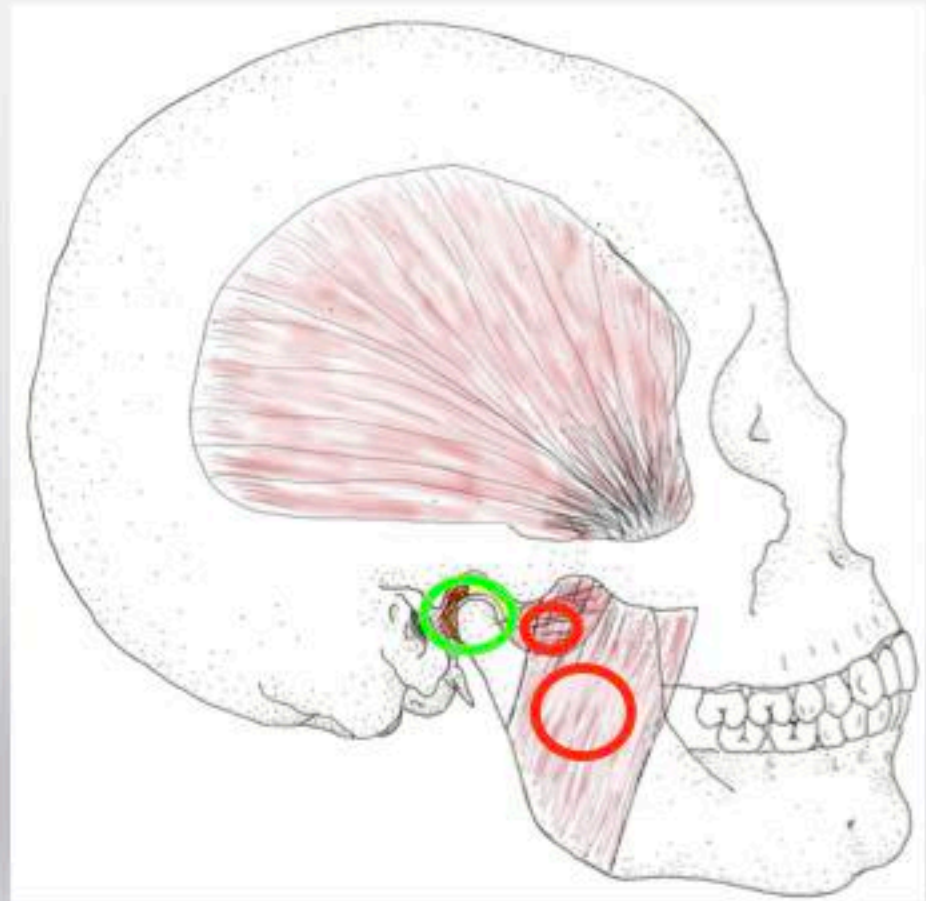
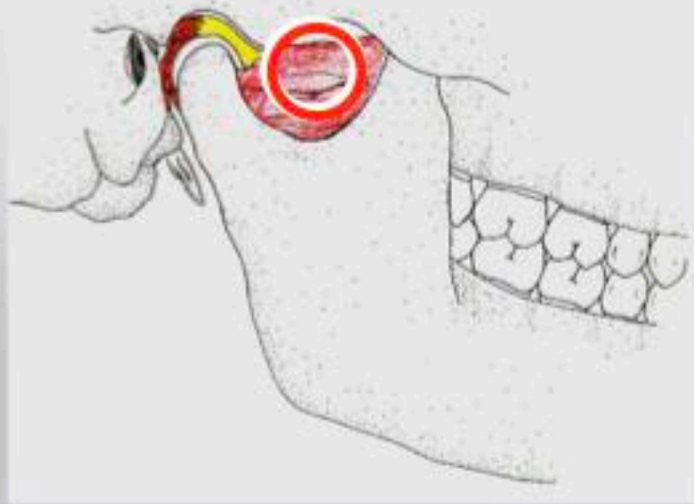
Sore TM Joint
Sore TMJ muscles
Difficulty chewing
Headaches
Eye pain
Ear pain
TMJ clicking
Jaw locking
Limited opening
Difficulty open jaw
Difficulty closing jaw
Anterior Open Bite

Occlusal Muscle Dysfunction



Occlusal Muscle Dysfunction Pattern

Sore muscles when chewing
Sore Lateral Pterygoid
TMJ is not sore
Day orthotic relieves symptoms



Drawings by Gretta Tomb DDS and John Droter DDS

Occlusal Muscle Dysfunction Diagnostic Tests

>30% of headaches have an occlusal component

Occlusal Muscle Dysfunction is a daytime problem

Clenching can be both a daytime and nighttime problem



In Office Anterior stop



D-PAS 2 week trial

3-6 week lower CR orthotic



Occlusal adjustment in patients with craniomandibular disorders including headaches. A 3- and 6-month follow-up. Vallon D, Ekberg E, Nilner M. Acta Odontol Scand. 1995

Response to occlusal treatment in headache patients previously treated by mock occlusal adjustment. Forssell H, Kirveskari P, Kangasniemi P. Acta Odontol Scand. 1987

Occlusal Sculpting Tools, including Zirconia



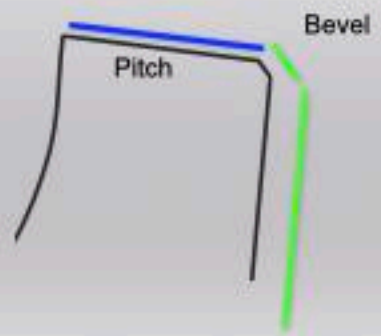
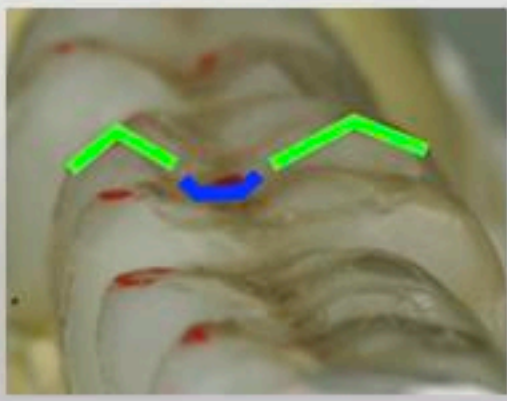
Wheel
 Create Cusp Landing Zone
 Flatten Incisal edges
 Bulk reduction of inclines



Move and Shape Cusps,
 Inclines, Facial Surfaces



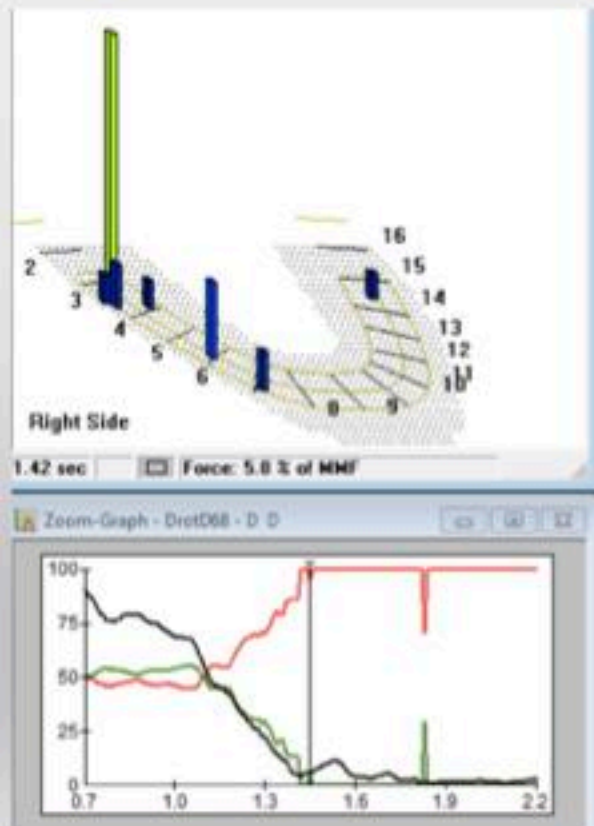
Brassler Brio Shine
 FLBCER-1
 FLBF-2



Premier 860.9 F Wheel Diamond
 Premier 230 F Barrel Diamond
 Neodiamond 1118.7F Roundend taper
 Dedco Green Stone
 White Arkansas stone
 Filtek Supreme- B1B

The indispensable value of T-Scan is not in finding heavy CR contacts, but working and nonworking contacts.

Is that a smudge or a muscle activating interference?



Remove too much and you decrease the ability to chew, especially lettuce. Chewing lettuce requires posterior inclines coming close enough to chew, but far enough apart to not touch and activate muscle.

TMDs- What are the choices? (190 Diagnoses, 7 Categories)

1. TMJ Damage

Adhesions and ankylosis of temporomandibular joint
 Avascular Necrosis Mandibular Condyle
 Cartilage Fibrillation, Mandibular Condyle, Fossa
 Closed Lock, Jaw Cartilage, Acute
 Closed Lock, Jaw Cartilage, Chronic
 Closed Lock, Jaw Cartilage, Intermittent, Mechanically dysfunctional
 Crush Injury Mandibular Condyle
 Crystal arthropathy, unspecified, TMJ
 Dislocation jaw cartilage due to injury, Sequela
 Dislocation jaw cartilage with reduction, favorable adaptation, TMJ
 Dislocation jaw cartilage without reduction, favorable adaptation, TMJ
 Effusion, TMJ

Impingement Retrodiscal Tissue
 Inflammatory Tissue Bone Resorption, TMJ Condyle
 Loose Body (Joint Mice), TMJ
 Malignant neoplasm of bones of skull and face
 Open Lock TMJ, Recurring
 Osteoarthritis TMJ, active degeneration
 Osteoarthritis- inactive
 Osteochondritis Dissecans TMJ
 Osteolysis Mandibular Condyle, Active
 Perforation Mandibular, TMJ
 Perforation Pseudodic, TMJ
 Psoriatic Arthritis TMJ
 Rheumatoid Arthritis Sero Negative TMJ
 Synovitis

2. Muscles of the TMJ

Dystonia
 Habitual posture forward mandible
 Hemifacial Muscle spasm
 Inhibitory Reflex Dysfunction, Periodontal Ligament Masseter Muscle
 Muscle Atrophy, TMJ
 Muscle Bracing Neck Stabilization
 Muscle Bracing Pain Avoidance
 Muscle Bracing TMJ stabilization
 Muscle Bracing Airway Patency (with Tongue)
 Muscle Contracture Fibrosis Lateral Pterygoid
 Muscle Contracture Fibrosis Masseter, Medial Pterygoid, Temporalis
 Muscle Fatigue Overuse
 Muscle Hypertrophy TMJ Muscles

3. Cranial Alignment/Occlusion

Cranial Distortion / Misalignment
 Hemifacial Hypoplasia
 Hyper Occlusal Awareness
 Iatrogenic Orthotic Damage
 Malocclusion Anterior Open Bite
 Malocclusion Centric occlusion MeIC discrepancy
 Malocclusion Deep Bite
 Malocclusion due to mouth breathing
 Malocclusion due to TMJ bone loss
 Malocclusion due to tongue, lip or finger habits
 Malocclusion insufficient anterior occlusal guidance
 Malocclusion lack of posterior occlusal support
 Malocclusion Posterior Openbite Bilateral
 Malocclusion Posterior Openbite Unilateral
 Malocclusion unspecified

Malposition/Misalignment: Maxilla, Temporal Bone, Mandible
 Mandibular asymmetry
 Mandibular hyperplasia
 Mandibular hypoplasia
 Mandibular Retrognathia
 Maxillary asymmetry
 Maxillary hyperplasia
 Maxillary hypoplasia
 Maxillary Retrognathia
 Occlusal Adaptation, Favorable
 Occlusal Adaptation for Joint Stabilization/ Proprioception
 Tooth intrusion
 Tooth Supereruption

4. Cervical Damage

Cervical Vertebrae Alignment Dysfunction
 Cervicocranial Syndrome
 Muscle Guarding due Neck Instability
 Trigger Point Neck Muscle with Referred Pain
 Trigger Point Neck Muscle, Localized Pain

5. Parafunction

Excessive Tooth Wear, Damage
 Hypererulsive Occlusion
 Parafunctional dechewing wiggle
 Parafunctional Clenching Teeth, Awake
 Parafunctional Clenching Teeth, Sleep
 Parafunctional Grinding Teeth, Awake
 Parafunctional Grinding Teeth, Sleep
 Parafunctional Tongue Bracing avoiding uncomfortable tooth contact
 Parafunctional Tongue Bracing Neck stabilization
 Parafunctional Tongue Bracing to maintain Airway
 Parafunctional Tongue Bracing unknown cause

6. Whole Body / Systemic

Lyme Disease Arthritis
 Magnesium Deficiency
 Obstructive Sleep Apnea
 Osteoporosis without current pathological fracture
 Pathological Habitual Movement Pattern
 Postural Disharmony Standing
 Postural Disharmony Walking
 Postural Forward Head Position
 Upper Airway Resistance, UARS

7. Other

Other.....

..... or pain disorder
 Pain disorder with related physiological factors
 Psychological

Facial Pain: Not always OMD

CC: Sharp Shooting Nerve Pain Right Face

Dx: Class 2 Malocclusion

Tx: Orthognathic Surgery. Still Facial Pain.

Dx: OMD

Tx: Multiple Occlusal Adjustment over a year
Still Pain

Dx: CT scan reveals Parotid Cancer, Stage 4.



7 Rules for Dx Facial Pain:

1. Listen to the patient, oral and written
2. Patients can have more than one disease
3. Develop a Differential Diagnosis
4. Run tests that increase or decrease the pain
5. Develop a Working Diagnosis
6. Diagnosis Confirmed after Tx
7. Do not chase a diagnosis too long before you rule out cancer.



Rule cancer out early, rule it out often.

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Rheumatoid Arthritis TMJ
Spondylosis

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5. Parafunction

Without ruling out occlusal problems and parafunction it is hard to figure out the rest.

Muscle Bracing Pain Avoidance
Muscle Bracing TMJ stabilization
Muscle Bracing Airway Patency (with Tongue)
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Muscle Contracture Fibrosis Masseter, Medial Pterygoid, Temporalis
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Muscle Hypertrophy TMJ Muscles

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7. Other

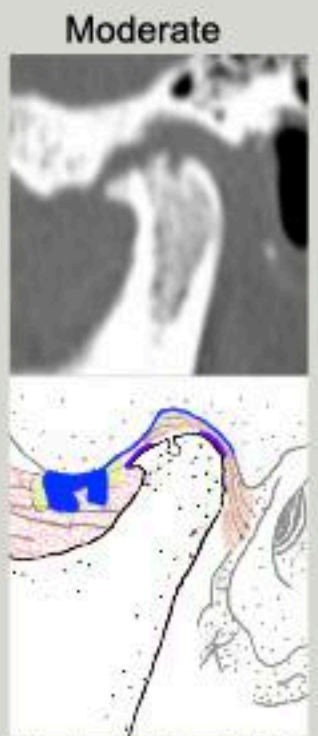
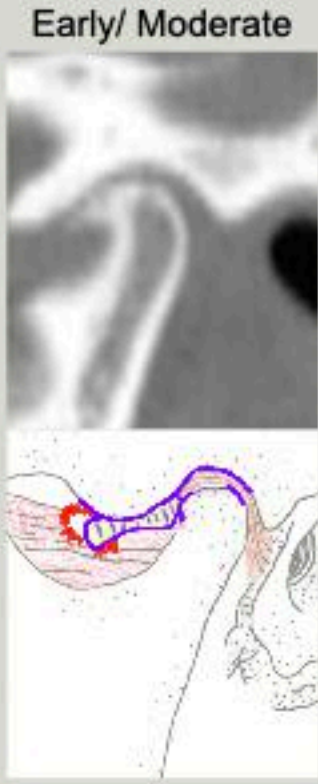
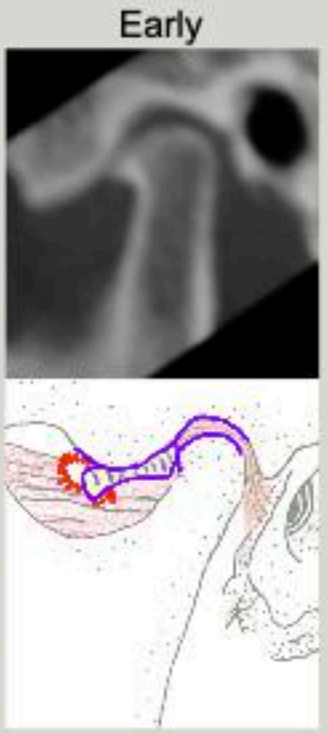
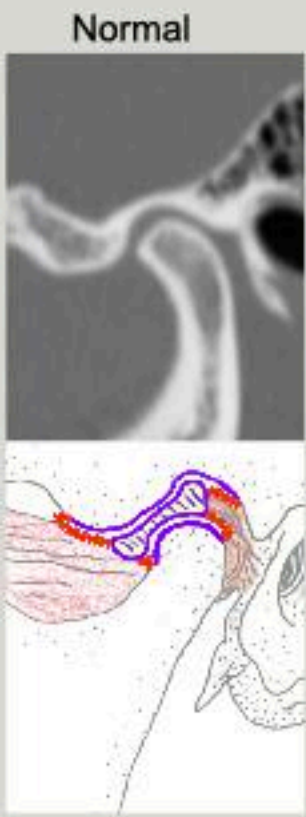
Nerve Entrapment Masseteric Nerve due to Masseteric hypertrophy
Neuronal Trigeminal Nerve
Obsessive-Compulsive Personality Disorder
Other
Otitis Ear Infection
Pain disorder exclusively related to psychological factors, Somatoform pain disorder
Pain disorder with related psychological factors
Spondylosis

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Osteoarthrosis/Osteoarthritis

Healthy joints have no friction or wear.
Damaged joints have Friction. Friction causes wear.
OA is a wearing out of a joint which starts in cartilage.
Parafunction increases wear.



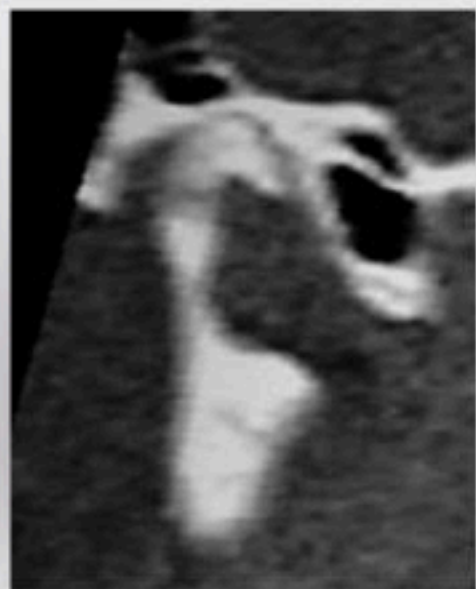
Representative examples of OA in different patients

Drawings by Gretta Tomb DDS and John Droter DDS

Adaptation Chronic Bilateral Osteoarthritis

Mandible recedes Slowly
Teeth Move/ Adapt
Anterior Guidance gets steeper as Condylar Guidance get shallower

OA Right and Left Bone Loss
#8 Ankylosed



Treatment OA

Osteoarthrosis

Glucosamine 1500mg /Chondroitin 600 mg per day

Minimize parafunction:

If sleep grinding due to airway
CPAP or Dental Airway Device

Osteoarthritis

All of the above plus eliminate inflammation.....

NSAIDs for 6+ weeks

Cold Laser

If still inflamed arthrocentesis with
Platelet Rich Plasma (PRP)



Shea Brand CBD



MLS Laser
3x week for 3 weeks

MLS Laser: BioResearch

Multiwave Locked System Laser

808 nm Continuous, 905 nm Pulsed

Diode Laser

Stimulates metabolic processes in cells
Increase release NO from cells
Decrease inflammation
Pain Reduction
Faster Healing
Eliminates Trigger Points
Much better than Dry Needling



Chung, H., Dai, T., Sharma, S. K., Huang, Y.-Y., Carroll, J. D., & Hamblin, M. R. (2012). The nuts and bolts of low-level laser (light) therapy. *Annals of Biomedical Engineering*, 40(2), 516–533.

Ilbuldu E, Cakmak A, Disci R, Aydin R. Comparison of laser, dry needling, and placebo laser treatments in myofascial pain syndrome. *Photomed Laser Surg*. 2004 Aug;22(4):306-11.

Treatment OA

Osteoarthrosis

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Glucosamine 1500mg /Chondroitin 600 mg per day

Osteoarthritis

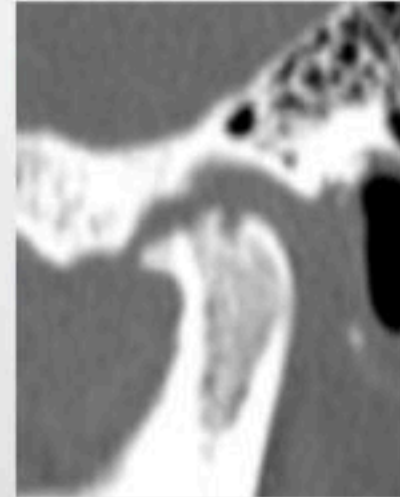
All of the above plus eliminate inflammation.....

NSAIDs

Cold Laser

If still inflamed arthrocentesis with Platelet Rich Plasma (PRP)

If still pain in 6 -12 weeks of NSAID:
Arthrocentesis
Platelet Rich Plasma



6 Common TMDs

Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium hs
Sleep Grinding	Worn Teeth	Protective night guard Airway night night guard
Occlusal Muscle Dysfunction	Sore muscles when chewing Sore Lateral Pterygoid, Headaches Day D-PAS Relieves Symptoms	Occlusal Adjustment
Osteoarthritis of TMJ	Arthralgia CBCT shows worn bone loss MRI T2, STIR ++	NSAID for 6-12 weeks Occlusal Adjustment Do not put in a night guard
Sprain Discal Ligament TMJ, Acute	Sudden onset pain TMJ, sore TMJ Limited opening Soft end point active stretch	Cold Laser, Ice 15 min 3x a day Rest, Soft diet, NSAID 7 days Anterior Reposition Orthotic 7 days
Acute Closed Lock TMJ	Sore TMJ Limited opening Hard end point active stretch	Arthrocentesis with PRP

TMD Symptoms

Limited Opening

Diseases to consider and rule out:

- Pain Avoidance Sore Joint
- Pain Avoidance Sore Muscle
- Hematoma
- Muscle Spasm
- Masseteric Space Infection
- Nonreducing Disc (4b,3b Acute)
- Joint Fibrosis, Muscle Fibrosis
- Other



Differential Diagnosis: Limited Joint Motion

Muscle Spasm

Painful to Move
Joint Pain
Muscle Pain

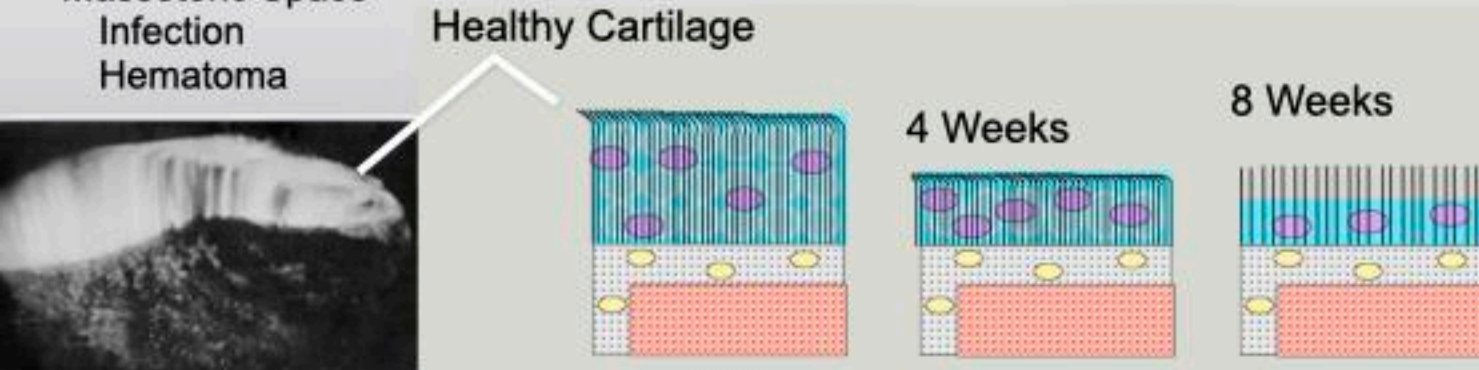
Mechanically Blocked
4b Acute
Adhesion

Masseteric Space
Infection
Hematoma

Lose 50% height of cartilage
Proteoglycans not being produced by Chondrocytes
Loss of 50% proteoglycans and water
Collagen still intact
Process is reversible

Move joint with light force/repetitive motion next 30 days

You have 6-8 weeks to get jaw moving
before cartilage is irreversibly damaged,
independent of the cause of the
immobilization

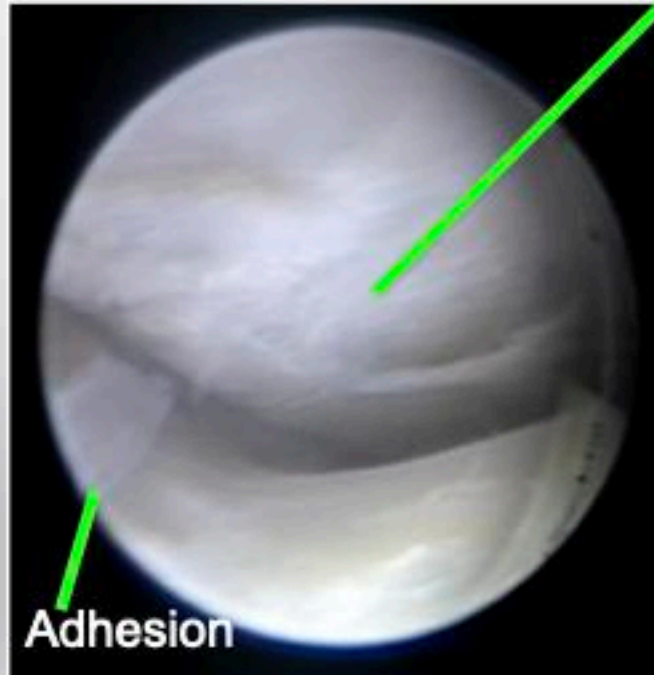
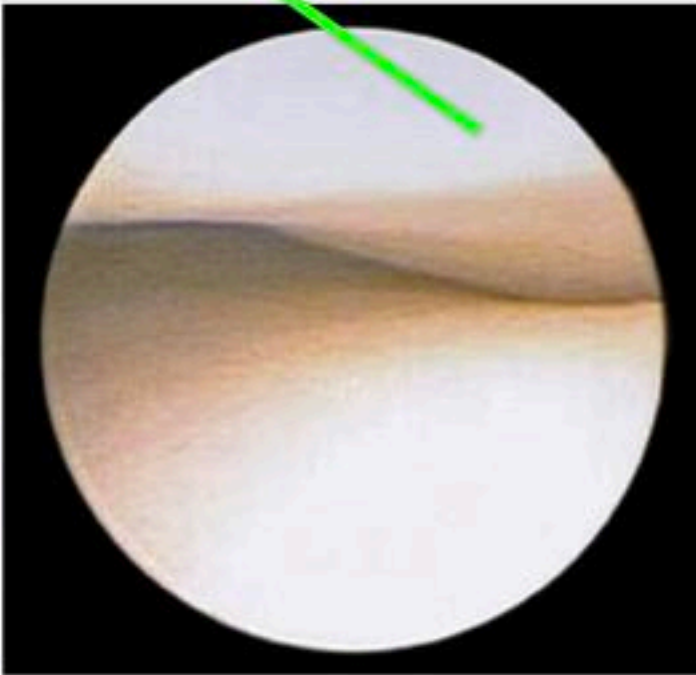


E.B. Evans, GWN Eggers, J.K. Butler, and J. Blumel, Experimental immobilization and remobilization of rat knee joints, J Bone Joint Surg Am, 1960 vol. 42 (5) pp. 737-758
Enneking WF, Horowitz M. The intra-articular effects of immobilization on the human knee. J Bone Joint Surg Am. 1972 Jul;54(5):973-85. PMID: 5068717

Arthroscopic View Left TMJ

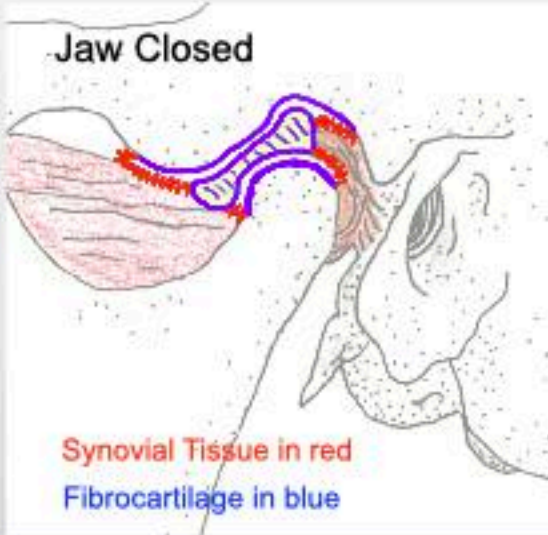
Eminence Healthy Cartilage

Eminence Necrotic Cartilage



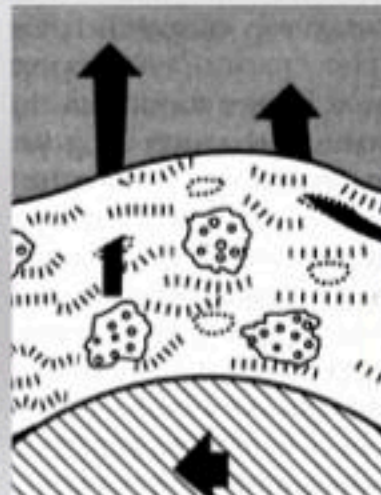
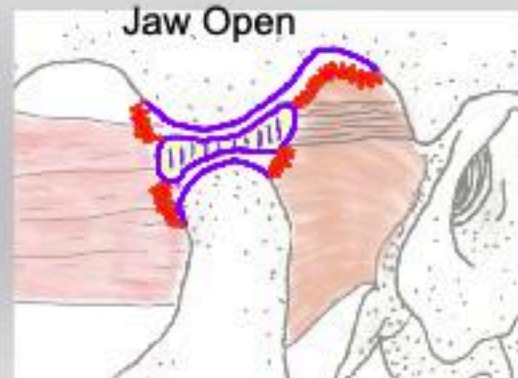
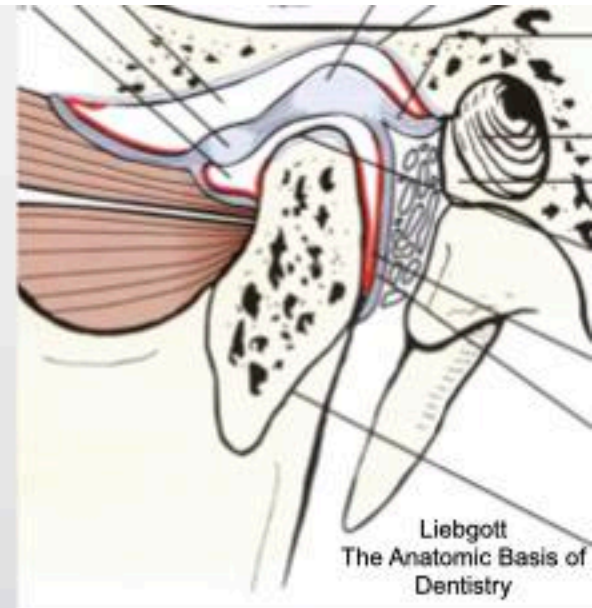
Not Same Patient

Normal TMJ- Synovium, Cartilage

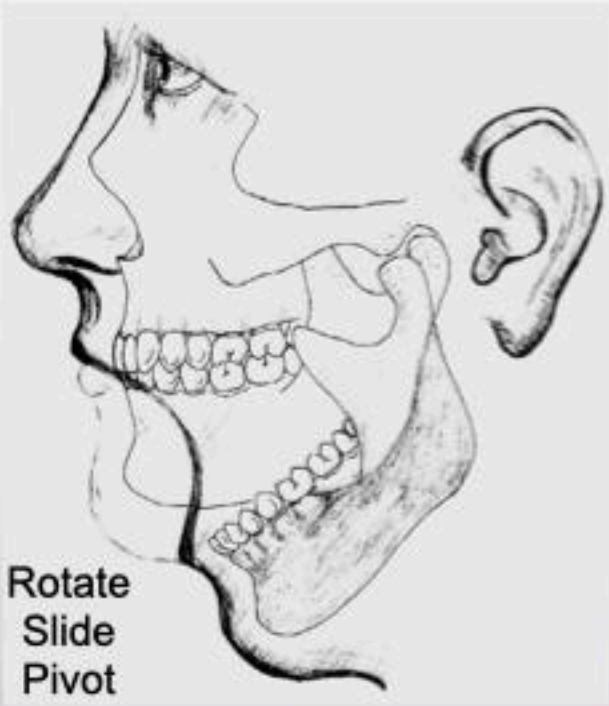


Fibrocartilage-
Slope of Eminence
Disc
Top of Condyle

Synovial Tissue makes Synovial Fluid
No blood vessels in a health joint
Nutrition to the cartilage cells
Lubrication- Hyaluronic Acid and Lubricin



Fibrocartilage surface covered in fluid
Cartilage is hydrophilic
Proteoglycan negative charge
Surface Active Phospholipids
Fluid slides against fluid
5x slipperier than ice



Rotate
Slide
Pivot

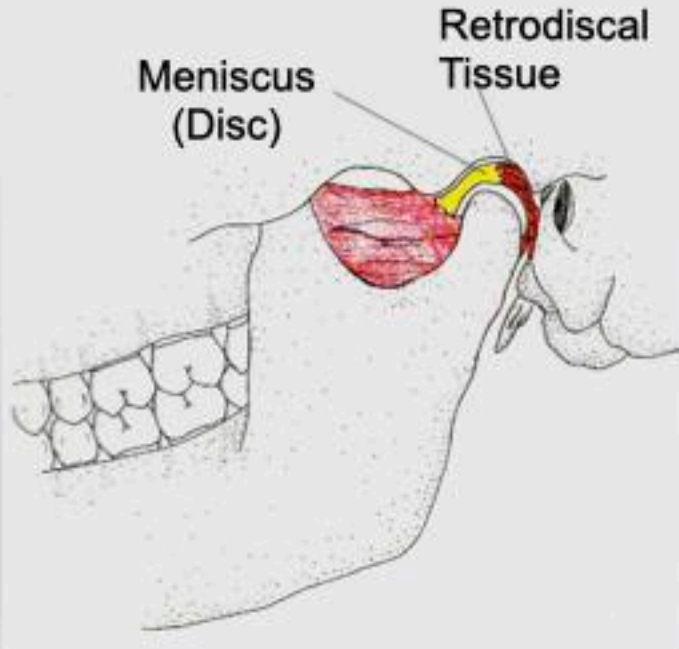
Rotation only 25mm

Max Open	40-55mm
Right Lateral	10-12mm
Left Lateral	10-12mm
Protrusive	10-12mm



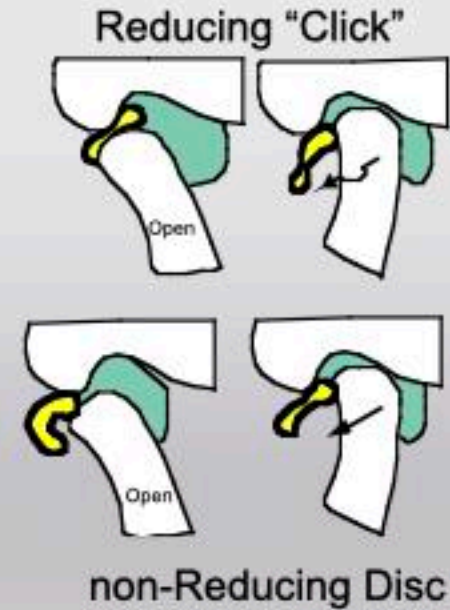
TMJ has 2 Joint Compartments:

Upper- Translation
Lower- Rotation



Acute non-Reducing Disc
Limits Translation.

"Old Adapted" may have
full range of motion.



non-Reducing Disc

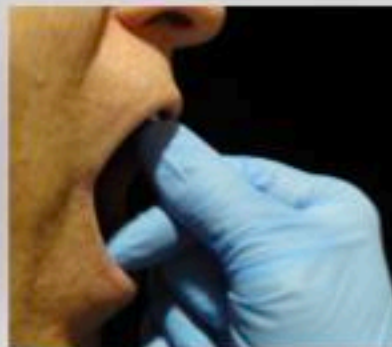
Limited Opening Algorithm

Differential Diagnosis Limited Opening:

- Pain Avoidance Sore Joint
- Pain Avoidance Sore Muscle
- Hematoma
- Muscle Spasm
- Masseteric Space Infection
- Nonreducing Disc (4b,3b Acute)
- Joint Fibrosis, Muscle Fibrosis
- Other

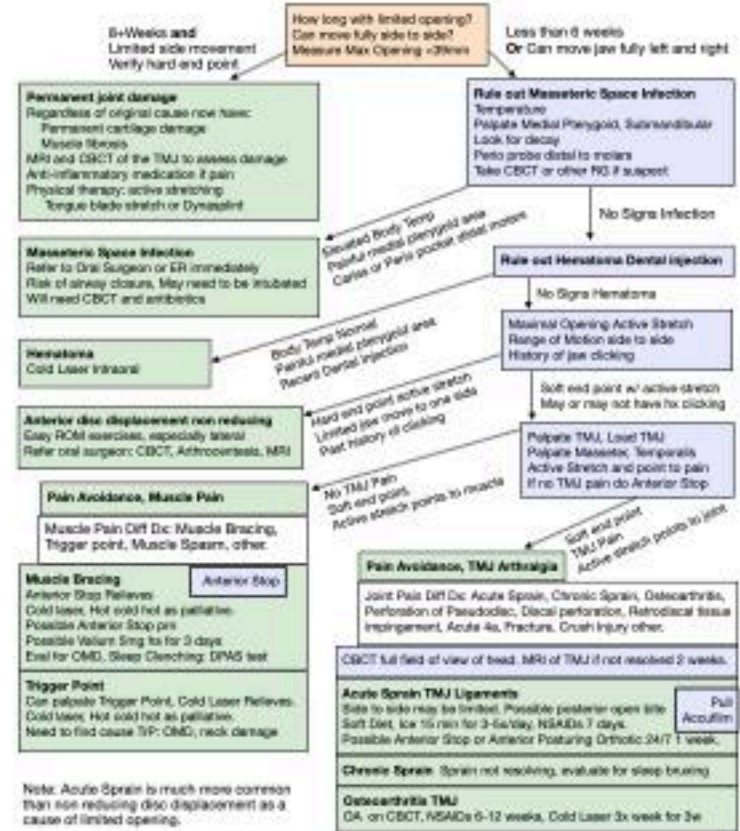
Diagnostic Tests:

- History: How long limited
- Body Temperature
- Caries Exam, Perio exam
- ROM open, side to side
- Gentle Active stretch
- Point to area of pain
- Anterior Stop
- If needed CBCT, MRI



Dr Droter's Limited Opening Algorithm

Differential Diagnosis Limited Opening (Less than 20mm): Pain Avoidance Sore Joint, Pain Avoidance Sore Muscle, Muscle Spasm, Masseteric Space Infection, Nonreducing Disc (4b,3b Acute), Joint Fibrosis, Muscle Fibrosis, other.



Note: Acute Sprain is much more common than non-reducing disc displacement as a cause of limited opening.

Subjective:

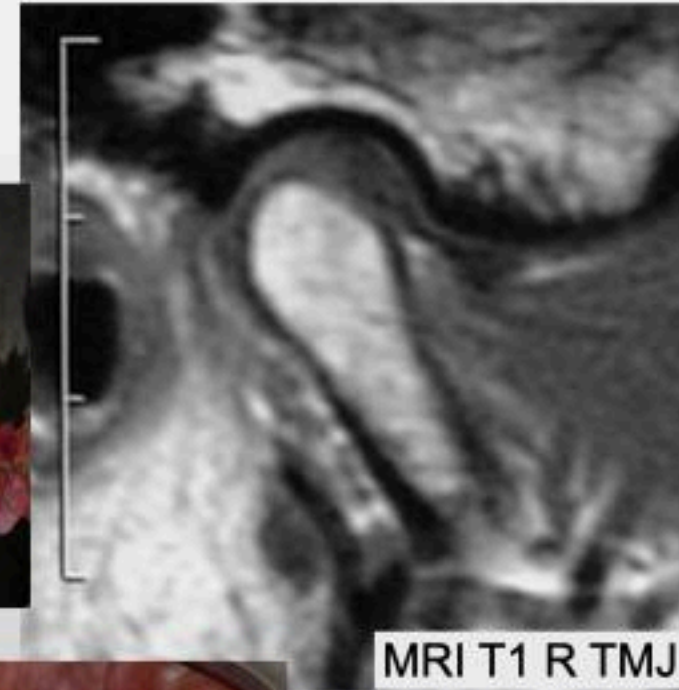
Dentist doing crown prep #30 1 week ago
Severe pain Right TMJ after moving jaw at end of appt
Constant deep pain Right TMJ
Limited opening

Objective:

Limited opening 32mm, Mandible shifts Left
Normal side to side motion
98 temp, normal perio probe 2nd molars, no caries
No pain palpation RL Medial Pterygoid
Soft end point on active stretch, 45mm, R TMJ pain
Right TMJ pain to palpation, Left TMJ normal
Posterior openbite Right, does not hold Accufilm

Assessment:

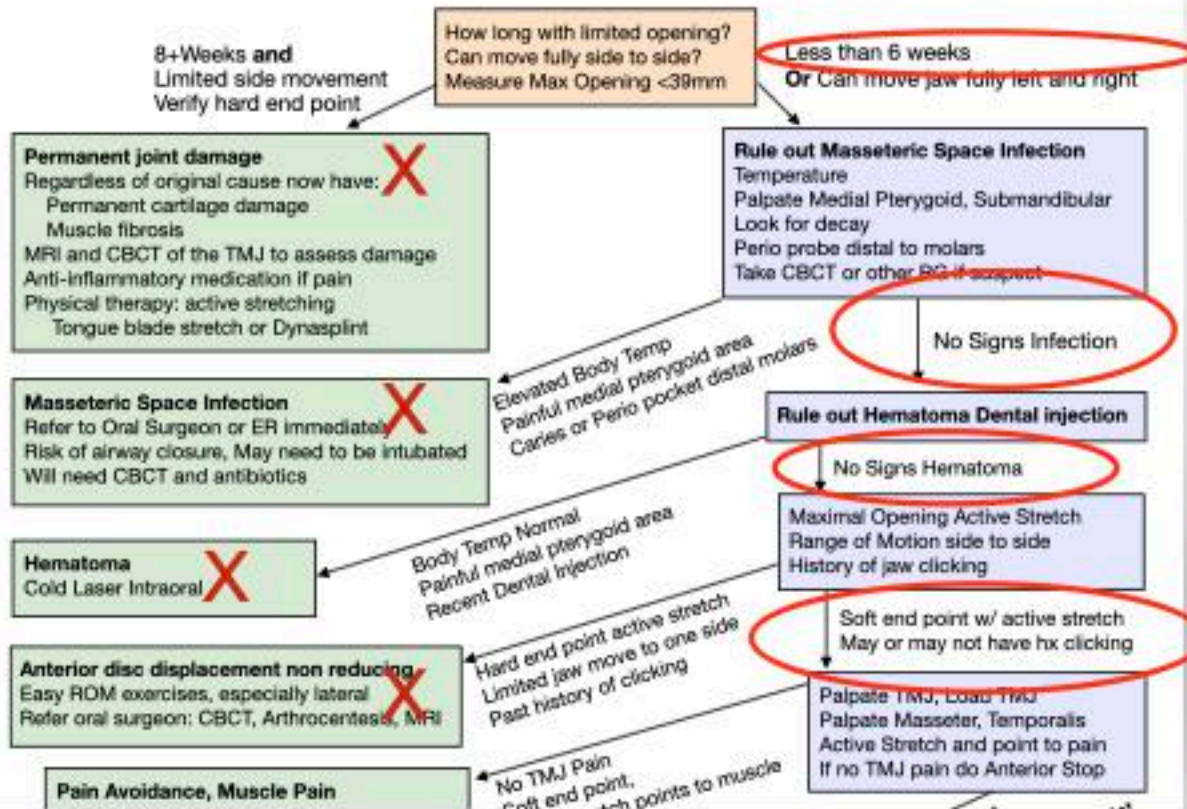
Limited opening due to Right TMJ pain avoidance
Acute Sprain Right TMJ Ligaments



Dr Droter's Limited Opening Algorithm

19.5

Differential Diagnosis Limited Opening (Less than 39mm): Pain Avoidance Sore Joint, Pain Avoidance Sore Muscle, Muscle Spasm, Masseteric Space Infection, Nonreducing Disc (4b,3b Acute), Joint Fibrosis, Muscle Fibrosis, other.



Objective:

Limited opening 32mm, Mandible shifts Left

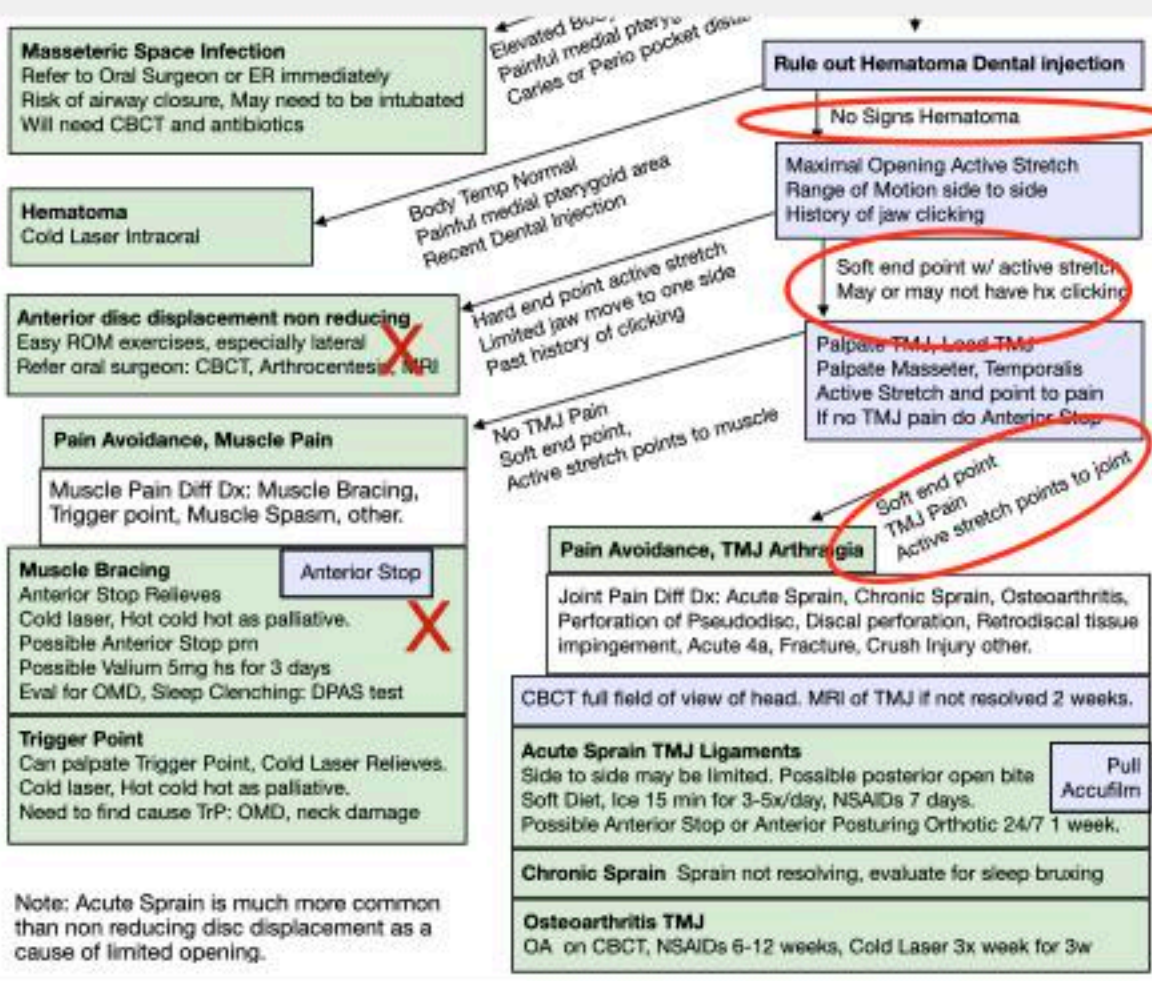
Normal side to side motion
98 temp, normal perio probe 2nd molars, no caries

No pain palpation RL Medial Pterygoid

Soft end point on active stretch, 45mm, R TMJ pain

Right TMJ pain to palpation, Left TMJ normal

Posterior openbite Right, does not hold Accufilm



Objective:

- Limited opening 32mm, Mandible shifts Left
- Normal side to side motion
- 98 temp, normal perio probe 2nd molars, no caries
- No pain palpation RL Medial Pterygoid
- Soft end point on active stretch, 45mm, R TMJ pain
- Right TMJ pain to palpation, Left TMJ normal
- Posterior openbite Right, does not hold Accufilm

Pain Avoidance, TMJ Arthralgia

TMJ +
Active stre...

Joint Pain Diff Dx: Acute Sprain, Chronic Sprain, Osteoarthritis, Perforation of Pseudodisc, Discal perforation, Retrodiscal tissue impingement, Acute 4a, Fracture, Crush Injury other.

CBCT full field of view of head. MRI of TMJ if not resolved 2 weeks.

Acute Sprain TMJ Ligaments

Side to side may be limited. Possible posterior open bite
Soft Diet, Ice 15 min for 3-5x/day, NSAIDs 7 days.
Possible Anterior Stop or Anterior Posturing Orthotic 24/7 1 week.

Pull
Accufilm

Chronic Sprain Sprain not resolving, evaluate for sleep bruxing

Osteoarthritis TMJ

OA on CBCT, NSAIDs 6-12 weeks, Cold Laser 3x week for 3w

Objective:

Limited opening 32mm, Mandible shifts Left

Normal side to side motion

98 temp, normal perio probe 2nd molars, no caries

No pain palpation RL Medial

Pterygoid

Soft end point on active stretch, 45mm, R TMJ pain

Right TMJ pain to palpation, Left TMJ normal

Posterior openbite Right, does not hold Accufilm

Treatment:

Ice 15-20 minutes for 3-5x 2 days only

Anterior repositioning orthotic 24/7 one week

NSAID for 5 days- 800mg Advil Liquid gel caps, q8h

Sleep with head elevated first week

Soft chew diet

At 1 week Anterior repositioning orthotic sleep only for second week

Week 3, no orthotic, reintroduce harder foods



Verify Orthotic does not rub
lingual tissue of mandible

At 4 weeks patient had full ROM
No clicking

New addition to protocol
Cold Laser (MLS Laser- 1500 hz 15
seconds, 10 hz 30 seconds)



MLS Laser: BioResearch

Multiwave Locked System Laser

808 nm Continuous, 905 nm Pulsed

Diode Laser

Stimulates metabolic processes in cells
Increase release NO from cells
Decrease inflammation
Pain Reduction
Faster Healing
Eliminates Trigger Points
Much better than Dry Needling



Chung, H., Dai, T., Sharma, S. K., Huang, Y.-Y., Carroll, J. D., & Hamblin, M. R. (2012). The nuts and bolts of low-level laser (light) therapy. *Annals of Biomedical Engineering*, 40(2), 516–533.

Ilbuldu E, Cakmak A, Disci R, Aydin R. Comparison of laser, dry needling, and placebo laser treatments in myofascial pain syndrome. *Photomed Laser Surg*. 2004 Aug;22(4):306-11.

Ms MY



LD Pankey Institute

Write your Dream

6 Common TMDs

Diagnosis	Pattern	Treatment
Clenching	Patient is aware Masseters Ache Morning TMJ clicking that resolves	Occlusal Adjust D-PAS Night Guard (if inhibition) Magnesium hs
Sleep Grinding	Worn Teeth	Protective night guard Airway night night guard
Occlusal Muscle Dysfunction	Sore muscles when chewing Sore Lateral Pterygoid, Headaches Day D-PAS Relieves Symptoms	Occlusal Adjustment
Osteoarthritis of TMJ	Arthralgia CBCT shows worn bone loss MRI T2, STIR ++	NSAID for 6-12 weeks Occlusal Adjustment Do not put in a night guard
Sprain Discal Ligament TMJ, Acute	Sudden onset pain TMJ, sore TMJ Limited opening Soft end point active stretch	Cold Laser, Ice 15 min 3x a day Rest, Soft diet, NSAID 7 days Anterior Reposition Orthotic 7 days
Acute Closed Lock TMJ	Sore TMJ Limited opening Hard end point active stretch	Arthrocentesis with PRP

6 Common TMDs

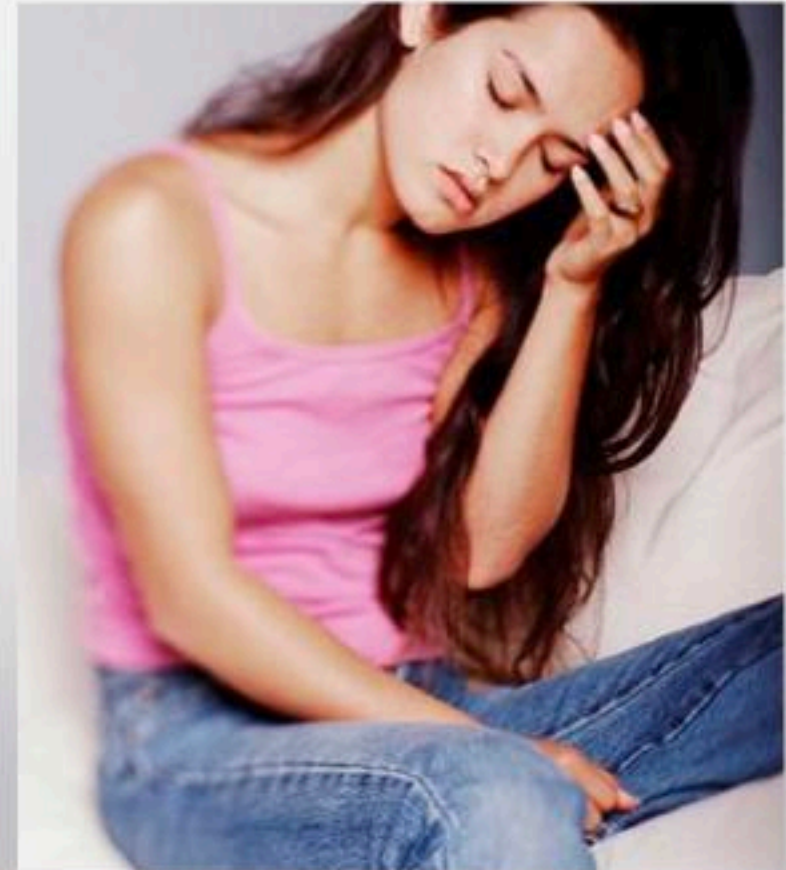
- Parafunctional Clenching
- Parafunctional Grinding
- Occlusal Muscle Dysfunction
- Osteoarthritis
- Acute Sprain
- Acute Closed lock of TMJ disc

5 Common Obstacles

- Neck and Postural Instability
- Wobbly TM Joint (Subluxation)
- Compromised Breathing/Airway
- Avascular Necrosis
- Referred Pain Muscle Triggerpoints

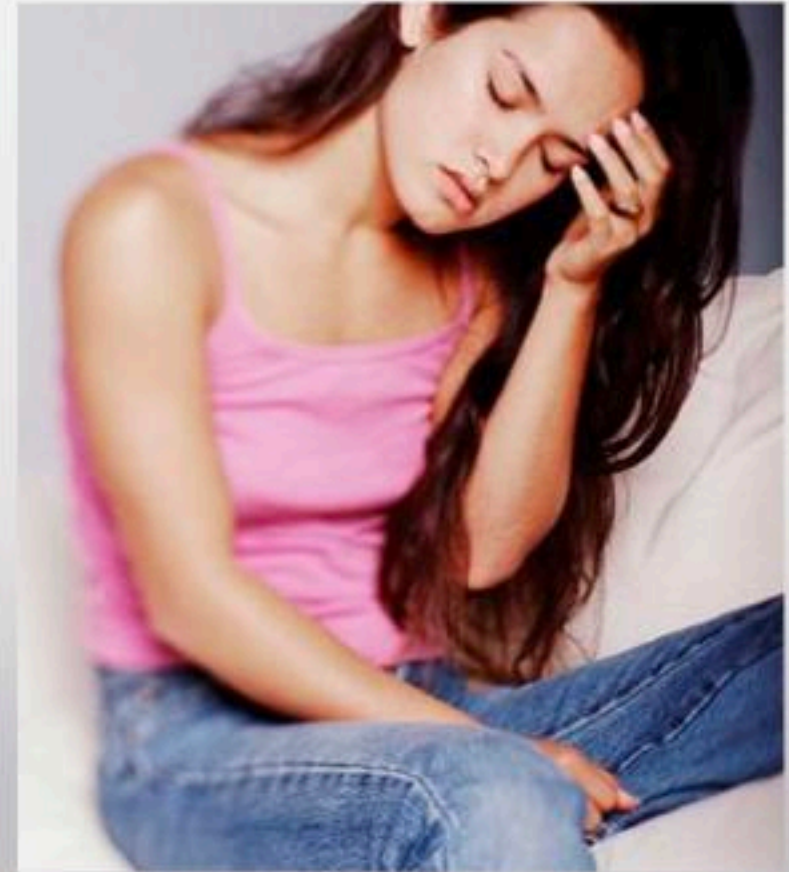
1 TMD that **usually** does not need therapy

- TMJ Clicking



5 Common Obstacles

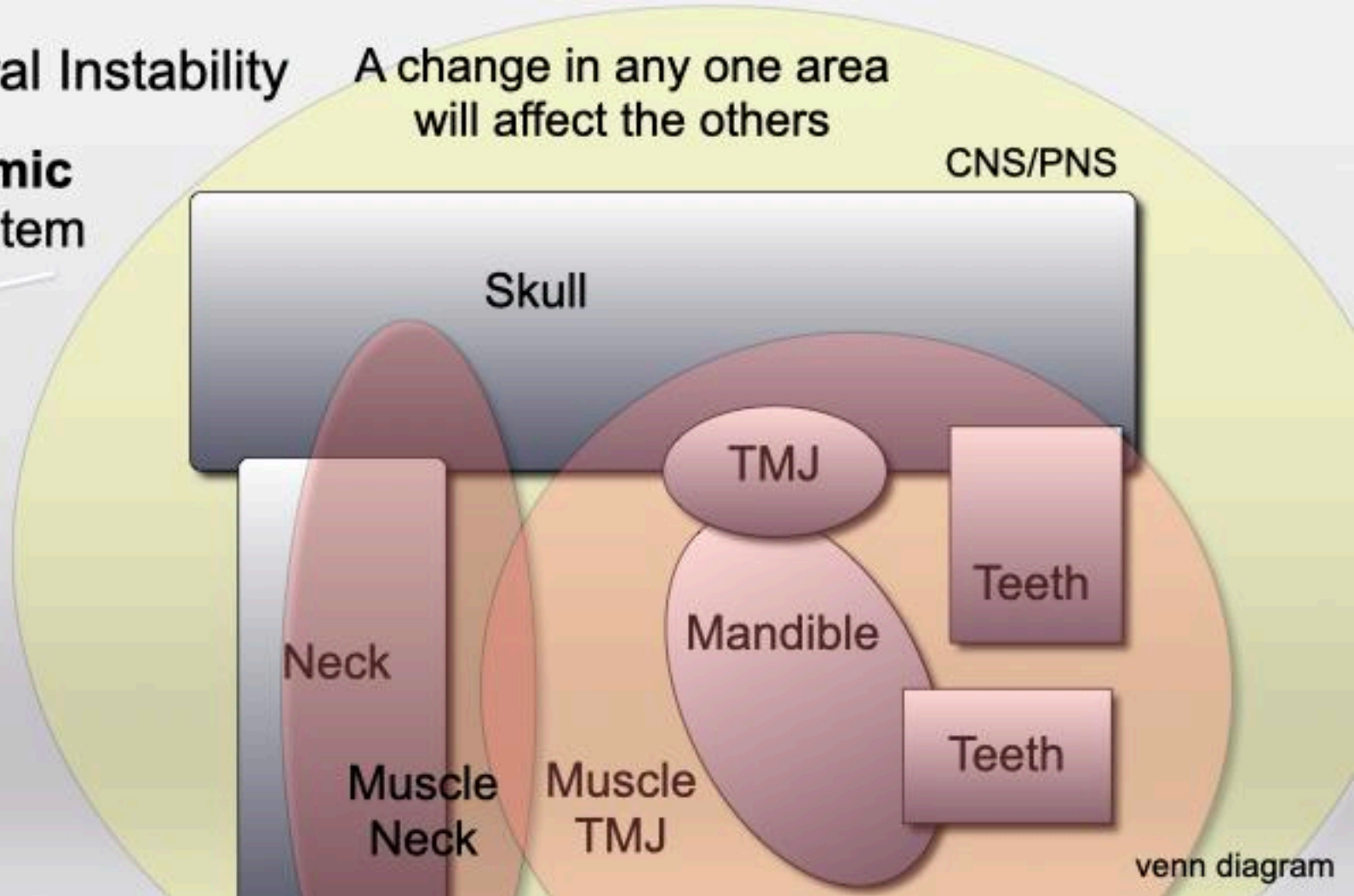
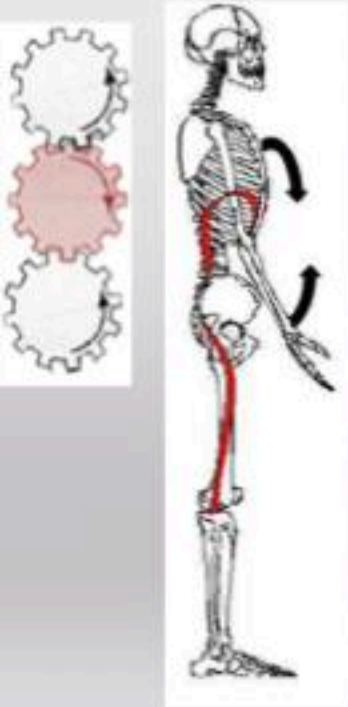
Neck and Postural Instability
Wobbly TM Joint (Subluxation)
Compromised Breathing/Airway
Avascular Necrosis
Referred Pain Muscle Triggerpoints



Neck and Postural Instability

A change in any one area will affect the others

This is a **dynamic** orthopedic System



Non-Linear Joint Deformity- Mechanically Unstable TMJs- “Wobbly Joint”

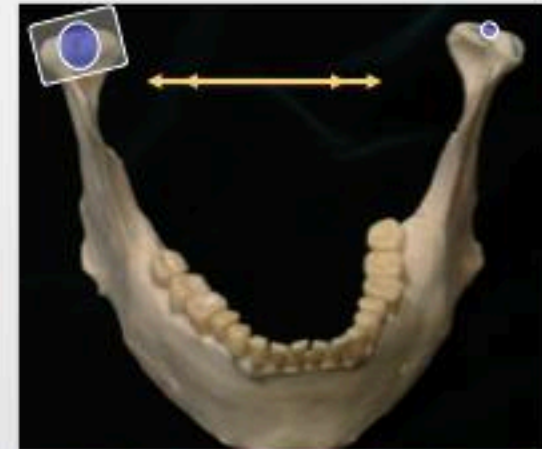
TM Joint subluxates under load
Adapted CR “wobbles”

TMJ Muscle hyperactivity
Looks similar to OMD
Muscles must stabilize the joint
Deep temporalis especially sore

Clinically:
Hypersensitive bite
Increase muscle pain with anterior deprogrammer
Continued muscle disharmony with flat plane orthotics
CT Scan- CR load zone not medial
JVA- after tooth tap see “wobble- 50hz vibration

How to Avoid Missing Dx- Offer complete exam to crown patients
Include anterior stop dx test
Let patients decide which risk to take.

Treatment: Lock-in Orthotic 6 months, the CR orthotic, then D-PAS.



Diagnostic Palatal Anterior Stop

D-PAS Test: Wear 2 weeks, Day and Night

Better- Decrease Symptoms

Sleep Clenching: Wear D-PAS as night guard
Occlusal Muscle Disharmony: Occlusal Adjust

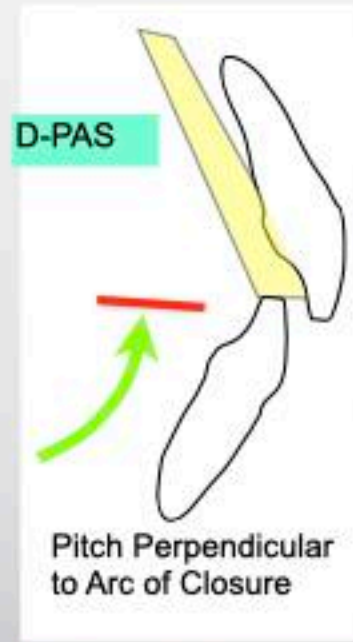
Worse- Increase Symptoms

Mechanically Unstable TMJ (Joint subluxation)
Intracapsular Problem TMJ

Stays the Same- No Change in Symptoms

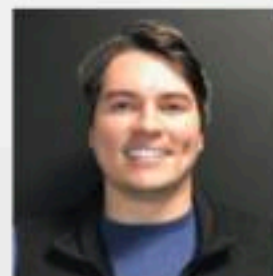
Damaged TMJ are mechanically stable
Pain not related to occlusion

This is a diagnostic test, not treatment





Nate Brock, CDT
 (865) 509-4509
 connect@livingtreelab.com



D-PAS option:
 You can make your
 own out of acrylic.

Instructions at
drdroter.com

3D Printed
 D-PAS

3D Printed
 Posterior deprogrammer
 with upper essix

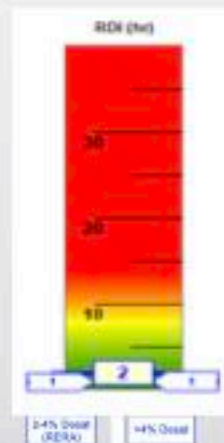
3D Printed
 CR Orthotic



Age 16F
cc: Facial Pain, Excessive Daytime Fatigue



Patient Safety Inc Pulse Ox Sleep Screening
RDI = 2, Autonomic Arousal **31 /h**



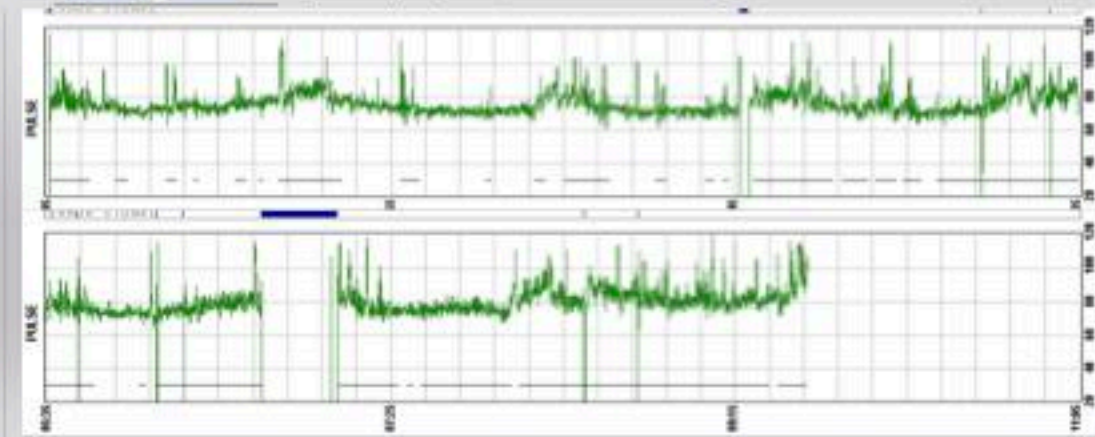
PULSE RATE DATA	
Autonomic Arousal	
Index (#/hr):	31
Pulse Rate Range	
Mean:	78
Min:	34
Max:	122
Tachycardia - Sleep (>90 bpm)	
Duration:	00:34:56
% (VRT):	6%
Bradycardia - Sleep (<50 bpm)	
Duration:	00:00:35
% (VRT):	0%



Heart Rate
>90 bpm
for 35 min

Medical Sleep Study in Lab RDI = 1
Dx: Snoring without evidence of gas exchange abnormalities or sleep disruptions

Sleep Latency Test
Dx: Narcolepsy
Recommend daytime medication



Disordered Breathing Disease Progression

Disease Stage 1

Predisposing Factors

Small Airway

Tongue Tie, Lip Tie
Bottle Fed as Infant
Dysfunctional Swallow
Allergies
Nasal Obstruction
Large Tonsil
Large Adenoids
Large Tongue
Mid-face Deficient
Mandibular Deficient
4 Bicuspid Extraction

Disease Stage 2

Compensation: Airway Maintained

Signs

Mouth Breathing
Head Postured Forward
Jaw Postured Forward
Tongue Bracing
Indents in Tongue
Sore Masseters
Sore Neck Muscles

Symptoms

Facial Ache
Not Waking Rested
Daily Fatigue
Neck Soreness

Disease Stage 3

Sleep Airway Partial Collapse

Signs

All of stage 1 and 2 plus.....
Upper Airway Resistance
2-4% Drop O₂ Saturation
RERA- Respiratory Arousals
Sleep Teeth Grinding
↓ Growth Hormone

Symptoms

Heart Rate Fluctuation
Snoring or "Purring"
Weight Gain
Cognitive Impairment, ADD
Hyperactivity

Disease Stage 4

Sleep Airway Full collapse

Signs

All of stage 1, 2, 3 plus....
4%+ drop O₂ Saturation
Apnea
Cardiovascular Damage
Elevated BP
GERD

Symptoms

All of stage 2, 3 plus....
Worn Teeth

Disordered Breathing Disease Stage 4

OSA- Obstructive Sleep Apnea

AHI- Apnea Hypopnea Index

Apnea and Hypopnea events per hour

Apnea- Stop airflow for 10 seconds

Hypopnea- <50% airflow or 4+% O₂ Desaturation

Disease Stage 1	Disease Stage 2	Disease Stage 3	Disease Stage 4
<p>Predisposing Factors</p> <p>Small Airway</p> <p>Tongue Tie, Lip Tie</p> <p>Bottle Fed as Infant</p> <p>Dysfunctional Swallow</p> <p>Allergies</p> <p>Nasal Obstruction</p> <p>Large Tonsil</p> <p>Large Adenoids</p> <p>Large Tongue</p> <p>Mid-face Deficient</p> <p>Mandibular Deficient</p> <p>4 Buccal Ectraction</p>	<p>Compensation: Airway Maintained</p> <p>Signs</p> <p>Mouth Breathing</p> <p>Head Postured Forward</p> <p>Jaw Postured Forward</p> <p>Tongue Beating</p> <p>Indents in Tongue</p> <p>Sore Masseters</p> <p>Sore Neck Muscles</p> <p>Symptoms</p> <p>Facial Ache</p> <p>Not Waking Rested</p> <p>Daily Fatigue</p> <p>Neck Soreness</p>	<p>Sleep Airway Partial Collapse</p> <p>Signs</p> <p>All of stage 1 and 2 plus....</p> <p>Upper Airway Resistance</p> <p>2-4% Drop O₂ Saturation</p> <p>RERA- Respiratory Arousal</p> <p>Sleep Teeth Grinding</p> <p>↓ Growth Hormone</p> <p>Symptoms</p> <p>Heart Rate Fluctuation</p> <p>Snoring or "Purring"</p> <p>Weight Gain</p> <p>Cognitive Impairment, ADD</p> <p>Hyperactivity</p>	<p>Sleep Airway Full collapse</p> <p>Signs</p> <p>All of stage 1, 2, 3 plus....</p> <p>4%+ drop O₂ Saturation</p> <p>Apnea</p> <p>Cardiovascular Damage</p> <p>Elevated BP</p> <p>GERD</p> <p>Symptoms</p> <p>All of stage 2, 3 plus....</p> <p>Worn Teeth</p>

John R. Droter DDS

AHI 1-4
"Normal" ??

AHI 5-15
Mild OSA

AHI 15-30
Moderate OSA

AHI 30+
Severe

Signs

- Apnea
- 4% drop O₂ Saturation
- Cardiovascular Damage
- Elevated BP
- GERD

Symptoms

- Not Waking Rested, Daily Fatigue
- Cognitive Impairment

Irreversible Damage

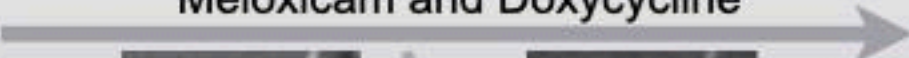
John R. Droter DDS

Anterior Openbite with Active TMJ Bone Loss

Non Surgical Therapies



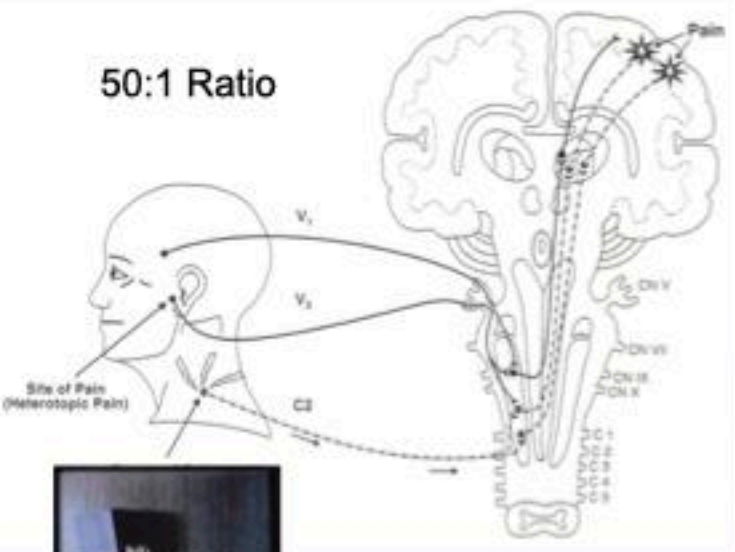
Condylar Distraction
Meloxicam and Doxycycline



Referred Pain Convergence

More primary sensory neurons than secondary neurons that travel to brain

50:1 Ratio



"Bell's Orofacial Pain"
Jeffery Okeson

Trigger Points

Contracted mass of actin, myosin and histamine

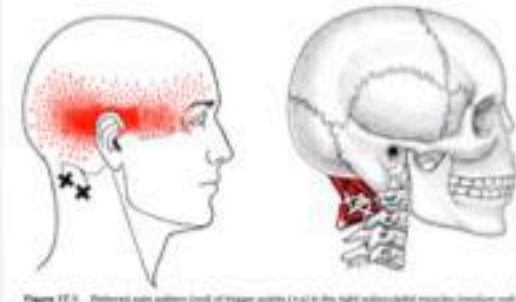
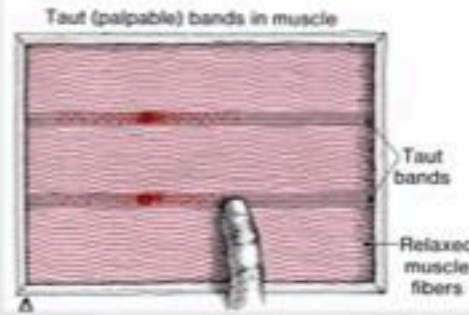
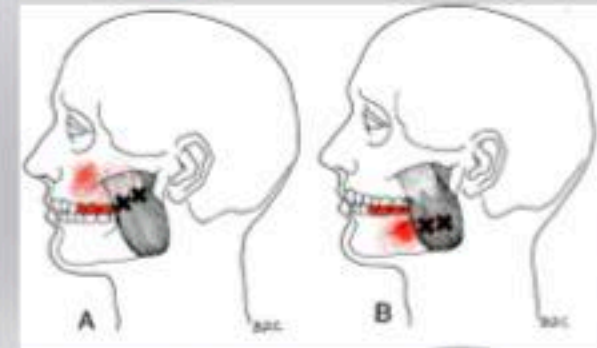
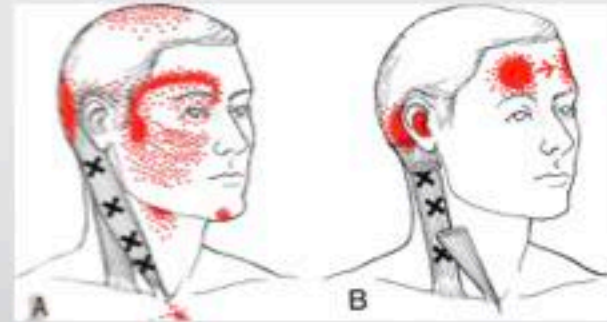


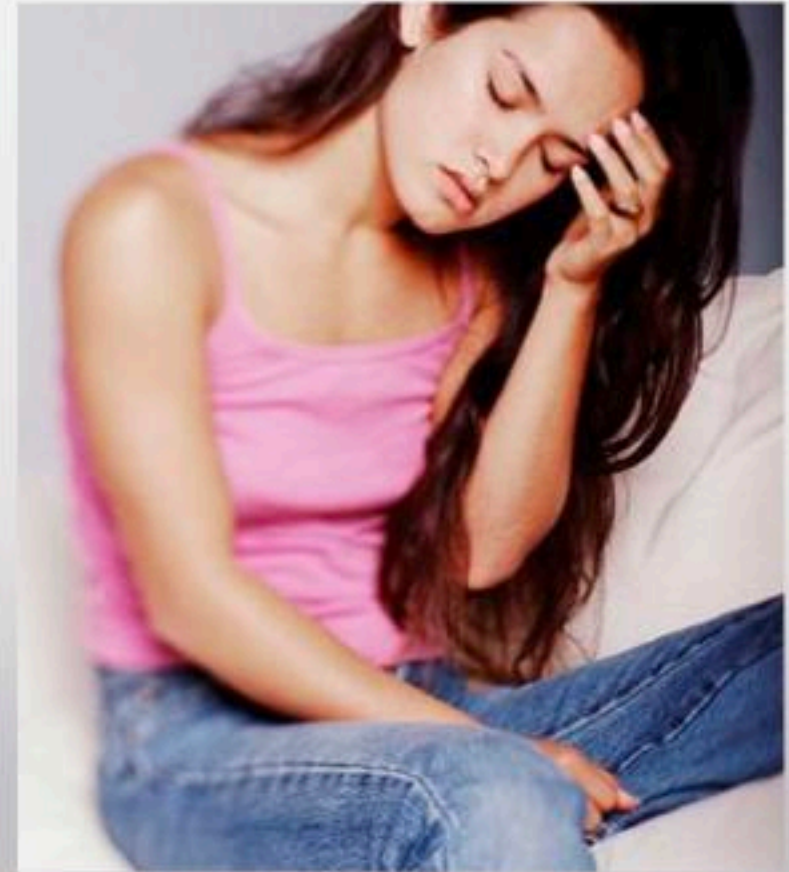
Figure 17.1. Referred pain pattern (red) of trigger points (x) in the right suboccipital muscles (American text)

"The Trigger Point Manual"
Janet Travell, MD



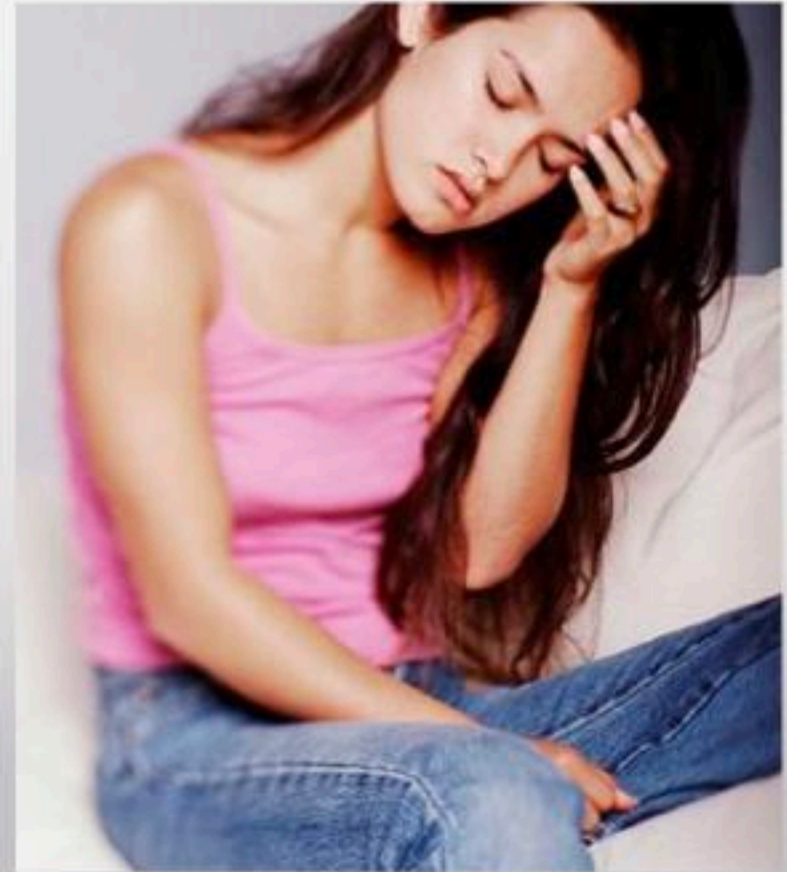
5 Common Obstacles

Neck and Postural Instability
Wobbly TM Joint (Subluxation)
Compromised Breathing/Airway
Avascular Necrosis
Referred Pain Muscle Triggerpoints



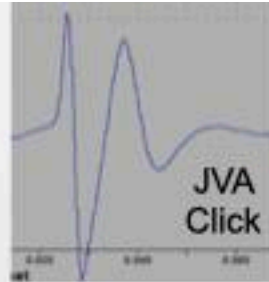
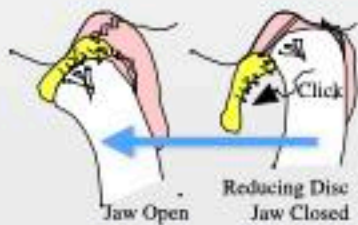
1 TMD that **usually** does not need therapy

TMJ Clicking

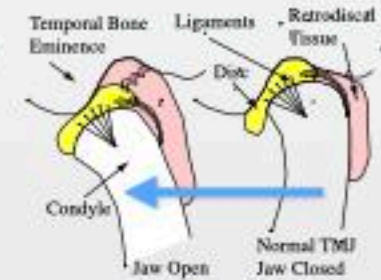


Differential Diagnosis of TMJ Clicking

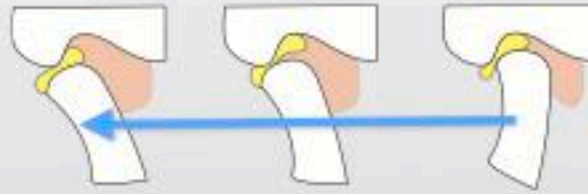
Disc Reduction



Normal

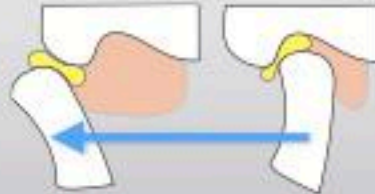


Adhesive Click



“Sticky Disc” - Disc sticks after prolonged clenching, then releases

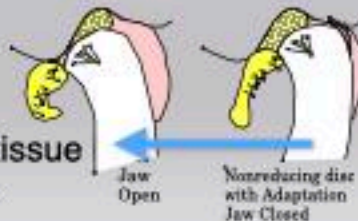
Eminence Thud



A hypermobile condyle moves past the crest of the eminence and makes a thud sound

Adhesion Crackle

A small piece of fibrous tissue in joint is moved across



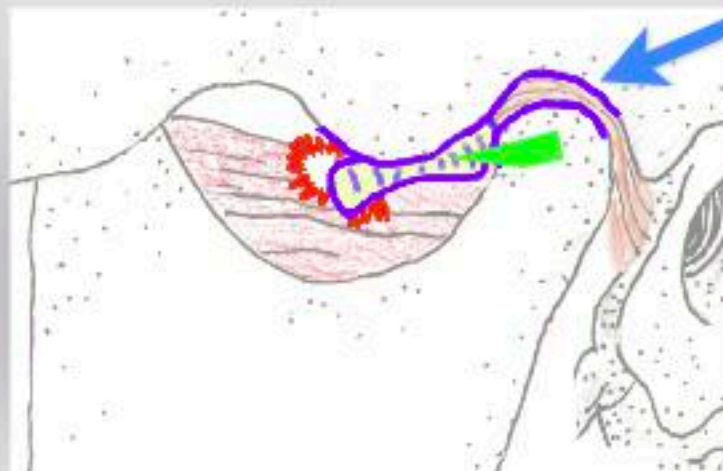
Basic Orthopedics

Joints are either
Healthy or
Damaged

If damaged, joints will be either:
Actively Breaking Down
Adapting
Adapted
Structurally, Mechanically
Favorably, Unfavorably



Majority of damaged
TMJs adapt favorably



Posterior ligament, synovium,
and retrodiscal tissue adapt to
form a
Pseudo-disc

Tissue Fibrosis

Symptoms of Temporomandibular Joint Osteoarthritis and Internal Derangement 30 years after Non-Surgical Treatment.

Leeuw, Boering, Stegenga, Bont,

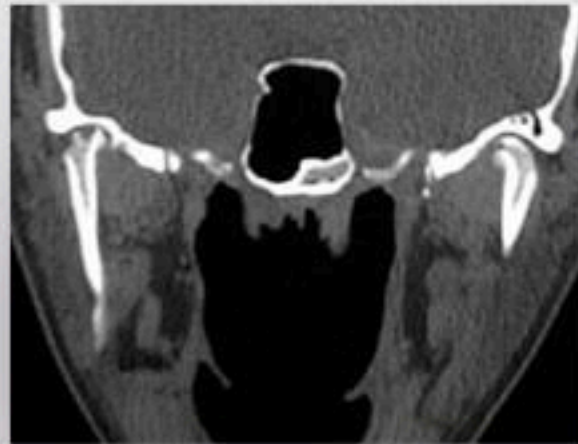
Journal of Craniomandibular Practice, April 1995, vol. 13, No. 2

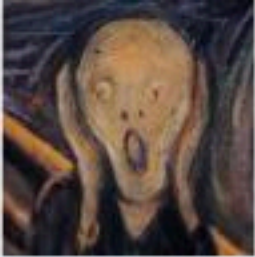
- University Hospital, Netherlands: 134 TMD patients, 30 year follow up
- Patients received good clinical work up and diagnosis 30 years ago, but basically no treatment
 - ┆ (Reassurance, PT, exercise, limited occlusal adjust)
- 70% satisfied with results
- 25% still had pain on movement
- 15% not able to eat hard foods
- 35 control patients had no apparent symptoms

**If you have a disease that is
one in a thousand, it is 100% for you**

There is no love sincerer than the love of food.

G. B. Shaw





Damaged TMJs



Adapt Favorably 85%
Adapt Fairly 14%
Adapt Poorly <1%



Occlusal Muscle Dysfunction
Osteoarthritis



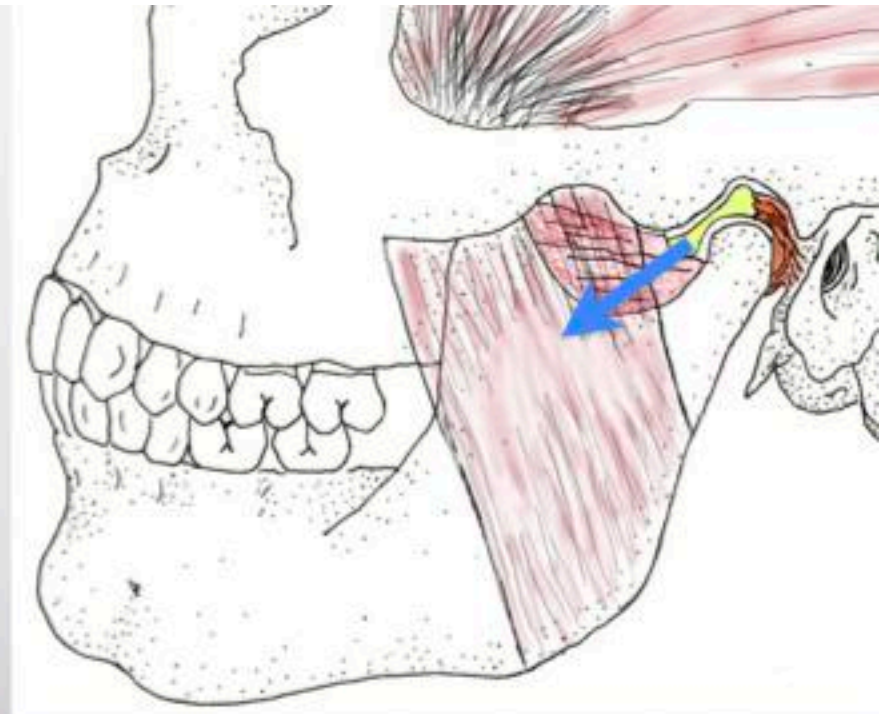
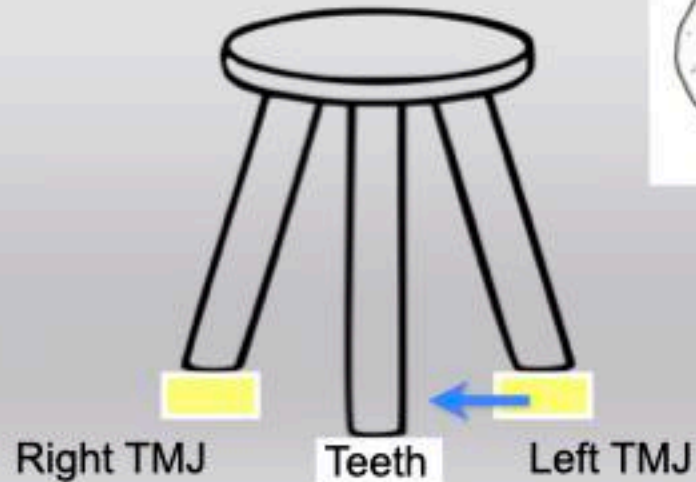
Avascular Necrosis
Progressive Condylar Resorption

*These are my guesses on %, no research to back up to backup

Normal Joint with Normal Occlusion

All teeth touch evenly with condyles seated in fossa

What happens to the occlusion if the disc is dislocated?



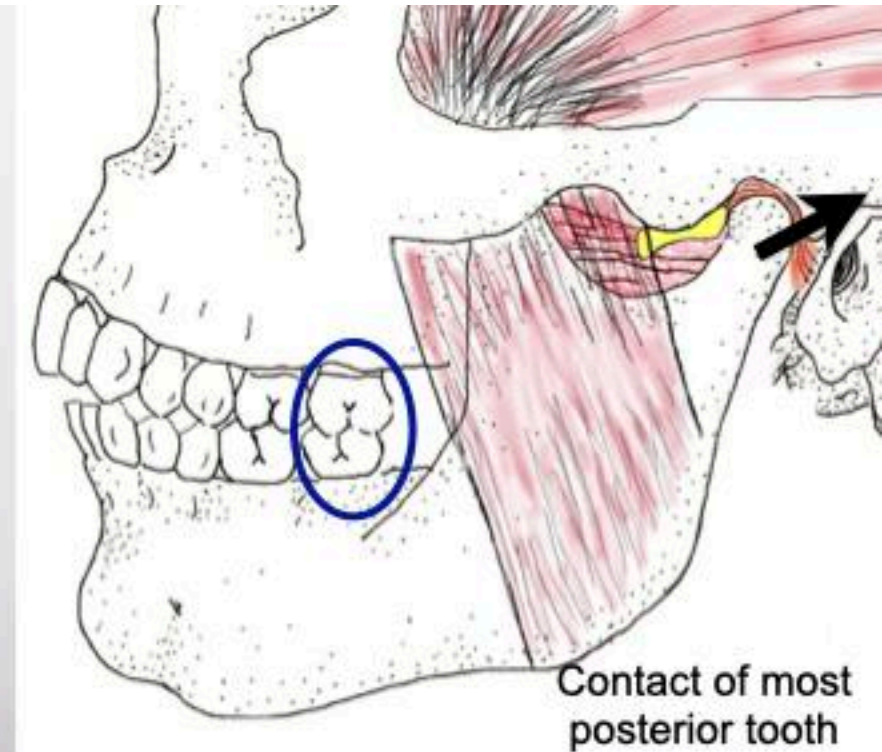
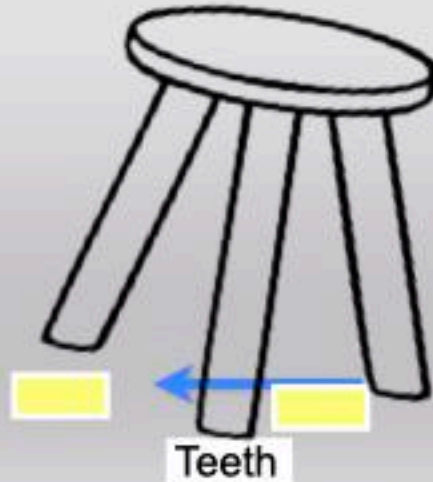
Damaged Joint with Malocclusion

85% damaged joints adapt favorably with respect to the TMJ.

Anteriorly Dislocated Disc, Mandible shifts:
Inadequate Anterior Guidance, Posterior Disclusion
Uneven Occlusion,
CR≠MaxIC
Occlusal Muscle Disharmony develops.

Treat Adapted joints with OMD
the same as healthy joints with OMD:
Occlusal Adjustment

CR≠MaxIC should be 2mm or less.
(Anterior Posterior 2mm)
If >2mm something else is going on.



6 Common TMDs

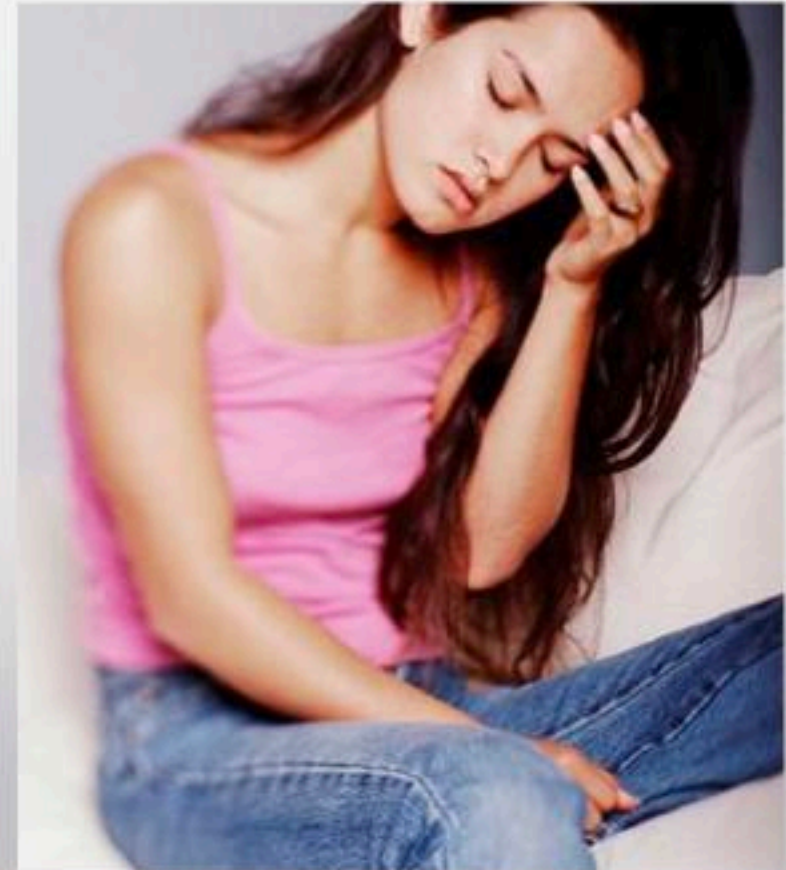
- Parafunctional Clenching
- Parafunctional Grinding
- Occlusal Muscle Dysfunction
- Osteoarthritis
- Acute Sprain
- Acute Closed lock of TMJ disc

5 Common Obstacles

- Neck and Postural Instability
- Wobbly TM Joint (Subluxation)
- Compromised Breathing/Airway
- Avascular Necrosis
- Referred Pain Muscle Triggerpoints

1 TMD that **usually** does not need therapy

- TMJ Clicking





LD Pankey Institute

Write your Dream

The Diagnostic Process- #1 is History

John R Droter DDS
Annapolis, Maryland

Annapolis, Maryland
John R Droter DDS

Facial Pain Diagnosis

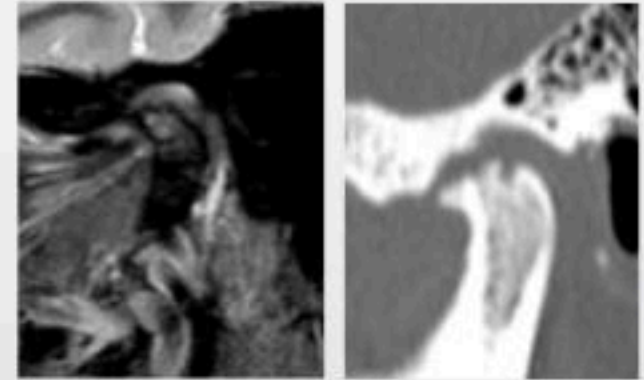
Diagnostic Tools

- 1 Written and Oral History
- 2 Observation
- 3 Physical Exam
 - Muscle Palpation
 - Joint Palpation
 - Joint Auscultation
 - Joint Motion
- 4 CT Scan
- 5 Dx Orthotic- D-PAS
- 6 Sleep Airway Screening
- 7 MRI

Biometrics

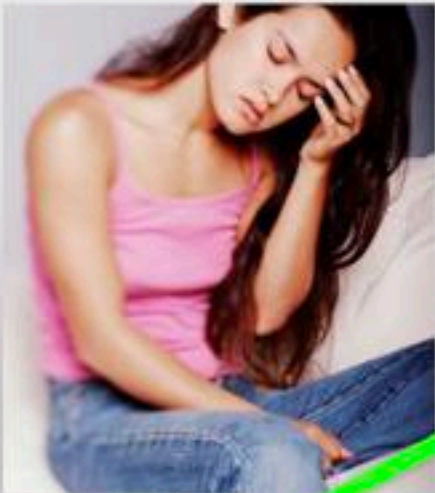
- Joint Vibration
- Jaw Tracker
- Electromyography
- T-Scan

- Occlusion: CR Mounted Study Models
- Complete Dental Exam
- Clinical Photographs
- Dx Blocks
- Blood test
- Dx Orthotics- Brux Checker, CR Orthotic



Diagnosis Treatment Flow Chart

Goal of history is to put as many things on Differential Diagnosis as possible



Symptoms

History

Signs

Doctor Exam

Differential Diagnosis

Diagnostic Tests

Specific Working Diagnosis

Treatment

No Signs

No Symptoms
Final Dx

Doctor Re-Exam

If not resolved

Symptom Dx

Tooth Pain
Arthralgia

vs
vs

Specific Dx

Irreversible Pulpitis
Osteoarthritis

Occlusion Problem Screening



John R. Dreter, D.D.S.
4550 Mitchellville Rd., #110
Bowie, Maryland, 20716

301-805-4400
jdreter@mac.com

Name _____ Age _____ Date _____

In the past have you had:

Broken teeth	No	Yes
Worn Teeth	No	Yes
Crown (s)	No	Yes
Root Canal (s)	No	Yes

Over the last 6 weeks have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
Jaw fatigue on chewing	0	1	2	3
Sore teeth	0	1	2	3
Teeth do not have a comfortable place to rest	0	1	2	3
Limiting diet to softer foods	0	1	2	3
Cold sensitive teeth	0	1	2	3
Clenching of teeth	0	1	2	3
Grinding of teeth	0	1	2	3
Clicking or popping jaw joint	0	1	2	3
Jaw joint pain	0	1	2	3
Ear pain	0	1	2	3
Ringing in ears	0	1	2	3
Dizziness	0	1	2	3
Temple Headache	0	1	2	3
Migraine Headaches	0	1	2	3
Any other type of headache	0	1	2	3
Facial ache	0	1	2	3
Neck tightness	0	1	2	3
Neck pain	0	1	2	3
Limited jaw opening	0	1	2	3
Need to wiggle jaw to open	0	1	2	3
Muscles waking up - rested	0	1	2	3
Fatigue during the day	0	1	2	3

21.11

Sleep/Fatigue Screening

Name _____

Date _____

Age _____

Recent Sleepers Include (Please check all that apply)

- 1. Have been told I was breathing while asleep
- 2. Have fallen asleep or nodded off while driving
- 3. The sudden loss of consciousness or fainting or my heart racing
- 4. Feel excessively sleepy or fatigued during the day
- 5. Excessive or total sleep that I want
- 6. Have had weight gain and found it difficult to lose
- 7. Have been diagnosed with high blood pressure
- 8. It takes me less than 15 minutes to fall asleep
- 9. Waken up more than 1 time per night
- 10. I wake up with headaches

Related Health History (Signs & Symptoms) (Please check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Snoring | <input type="checkbox"/> Diabetes |
| <input type="checkbox"/> Depression/Anxiety | <input type="checkbox"/> History of Stroke/Heart Disease |
| <input type="checkbox"/> Uncontrolled blood pressure | <input type="checkbox"/> Acid Reflux/GERD |
| <input type="checkbox"/> Medication (including sleeping tablets) | <input type="checkbox"/> Hypertension |
| <input type="checkbox"/> Asthma/Obstructive Pulmonary Disease | <input type="checkbox"/> Memory Loss |
| <input type="checkbox"/> History of or with Dry Mouth | <input type="checkbox"/> Family History of OSA/ Snoring |
| <input type="checkbox"/> Alcohol/Drug Use | <input type="checkbox"/> Coronary Artery Disease |
| <input type="checkbox"/> Heart Disease | <input type="checkbox"/> Currently Not Using Prescribed CPAP |

Tiredness: How likely are you to doze off in the following situations? Use the following scale to check the most appropriate number for each situation:
 0 = no chance of dozing 2 = moderate chance of dozing
 1 = slight chance of dozing 3 = high chance of dozing

- Situation _____
- Sitting and reading _____
- Watching TV _____
- Sitting inactive in a public place (e.g. a theater or meeting) _____
- As a passenger in a car for an hour without a break _____
- Lying down to rest in the afternoon when circumstances permit _____
- Sitting and talking to someone _____
- Sitting quietly after lunch without alcohol _____
- In a car, while stopped for a few minutes in traffic _____

Over the last 2 weeks have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
Feeling tired	0	1	2	3
Trouble falling asleep	0	1	2	3
Feeling nervous, anxious or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3
Abdominal discomfort and/or bloating/fullness	0	1	2	3
Diarrhea	0	1	2	3
Constipation	0	1	2	3
Burping or gas/retching	0	1	2	3

Epworth Sleepiness Scale
 10 or greater think OSA. Need to find out
 why they are not sleeping well.

Over the last 2 weeks have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
Feeling fatigued	0	1	2	3
Trouble falling asleep	0	1	2	3
Feeling nervous, anxious or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3
Abdominal discomfort and/ or bloating/fullness	0	1	2	3
Diarrhea	0	1	2	3
Constipation	0	1	2	3
Stomach or gut rumbling	0	1	2	3

Johns, M. W. M. (2000). Sensitivity and specificity of the multiple sleep latency test (MSLT), the maintenance of wakefulness test and the epworth sleepiness scale: failure of the MSLT as a gold standard. *Journal of Sleep Research*, 9(1), 5-11.

Date _____ Referred by _____

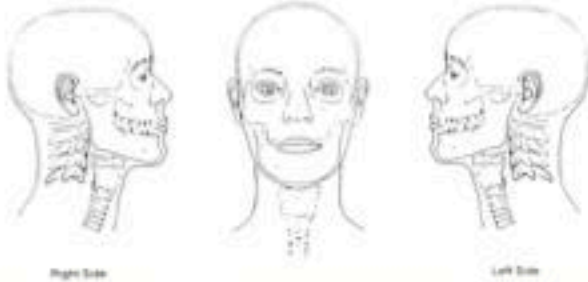
Referring Dr.'s Phone # and Email: _____

1. Which of the following do you have (circle all that apply)
- Headaches Neck Pain Jaw pain Ear Pain
- Facial Pain Bite Problems Damaged teeth Sleep Problem
- Other _____

2. How many days a month are you pain free? _____

If pain free, go to next page.

If Pain, Please shade in where your pain is located:

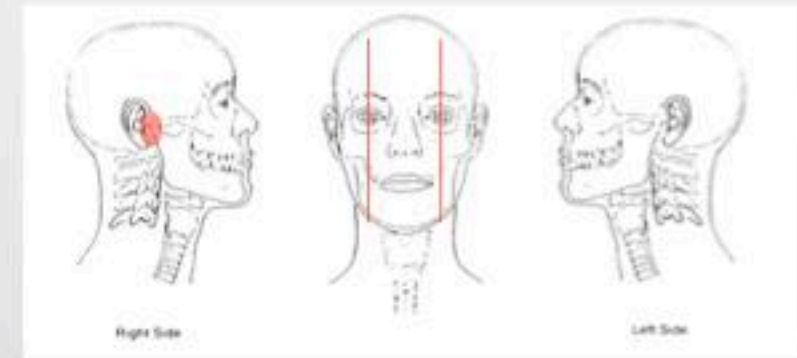


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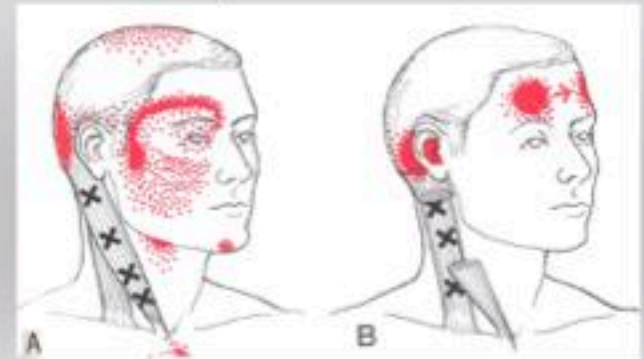
Date _____



**Legal- You need to know who wrote what.
Dr. only writes in here.**



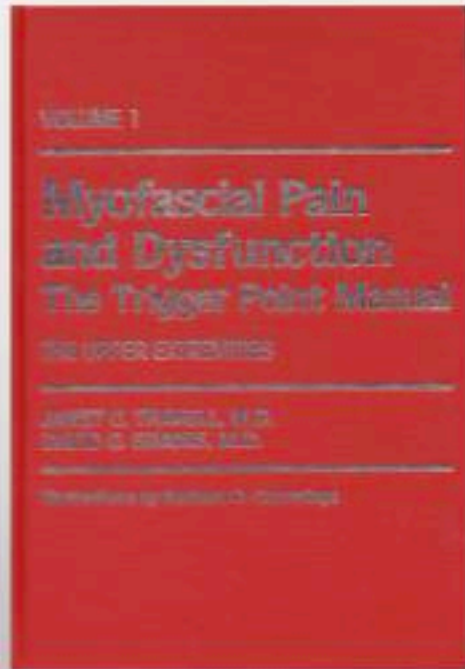
**Intracapsular pain is outside the pupils.
Muscle pain can be all over.**



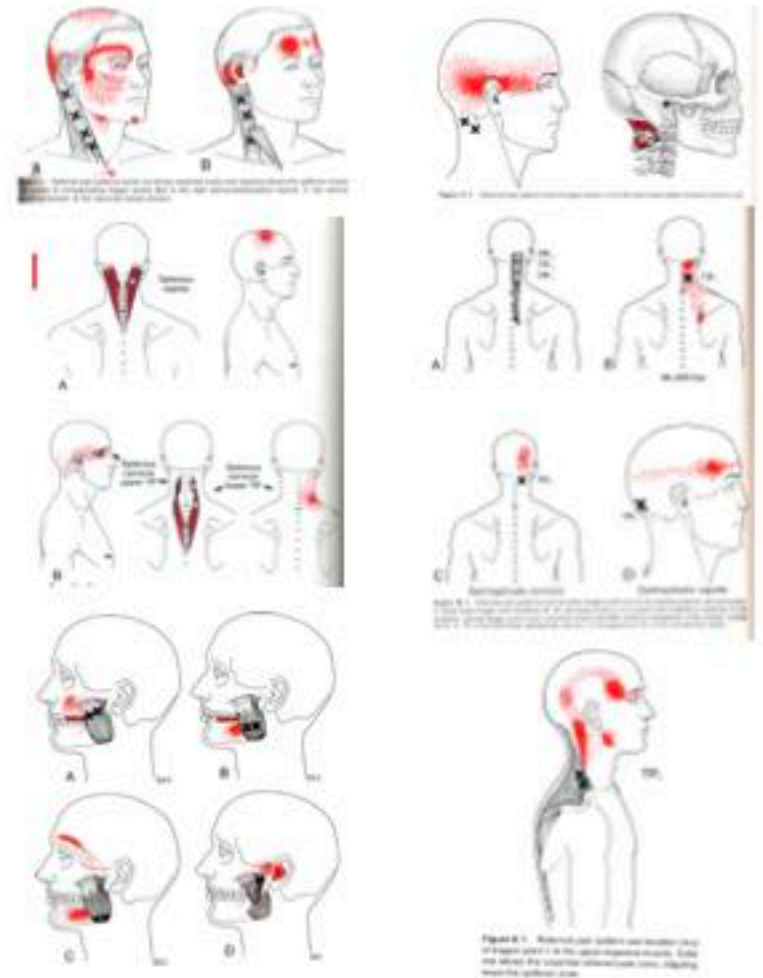
**Show me where the pain is:
One finger
Whole hand
Five intense fingers
With or with out movement
Quickness and certainty of answer**

**“The Trigger Point Manual”
Janet Travell, MD**

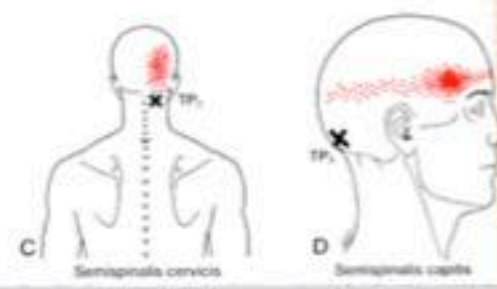
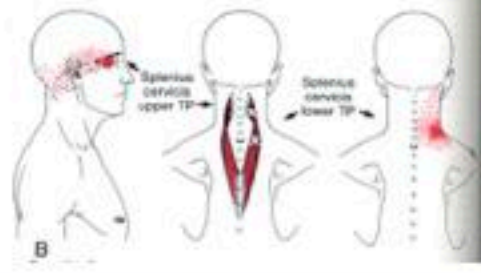
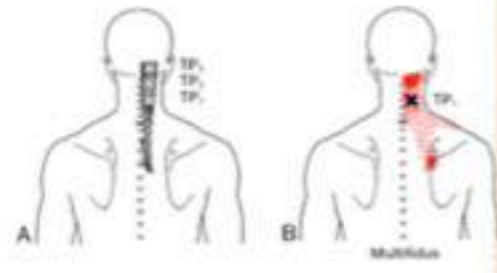
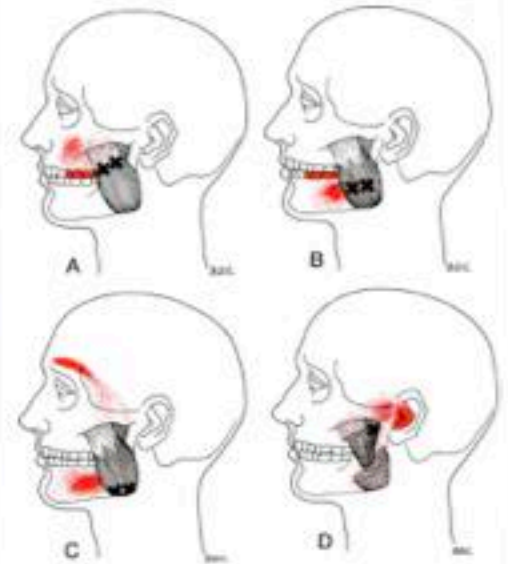
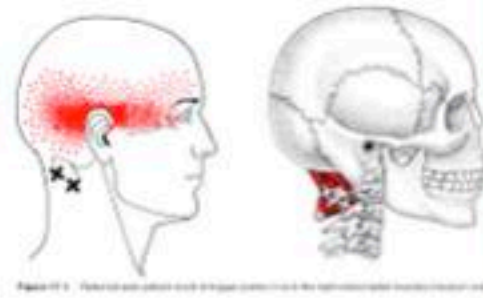
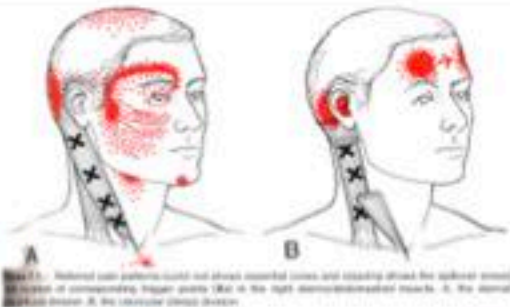
I have made my own summary
sheet I can hand to patient



Janet Travell: Myofascial Pain and Dysfunction



"The Trigger Point Manual"
Janet Travell, MD



Show me where the pain is:

One finger

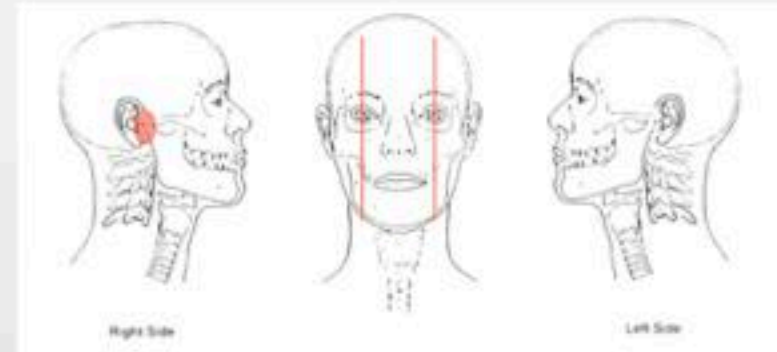
Three fingers

Whole hand

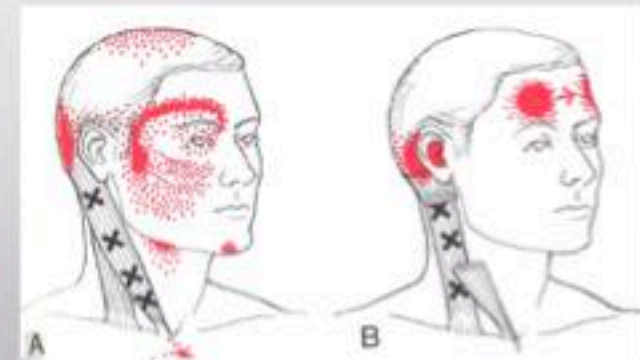
Five intense fingers

With or with out movement

Quickness and certainty of answer



Intracapsular pain is outside the pupils.
Muscle pain can be all over.



Clinical Observations and things to add to Differential Dx:

One finger over the TMJ- TMJ Arthralgia or ear infection

One or three fingers to masseter- myalgia of masseter

Whole hand cupping lower jaw over masseter- think OMD, Clench, Brux

Forehead- think sinus, neck

Whole hand circular- look at neck.

Pain that moves from one area to another- look at neck

Pain top of head- look at neck, cranial bone alignment

Five intense fingers- think RSD

Masseter pain increasing with chewing- OMD, neck damage

Temple Pain increasing with chewing- OMD, Temporal arteritis

The less time being in pain the easier it is to treat

Pain worse in the Morning, think
Diff Dx: Clenching, Bruxing

Pain relieved by NSAID is easier to
treat than narcotics or nothing helps.

If on scale of one to ten they
choose 12
Diff Dx: RSD

How long have you had this pain? _____

Is the pain constant? _____

Is the pain (circle all that apply) Aching Burning
 Stabbing Sharp Dull Other _____

Is the pain worse in the (circle all that apply)
 Morning Afternoon Evening Night

What makes the pain better? _____

What makes the pain worse? _____

How severe is your pain? Please make a mark along the line below:

No Pain | _____ | Worst Pain Ever

Pain relieved by NSAID is easier to treat than narcotics or nothing helps.

How much medication taken and consistency give you idea on the type of person and coping skills.

Consistent NSAID for more than 20 days think stomach, kidney, BP issues.
Evaluate for Tylenol toxicity of liver, 4G/day

Question 3 assesses how well their jaw functions.
If all answers are "NO", it is not OMD.

What medication do you take or have you previously taken for your pain?

MEDICATION	DOSE	FREQUENCY
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

	Yes	No
3. Any discomfort when you chew?	Y	N
Which side do you favor chewing on ?	R L	Use Both
Is it difficult or painful to swallow?	Y	N
Any discomfort when you move your jaw?	Y	N
Any discomfort upon chewing hard foods like carrots?	Y	N
Do your jaw muscles get tired from chewing?	Y	N
Does it hurt to open wide?	Y	N
Which side of your jaw makes a clicking/popping noise?	R L	neither
Which side of your jaw makes other noises?	R L	neither
What Noises? _____		
When did you first notice the noises or clicking? _____		
Have you noticed any changes in noises or clicking?	Y	N
Explain: _____		

4.	Have you ever not been able to open your jaw all the way?	Y	N
	Have you ever had to wiggle your jaw to get it open?	Y	N
	Has your jaw ever been stuck open and you could not close it?	Y	N
	When did this first happen? _____ Last happen? _____		
5.	Has your speech changed?	Y	N
	Have you noticed a change in the way your teeth come together?	Y	N
	Have you noticed your teeth shifting?	Y	N
	Has the shape of your face changed?	Y	N
	Has your chin shifted to one side of your face?	Y	N
	When did you notice any of the above changes? _____		
6.	Do you have a hyper-sensitive bite?	Y	N
	Is your bite uncomfortable?	Y	N
	When you close your jaw, do you have to search for a comfortable position for your teeth to fit?	Y	N

Looking for disc locking, about to go from 4a to 4b.
AVN risk. Closed lock is different than open lock.

Diff Dx: 4a locking, 3a locking opposite old 4b.

Looking for change of joint space
Diff Dx: New 4a, condylar bone loss,
condylar bone growth, synovial
hyperplasia.

Diff Dx: Wobbly Joint

Diff Dx: Wobbly Joint, Occlusal Muscle Dysfunction

7. Are your teeth sore or sensitive? Y N
 Do you clench your teeth? Y N
 Do you grind your teeth? Y N
 Do you grind or clench during the day or night? Day Night Both Neither
 When did you start clenching or grinding? _____

8. Do you have a dentist who you see for routine care and cleanings? Y N
 Please list : _____ Last Visit: _____

Which of the following dental procedures have you had (please circle):

Fillings Orthodontics Root Canal Dentures
 Crowns Bridges Bite Adjustment

If you had braces, how many times were you in braces? _____

How old were you when you got braces? _____

How old were you when you were done? _____

Have you ever had a tooth extracted? Y N

Have you ever split or broken a tooth? Y N

Do you feel there is any connection between the dental work you have had done
 and the problems you are having? Y N

Recent dental work may have changed occlusion and triggered the event.
 Do not lead patient into making the association

Orthodontics more than once may indicate progressive adaptation.
 Ask why they went into braces.

It is important to know if they are blaming the dentist.

9. Have you ever injured or sustained any form of trauma or whiplash to your:
 (circle all that apply) Jaw Head Neck None of these
 (If any past trauma, please complete the trauma questionnaire)

Have you ever had stitches to your chin?	Y	N
Do you feel there is any connection between the trauma you have had and the problems you are having?	Y	N

10. Do you get headaches? Y N How often? _____
 How long do they last? _____
 Where does it ache? _____

Ask Trauma question in at least three different ways, probe deep. Patients filter information.

Any trauma to face or jaw?
 Ever been in a car accident?
 Slight Fender bender?
 Whiplash?
 Fall down stair or on ice?
 No Trauma even minor?
 Play any sports?

Important to rephrase question: Unrelated to the jaw/muscle pain, do you get headaches? Patients filter information and only give you what they feel is relevant. They may feel it is a sinus headache.

Show me where you get headaches.
 Not often, 2-3x a week?

11.	Have you had any changes in your vision?	Y	N		
	Do you get visual disturbances along with headaches?	Y	N		
	Do you have problems with your ears?	Y	N		
	Dizziness?	Y	N	ringing?	Y N
	Hearing?	Y	N	Other?	_____
	Have you noticed any lumps in your face, throat or neck?	Y	N		
	Do you typically breath through your mouth instead of your nose?	Y	N		
	Do you have any sinus problems?	Y	N		
	Explain: _____				

Diff Dx; Migraine

Pintos Ligament- TMJ damage can alter middle ear contents. Not common, but it can happen.

Put Cancer in Diff Dx

Diff Dx: Compromised Airway

Migraines:

- 70% are alignment C1, C2
- 20% histamine release from trigger,
- 10% other.

Occlusal appliances and subsequent occlusal adjustment can alter C1/C2 alignment and can affect migraines

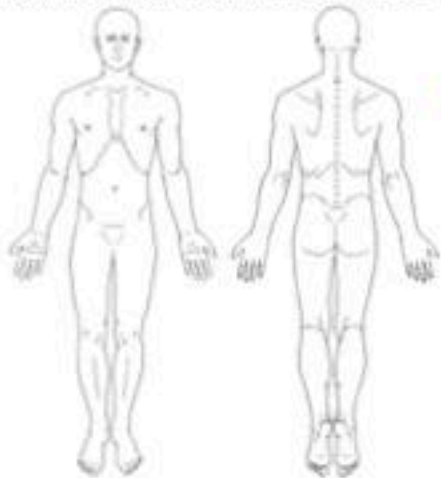


There is very little tissue between the ear and the TMJ. An inflamed ear will inflame the joint, and an inflamed joint will inflame the ear. Use Otoscope

- | | | | |
|-----|--|---|---|
| 12. | Do you have trouble sleeping? | Y | N |
| | Do you feel rested when you wake up? | Y | N |
| 13. | Do you have or have you had arthritis? | Y | N |
| | Does anyone related to you have arthritis? | Y | N |
| | Are your fingers sore or stiff? | Y | N |
| | Any dry skin patches past or present? | Y | N |
| | Any skin rashes past or present? | Y | N |
| | Have you been treated for any other painful condition in the last three years other than your present problem? | Y | N |

Explain _____

On the diagram below please indicate any other areas that are painful:



Look for neck and back involvement

Majority patients are not sleeping well.
Diff Dx: Compromised Airway

Diff Dx: Rheumatoid Arthritis,
Osteoarthritis, Psoriatic Arthritis

RhA is disease of Synovium
OA is disease of cartilage

Rheumatoid arthritis:
Family History
Multiple joints
Fingers and knees first usually
TMJ can be first
Need blood work

There is a correlation between
Fibromyalgia and not sleeping well

Good overview of what has gone on, when.

14. Have you had any prior treatment for TMJ problems? Y N

Appliance/Splint? Y N When? _____ Did it help? Y N

Night guard? Y N When? _____ Did it help? Y N

Bite adjustment? Y N When? _____ Did it help? Y N

Orthodontics? Y N When? _____ Did it help? Y N

Other _____

15. Please list, in chronological order, health care providers you have seen for the problem you are presenting with today:

Date	Doctor or provider	Treatment	Did it help?
_____	_____	_____	Y N
_____	_____	_____	Y N
_____	_____	_____	Y N
_____	_____	_____	Y N
_____	_____	_____	Y N
_____	_____	_____	Y N
_____	_____	_____	Y N

Look for clues as to what has helped or hurt

Are you the first doctor in or the 20th?

How committed are they into healing?

Question 17 is the most important of all

17. Describe the problem (s) in your own words:

How have these problems affected your life? Does it keep you from doing anything that you want to do? (work, play, chores, eating, talking)

What would you like to accomplish with treatment here?

Start Reading here when you first look at form

What we want to know first, is best answered by the patient last. Patient's memory has been focused on the details of the problem for the previous 4 pages. Now when they answer, it is a much more focused answer.

FAB
Feature
Advantage
Benefit

All treatment discussions are made in reference to the benefit to the patient

Nobody ever wants to own a feature: an occlusal adjustment, a crown, or a root canal.
The first step to achieving(Benefit for patient).... is
The cost to(Benefit for patient).... is \$\$

18. What has Changed and When:

So that I may have a better understanding of your problem, please list in chronological order with date estimates all the changes and/or defining moments of your problem.

(Examples are: fell down stairs, left TMJ clicking started, clicking stopped, teeth shifted, headaches increased, headaches stopped, left ear pain.)

Date Estimate

Change that Occurred

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

5

**Looking for defining moments
in the disease process**

19. Is there anything else that I should know about?

It is amazing what you would miss without this question

McGill Pain Questionnaire

20. So that I can better understand your pain, please complete the following:

What does your pain feel like? Some of the words below describe your present pain.

Circle all the words that describe it.

Flickering	Jumping	Pricking	Sharp	Pinching
Quivering	Flashing	Boring	Cutting	Pressing
Pulsing	Shooting	Drilling	Lacerating	Gnawing
Throbbing		Stabbing		Cramping
Beating		Lancinating		Crushing
Pounding				
Tugging	Hot	Tingling	Dull	Tender
Pulling	Burning	Itchy	Sore	Taut
Wrenching	Scalding	Smarting	Hurting	Rasping
Searing	Stinging	Aching	Splitting	
			Heavy	
Tiring	Sickening	Fearful	Punishing	Wretched
Exhausting	Suffocating	Frightful	Grueling	Blinding
		Terrifying	Cruel	
		Vicious		
Annoying	Spreading	Tight	Cool	Nagging
Troublesome	Radiating	Numb	Cold	Nauseating
Miserable	Penetrating	Drawn	Freezing	Agonizing
Intense	Piercing	Squeezing		Deadful
Unbearable		Tearing		Torturing

Emotional Words



LD Pankey Institute

Write your Dream

Anterior Stop Orthotic In Office Diagnostic Test



ArrowPath Sleep
Anterior Stop



Deprogram Muscle Engrams

If pain reduces, Occlusion/ Cranial Alignment and/or Muscle Engrams are part of the problem

With anterior stop in place:

5-10x wide open solid tap, open tap far left, open tap far right

2nd round same except Dr unexpectedly accelerates closing a few times

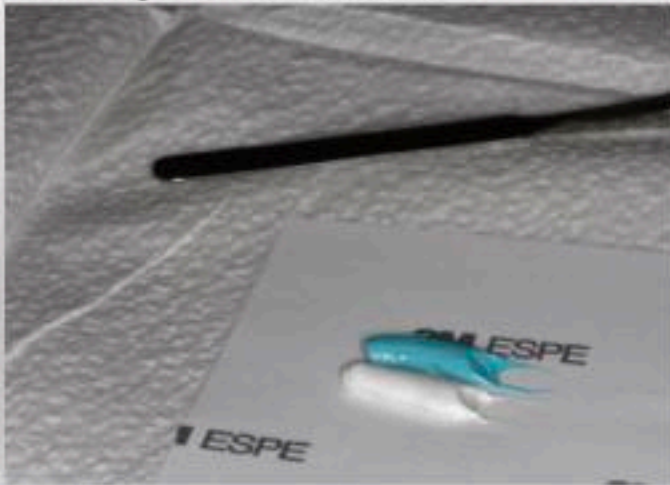
Occipital Lift with 3 deep breaths. Posterior neck opening muscle massage.

3rd round same as first except less taps each position

Office USE ONLY Do not send home with patient

Anterior Stop Orthotic In Office Diagnostic Test

Can do 2nd mix to
overlay 1st if needed



CBCT Rx

Patient _____

Date _____

Dx Code:
Reason for Scan:

1. Large Field of View

15cm tall field of view or greater

At 12cm tall you will miss some joints. 15cm and up is better

Note: 17cm x12 cm is 12 cm tall. The smaller # is the height, and is listed last

2. Scan Area

Scan Area to include 1cm above condylar head,
1 cm behind condylar head and 1 cm below chin.



3. KVP and AMP

Use highest KVP and Amperage the machine allows to get best contrast.

4. Voxel Size

Lesser scan time minimizes movement artifact. 0.3 voxel will give a better image than 0.1 voxel

5. No Metal-

No hair ties/clips, facial piercings, partials, glasses, etc.

6. Natural Neck Posture

Side view: Neck in natural postural alignment, and Frankfurt horizontal plane parallel to the floor. Avoid reaching for chin-rest with head forward posture.

Align head frontal view: Laser aligner down middle of face, can see both ears equally

7. Hold Still, Back teeth together

Goal: Patient to hold very, very still for 20 seconds while scan is being taken

Sitting is more stable than standing. A hard chair works well.

Practice swallowing, back teeth touching, tongue lightly resting back of front teeth.

Practice lightly breathing.

Give patient a 7 second warning before you take the scan so they can swallow, get

back teeth touching, and have tongue lightly resting back of front teeth.

8. Take Scan

Ten seconds before scan have patient swallowing, back teeth touching, tongue lightly resting back of front teeth, lightly breathing.

9. Burn Raw DICOM

Burn as Raw Dicom files, not locked into a viewer program

19.2

MRI Scan of the Temporomandibular Joint 1.5 Tesla Magnet

date _____

Please evaluate _____

- Facial Pain 784.8
- Ankylosis/Neurosis 326.4
- Osteoarthritis 715.2

Significant History: See Exam Form

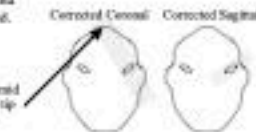
- Use TMJ coils. Use 1.5 Tesla magnet. Do not use an open MRI. Do not use a short flip angle.
- Show orientation views.
- Closed views are with back teeth together.
- Use a roll of tape (3M Transpon Tape 1 inch wide) for the open view. The roll is two inches in diameter. Have patient open as wide as they can comfortably and place the tape roll as far back as possible with the flat side toward the teeth. They should be biting into the tape with their back molars on both sides.
- Copy DICOM images to a CD and give to patient.
- If at Anne Arundel Medical Center, Radiologist Kerry Thompson, MD is to read the scan.
 - Patient has wax index to wear on both to stabilize jaw for closed views.
 - Patient is to wear Dr. Drotter's appliance for all closed views.
 - Give Rx for _____ They will take it 1 hour before scan.
 - Patient to get braces off molars before scan. No orthodontic wire in place.

1. T1, mouth closed, corrected sagittal projection, right and left TMJ.
8 or more views: lateral, medial, 4 cuts through condylar head.
2. T2 scan mouth closed, corrected sagittal projection, right and left TMJ.
8 or more views: lateral, medial, 4 cuts through condylar head.
3. STIR (T1 inversion recovery) corrected sagittal projection, right and left TMJ.
8 or more views: lateral, medial, 4 cuts through condylar head.
4. Proton Density, mouth closed, corrected sagittal projection, right and left TMJ.
8 or more views: lateral, medial, 4 cuts through condylar head.
5. Proton Density, mouth closed, corrected coronal projection, right and left TMJ.
8 or more views: in front of condylar head, through condylar head, behind condylar head.
Be sure to go at least one slice distal, and one slice anterior to condylar head.
6. Proton Density, mouth open fully, corrected sagittal projection, right and left TMJ. 8 or more views: lateral, medial, 4 cuts through condylar head.
Use roll of tape for open view as described above.
Take this view last.

Thank You

18.18

Aim from mid
condyle to tip
of nose



T-Scan is excellent for Patient Education of Occlusal Pathology

